

Article

Smallholders' Challenges: Realizing Peri-Urban Opportunities in Bengaluru

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Abstract: Urban expansion creates potential for increased incomes among previously rural smallholders from sources other than traditional agriculture. Harnessing this potential, however, requires investments into agricultural upgrading or non-farm activities. The article addresses the question concerning to what extent these investments are realised in the peri-urban space of Bengaluru. Its answers are based on a review of the literature and extensive field surveys in two differentially developed districts assessing the smallholders' economic situation in 2019 and as a recall in 2009. Our findings are that only a few smallholders were able to realise the peri-urban opportunities. Household income increased in real terms only by a little, especially from farming. Instead of a traditional farm to non-farm production linkage, surpluses from the non-farm sector were seen to meet the working capital needs of the farm sector. While physical access to formal financial institutions has significantly improved, formal borrowing is dominated by small-sized loans from registered self-help groups or traditional priority sector loans. Only a few households took up non-farm activities as many others failed to obtain sufficient credit and lacked knowledge about remunerative non-farm projects. Overall, rising outlays for education and health services leave little resources for any productive investments.

Keywords: peri-urban; non-farm activities; formal credit; collateral; Bengaluru



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1. Introduction

As urban regions grow over time, various erstwhile rural areas at the periphery begin establishing linkages with the urban economy and society and a process of transition takes place. These linkages create potential for development and increased incomes among previously rural residents from sources other than traditional agriculture. Harnessing this potential, however, requires investments into agricultural upgrading or specific non-farm activities [1,2]. Both the knowledge of the correct businesses as well as the capital required for investment are critical and the latter makes the provision of credit essential [3,4]. This paper examines these issues of the development of farm and non-farm investments and the role of formal credit by considering the peri-urban regions of an important metropolitan city of India, Bengaluru.

Concerning the prospects for the resident smallholders in the peri-urban zones, some authors highlight their opportunities, others their constraints. Among the opportunities, significant increases in real estate prices have been mentioned, which presumably grant residents in these areas more valuable collateral for obtaining loans. This is bolstered by a greater perception of creditworthiness by banks among these populations owing to their proximity to markets and financial institutions [5]. Added to this, government credit programs, such as MUDRA Yojana introduced in India, which aim to provide credit for small enterprises, are supposed to facilitate better access to credit [6,7]. From the demand side of loans, better communication technology is expected to reduce the transaction

costs and improve access to information on various economic activities, financial services, etc. [8,9].

In much of the literature on inclusive finance, access to and the availability of loans are seen as important stimulants for economic activities and, therefore, economic growth [10,11]. Yet, even friendly critics of inclusive finance, such as [3]) and [4], point out that not everyone will become a successful businessperson with better access to loans. Furthermore, the land in the emerging peri-urban area is neither equally distributed nor is there capacity to sell land at a price that reflects its future value [12,13]. Therefore, the question arises about the factors that influence the realisation of new peri-urban opportunities.

The article addresses this controversy about peri-urban opportunities for smallholders by providing answers to the question in relation to what extent peri-urban potentialities are realised in the peri-urban space of Bengaluru. The answers are based on a brief review of the literature and extensive field surveys in two districts conducted in 2019, one in a more developed peri-urban region close to the international airport (Bengaluru Rural) and the other a relatively less developed region in the periphery (Ramnagara).

In several ways, the study adds new insights to the existing literature on peri-urban space in India. Based on the field survey, it provides estimates of income for the peri-urban households from two periods of time differentiating between farm and non-farm incomes. This analysis shows that in real terms, the increase in income has been small, more so for the farm income, necessitating the need for the development of non-farm activities. Instead of a traditional farm to non-farm production linkage, we observed a linkage from the non-farm sector to the farm sector. Surpluses from the non-farm sector meet the working capital needs of the farm sector. Consumption linkages giving rise to the non-farm sector in retailing are prevalent. Our survey data on expenditures reveals rising outlays for education leaving little savings in the hands of the households for any productive investments.

Our survey also calls into question the usefulness of financial infrastructure, in particular banking infrastructure, as a key indicator of financial inclusion, as can be seen in much of the literature on financial inclusion [14]. While bank branches have increased manifold in the region and with it the bank accounts for the citizens, actual usage in terms of deposits and credits is very limited. In particular, a key finding of the study is that while physical access to formal financial institutions has significantly improved, formal borrowing is dominated by small-sized loans from registered self-help groups of women members or traditional agriculture loans given under prescribed priority sector lending norms. Even though most households perceived agriculture as a risky occupation, few took up non-farm activities as the household lacked knowledge about innovative and remunerative non-farm projects and the ability to procure credit support for the same. Due to land sales resulting in small sizes of land, some farmers switched from traditional food crops to the more lucrative and less seasonal floriculture. Without agriculture insurance, however, they found it difficult to access loans for expansion. Overall, the already mentioned high costs of (better) private education and health services as well as expenditures for ceremonial purposes induced households to access consumption loans for these purposes from informal sources, leaving little room for obtaining productive loans.

We begin our article with a brief review of the literature on financial inclusion and peri-urban opportunities for smallholders. We proceed with a justification of our case selection for the field research and a description of the economic developments in the chosen sites in the period of peri-urbanisation. The presentation of the household survey results follows, first on the issue of land sales, and second on the household's access to finance and use of loans. We conclude with a brief comparison of the insights found in the literature and our household survey.

2. Insights from the Financial Inclusion Literature

It is a well-established consensus that informal sources of credit, except relatives or friends, charge very high interest rates [15,16]. A recent study on villages in India revealed

that professional moneylenders charged interest rates of up to 120 percent per year. If smallholders buy inputs on credit, the input dealer will charge them above the market prices and might force the smallholders to sell the produce to them immediately after the harvest [17] (p. 251). For street vendors, the interest rate for their working capital loans can even be much higher [3] (p. 232).

Access to formal loans is, therefore, seen as a means to reduce poverty [11] and to ensure overall economic growth because a well-functioning formal financial system contributes to the efficient allocation of savings for investment [18]. Access to formal financial institutions by the poor, called financial inclusion, is, according to a study by Sarma and Pais, positively correlated to the Human Development Index and the Gross Domestic Product [19]. Much of the literature on the measurement of financial inclusion uses the number of bank branches per population and deposit accounts as indicators of financial inclusion [14].

In India, the financial access of the poor to formal institutions has been encouraged by government policies but has not yet led to the driving out of informal sources nor are the amounts of formal credit provided sufficient for the financial needs of smallholders [17] (p. 257) and the urban poor [5].

Access to formal credit and interest rates differ between social groups. Tenant cultivators are less likely to access crop credit [20] (Rajeev and Vani, 2019) while smallholders usually pay higher interest than larger farmers. Social status also plays a role: members of scheduled caste, scheduled tribes, and Muslim households are less likely to gain access to formal credit. For our study of the peri-urban space, it is interesting to note that the research completed by Chavan and Sivamurugan revealed that nonagricultural employment had a positive impact on access, while activities allied to agriculture did not [17] (pp. 253–256). Furthermore, Banerjee and Duflo observed that better physical access to banks did not necessarily lead to higher levels of formal loans [3]. (p. 235)

A key reason for the limited access to formal credit besides geographical distance is the bank's monitoring costs of debtors' creditworthiness. These costs do not increase proportionally with the size of the loan. Therefore, one large loan requires less administrative time than the handling of many small loans [3] (p. 240) The techniques of micro-finance have proven to be a solution to the costs of monitoring. By using the power of shaming in female joint liability groups and removing almost all flexibility through the requirement of repaying a fixed amount every week, micro-finance has considerably reduced the monitoring costs while keeping default rates very low [3] (pp. 255–256). Low costs and default rates allow micro-financial institutions to offer loans at interest rates much lower than their informal competition. Therefore, it is not surprising that micro-finance has become very popular throughout the global South.

Microfinance's impact on poverty reduction, however, has been limited. Except for instances of predatory lending, which became more frequent the moment micro-finance was discovered as an attractive investment for international financial speculators [21] (p. 75), the average debtor to micro-financial institutions profited only modestly from access to credit at relatively low interest rates. The micro-finance promoters' much touted female empowerment and successful entrepreneurship remain an exception. As empirical research has shown, the very techniques of micro-finance undermine the stated goals of supporting entrepreneurship: its rigid rules, the time the group meetings impose on its clients, and especially the weekly repayments. These conditions are not conducive for establishing a business whose returns may be uncertain [22].

Banerjee and Duflo summarised the micro-finance dilemma succinctly: "there is a clear tension between the spirit of microcredit and true entrepreneurship, which is usually associated with taking risks and, no doubt, occasionally failing." [3] (p. 257).

Furthermore, many poor people are not willing, or lack the skills, to start their own business even if they can access loans at reasonable rates. Most of those who take out micro-finance loans belong to the category of so-called necessity entrepreneurs. Running their own business is not their first choice of occupation. The inability to find gainful em-

ployment makes them start their own business. Their tiny businesses generate little income as they are in competition with many others offering similar services [3] (pp. 312–330) in niches not yet occupied by chain stores [23] (p. 193). For the so-called opportunity entrepreneurs, who resemble more Schumpeterian entrepreneurs, much larger amounts of capital and add-on services are required than micro-finance institutions deliver [3,24]. According to Sonne, provisions for healthcare and education are more important than the availability of credit [24] (p. 153).

To sum up these insights about more inclusive access to finance, we can expect for peri-urban Bengaluru the following: better access to financial infrastructure will not translate into widespread entrepreneurial investment due to a lack of access to credit and skills, low income and thus limited creditworthiness, and crowded labor markets.

3. Insights from the Literature on Peri-Urban Opportunities and Constraints

Urbanisation processes and real estate speculation go together. While “peasant elimination” is an ongoing process in the age of industrialisation [25] urbanisation is speeding up this process by market-induced processes, by the state-orchestrated forced selling of land, or by the environmental degradation of agricultural land. According to the literature on Bangalore, all three processes have played a role [12,13,26,27]. Agriculturalists sold the land because of the prospect of rising land prices or because they could no longer compete with larger, more productive producers and harboured the hope for alternative employment. They were also forced to sell their land to para-statal agencies under the law of eminent domain in the name of development. In the greater Bangalore area, the Karnataka Industrial Area Development Board (KIADB) was charged with the task of purchasing land from rural owners and developing it for reselling or leasing it to infrastructural entities (e.g., airport consortium), industrial enterprises, or real estate developers. KIADB paid a fraction of the market value to the smallholders and those who were cultivating common land were not compensated. Furthermore, portions of the rural poor, especially women, had difficulty proving ownership. The ensuing protests by farmers were only occasionally successful in obtaining a better deal [12,26]. The depletion of water resources by overuse or pollution was also a reason for giving up farming by selling land. Rapid urbanisation and irrigated agriculture have over-exploited many aquifers in the Bengaluru area [28] and threaten the future availability of water [29].

Nevertheless, while urbanisation encroaches on farmland, it also offers opportunities for successful farming [30]). Less land for agriculture does not necessarily translate into less agricultural value extracted from each acre left. The access to more finance (and more customers) could lead to the intensification of agriculture through mechanisation and chemicalisation as well as to a shift to more valuable crops. In case these processes take place, the question arises to what extent the previously landless agricultural workers will be in demand. Animal products have become more popular especially in cities and livestock and poultry raising can be carried out also on smaller plots [31]. In addition, opportunities for processing arise [32] Urban affluent consumers are willing to spend more on high-priced food such as vegetables, milk products [33] silk, flowers, lawn grass [31], and even organic products [34]. For displaced peasants, factory jobs are an attractive alternative as they usually provide more stable employment which allows for better support of their children’s education and a subsequent move out of poverty [3,35,36]. While organised manufacturing industries have experienced jobless growth for many decades in India [37,38] (p. 117), the labor market in the area north of Bangalore offers employment in the pharmaceutical, automobile, and machine-tool industries, though employing a predominantly male workforce. Farm-based industries are absent [31]. However, many of the displaced peasants lack the skills for more gainful occupations and they are in competition with migrants from further away [39] (p. 76).

Previous research shows that the extent to which the original inhabitants of the peri-urban spaces can make good on the opportunities offered by the expanding city depends on their resources. Those households with a high level of material capital (especially land),

human capital (education), and social capital (networks including resourceful persons of high status) are much better positioned to exploit the peri-urban opportunities such as supplying foodstuffs for affluent urban consumers, selling land at high prices, and starting non-agricultural businesses. Fewer opportunities are opening up for those who lack material, human, and social capital [12,39].

According to the literature, those households that lack these types of capital must pursue manifold strategies to secure their livelihood. Members of such households will take up non-farm employment in the vicinity, migrate temporarily to further places, or start small retail, transportation, or renting businesses. Despite their marginality, agricultural activities will remain for many one important source of income and the anchor for their social networks [23]. As they are reliant on reciprocal social exchange, the question arises regarding to what extent their networks will survive the process of peri-urbanisation.

Even without the loosening of social bonds through peri-urbanisation, traditional village or caste-based solidarity networks frequently fail to provide appropriate support in the case of nonfatal severe illnesses because helping people to pay for major medical expenses goes beyond the basic act of sharing [3] (pp. 209–218).

In sum, the literature on economic opportunities in peri-urban areas directs our attention to socially differentiated opportunities.

4. Case Selection: Devanahalli and Magadi

For assessing the extent to which peri-urban Bengaluru confirms the insights from the literature on peri-urban financial constraints and opportunities, we carried out a field survey in two districts at different distances from the city centre during 2019. The one fairly close by is Bengaluru Rural, the one further away is Ramnagara.

Devanahalli is one of four taluks in the Bengaluru Rural district of Karnataka, which lies to the north of the city. As of the 2011 census, there are 217 villages (habited plus inhabited) and two towns under town municipal corporations (TMC)—Devanahalli (TMC) and Vijayapura (TMC) that are located here. The town of Devanahalli is located approximately 30 km from Bengaluru city in proximity to its international airport. The construction of Kempegowda International Airport, which was undertaken between 2005 and 2008, has strongly influenced the development of this taluk.

Ramnagar district is headquartered in the city of Ramnagaram, which is famous for its silk used in weaving. This district was carved out of the Bangalore Rural district on 23 August 2007 and comprises four taluks including Channapattana, Kanakapura, Ramnagara, and Magadi. There are 285 villages (habited plus inhabited) and two towns in Magadi. The taluk is located 51 km from Bangalore city.

4.1. Methodology

4.1.1. Sample Selection

A multi-stage sampling technique was used for the selection of the sample households. As we were interested in the peri-urban regions of Bangalore, as mentioned, we selected the two adjacent districts of the Bangalore urban district: the Bangalore Rural and Ramnagara districts. We next selected two peri-urban Talukas purposefully; one relatively more developed, Devanahalli (from Bangalore rural district) and the other a less developed Magadi taluka (from the Ramnagara district). It is to be noted that as per the 2015 data, Magadi taluka ranked 75th based on the Human Development Index (HDI) rankings of talukas, while the ranking of Devanahalli was 33 [40]. This clearly shows that in terms of income, health, and education criteria, Devanahalli is far more developed than Magadi. From these two talukas we selected five villages each that fell within a radius of 10 km from the town areas. Interior villages were not considered as our objective was to understand the characteristics of a peri-urban region. As per 2011 census, Magadi and Devanahalli have 274 and 193 inhabited villages respectively. Thus, from each talukas we selected around 2 percent of villages. Out of the total number of households in these selected villages (numbering 2774) on average we selected around 10 percent of households. In the selected

villages we visited the farmer relationship centres (Raitha Samparka Kendras) and the local government offices (Village Panchayats) to prepare a list of households. From each village, we randomly selected 30 households. The sample size thus was 300 households, with 150 households from each taluka. Information about a total of 1173 members in these households was collected (wherever relevant). The survey was conducted during 2019, before the pandemic struck India and hence, we could gather data in a normal period.

4.1.2. Survey Instrument: Personally Canvassed Questionnaire

Through the survey we tried to understand various socio-economic aspects such as the changes in economic activities due to peri-urbanisation, enabling environments such as physical and financial infrastructures, access to these facilities, and the challenges faced by the households. Accordingly, a structured questionnaire was formulated capturing these aspects as well as the socio-economic profiles of the households. We canvassed this questionnaire through door-to-door visits and adopting a face-to-face interview method.

First, a pilot survey was conducted based on which some revisions of the questionnaire were made. The anonymity of the respondents was maintained which, we believe, helped the respondents to answer our queries candidly.

The survey was primarily cross-sectional; however, some information about past years was collected using a recall method to understand changes that had occurred to some of the pertinent indicators. The interviews were carried out among farm households, as well as non-farm enterprise owners.

The questionnaire contained both quantitative questions (to be answered on a nominal scale such as the level of income and expenditure) and qualitative questions (such as problems faced in accessing a financial institution). In addition, we also held discussions with bank officials, non-governmental organisations, (NGOs), and others.

We used SPSS software for data entry and the data were analysed using both SPSS and STATA. For this descriptive research, standard descriptive statistics were primarily used. We also utilised a test of difference in proportions (two-sample test of proportions) to substantiate some of our arguments. For example, to test whether the occupational difference between the more developed Devanahalli taluk and the relatively less developed Magadi taluks were statistically significant, we used a test of difference in proportion (a standard normal test). It showed at the 99 percent confidence level that these differences were statistically significant. Some of these exercises are discussed in the subsequent sections.

4.2. Basic Characteristics

Considering the primary occupation of the households, as expected, we observed that more households were engaged in cultivation (see Table 1). Due to higher levels of industrialisation in Devanahalli, we can see that the average landholding was much smaller in Devanahalli than in Magadi, which is more focused on agriculture/cultivation (Table 1). In Devanahalli about 5 percent of respondents worked as agricultural labourers; these workers usually did not own land and worked in other cultivator households' fields during the sowing and harvesting seasons. Non-agricultural labour is usually engaged in works such as construction. Both Devanahalli and Magadi had above 10 percent of respondents in this category. Non-farm activities involve small entrepreneurs such as petty shop owners, vehicle owner cum driver and so on. Devanahalli airport workers including gardeners were classified under the "others" category. Other occupations that were classified under the "others" category include teachers, temple priests etc. Devanahalli had a much higher percentage of respondents in these two categories (Table 1).

Table 1. Primary Occupation of Sample Household Heads (percentage of households).

	Devanahalli	Magadi
Cultivation	41.6	77.3
Animal Husbandry	9.4	1.3
Agricultural Labour	5.4	0.01
Non-Agricultural Labour	11.4	14.0
Non-farm	14.8	2.0
Others	17.5	5.3

Note: Agriculture labourers do not own land and work as labourers in agriculture fields; Non-agricultural labourers include workers engaged primarily in construction, etc. Source: Field Survey.

A question may arise whether these differences in the proportion of people engaged in different occupations were statistically significant. To test this, we conducted a two-sample test of proportion. Let p_1 be the proportion of people engaged in a particular occupation in Devanahalli and p_2 be the corresponding proportion for Magadi. The null hypothesis H_0 was that there was no significant difference between the two population proportions, which was tested against the alternative hypothesis H_1 as given below.

$$H_0 : p_1 - p_2 = 0$$

$$H_1 : p_1 - p_2 \neq 0$$

The standard normal tests conducted for the purpose revealed that each of the category-wise differences was statistically significant at a 99 percent confidence level except for the non-agricultural labour category (for details see Table 1 in the Appendix A). More precisely, we observed that a higher proportion of households in the relatively less developed Magadi taluka were engaged in cultivation as the primary occupation compared to Devanahalli. This difference in proportion (shown in Table 1, row 2) was statistically significant at a 99 percent confidence level. On the other hand, for non-farm activities, Devanahalli had a higher proportion of households than Magadi and this difference was also significant at a 99 percent confidence level. Similar results were obtained for other activities such as agricultural labour and animal husbandry-based occupations. However, for non-agriculture labour there was no statistically significant difference between the two regions.

Devanahalli and Magadi differed also in their social composition. Members of scheduled castes (SC) and scheduled tribes (ST) are more prominently represented in Devanahalli. The last, though slightly outdated census revealed that SC and ST comprised 38.9 percent of the population in rural Devanahalli and 23.6 percent of the population in rural Magadi (24 percent in all of Karnataka; District at a glance: 2016–2017, <https://www.censusindia2011.com/karnataka-population.html>, accessed on 24 June 2021). In our sample, SC and ST were over-represented, especially in the Devanahalli sample with a share of 59.1 (see Table 2).

Table 2. Social Group of Respondents (percent of Households).

Social Group	Devanahalli	Magadi
Scheduled Caste	30.2	22.7
Scheduled Tribe	28.9	6.7
Other Backward Castes	30.9	50.7
General	10.1	20.0

Source: Field Survey.

Almost all respondents lived in poverty as revealed by the type of ration card they possessed (Table 3). Ration cards are documents that help a poor household to receive subsidised food in designated outlets. People considered as poor possess a different type of ration card than those living above poverty as the level of subsidies are different.

Table 3. Type of Ration Card (percent of Households in Sample).

	Devanahalli	Magadi
Above Poverty Line	1.3	2.0
Below Poverty Line	94.6	98.0
Others/no ration card	4	0

Source: Field Survey.

5. Discussion

5.1. Economic Development of Devanahalli and Magadi

There has been a rapid development of the Devanahalli Taluka after the opening of the main airport of Bengaluru called the Kempegowda International Airport in May 2008, which is approximately 5 kilometers south of Devanahalli. The opening of the airport also encouraged airport and aerospace-related industries to settle in the vicinity. The population of Devanahalli increased from the 2001 to 2011 census by 13 percent while the urban population increase was about 19 percent. The census of 2011 showed a population figure of 209,622 for the taluka which is projected to increase to 288,787 by 2021 [41]. Ever since the development of the airport and other industrial activities arrived there has been a rapid increase in real estate activities in Devanahalli, more in the proximity of Devanahalli town, which has now transformed into a bustling business centre [31]. During our survey we observed that every large construction company is now engaged in intense construction activities in Devanahalli, giving rise to the demand for labour and materials. In addition, hardware, electric appliances, and furniture shops are also flourishing in the region. Thus, the economic activities have changed in Devanahalli, transforming it from a rural area to a peri-urban region [42]; participant observation from our field survey).

These industrial developments have had an impact on the land use in Devanahalli. Looking at the changes in the land utilisation pattern from 2002–2003 to 2016–2017 in Table 4, it is observed that uncultivated areas and fallow land have shown a significant decrease while there is a slight increase in the cultivated area. Non-agricultural land use has, however, rapidly increased by 4852 ha over the years.

Table 4. Changes in Land Utilisation Patterns in Devanahalli Taluk (Area in Hectares).

Year	2002–2003	2016–2017
Geographical area (Total)		44,935
Forest		2275
Non-agriculture	5764	10,616
Barren		1477
Uncultivated	7121	5469
Fallow Land	8749	5701
Net cultivated	19,549	20,763

Source: District at a Glance (Bengaluru Rural) 2003–2004 and 2016–2017; <https://bangalorerural.nic.in/en/socio-economy-at-a-glance/>, accessed on 30 June 2021.

Of the total cropped area of 20,763 ha, the area under food grains was 8222 ha, representing 40 percent of the total cultivated area, and the area under horticulture was 4356 ha, representing 21 percent of the total cultivated area.

Such a transformation has changed the infrastructure facilities for the locals in Devanahalli. Almost all households during our survey reported access to better roads and transport facilities which has facilitated mobility. In particular, for the whole sample (Devanahalli and Magadi combined) as much as 82 percent of households reported having mud roads near their residence during the early half of 2000 which has reduced to 0.5 percent during 2018, replaced by the tarred roads. In addition, around 49 percent of the households reported better water facilities now in terms of having a water tap at home compared to only 4 percent having a water tap during the year 2000. Similarly, regular electricity was available to only 25 percent of the households during the year 2000 which increased to around 84 percent during the time of the survey. These kinds of changes are

seen in terms of health care, education as well as sanitation facilities, except for waste disposal facilities from the state which still need to improve considerably.

Though not as rapid as Devanahalli, Magadi taluka has also seen steady development over the years due to its proximity to Bangalore city as well as the Bidadi industrial estate that has major automobile and food processing industries. In addition, the development of the Bangalore–Mysore infrastructure corridor has led to greater development potential by means of an improved road infrastructure and movement of people [43]. Development of the Magadi road has further increased the prospects of the area. The prospect of a metro connection to this region, consequently linking it effectively to the Bangalore urban district has increased the appeal of the area as a residential prospect [44]. During our field survey it was observed that many gated communities have been built in the area, and while still uninhabited, they have all been purchased as investment properties. The population of Magadi increased from the year 2001 to the 2011 census by 0.7 percent while the urban population increased by 46.7 percent. The census of 2011 showed a population figure of 203,841 [45].

Looking at the changes in the land use pattern from 1998–1999 to 2015–2016 in Magadi taluk in Table 5 we can see that there has been an increase in both non-agricultural and cultivated land by 206 and 1590 ha, respectively.

Table 5. Changes in Land Utilisation Patterns in Magadi Taluk (Area in Hectares).

Year	1998–1999	2015–2016
Geographical area (Total)		79,969
Forest		6598
Non-agriculture	5030	5236
Barren		5345
Fallow Land	9559	8780
Net cultivated	43,556	45,146

Source: District Census Handbook, 2001 and District at a Glance (Ramnagara), 2015–2016 [46]; http://lsi.gov.in:8081/jspui/bitstream/123456789/6304/1/37641_2001_BAN.pdf; <https://ramanagara.nic.in/en/district-at-a-glance>, accessed on 30 June 2021.

Of the total cultivated area of 45,146 ha, 31,531 ha was used for food grain cultivation, representing 70 percent of the total cropped area while 11,126 ha was under horticulture cultivation representing 25 percent of the total cropped area.

Industrial activity in the taluk had also improved with 93 small-scale industrial units established in 2015–2016 employing 473 people and a cumulative total of 1022 units up to 2015–2016 employing 9501 people. A total of 25 units were involved in service activities while textiles had 43 units followed by 6 food and alcoholic beverages units and 4 electrical and electronics units.

5.2. Impact of Land Sales on Economic Activities

In both taluks, households sold land. The plans for the new airport next to Devanahalli led to land sales already in the late 1990s and early 2000s. Even after the opening of the airport in 2008, land sales continued due to the demand for housing and airport-related economic activities. Therefore, it is not surprising that in Devanahalli a far larger percentage of households (13 percent) reported having sold land than in Magadi (3 percent), even in the 2009–2014 period. The size of the average land sold was much higher as well (Table 6). These data are limited to those who stayed in the area, while those households that fully sold all their land and have moved away were not part of our survey.

The announcement of the airport led to a land rush and soaring land prices. However, most small and marginal farmers were unaware of the future value of their land. Taking advantage of this, many intermediaries flooded the land market in Devanahalli. As per our interview with the small and marginal farmers, land was sold for around INR 500,000 per acre. Its value increased to above INR 15,000,000 in 2019. One can, therefore, see the enormous gain the land intermediaries were making, taking advantage of their capital both financial and human capital in terms of knowledge.

Table 6. Household Land Ownership and Sale, 2009–2019 Sample.

Categories (Unit of Measurement)	Devanahalli	Magadi
Average Acres of Land Owned in 2019 (acre)	0.9	2.1
Share of households that sold land between 2009 and 2019(percent)	13.1	3.3
Average Land Sold Between 2009 and 2014 (in acre)	3.5	0.3
Average Land Sold Between 2014 and 2019 (in acre)	1.2	1.2
Sold Land due to Urbanisation (amount in acre)	2.0	0
Average Land Sold due to Urbanisation 2009–2014 * (amount in acre)	3.35	0
Average Land Sold due to Urbanisation 2014–2019 *	0	0

* Answered by only a few respondents. Source: Field Survey.

The money the farmers received from land sales was mostly spent on house improvements. Some of that allowed for income generation through renting out rooms [39] (p. 53). In the main, however, little money was spent on income-generating investments; some even used the money for building temples in the village or for expensive four-wheelers. Even though there have been significant changes in the infrastructure facilities in terms of roads and transport facilities, educational institutions, and health care facilities, these changes have helped only about one-third of the households to take up new and better activities. One of the major problems in taking up remunerative non-farm activities is the lack of information. With the improved communication linkages, information is now available at these peri-urban regions but only about 29 percent of households have reported being able to benefit from such improved information.

By 2019, about 41 percent of Devanahalli households in our sample had agriculture as the primary activity while this was 77 percent for Magadi. Thus, it appears that much of the rural populace in Devanahalli has shifted from agriculture to non-agriculture, but Magadi has primarily remained agriculture-centric, despite an overwhelming assessment of agriculture as riskier than other professions (response by 68 percent of the households in the sample of Magadi and 56 percent of the responding households in Devanahalli). Among the other activities, labour is the next largest category followed by animal husbandry.

As far as farm–non-farm linkages are concerned, we observed that even though Magadi has remained primarily agriculture-based, there is no traditional farm to non-farm linkages whereby farm surpluses fund non-farm activities. On the other hand, the reverse has taken place: the surpluses from the non-farm activities supported the farm activities. Consumption linkage was observed in both Magadi as well as Devanahalli. Especially in Devanahalli, construction work augments local demand for electrical appliances, tiles, furniture, etc.

Further, a social class-wise disaggregation of occupation reveals that the socially backward class has mainly taken up the labour work (Table 7) while the general class has remained with agriculture and other work which includes mainly salaried jobs. In Table 7 we have shown the disaggregation in terms of socially backward castes and tribes. These are officially designated social classes in India that are considered to be deprived and receive certain benefits reserved for them. Schedule tribes (STs) usually live in hilly areas and forests. A more disaggregated examination of the non-farm activities reveals that most are service based. About 8 percent of non-farm workers are engaged as drivers, another 5 percent are working as mechanics repairing two-wheelers/bicycles, and 1 percent each are engaged in factory work and real estate dealers.

Similar to the case in Table 1, here too we carried out a two-sample test of proportions to examine whether the differences in the proportion of people engaged in different occupations were statistically significant. In particular, we asked whether the higher level of participation in labour work by the SC and ST populations vis-à-vis others were statistically significant or not. We found that for agriculture labour work, this difference was significant at a 10 percent level (with a test statistic z-value at 1.762) and for non-agriculture labour this difference was significant at a 1 percent level of significance (with a z-value at 2.586).

Table 7. Caste-wise Disaggregation of Primary Occupation (percent of respondent households) Sample.

	Devanahalli				Magadi			
	SC	ST	OBC	Gen	SC	ST	OBC	Gen
Agriculture/cultivation	35.6	32.6	39.1	93.3	67.7	100	75.0	86.7
Animal Husbandry	4.4	16.3	10.9	0	0	0	0	6.7
Agricultural Labour	8.9	4.7	4.4	0	26.5	0	15.8	0
Non-agricultural Labour	24.4	9.3	4.4	0	0	0	0	0
Non-farm	13.3	11.6	23.9	0	5.9	0	0	3.3
Others	13.3	25.6	17.4	6.7	0	0	9.2	3.3
Total	100	100	100	100	100	100	100	100

SC: Scheduled Caste; ST: Scheduled Tribe; OBC: Other Backward Castes; Gen: General Castes. Source: Analysis of Field Data.

As recalled and reported by our respondents, farm income has not increased much between 2005 and 2018. In contrast, non-farm income increased substantially in both places, though even more in Devanahalli (Table 8).

Table 8. Changes in Income in the Peri-Urban Regions of Bangalore (in Indian rupees, at constant 2011–2012 prices), Sample.

Year	Average Monthly Farm Income *	Percent Change in Farm Income	Average Monthly Income from Non-Farm **	Percent Change in Non-Farm Income
Devanahalli				
2005	5313	21	5509	85
2018	6442		13,977	
Magadi				
2005	5509	−7	5696	30
2018	5114		10,481	

* Deflated by all India Wholesale price index (WPI) of primary goods (includes mainly food items) ** Deflated by Wholesale Price Index of Manufacturing sector Note: Based on the recall of respondents Source: Analysis of Field Data.

Despite being more remunerative, non-farm activities remain marginal. Among the reasons for this, as revealed during our survey, are the lack of non-farm qualifications, especially literacy for services and additional mechanical skills for industry, and a lack of “social” and “financial” capital. Social capital acquired in the village is also devalued once individuals move outside of farming. As mentioned above, access to and an understanding of information about job and livelihood opportunities is limited for functional illiterates in particular. Regarding the financial capital, we investigated the role of the credit market in the region.

5.3. What Hinders Moving up the Value Chain: The Role of the Credit Market

In the absence of one’s own fund, banks can play a role in providing resources. What kind of formal financial institutions exist in these regions? In the 1990s, only a few banks were operating in Devanahalli as well as Magadi. However, today there are about 44 public sector banks, 3 foreign banks, 7 regional rural banks, 10 private banks, and 16 cooperative societies operating in Devanahalli [41]. Magadi Taluka has 18 public sector banks and 1 private bank, 2 regional rural banks, no foreign bank, and as many as 94 credit cooperative societies [45]. Thus, one can observe many formal financial institutions operating in both these peri-urban regions.

The proximity of banks together with the Government’s financial inclusion programme has eased access to bank accounts. In fact, all our respondents in the peri-urban region had a bank account. They also used the bank services regularly, but the level of deposits appeared to be rather low on average (Table 9). However, we can observe that visits to banks were much lower for Magadi households and the level of savings was also lower.

Table 9. Account Ownership and Savings in Devanahalli and Magadi, 2019, (Sample).

Categories (Unit of Measurement)	Devanahalli	Magadi
Share of households that accessed a financial institution in the past year (percent)	100	100
The average number of times accounts accessed in a year (number)	10	3
Share of households that saved money in the past three months (percent)	72	76
Average amount saved among households that saved (in Indian rupees)	4314	2663

Source: Field survey.

Although households saved in financial institutions, this was not their only mode of saving money. The informal sector played a role as well, and Table 10 provides a breakdown of the percentage of households in the two taluks that reported saving money in each formal and informal method.

Table 10. Share of Sample Households that Reported Saving Money in Each Institution Type, in Percent.

Type	Devanahalli	Magadi
Scheduled Commercial Bank	58	71
Cooperative Society	2	2
Self Help Group	13	28
Post Office Savings Account	2	1
Other Formal Institution	0.7	0
Moneylender	0.7	0
Friends/Relatives	0	0.7
As Cash at Home	56	67
Gold/Jewels	3	1
Others	1	0.7

Source: Field Survey.

While banks and other formal institutions act as an important destination for household savings, the same is not true of informal institutions. However, a large percentage of households in both taluks reported keeping savings in the form of cash at home and this percentage was much higher for Magadi taluka. We may postulate that households save in this form owing to issues in accessing banking facilities. Around 72 percent of households in Devanahalli and 82 percent of households in Magadi reported having faced issues in accessing bank facilities in the past. The prominent issues faced in 2019 as well as in the decade of 2000 in both districts are displayed in Table 11. Though financial literacy has improved over the years, even during 2019 almost fifty percent of respondents faced the problem of low literacy and comparatively this percent was much higher for Magadi.

Table 11. Issues faced by households in accessing banking facilities in 2000 and 2019, in percent.

Percent of Respondent Households Facing the Specific Problem	Devanahalli		Magadi	
	2000	2019	2000	2019
Low financial literacy	56	44	75	66
Corruption	54	53	80	74
Distance	54	3	77	8
Lack of awareness	63	23	79	18
Complexity of procedures	46	13	75	41
Time for services (Digital Banking Usage)	37	11	75	11
Others	0.7	0.7	0	0

Source: Field Survey.

In both taluks, the percentage of households reporting access hurdles such as distance, lack of awareness, the complexity of procedures, and excessive time spent using banking services was significantly reduced but did not vanish completely. The reduction in the distance to banks and improved awareness are a result of improved banking infrastructure in the urban periphery, while reduced complexity and spent time on obtaining service

results from the spread of digital banking facilities such as mobile banking. However, many households reported that corruption and financial literacy were lingering issues that prevented or discouraged the use of banking facilities. Both corruption and financial literacy are found to be closely related. As households interested in obtaining credit are often unaware of the procedures to be followed, they take the help of the middlemen who charge them commissions for obtaining credit.

Out of the total households, about 40 percent reported having taken a loan from some source, either formal or informal during the last 10 years; that is, between 1 April 2009 and 31 March 2019. Per year, only about 10 percent of respondent households accessed credit which clearly shows low access to credit. Table 12 provides information on the distribution of these loans across the source of borrowing.

Table 12. Source of Borrowing of Loans between 2009 and 2019, percent of respondent households.

Source	Devanahalli	Magadi
Scheduled Commercial Banks	19	20
Cooperative Banks	10	1
Self Help Groups	53	71
Micro Finance Institutions	1	3
Under MUDRA Yojana	1	0
Moneylenders	3	3
Traders/Shop	1	0
Relatives/Friends	3	1
Other Informal	8	0

Source: Field Survey.

Formal sources are much more prominent providers of finance to peri-urban households than informal ones. However, looking more closely at the figures, we observed that formal borrowing was dominated by loans from Self Help Groups (SHG). These loans are often raised through internal funds within the group, which have been built by group members' contributions. SHG loans often come with a relatively high interest rate of 24 percent per annum. Less than 20 percent of loans in each taluk were from scheduled commercial banks, and cooperative banks and Microfinance Institutions (MFI) played an even smaller role in this regard. An earlier survey conducted by us revealed that loans from SHGs are often insufficient for the purpose for which they are borrowed [47]. In particular, we found that around 76 percent of households reported that they received less than half of the level of funds required for their business and only 6.3 percent of our respondent households reported receiving more than three-quarters of the required funds [48]. Insufficient funding can reduce the productivity and probability of success of income-generating projects, but the limited funds available with SHGs, which in turn determine the loan amount by the banks, do not permit them to fulfil the loan demands.

We next look at the usage of loans, the information on which is detailed in Table 13.

Table 13. Usage of Loans taken between 2009 and 2019, percentage of respondent households.

Activities for Which a Loan Is Used	Devanahalli	Magadi
Crop/Farm Activities	30	22
Livestock	18	5
Non-farm Activities	7	0
Other Productive Activities	7	6
Health	4	1
Education	18	30
Religious/Marriage/Other Ceremonial Purposes	12	36
Other	4	1

Source: Field survey.

We can see that among the income-generating purposes for borrowing, agricultural activities were the dominant purpose, followed by livestock, as these loans are given under the priority sector lending norms. We have observed above that non-farm activities are more remunerative; however, one needs financial support to start such activities. From our survey (Table 13) it was seen that only a few loans were taken for non-farm activities in Devanahalli, and none in Magadi, leading to only a small percent of households taking up such activities.

In total, around 62 percent of loans taken in Devanahalli were for productive purposes, while this figure was only 32 percent in Magadi. In the latter taluk, non-income generating activities formed the most common reasons for taking loans, including education (30 percent) and religious or ceremonial purposes (36 percent). Due to urban influence and in order to make children well versed in the English language for better job opportunities, many households send their children to expensive, private English medium schools (government schools are usually vernacular medium). This is one major expenditure group (see Table 14) that has drained their resources considerably. Many are indebted to informal lenders due to education loans.

Table 14. Average Expenditure per Household (in Indian rupees) on Essential Items (among sample households that incurred expenditure) during 2000 and 2019.

Expenditure Heads	Devanahalli		Magadi	
	2000	2019	2000	2019
Education	1728	37,062	1304	21,858
Health	285	794	151	320
Food	1276	3855	936	2866

Source: Analysis of Field Data.

Although education creates human resources and provides the option for income-generating capacity for the future, it still accounted for fewer loans than those used for ceremonies. While ceremonial expenditures are useful for acquiring social capital [49], it is doubtful whether the social capital acquired in these traditional settings is of much use to navigate the challenges of peri-urbanisation processes. As ceremonial expenditures do not generate any income, they can increase the debt burden of such households, and thus households in Magadi are prominently at risk of falling into a debt trap. The diversion of loans towards non-income-generating uses is also common. When we looked at loans taken from SHGs, we found that 51 percent of such loans in Devanahalli and 87 percent in Magadi were being put to non-income-generating uses. This is both harmful to borrowers, who cannot repay and thus face lower credibility, and to the group, whose savings diminish and thus find it harder to finance profitable activities.

Why have only a few households in our sample obtained a loan from commercial banks? For those who stayed in agriculture with little land left, floriculture, especially rose cultivation, proved to be a somewhat profitable business opportunity. Floriculture is not as seasonal as a food crop and hence farmers obtain a flow of income throughout the year. However, it faces volatile demand conditions as it is not a necessity. For example, during the pandemic of 2020/21, farmers lost a major source of demand for flowers as the temples were closed. Furthermore, floriculture is not included in the crop insurance programme of the Government. Hence, in the case of climatic aberration such as heavy rain, the farmers lose their output. These risks make them less creditworthy for formal institutions, and, therefore, the distressed households tend to depend on informal lenders [50]. As peri-urban zones develop, land values increase, and the literature predicts that the increased land value will act as collateral for larger loans from formal institutions. In India, the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act helps the bank to take possession of collateral without going to court. However, land marked as agricultural land does not fall under the SARFAESI act. Thus, the increased value of land has not helped the households to acquire more credit even as their land gained in value. Amounts of agriculture credit depend on the type of crop grown

and the acreage, not on the value of the land. Hence, we observed that the households were not able to borrow for major non-farm activities.

6. Conclusions

We set out to answer a question about the factors that influence the realization of the new peri-urban opportunities for smallholders. Based on a literature review and a survey among smallholders in two differentially developed peri-urban locations of Bengaluru, we were able to identify key constraints for smallholders capitalizing on peri-urban opportunities.

The constraints of small and marginal farmers start with the fact that they obtained only a fraction of the later value of the land they sold as our surveys have revealed. Moreover, most of what they received was not spent on income-generating investments. While bank account ownership was prevalent among the surveyed peri-urban households, there was a distinct lack of access to credit from commercial banks. Access to commercial banks was limited even for those who succeeded in shifting their agricultural activities to higher value items such as floriculture. Furthermore, the rise in land values did not translate to obtaining larger loans because banks cannot repossess agricultural land.

Therefore, a large percentage of funding is through cooperative institutions such as self-help groups. While this is better than high levels of indebtedness to informal lenders, the quantum of loans that SHGs can provide is limited, and this can in turn limit the profitability and success of income-generating projects. Added to this, many poor households use loans for personal non-income-generating expenses. The insufficient public provision of quality education leads to indebtedness for school tuition. Traditional notions about social bonding through spending on ceremonies further increase the risk of falling into debt traps and seem of little help for accessing more remunerative economic opportunities. While non-farm activities have proven to be significantly more remunerative, they are not sufficiently available, especially for those with little schooling and lower access to credit.

The analysis suggests certain important policy implications. First, in such transitional peri-urban regions where the large-scale land sale takes place to private entities or the state occupies land from the villagers for building certain infrastructure, it is necessary to provide counselling to the citizens concerning the meaningful utilisation of the funds acquired. During our survey, we observed that many were not able to utilise their proceeds from the land sale to ensure future income generation. Secondly, our study revealed that non-farm activities generate more income than the farm sector. However, the households in these regions lack skills and business ideas and these are the areas where state assistance in terms of skilling and business development plans are necessary. Further, due to the sale of land leading to a reduction in land size, the cropping pattern has changed from food crop to floriculture. Moreover, owing to the closeness to the city markets, flower cultivation has become remunerative for the peri-urban dwellers. However, floriculture is outside the net of subsidised crop insurance. An expansion of crop insurance would help them. If some of these measures are taken up, the small and marginal farmers could benefit more from the opportunities of a peri-urban region. Most of all, however, better public schools would relieve these households of high levels of indebtedness.

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Appendix A

Table 1. Two sample tests of proportion results for the primary occupation of sample household heads.

Occupation	Variable	Mean	S.E	Diff = Prop(x) – Prop(y)	z-Value	p-Value
Agriculture	Devanahalli (x)	0.416	0.040	−0.357	−6.287	0.000 *
	Magadi (y)	0.773	0.034			
Animal Husbandry	Devanahalli (x)	0.094	0.023	0.081	3.115	0.002 *
	Magadi (y)	0.013	0.009			
Agricultural Labour	Devanahalli (x)	0.054	0.018	0.054	2.885	0.004 *
	Magadi (y)	0.000	0.000			
Non-Agricultural Labour	Devanahalli (x)	0.114	0.026	−0.026	−0.675	0.500
	Magadi (y)	0.140	0.028			
Non-Farm	Devanahalli (x)	0.148	0.029	0.128	3.994	0.000 *
	Magadi (y)	0.020	0.011			
Others	Devanahalli (x)	0.175	0.031	0.122	3.321	0.001 *
	Magadi (y)	0.053	0.018			

* Significant at 1 percent level.

References

1. Gerdien, M.; Roza, P. *The Role of Agriculture in Development; Markets, Chains and Sustainable Development Strategy and Policy Paper*; No. 5; Stichting DLO: Wageningen, The Netherlands, 2007.
2. Tacoli, C. *Links between Rural and Urban Development in Africa and Asia*; UN/POP/EGM-URB/2008/09, United Nations Expert Group Meeting on Population Distribution, Urbanization, Internal Migration and Development; Population Division, Department of Economic and Social Affairs, United Nations Secretariat: New York, NY, USA, 2008.
3. Banerjee, A.V.; Duflo, E. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*, 2011th ed.; Random House Publishers Private Limited: Delhi, India, 2011.
4. Robert, C.; Morduch, J. *Microfinance and Economic Development*; Policy Research Working Paper, No. 8252; World Bank: Washington, DC, USA, 2017.
5. Rajeev, M.; Vani, B.P. *Financial Access of the Urban Poor in India: A Story of Exclusion*; Springer: New Delhi, India, 2017.
6. Mahajan, Y. A Study and Review of Pradhan Mantri Mudra Yojana (PMMY) in the State of Maharashtra. *Int. J. Adv. Innov. Res.* **2019**, *6*. Available online: <https://ssrn.com/abstract=3681243> (accessed on 6 June 2021).
7. Gautam, V.; Kumar, P.; Gopal, K. Analysis the Performance of MUDRA. *Int. J. Manag. Soc. Sci.* **2017**, *5*, 72–77.
8. Mushtaq, R.; Bruneau, C. Microfinance, financial inclusion and ICT: Implications for poverty and inequality. *Technol. Soc.* **2019**, *59*, 101154. [[CrossRef](#)]
9. Nagarajan, G.; Meyer, R.L. *Rural Finance: Recent Advances and Emerging Lessons, Debates, and Opportunities*; AEDE-WP-0041-05; Department of Agricultural, Environmental, and Development Economics, The Ohio State University: Columbus, OH, USA, 2005.
10. Demirguc-Kunt, A.; Klapper, L.; Singer, D. *Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence*; Policy Research Working Paper No. 8040; World Bank: Washington, DC, USA, 2017.
11. Mohanty, D. *Report of the Committee on Medium-Term Path on Financial Inclusion*; Reserve Bank of India: Mumbai, India, 2015.
12. Purushothaman, S.; Patil, S. *Agrarian Change and Urbanization in Southern India*; Springer: Singapore, 2019. [[CrossRef](#)]
13. Levien, M. *Dispossession without Development: Land Grabs in Neoliberal India*; Oxford University Press: Oxford, UK, 2018.
14. Sarma, M. *Index of Financial Inclusion*; ICRIER Working Paper, No. 215; ICRIER: New Delhi, India, 2008.
15. Bhattacharjee, M.; Rajeev, M. Modeling Loan Repayment Behavior in Developing Countries. *Appl. Econ. Perspect. Policy* **2013**, *35*, 270–295. [[CrossRef](#)]

16. Bhattacharjee, M.; Rajeev, M. *Interest Rate Formation in Informal Credit Markets in India: Does Level of Development Matter?* Working Paper No. 126; Brooks World Poverty Institute, University of Manchester: Manchester, UK, 2010.
17. Chavan, P.; Sivamurugan, T. Formal Credit and Small Farmers in India. In *How Do Small Farmers Fare? Evidence from Village Studies in India*; Swaminathan, M., Baksi, S., Eds.; Tulika Books: New Delhi, India, 2017.
18. Cihak, M.; Demirgüç-Kunt, A.; Feyen, E.; Levine, R. *Benchmarking Financial Systems around the World*; Policy Research Working Paper, No. 6175; World Bank: Washington, DC, USA, 2012.
19. Sarma, M.; Jesim, P. Financial Inclusion and Development: A Cross Country Analysis. In Proceedings of the Annual Conference of the Human Development and Capability Association, New Delhi, India, 10 September 2008; Available online: <http://www.innosocial.in/services/financial-inclusion/Kofi> (accessed on 10 June 2021).
20. Rajeev, M.; Vani, B.P. *Interest Subvention for Short Term Crop Loan in Karnataka*; The Reserve Bank of India: Mumbai, India, 2019. Available online: <https://m.rbi.org.in/Scripts/PublicationsView.aspx?id=18781> (accessed on 8 June 2021).
21. Sriram, M.S. *Inclusive Finance India Report*; Sage: New Delhi, India, 2018.
22. Field, E.; Pande, R.; Papp, J.; Rigol, N. Does the Classic Microfinance Model Discourage Entrepreneurship among the Poor? Experimental Evidence from India. *Am. Econ. Rev.* **2013**, *103*, 2196–2226. [CrossRef]
23. Du Toit, A.; Neves, D. The government of poverty and the arts of survival: Mobile and recombinant strategies at the margins of the South African economy. *J. Peasant. Stud.* **2014**, *41*, 833–853. [CrossRef]
24. Sonne, L. Supporting Rural Entrepreneurship and Innovation. In *Micro-Finance in India. Approaches, Outcomes, Challenges*; Tara, S.N., Ed.; Routledge: New Delhi, India, 2015; pp. 153–168.
25. Ikenberry, G.J.; Kitching, G. Seeking Social Justice through Globalization: Escaping a Nationalist Perspective. *Foreign Aff.* **2002**, *81*, 178. [CrossRef]
26. Goldman, M. Speculative Urbanism and the Making of the Next World City. *Int. J. Urban Reg. Res.* **2011**, *35*, 555–581. [CrossRef]
27. Balakrishnan, S. Land-based Financing for Infrastructure. In *Political Economy of Contemporary India*; Cambridge University Press: Delhi, India, 2017; pp. 260–278.
28. Wegmann, J.; Mußhoff, O. Groundwater management institutions in the face of rapid urbanization—Results of a framed field experiment in Bengaluru, India. *Ecol. Econ.* **2019**, *166*, 106432. [CrossRef]
29. Brinkmann, K.; Hoffmann, E.; Buerkert, A. Spatial and Temporal Dynamics of Urban Wetlands in an Indian Megacity over the Past 50 Years. *Remote Sens.* **2020**, *12*, 662. [CrossRef]
30. Rao, E.J.; Omondi, I.; Karimov, A.A.; Baltenweck, I. Dairy farm households, processor linkages and household income: The case of dairy hub linkages in East Africa. *Int. Food Agribus. Manag. Rev.* **2016**, *19*, 95–108. [CrossRef]
31. Patil, S.; Dhanya, B.; Vanjari, R.S.; Purushothaman, S. Urbanisation and New Agroecologies. The Story of Bengaluru’s Peripheries. *Econ. Political Wkly.* **2018**, *43*, 71–77. Available online: <https://archive.azimpremjiuniversity.edu.in/SitePages/pdf/Purushothaman-and-Patil-2018-Urbanisation-and-New-Agroecologies.pdf> (accessed on 17 May 2021).
32. Prasad, C.S.; Anandan, S.; Gowda, N.K.S.; Schlecht, E.; Buerkert, A. Managing nutrient flows in Indian urban and peri-urban livestock systems. *Nutr. Cycl. Agroecosyst.* **2018**, *115*, 159–172. [CrossRef]
33. Vandecastelen, J.; Minten, B.; Tamru, S. Urban proximity, access to value chains, and dairy productivity in Ethiopia. *Agric. Econ.* **2021**, *52*, 665–678. [CrossRef]
34. Erler, M.; Dittrich, C. Middle Class, Tradition and the Desi-Realm—Discourses of Alternative Food Networks in Bengaluru, India. *Sustainability* **2020**, *12*, 2741. [CrossRef]
35. Rodrik, D. *The New Development Economics: We Shall Experiment, but How Shall We Learn?* Harvard Kennedy School Faculty Research Working Paper Series; John, F., Ed.; Kennedy School of Government, Harvard University: Cambridge, MA, USA, 2008.
36. Niladri Sekhar, D.; Patra, S. Labour in Small Farms: Evidence from Village Studies. In *How Do Small Farmers Fare? Evidence from Village Studies in India*; Swaminathan, M., Baksi, S., Eds.; Tulika Books: New Delhi, India, 2017; pp. 62–94.
37. Jha, P. *India’s Macroeconomic Policy Regime and Challenges of Employment: Some Reflections on the Manufacturing Sector*; International Center for Development Decent Work Working Paper Number 20; Kassel University Press: Kassel, Germany, 2018.
38. Kannan, K.P. *Interrogating Inclusive Growth. Poverty and Inequality in India*; Routledge: New Delhi, India, 2014.
39. Sadashiva, V.P. The Political-Economy of Peri Urbanization in the Metro City Bengaluru in India. Impact on Small and Marginal Farmers. Master’s Thesis, Department of Social Sciences, University of Kassel, Kassel, Germany, 2021, unpublished.
40. Government of Karnataka. *Human Development Report (District), Department of Planning, Programme, Monitoring and Statistics*; Government of Karnataka: Bengaluru, India, 2015.
41. Government of Karnataka. *Bengaluru Rural District at a Glance 2016–17*; District Statistical Office: Bengaluru, India, 2017.
42. Kavya, C.; Nagaraja, G. Economics of Peri-urban Agriculture in off Bengaluru: A Linear Hedonic Model Approach. *Indian J. Econ. Dev.* **2018**, *14*, 695. [CrossRef]
43. Kannan, E.; Balamurugan, G.; Narayanan, S. Spatial economic analysis of agricultural land use changes: A case of peri-urban Bangalore, India. *J. Asia Pac. Econ.* **2020**, *26*, 34–50. [CrossRef]
44. Varghese, N. Magadi Road: On the Cusp of Change. 2017. Available online: <https://www.moneycontrol.com/news/business/personal-finance/magadi-road-uncuspchange-2347893.html> (accessed on 19 June 2021).
45. Government of Karnataka. *Ramnagara District at a Glance 2015–16*; District Statistical Office: Ramnagara, India, 2016.
46. Government of India. *District Census Handbook Bangalore Rural*; Directorate of Census Operations: Karnataka, India, 2001.

47. Rajeev, M.; Vani, B.P.; Veerashekharappa. *Financial Inclusion through SHGs: Understanding Quality and Sustainability of SHGs in Karnataka State*; Social and Economic Change Monograph Series No. 40; Institute for Social and Economic Change: Bengaluru, India, 2015.
48. Rajeev, M.; Vani, B.P. Veerashekharappa Group lending through an SHG bank-linkage programme in India: Transaction costs and social benefits. *Dev. Pract.* **2019**, *30*, 168–181. [[CrossRef](#)]
49. Robison, L.J.; Oliver, J.R. Rationalizing predictably irrational choices: The social capital synthesis. *Ann. Reg. Sci.* **2019**, 1–21. [[CrossRef](#)]
50. Rajeev, M.; Bhattacharjee, M.; Vani, B.P. Climate change and Uncertainty in Agriculture: Does Crop Insurance Help in India? In *Climate Change Challenge (3Cs) and Socio-Economic-Ecological Interface Building*; Nautiyal, S., Schaldach, R., Raju, K.V., Kaechele, H., Pritchard, B., Rao, K.S., Eds.; Springer International Publishing: Cham, Switzerland, 2016.