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Agrarian Change and Social Mobility in Tamil Nadu

Abstract

This is a study of social mobility over 25 years in six villages in the former Tiruchy District in Tamil Nadu. The two most important external drivers are local industrialization and social policy in a broad sense. In a mainly descriptive analysis, it is shown that the overall effect seems to be a centripetal tendency in agrarian structure, with tendencies towards a strengthened position for family farming and for both the topdogs and the underdogs in the old agrarian society to leave agriculture altogether, seeking improved life chances in the non-agrarian economy, both inside the villages and in the wider economy. The descriptive analysis in this article is followed up with a modelling exercise in an accompanying article.

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Agrarian Change and Social Mobility in Tamil Nadu¹

This is a paper in two parts looking at social mobility during the period 1979 to 2004.² Social mobility is here defined as mobility of households between different positions in social structures. We will be looking more specifically at (i) mobility out of and into farming, (ii) mobility inside the farming sector, operationally defined as mobility between size-classes of operated area. Finally, (iii) we will study the consequences in terms of changes in real income. Since increased income, other things equal, implies decreased poverty, it is a way of looking at poverty alleviation. It has the further advantage of being independent of arbitrary ways of fixing a poverty line.

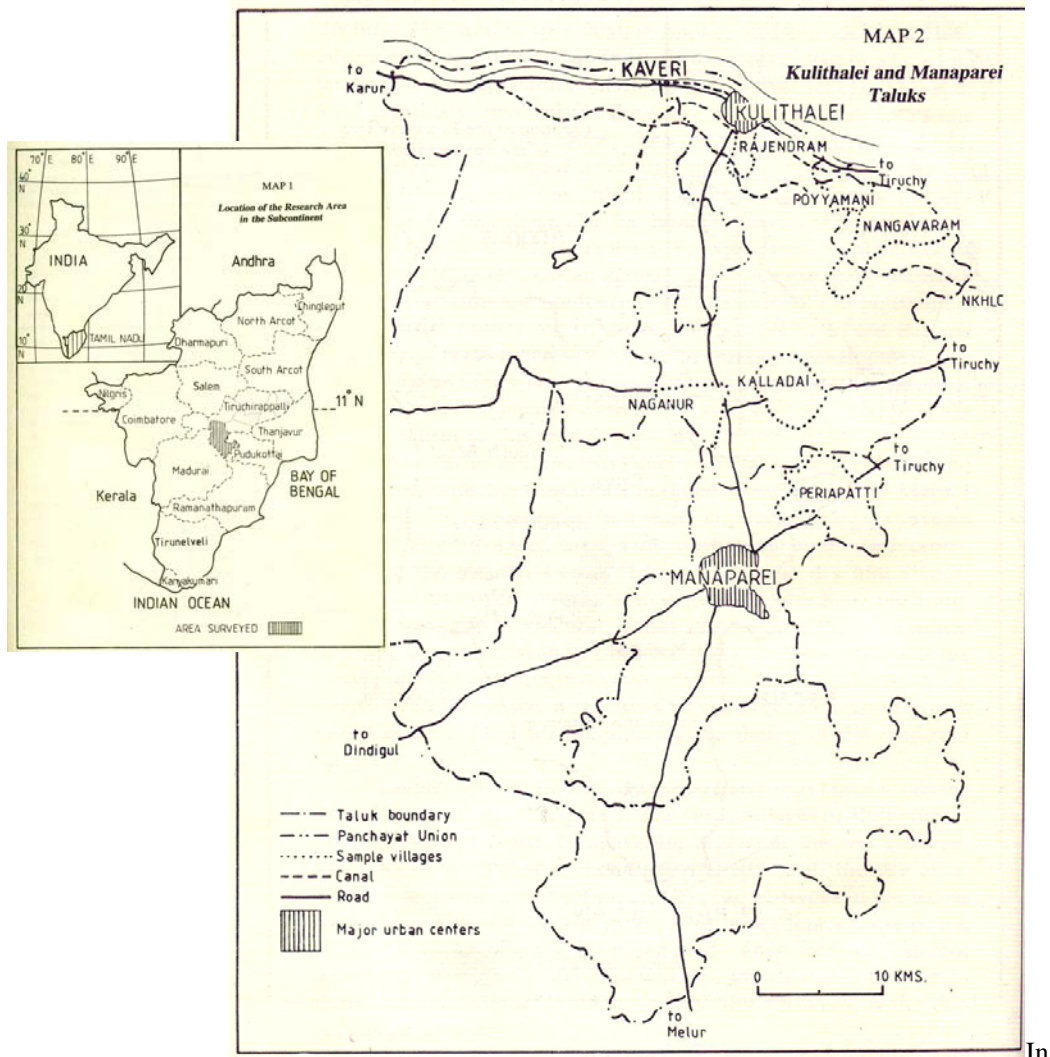
We want to test some hypotheses about the driving forces of mobility and their consequences for people's life chances. We think of three major drivers of social mobility and the social transformation which they result in. The first one is local *industrialization* and the *structural transformation of the rural economy*, which is an indirect consequence of industrialization and urbanization.

Industrialization has been running at an uneven but increasing pace during the 25 year period. Our field is both indirectly and directly affected since it lies close to the Karur-Tirupur textile industry belt (see Map 1), which is a major global centre of knitware production, supplying not only the Indian market but to an increasing extent also a global market. The textile dynamics obviously has many indirect effects on urban growth and on the growth of other industries, like building and construction. In our field area, it is mainly these indirect effects, which we term the structural transformation of the rural economy, which contributes to social mobility inside rural society. However, we also have a few small textile industries in the area itself.

¹ This research has received financial support from the Swedish Research Council, Sida's Research Council for Developing Countries and Swedish South Asian Studies Network (SASNET). Athryea, Rajagopal and Vidyasagar were affiliated to South Asian Integrated Water Resources Management Consortium, while Djurfeldt and Lindberg are with Lund University, Sweden. We want to thank the participants in a seminar in Department of Sociology, Lund University in March 2007 and the working group on Development Sociology at the Annual Meeting of the Swedish Sociological Association in Lund in January 2007. Special thanks to Agnes Andersson, Björn Holmquist and Magnus Jirstrom.

² We use these years as short-hand for 1979/80 and 2004/5 respectively.

Map 1. Kulithalei and Manaparei Taluk, with Tamil Nadu and India inset



From the viewpoint of agriculture, urbanization and industrialization does not only result in people permanently migrating from villages. It also results in villages and rural economies getting transformed by (i) a growing non-agricultural sector in rural areas and (ii) seasonal migration and (iii) by *pluriactivity*, i.e. of rural people combining income earning activities within and outside the agriculture sector. Our material gives little support to those who argue that these trends are driven by agricultural distress and that they lead to little poverty alleviation. As we will see, the indications are the reverse, i.e. that the real income effects of the structural transformation of the rural economy are on the whole positive.

Thus people migrate, permanently and seasonally and they commute, for example with train from the wet villages upstream towards the textile town of Karur. As a consequence, the agrarian sector decreases in relative terms, both in terms of labour absorption and as a source of income for local households.

There are also drivers of social mobility within the rural economy. As we will see, there appears to have been a respectable rate of growth of farm income over the period. Moreover,

we will show that agricultural growth may have contributed about as much as local industrialization to growth of real incomes and thus to poverty alleviation. In the first leg of this study, we documented the effects of the Green Revolution, which apparently continued to be dynamic in the 1980s. We agree with Lipton and Longhurst (1989), who argued that the Green Revolution had a considerable and beneficial impact on poor farmers. We will not go deeply into this, but the data we present indicate that the Green Revolution has since then lost its poverty profile. More capital intensive patterns of growth are now played out.

However, social mobility is not only driven by these economic forces, but also by political ones. There are important social policy interventions by the Union and State governments, which influence people's life chances (see Lindberg forthcoming 2007). There is a broad repertoire of policies, many of which would not be classified as social policies in a conventional sense, but which do influence life chances. It is tempting to refer the broad perspective introduced by Wood and Gough (2006) and Wood (2003).

Lacking the *entitlements* needed to escape poverty (Sen 1981), the poor are according to Wood's analogy driven to enter a "Faustian³ bargain" with patrons controlling the access to resources, like local landlords, money-lenders, employers etc. In the terms of the Faustian analogy the poor are driven to sell their souls to the patronizing "devils" in exchange for which they get entitlement to food, work, credit etc. In the bargain they are driven to compromise on their political and social rights. The important function for social policy in this perspective is to supply the entitlements that poor people need in order to avoid the Faustian bargain.

Social policies in the above sense is a broad repertoire of interventions like the *Public Distribution System (PDS)*, the midday-meals schemes in schools where Tamil Nadu is a pioneer and a similar scheme within the Integrated Child Development Scheme (ICDS). The most important of these may be the PDS, which has been in place since colonial times, but which has gained an increasing importance in supplying poor people with basic necessities. Although the functioning of the PDS and the *ration shops*, through which it is working is widely divergent in the different states of India, it works comparatively well in Tamil Nadu. In our area most households rely on the ration shops for their food grains. The effectiveness of the system is testified to by the answers to the survey question: Does it happen that you have to forego a meal? If yes, when did it last happen?" Only one interviewee answered yes and in his case it last happened in the year 2000.

In addition to the PDS, as Lindberg has documented (forthcoming 2007), there are a range of other interventions, like the expansion and improvement of the health system, of social services like water, education, the devolution of power to the panchayats, and a whole repertoire of policy interventions that have demonstrable effects on life chances. Their effects on mobility will be indirectly brought out below. For a more detailed discussion of social policies and their effects, see paper by Lindberg already referred to.

Local industrialization, structural transformation of the rural and agrarian economy and social policy interventions thus have resulted in increasing levels of living in terms of food security, decreasing poverty, improved housing standards, increased levels of education etc. This again,

³ "Faustian" with an obvious reference to Goethe's Faust, who sold his soul to the devil in return for worldly success Goethe, J. W. v. (1999). Faust : the first part of the tragedy : with the unpublished scenarios for the Walpurgis Night and the Urfaust. Ware, Hertfordshire, Wordsworth Editions..

as we will see, has resulted in decreased inequalities in income and distribution of assets, within the rural economy.⁴

Yet another demonstrable consequence of these overall processes is a tendency for the status hierarchies in agrarian society to change. More specifically, we will document that, on the one hand, opening of opportunities in the off-farm sector and, on the other, policy interventions including affirmative action of various sorts have made it possible to an increasing extent for the old underdogs in agrarian society, i.e. the *dalits* or the ex-Untouchables to escape the indignity and degradation of village society. This is not to say that all of them have escaped the Faustian dilemma. For those who remain inside the village economy and with few opportunities outside of it, the old hierarchies persist.

The emancipation of the dalits and other underlings has consequences for the old rulers. Deprived of a source of cheap labour, the old patrons often opt out of agriculture, especially in connection with a generational transfer, which parents can use to prepare for a non-farm career for their children.

When the old topdogs tend to leave it creates new chances for the “middle dogs” to strengthen their position. Thus we will hypothesize a middling or centripetal tendency in the structure of operational holdings, reflecting a strengthening of the family farm sector.

We use Djurfeldt’s definition of notional family farmers as:

“1) The notional family farm is characterised by an overlapping between three functional units: (a) the unit of production (i.e. the farm), (b) the unit of consumption (i.e. the household) and (c) the unit of kinship (i.e. the family).

2) For its reproduction the notional family farm requires family labour, i.e. labour performed by members of the family/household, (and here we are not referring mainly to managerial work). This implies that, if the farm no longer requires family labour for its reproduction, it is no longer a notional family farm, although it may still be a farm family business...” (Djurfeldt 1996)

In our area family farms used to be a small minority of all farms (Athreya, Djurfeldt et al. 1990, *passim*). According to our hypothesis the growth of family farms occurs at the expense of holdings operated by means of tenants or agricultural labourers. Note that social policy contributes to this process by providing the entitlements that workers previously could only get from the landlords.

The strengthening of the family farm sector obviously also implies an increased share of family labour as compared to hired labour in cultivation.

In the first paper we start out descriptively, documenting the above tendencies with our survey data. This is done by means of cross-sectional data from the two panel waves, 1979 and 2004. Comparison of the cross-sections give us the net result of structural changes and mobility between the two waves. Relying only on such data is hazardous, however, and cross-sectional data must be complemented with longitudinal ones to get the full picture and to bring out the driving forces behind the tendencies observed. In the accompanying paper (Djurfeldt, Athreya et al. 2007), by means of three regression analyses we aim to try to substantiate the causal claims made above and spot any spurious correlations in the cross-sectional data.

⁴ We don’t study the remaining parts of the economy where inequalities may have increased.

The area and the field work

In 1979/80 Athreya, Djurfeldt and Lindberg did a study of agrarian change in Tamil Nadu, South India. They studied six villages in Tiruchi District, Tamil Nadu and did a detailed survey of among others a main sample of 240 households. Twenty-five years later, the current authors returned to the same villages, set on tracing the original participants and their descendants. A pilot study conducted during the summer 2003 and involving a sub-sample of the original households showed that it was indeed possible to trace a surprisingly large proportion of the original sample (well above 90 per cent), why representativity was not expected to be an insurmountable problem.

Thus we launched a full-scale resurvey during the autumn of 2005. Treating the 1979/80 study as a base-line, we created a panel database of both qualitative and quantitative data. In the following sections, we will go through the methodology of the panel study, the sampling strategy and the weighting system, attrition and other aspects necessary to judge the validity and reliability of the results reported in later chapters.

The original sample is a multi-stage one, beginning with the purposive selection of two units, Manaparei and Kulithalei Panchayat Unions in what was then Tiruchy District. The idea was to select a contiguous and relatively small area containing the variance between dry, rainfed tracts and the “wet”, irrigated areas which are so typical, not only of Tamil Nadu, but of much of South and Central India.

The second stage was the selection of six revenue villages within the first stage units. This was done with so-called PPS sampling, i.e. with *probability proportional to size*.⁵ At the third stage, finally, we selected 40 households in each village with simple random sampling (SRS). Deducting two refusals, we get 238 households which was the main sample.

Variance estimators are standard formulas in simple random samples, but in multi-stage sampling, the formulae have to be worked out for each specific sample design. As demonstrated in Athreya et al. (1990, p. 47 ff.), we can use standard SRS-estimators, provided we take account of the *design effect* (Kish 1957), which is a function of both the number of stages and the type of sample (PPS, SRS etc.). For variables which are not too skew, Athreya et al., have shown that the ‘design effect’ in their sample can be taken to be about 1.3. What this means is that, if we want to avoid *false positives* or Type I errors, 30 per cent should be added to a confidence interval and to the critical value of the test statistic. For 2004/05 data, since a further sampling stage is involved, the design effect may be higher. (See further below).

Since the two ecotypes - wet and dry - are substantially different in their agro-ecological as well as social and cultural characteristics, they should be treated as two different universes for the purposes of arriving at estimates of a range of characteristics. Estimates should therefore ordinarily be made separately for the two ecotypes.

⁵ As discussed by Athreya et al., there were some impurities in design which, however, were not important enough to imply the more cumbersome way of treating the sample as PPZ, i.e. with units selected with *probability proportional to estimated size* Athreya, V. B., G. Djurfeldt, et al. (1990). *Barriers Broken: Production Relations and Agrarian Change in Tamil Nadu*. New Delhi, Sage. See Cochran for a treatment of PPS and PPZ sampling Cochran, W. G. (1977). *Sampling Techniques*. New York, John Wiley..

Creating the panel⁶

Attrition is a problem in all panel studies, since a portion of the original units disappear from the population, either by passing away or by emigrating from the area. Over a whole generation, the problem is likely to be severe. However, we did not want only a panel, but also a new cross-section. This was to enable us to compare the cross-sectional sample made in 1979 with a similar cross-section in 2004/2005, but containing the surviving units and *their descendants*. If there were more than one descendant household, we randomly selected one of them to replace the original one. Moreover, we tried to trace households who had migrated from the villages.

To make the 2004 sample representative of the current agrarian population, we made lists of households who had settled in the village since 1979 and drew a sample of these.

In many settings, the ambition of tracing households after 25 years would have been in vain. However, given the limited geographical mobility and the impossibility of remaining anonymous in a village setting, it proved to be easier than we had expected to trace almost all of the original main sample households. We were able to trace 233 households out of the originally selected 240 main sample households. Of the remaining seven, six had become extinct, and one respondent had refused to be interviewed in 1979/80 itself. Of the 233 households traced, some still remain under the same head, which in this context normally is a male, and most them remain in the agricultural sector. Others remain in the village and the sector, but have a new head. Still others have passed through a generational transfer where landholdings and other property have been partitioned between the heirs, normally among the sons of the former head. Yet others have emigrated, but left enough traces in the village to enable us find out to where.

A questionnaire was developed, largely following the instrument used in 1979/80. Data collection started in September 2005 and ended in February 2006 but referred to the crop year 2004/05.⁷

We judge the quality of our data to be high. This is due first of all to the work we put down in 1979/80 when we thoroughly cross-checked all information on important variables, like landownership, with registers, neighbours etc. The enthusiastic response we received when returning in 2004 contributed to data quality.

Structural transformation of the agrarian and rural economy

On the basis of our survey data, we estimate the agrarian population and its growth over the twenty-five year period, from 1979/80 to 2005. Although the total population of the six villages has grown by about 24 per cent over the 25 year period, we estimate that the agrarian population has been more or less constant.⁸ The pattern is different in the two ecotypes, with a slight increase in agrarian population in the latter, especially in one of our villages, viz. Naganur. In the wet villages the general pattern seems to be a slight decrease.

⁶ See Menard's short book for a good treatment of methodological issues in panel design Menard, S. (1991). Longitudinal Research. Newbury Park, California, Sage..

⁷ An excellent job was done by a team of investigators, most of them post graduates in Economics from Bharatidasan University in Tiruchirapalli. Mr. M. Dharmaperumal, Madras Institute of Development Studies, Chennai helped making the data entry formats.

⁸ Adding margins of error to the above estimates, the conclusion would be more precisely either a small contraction or a slight growth.

The above means that almost all growth in population has occurred outside the agrarian sector. The general conclusion is that these village economies have gone through a considerable structural transformation in the last generation. In a foreseeable future the agrarian population will be down to half the total population. The trend is compounded of course by migration, which seems to have increased during the last half of our period.

Emigration

Looking at the households that have left our villages since 1979/80, we spot no statistically significant differences in destinations or in reasons for migration, although there is a slight tendency for the labouring classes (agricultural labourers and poor peasants according to the 1979/80 classification) to migrate more in search of employment.

However, there are interesting differences between classes in rates of migration. In the below table we look at the proportion of the 1979 sample that have since outmigrated from the villages.

Table 1. Rates of migration since 1979/80 by class

Class position, 1979	Mean	Std. error	n
Labouring classes	0.173	0.037	110
Family farmers	0.047	0.025	88
Big farmers and landlords	0.000	0.000	7
Other and uncodable	0.233	0.082	27
Total	0.122	0.022	232

Note: Per cent missing = .4.

There is a clear and statistically significant difference (at 1% level) between the labouring classes, whose emigration rate is .17 and the landed households (middle and rich peasants etc.), whose rate of emigration is below 5 percent. However, our hypothesis of a higher rate of outmigration for the big farmers and landlords does not gain support from the above data.

This notwithstanding, we will continue to argue that the growing weight of the non-agrarian sector has differential consequences for the top, middle and the bottom of agrarian society. Although all are affected, the old underdogs, primarily the agricultural labourers are more prone to seize new opportunities in the non-agrarian sector than the landed and middling households. Similarly the top strata are pushed out of agriculture, due to the constraints on profitability and the scarcity and high cost of labour, and simultaneously attracted by growing opportunities in the non-agricultural sector. When the topdogs and underdogs exit agriculture, they leave space for the middling sectors, what we will call the family farmers to strengthen their position.

Is the hypothesis about the exiting of the topdogs contradicted by the above data? Not necessarily, since exiting does not necessarily imply leaving the village. The topdogs may be exiting agriculture and with some family members remaining in the village. We will return to this issue below.

Housing standards

Table 2 gives as good a description of the general trend as any:

Kommentar [MSOffice1]: A
193-198, 202-203
V878 – v882

Table 2. House type by survey panel

Housetype	1979/80	2004
Katchai	60,3	28.6
Semi-pucca	20,1	19.8
Pucca	19,5	51.6
Total	100,0	100,0

Note: No. of cases in 1979/80: 367, missing: 0; in 2004: 213, missing: 0.

While 25 years ago, about 60 per cent of the agrarian population in our villages, with the Indian terminology, lived in “katchai” houses, i.e. huts of mud with thatched roofs, less than 25 per cent do so today. The percentage living in solid “pucca” houses has almost tripled, from less than 20 per cent to above 50 per cent.

With this improvement in housing standards goes increased ownership of consumer durables and furniture. Together with indicators available in official statistics, like improvements in child mortality and literacy, this goes to show an appreciable progress over the last generation. As we will see, this depends on growth in the farm sector, but most importantly on the structural transformation of the economy.

The growing role of the non-agricultural sector

An increased allocation of family labour to non-agricultural activities does not necessarily and over a longer run result in an increasing share of income from such sources. The change in the share of income would depend on the pattern of investment. If much non-farm income would have been invested in the farm sector, we would not necessarily expect an increased share for non-farm income. Parallel to our first wave, Harriss (1981) pointed to the important role of the family networks spanning the farm and non-farm sector, especially business investments. She argued that non-farm income typically would be reinvested in farming. Obviously this would differ according to the vagaries of the farm business climate and one could argue that the likelihood of such investments would be lower today than in the “golden days” of the Green Revolution.

We see from Table 3 that in total and on the average households have increased their allocation of household labourers to non-farm activities by more than 100 per cent. The corresponding increase in the share of household income from non-farm sources is 52 per cent. One cannot draw the conclusion from this that non-farm workers earn less than farm workers do. Instead, one possible explanation for the lower growth in the share of income from non-farm sources than in the share of labourers in the same sector is that over the period parts of non-farm income has been invested on the farm and thus contributed to the increase in farm income.

Table 3. Share of Income and percentage increase of income from non-agricultural sources by survey round and class

Ecotype	Class 1979	Share of household labour			Share of household income			No. of cases	
		1979	2004	Change %	1979	2004	Change %	1979	2004
Wet	Labouring classes	0.112	0.177	59%	0.176	0.246	40%	39	40
	Family farmers	0.139	0.346	148%	0.169	0.293	73%	30	31
	Big farmers and landlords	0.077	0.411	431%	0.090	0.237	162%	7	7
	Other and uncodable	0.126	0.355	181%	0.202	0.460	127%	11	11
	Total	0.120	0.282	135%	0.170	0.290	71%	87	89
Dry	Labouring classes	0.236	0.416	76%	0.349	0.486	39%	43	42
	Family farmers	0.128	0.297	132%	0.284	0.378	33%	52	52
	Big farmers and landlords	-	-	-	-	-	-	-	-
	Other and uncodable	0.193	0.171	-11%	0.107	0.184	72%	6	7
	Total	0.177	0.338	91%	0.303	0.408	35%	101	101
Total	Labouring classes	0.163	0.272	66%	0.239	0.342	43%	82	82
	Family farmers	0.133	0.321	142%	0.232	0.335	45%	82	83
	Big farmers and landlords	0.077	0.411	431%	0.090	0.237	162%	7	7
	Other and uncodable	0.142	0.317	123%	0.184	0.394	114%	17	18
	Total	0.145	0.305	111%	0.224	0.339	52%	188	190

Note: per cent missing 1979 = 22 and 10 respectively and for 2004 = 11 per cent for both variables.

Generational transfer

Before proceeding any further, we have to devote a section to generational transfer. The most remarkable finding is that although customary law stipulates partible inheritance along the patriline,⁹ most of the first wave households have avoided dividing their holdings. Out of the 97 cases of partition that we have in the sample, 78 per cent were the only heirs. It would be possible to check against old data to find out how many of these were the only kids of the family, but it is unlikely that more than a minority were. This implies that the parents had manoeuvred to put up their kids, especially their sons, in other occupations and to make only one son the heir of their landed property.

This deviation from customary law can be explained as an effect of transformation of the rural economy and local industrialization, which make it feasible for parents to avoid dividing the ancestral property, because they can place the “superfluous” kids in other occupations. It further implies that local agriculture to some extent avoids the trap, foreseen by many, of landholdings getting increasingly diminutive and fragmented.

It is also worth noting that a sizeable minority let landed property pass along the matriline. However, out of the 97 cases we have data on the gender of heirs only for 37. Assuming that the remaining 58 inherited patrilineally, in 8 per cent (weighted estimate) of the cases both sons and daughters inherited land. In 2 per cent of cases land was inherited by daughters. Matrilineal inheritance has for long been a practice in cases where there are no sons to take over, so this practice might not after all be as important as the presumably spreading practice of non-partible inheritance of land.

Entry into and exit from farming

One would expect the structural transformation of the rural economy to imply that people leave the land, and they do, but not universally and with the same tempo. Moreover, there is a stream in the other direction, i.e. into farming, as the table below shows.

Data for 1979 in the below table are representative for the agrarian population in that year. But it includes not only that cohort, but also representatives of the partitioned households. The table does not include representatives of the small group of households that were non-agrarian

⁹ While formal law since 1989 stipulates equal inheritance with discrimination of gender.

in 1979 and who have entered agriculture since then. Likewise it does not include a small group of immigrated households that are part of the 2004 agrarian population. Of the 2004 non-agrarian population, only those who are descendants of 1979 households are included.

Data for 2004, then, are not completely representative of the 2004 agrarian population, but for large parts of it. Thus we take the marginal distributions in the table as representative or nearly representative of the agrarian population in both rounds.

Table 4. Cultivator status by survey wave by partition status, total percent

Household partitioned since 1979	Cultivated land in 1979	Cultivated land in 2004		Total
		No	Yes	
No	No	25,9	4,5	30,4
	Yes	24,1	45,5	69,6
	Total	50,0	50,0	100,0
Yes	No	12,8	5,5	18,3
	Yes	20,6	61,1	81,7
	Total	33,4	66,6	100,0

Note: Total no. of cases = 233, per cent missing = 0. Differences are significant at .1% level.

Here is another effect of the structural transformation of the rural economy: While 67 per cent of the households having undergone a generational transfer are cultivators, 82 per cent of their parents were so 25 years ago. Thus, there is a net exit from farming which can be due, either to proletarianization of farmers or, which would largely be another term for the same process, an exit from an unrewarding existence as a farmer to a more promising future in the non-farm sector, most probably occurring in connection with a generational transfer.

The predominantly downward mobility (i.e. out of farming) is reflected in the two mobility matrices of the table above, reflecting net rather than gross mobility. Looking first at partitioned households, we see that in total 6 per cent of the heirs have been upwardly mobile from non-cultivator to cultivator status, while 21 per cent have been downwardly mobile and lost or got rid of their cultivated holdings somewhere during the period.

Exiting from cultivation is somewhat more pronounced in the unpartitioned category. While 30 per cent of these households did not farm in 1979, today 50 per cent do not. As would be expected, downward mobility is slightly lower among the unpartitioned households, 24 per cent compared to 21 among the partitioned ones. Generational transfer seems to cause some downward mobility, but presumably less than would have been the case if all holdings had been partitioned as per traditional law.

Proletarianization

Two of the most common hypotheses about agricultural development is that it leads to proletarianization of small farmers and to polarisation, i.e. increased inequality between smallholders and big farmers. These hypotheses belong to the standard narrative, but they are not often put to rigorous test. When they have been tested, they often failed to get empirical support (see e.g. Schendel 1981; Edmundson 1994; Hayami 1997; Djurfeldt and Waldenström 1999; Fuwa 1999; Srinivas Dasari 2004).

When in the first panel wave, we looked at retrospective data and tested the hypotheses mentioned, we found that over a generation, landlessness was likely to have slightly decreased because many agricultural labourers during their life time succeeded in getting access to land.

A generation ago, then, there was still a net entry into agriculture – a trend which seems to have reversed since then. Similarly, when comparing the 1979 distribution of land with land inherited we found a slight *centripetal tendency*, i.e. a tendency to less inequality in the distribution of land (Athreya, Djurfeldt et al. 1990, chapter 5).

Sitting now with data from two panel waves, we have a chance again to test the proletarianization and polarization theses. However, and as would be clear by now, we add a new dimension to the analysis by also considering the structural transformation of the rural economy, a dimension abstracted from in the work cited. Let's look first at the proportion of landless households in the agrarian population.¹⁰

Table 5. Per cent landless labourers in agrarian population, by ecotype and panel wave

Ecotype	1979/80	2004
Wet	30	31
Dry	16	9

Note: No. of cases 1979/80 = 240, per cent missing = 0; no. of cases 2005 = 213, per cent missing = 0.

In the wet area, the proportion of landless labourers seems largely stable, while in the dry area it has gone down. Thus there is no support for the proletarianization thesis. This looks more like a stable situation in the wet area, although as we have seen, the agricultural labourers there are less specialised in agriculture today. This again has to do with expansion in the non-agricultural opportunities and increased mechanization, especially of ploughing, threshing and, to a less extent, irrigation, which means a contracting demand for labour in agriculture.

In the dry area, on the other hand, the landless labour population seems to have substantially gone down. The same driving forces as in the wet area have slightly different effects here. To the extent that this is not only an effect of mechanization, it could reflect a development towards more family labour and thus again could promote a centripetal tendency in the agrarian class structure.

Agricultural labour income

With the competition for labour between the farm and the non-farm sector, the former usually tends to be the loser, in the sense that the scarcity of labour increases, which again causes an upward pressure on wages. A frequent counter-strategy by farmers in that situation is to mechanize.¹¹ Accordingly, a great deal of mechanization has occurred, in ploughing, irrigation and threshing, although not yet in harvesting. At the same time, the agricultural wage labour force has gone down (in the dry area) or become more pluriactive (in the wet one). This brings down the time labourers devote to agricultural labour. These processes have had the following effect on employment (see table below).

¹⁰ The agrarian population is defined as having some relation to agriculture, either as labourers, cultivators or as owners of agricultural land.

¹¹ It can be added that farmers mechanize also in order to increase productivity. Ploughing is a good example of an operation which both decreases dependence on hired labour and increases productivity – the latter because ploughing can be made quicker and the growth period thus shortened, which usually has a positive effect on yields. Moreover, it allows earlier planting of the second crop, again positive effects on yields.

Table 6. Working days per year for agricultural labourers by gender, ecotype and panel wave

Ecotype	Gender	1979		2004	
		Mean	Std. Error	Mean	Std. Error
Wet	Male	165	9.11	153	8.23
	Female	171	7.69	134	6.09
Dry	Male	69	8.98	91	9.34
	Female	129	7.90	113	6.91
Total	Male	136	7.41	133	6.72
	Female	157	5.72	125	4.76

Note: No. of cases 1979/80: 106 men, missing: 0%, 145 women, missing: 1.4%; no. of cases 2004: 87 men, missing= 0%, 135 women, missing = 0%.

We see that employment has declined slightly for men in the wet area (although, as standard errors indicate, not statistically significant), while for women there has been more substantial reduction, from 171 to 134 days, or about 22 per cent, which is statistically significant even when you correct for the design effect.¹² The latter reduction probably depends on the mechanization of threshing of grains.

In the dry area on the other hand, the decline of the total labour force has brought about an increase in employment for men, from 69 to 91 days (just about significant at 5% level), while employment for women in the dry areas has gone down slightly, again probably depending on mechanization.

Inequality

Scholarly opinion appears to agree that increasing inequality is not a necessary consequence of economic growth, unlike what Kuznets once generalized for the earlier phases of development (Kuznets 1971). Case studies of different countries show radically different correlations between economic growth and inequality (Frazer 2006). In the Indian debate, most scholars seem to lean towards the interpretation that inequality has increased with the economic growth in the 90s (Asian Development Bank (ADB) 2007, pp. 59-59). However, this goes for the economy as a whole. When it comes to the agrarian sector, the number of number of studies are less, except for the early period of the Green Revolution, when many authors concluded that it increased inequality. Many of these studies were methodologically weak and they have been subjected to scathing criticism by Freebairn (1995).

Our data cannot be reconciled with a hypothesis about increasing disparities in income. Whether we look at operated area, total income or farm income, or the corresponding Gini indices, with one exception they have radically decreased. The exception would be farm income, but as can be seen from the table below, the high Gini indices for farm income in 2004 were due to the drought that year. Comparing these with indices for the best of last five years points to a considerable decrease in inequality of farm income compared to 1979.

Furthermore note that inequality is higher for farm income than for income in general. This would support a hypothesis saying that non-farm income dampens economic inequality in our villages.

¹² Cf. the discussion of the design effect above.

Table 7. Gini indices for distribution of operated area, income and farm income by ecotype and panel wave.

Distribution \ Ecotype	1979			2004		
	Wet	Dry	n	Wet	Dry	n
Operated area	0.84	0.83	169	0.41	0.44	159
Income (Current year)	0.82	0.83	227	0.41	0.34	124
Income (Normal year)	-	-	-	0.42	0.33	124
Farm income (Current year)	0.83	0.83	231	0.79	0.71	210
Farm income (Best of 5 years)	-	-	-	0.62	0.47	210

Note: No. of missing cases first wave: 0, 8, 33%; second round: 0, 16 and 1%.

The strengthened position of family farming

Increased scarcity of agricultural labour and upward pressure on wages implies a profit squeeze for farmers relying on hired labour, like big farmers in both the ecotypes were doing to such an overwhelming extent a generation ago. The same processes create an incentive for family farmers to rely more on their own labour. These are basic reasons why family farmers take over land from big farmers and buy up land sold by smallholders exiting agriculture. We contend that such a process is going on in our area, propelled by local industrialization and the structural transformation of the rural economy and that it strengthens the position of family farming, much in line with what has happened in other countries (Djurfeldt 1981; Fuwa 1999; Hayami and Kikuchi 2000).

We have already seen a centripetal tendency in the distribution of operated area, which supports the above interpretation. We get further support for this thesis when looking at labour use in cropping (see Table 8).

The pattern is very clear for the biggest crop, i.e. paddy, where the share of family labour has gone up, both in the wet and dry area. In the dry ecotype moreover, the same pattern is shown by all major crops. Unfortunately we have too few cases of the other two major crops in the wet area, i.e. banana and sugar-cane. These are labour intensive crops, with labour input in marked peaks, which make them difficult for family farmers to handle by the means of only family labour. Moreover, both banana and cane are often grown by big farmers. Thus we would not expect an increasing importance of family for these crops.

Table 8. Total labour input per acre and proportion of labour input by type, crop and survey round¹³

Ecotype	Crop	Total Labour Days		Family Labour Days		Proportion	
		1979	2004	1979	2004	1979	2004
Wet	Paddy HYV	65,5	69,1	18,3	27,1	0,28	0,39
Dry	Paddy HYV	108,9	105,9	36,2	45,3	0,33	0,43
	Groundnut	34,9	72,6	9,8	23,3	0,28	0,32
	Millet Irr	35,7	46,9	15,3	26,7	0,43	0,57
	Millet UnIrr	51,7	30,0	22,3	14,3	0,43	0,48

Note: Total number of cases 121 for 2004, and 237 for 1979.

Growth in agriculture

Before coming to mobility out of and into farming, in operated area and to poverty alleviation, we need to look at the growth of agriculture, which would have had a fundamental impact on these processes.

¹³ A small number of sample cases makes the figures for banana, sugarcane and chillies unreliable.

Table 9. Mean household income by source, by ecotype and panel wave¹⁴

Ecotype	Income source	1979			2004			Increase over the period %
		Mean	Standard error	n	Mean	Standard error	n	
Wet	Agricultural labour inc	5936	113	86	9935	842	79	9
	Farm income	21624	679	69	27675	1394	43	32
	Total income	22381	427	121	45404	805	100	70
Dry	Agricultural labour inc	2371	62	63	6985	614	80	33
	Farm income	7953	265	62	14597	456	59	105
	Total income	12070	248	117	47834	736	111	196
Total	Agricultural labour inc	4777	83	149	8819	528	159	13
	Farm income	16673	460	131	20991	707	102	42
	Total income	18580	288	238	46378	566	211	102

Note: per cent missing 1979 = 0.8 %, 2004 = 0.17 %

As would be expected total income has risen much more than either agricultural labour income or farm income – obviously a reflection of the structural transformation of the economy. Moreover, as one would also expect on the background of the above, incomes have increased more in the dry area than in the wet one.

Agricultural labour incomes have been fairly stagnant, especially in the wet area. Thus it seems that the strategy, on the one hand, of family farmers to increase their input of own labour and, on the other hand, for landlords and bigger farmers, to do away with dependence on hired labour by means of mechanization, have been rather successful in containing wage demands from labourers. The stagnation in agricultural wage income in the wet area is compensated for by rising non-agricultural earnings, so that total income for agricultural labourers have gone up.

In the dry area, from a much lower base, agricultural labour incomes have risen more than in the wet one. As we have seen, the number of working days for male labourers have also gone up, at the same time as the number of labourers have gone down. The deeper impact of structural transformation in the dry area has contributed to this, but social policy interventions to emancipate unfree labourers may also have had a hand in the outcome.

Farm income, finally, has gone up less than total income. The overall increase of 42 per cent in fact implies a modest growth rate of less than 1.5 per cent year over the period. The dry area performed better and its growth rate would have been almost 3 per cent per year. The distributional impact of this growth depends on the distribution of incomes. As we have seen, inequality seems to have gone down, why the benefits of growth should be fairly equitably spread. If so, this would be reflected in reduced poverty.

Conclusion

On its own the above analysis would seem to lay a quite stable foundation for our theses about the patterns of development and their causes in our sample area. From a situation 25 years ago when rates of population growth were considerably higher and when the agrarian was still growing, Tamil Nadu has seen the beginning of a demographic transition and industrial and urban growth enough, not only to dampen but more or less halt the growth of the agrarian population. One consequence of this is the change in patterns of inheritance, where parents

¹⁴ Real income in 2004 prices inflated for 1979 by a factor of 5.38 estimated from The Annual Report on Consumer Price Index Numbers for Agricultural and Rural Labourers The Annual Report on Consumer Price Index Numbers for Agricultural and Rural Labourers. (2004). Retrieved September, 2006, from <http://www.labourbureau.nic.in.>

avoid dividing their farms, preferring instead to launch “surplus” sons in non-farm careers. This in turn implies that the fragmentation of holdings, which scared many researchers a generation ago, has more or less stopped.

Rates of out-migration have also increased, mainly implying the landless and the smallest landowners. They are not only pulled by prospects of a better life in town, but also pushed out from an agrarian where, since the majority of them are dalits, where denied a decent living and human dignity. Our parallel hypothesis about the topdogs leaving together with their old underdogs, does not gain solid statistical support. This may however be due to a scant statistical basis: The implied groups are small and not adequately represented in a simple random sample.

Those who don't migrate tend instead to go pluriactive. Increased allocation of household labour to non-farm activities is part of the structural transformation of the economy, and a consequence is that non-farm sources of has grown considerable in importance.

For those who had foreseen increasing inequality *within the farm sector* as a result of these processes, our data would cause consternation. Our findings point quite unequivocally towards a decreasing inequality both in operated area and in income.

Real income in the farm sector also show a clear upward trend, more so for farmers than for agricultural labourers and, interestingly, more so in the dry area than in the wet one. This again implies that rates of poverty have gone down. The least favoured group in this respect is the agricultural labourers – yet another background to their higher rates of out-migration and increasing levels of pluriactivity.

There are always traps in the type of statistical analysis that we have so far made. Being mainly bivariate, it does not control for spurious correlations and so provides a poor basis for causal analysis. To reinforce our conclusions, we continue the analysis in an accompanying paper (Djurfeldt, Athreya et al. 2007) by means of three regression models, testing our hypotheses about the driving forces of industrialization, structural transformation of the rural economy and social policy leading to decreasing inequality and improved levels of real income. Before doing so, we have to discuss some methodological issues.

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