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REPORT ON ON-GOING RESEARCH: SOME EVIDENCE ON THE IMPACT OF AGRICULTURAL MODERNIZATION ON NON-AGRICULTURAL INCOMES IN AGRICULTURAL MARKET CENTERS

By

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Report on On-Going Research:*
Some Evidence on the Impact of Agricultural Modernization on Non-Agricultural Incomes in Agricultural Market Centers

by Arthur Gibb, Jr.

The research on which I will report this morning is a case study directed at measuring the impact of agricultural modernization on non-agricultural employment in and around agricultural market centers. It does not deal directly with income distribution, therefore. Its relevence for this seminar lies in the fact it shows where the non-agricultural employment is being created, both in terms of which local industries are reflecting the impact of new buying power and in geographical terms, that is, whether it is being created in the town proper or in the farming barrios.

The research has progressed sufficiently to provide a more or less quantitative feel for the situation and thus to be worthwhile reporting on. At the same time, it raises a problem as to how the preliminary findings can be presented with an appropriate degree of tentativeness. I finally decided simply to run the preliminary results off as the sheet of "Working Notes" which is now being distributed. (See Appendix.) After I have given a brief description of the current situation and findings, we can use these Notes as the basis for our discussion.

The Situation

The research is using establishment surveys to re-construct the history of non-agricultural employment since 1966 in and around a set of five agricultural market centers in Central Luzon. Only formal

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establishments are covered so cottage industries are not reflected in the data. In addition, there was a small amount of shifting of enterprises during the period from the home into formal establishments -- usually into stores and shops -- which shows up in our data as an increase in employment, which it is not in fact. These qualifications are not too important, however. There is relatively little cottage industry in the area and we have classified all full-time enterprises that are at all visible as "formal". We have been able to use the lists of establishments of the 1967 Economic Census for these towns for baseline information and for confirming the accuracy of our own interviewing. The level of accuracy seems high and we consider the preliminary results to be quite firm. But for purposes of discussion perhaps it would be best to assume only that they are reliable in indicating the direction and the relative intensity of the changes we are observing. Also, let me underline that the preliminary results do not cover seasonal employment (see footnote to Working Notes). We will eventually have data on seasonal and part-time employment but that must wait for the results of the manufacturing interviewing which is currently underway.

The towns involved are a Local Urban Center, Gapan, three of the surrounding Rural Towns which it serves, and the Regional Urban Center which in turn serves it.[1] These are formally defined terms, a Rural Town being a town which serves only itself and its hinterland, a Local Urban Center being a town which serves other towns as well as itself, and a Regional Urban Center being one which serves a set of Local Urban Centers. The area served by this structure of towns constitutes the region.[2]

Gapan is in fact the cross-roads town serving the eight towns of southern Nueva Ecija Province. The seat of the province government, Cabanatuan City, is the Regional Urban Center and the province roughly coincides with the region. Nueva Ecija is a monocrop region (rice) and is conveniently isolated from other economic activities for purposes of this research. Yet it is considered reasonably representative of Central Luzon rice-producing areas. (There are a number of qualifications that could be entered at this point but permit me to defer noting them until they become relevant during the discussion.)

I will report only on Gapan and on two of our three Rural Towns. Over 90% of the farms in these areas (municipalities) are operated by tenants. The one Rural Town is the equal of Gapan in physical resources, being well irrigated and on a national highway; the other has very little irrigation and is at the end of the road leading up to the mountains to the east. In the Working Notes they are designated, respectively, Rural Town/Wealthy (RT^W) and Rural Town/Poor (RT^P). All three towns have experienced an increase in rice yields per hectare since 1966 of roughly 25%. The absolute level of the poor Rural Town's production per hectare is only 80% of that in the others, however, and it produces only a single crop annually. The others can produce two crops on some of their land each year. There is considerable poultry production in the wealthy Rural Town. Gapan, in addition to being the local trade center, is something of a rice milling center.

All things taken into consideration, we feel it is reasonable for purposes of discussion to assume a change in agricultural income in the Gapan-area since 1966 on the order of 25%. This estimate may require revision, however. Fortunately a good deal of data on the area exists as a result of various sample surveys and farm management studies in recent years, so relatively firm final estimates should be possible.

Findings on Changes in Non-Agricultural Employment

Speaking broadly, the principal finding to date is that in the Local Urban Center employment serving household consumption needs (i.e., in stores and shops and in personal transportation) increased markedly faster than did employment in agro-business (mainly rice milling, distribution of agricultural supplies, and related transport). The latter appears to have increased both its physical capacity and employment roughly proportionally to physical agricultural output, or on the order of 25%. In contrast, employment in stores and shops ("Store Fronts") rose over 60% while that in commercially-operated tricycles increased 40%.[3] Sari-sari store employment increased less, perhaps by one-quarter or one-third. Given that these three categories account for 55% of Gapan's non-seasonal non-agricultural employment as against only some 15% in agro-business, the differential growth rates are significant.

For completeness, let me note and characterize briefly the remaining sources of such employment: Employment serving household investment — housing and furnishings mainly — is covered principally under the heading Other Manufacturing for Local Demands (4% of the preliminary total). This is poorly quantified at present but is the tip of the residential construction iceberg about which I will say more later. Teachers, civil servants, and local government laborers account for less than 20% of the total and are increasing more in response to demographic trends than to economic or political stimuli. Teachers and civil servants are important, however, for the quality as well as the quantity of employment they provide. Other Manufacturing for Regional Demands, accounting for 9% of the preliminary total, covers two industries (rattan furniture and slipper manufacture), which are importantly creatures of the accessibility which Gapan enjoys to Central Luzon by being a cross-roads town. Employment in them has grown well over 100% since 1966. Other agricultural market centers are their principal markets, but Manila and the two American-bases cities in Central Luzon are also important. (Surveys of these two industries have been started but not yet completed.)

For the second principal finding, may I draw your attention to the top of the "Remarks" column in the Working Notes. Assuming that the 65% increase in employment in stores and shops (Store Fronts) in the Local Urban Center reflects an employment multiplier on changes in agricultural incomes on the order of 2.0 or better (65%/25%), it is interesting to note the data suggests the multiplier for the poor Rural Town may be only 1.0 (25%/25%) while that in the rich Rural Town is intermediate between the two (40%/25%). We take this differential rate of labor absorption to reflect differential functional specialization among these towns. Evidence available to date suggests we will find a similar pattern in most other employment categories as well.

The pattern of specialization in stores and shops can be seen in the Store Front sub-categories. In response to perhaps a 25% change in agricultural incomes — though from different absolute levels — employment in the retailing of traditional goods responded similarly in all three towns (up 40-45%), reflecting the close correspondence between such incomes and the basic function of an agricultural market center so far as consumption is concerned. Employment in personal and recreational services and in retailing of non-traditional goods grew at similar rates (70-75%) in the Local Urban Center and the wealthy Rural Town but not at all in the poor Rural Town. And only in the Local Urban Center did employment in formal tailoring establishments grow sharply.

The Impact on Income Distribution

The immediate income distribution question which this labor absorption data raises is, where does the increased buying power come from? Our research can suggest an answer — albeit crudely — in geographical terms since data is being collected by barrio and being aggregated by "town barrios" and "farming barrios".

It seems clear from casual observation of the farming barrios as well as from our data that income from the higher agricultural productivity is being broadly shared, although with what degree of inequality I do not know. Evidence of broadly-based increased purchasing power can be found in the farming barrios in up-graded housing and clothing, ownership of tricycles, and increased enrollment of children in secondary schooling.[4] The Working Notes provide particular data on the latter two variables. Various data we have gathered show that these wealth changes have occurred preponderantly in farming households and derive primarily from changes in agricultural incomes.

Looking at changes in wage rates over the past five years for evidence of shifts in income distribution, our observations to date point only to a negative conclusion, namely, that there are no obvious losers. Remuneration rates -- and there is a whole range of them: in cash, in kind, by the piece, the day, the month -- have risen in the past three years, some before and some after the peso devaluation in January, 1970. In general they appear to have at least kept up with prices, but our information on this has not yet been gathered systematically. In the two areas having ~~a~~ potential for labor-displacing technology -- rice milling and the use of farm tractors and machinery -- there is little evidence of an inclination yet to substitute capital for labor beyond the levels prevailing during the 1960s. This is especially true for rice milling.

One candidate to be a losing group in future structural change is the landless agricultural laborer. There is evidence from several sources that family labor inputs are rising on rice farms. In addition, from Bulacan there is a report the traditional homogeneity of barrio society may be fragmenting as those having land to till move ahead of those without this resource.[5] In the Gapan-area it is widely believed farm operator households are doing well. The question is whether this is at the expense of agricultural laborers. Our observations on this issue are necessarily partial or casual. They may nevertheless be of interest to the extent they suggest the outline of the problem.

On the plus side, increased income opportunities in farming barrios appear to exist in tricycle driving, meat production, housing construction, and possibly in paid agricultural employment as well. Tricycle driving has supplanted calesa driving; the net change in employment is clearly positive. Production of meat for the increasing local demand tends to be broadly spread through the farm barrios, commercial production of improved strains going mainly to city markets. To a significant extent up-grading of housing is contracted ~~to~~ craftsmen rather than being done by the homeowner or through labor exchange. Despite increased inputs of family labor on the farm, reports persist that demand for agricultural laborers has not fallen off. And a final element of importance to the barrio labor market is the increased enrollments of children from farming barrios in secondary schools. Presumably this both opens up employment opportunities for workers from families less well off and puts upwards pressure on wages by tightening the labor market.

Negative factors affecting income possibilities in the farming barrios include the elimination of some employment, such as in firewood and charcoal production, as industrial substitutes become more popular. The increasing use of cooking gas is a current case in point although it is perhaps worth noting that such substitutions are much more a thing of the past than of the future. Significant production of such items as traditional roofing, textiles, and kitchenware has long since ceased in the farming barrios of the area. A decreased willingness of women to engage in cottage industries because the prevailing remuneration rates in them no longer are interesting is another possibility of which there has been one report recently.[6]

Returning to the question of who is benefitting from these changes in the structure of income opportunities, our partial data suggests it may be important to differentiate between farm-operator households and non-farm-operator households in income studies. It appears that it is not so much the man without agricultural resources — the landless agricultural worker — who is exploiting the non-farm opportunities for employment. Rather, it appears more often than not it is the tenant who has the initiative, the skills, and the capital to engage in building trades, tailoring, tricycle driving, and even jeepney ownership. At a minimum it is safe to say that tenants are active in these fields and that there is no simple complementarity wherein farm and non-farm activities respectively absorb the efforts of people with land and those without.

Labor force and income/expenditure data in most countries are unable to shed light on this last issue. Yet it would not seem too difficult in the several prospective household survey programs which we have discussed at this seminar to distinguish between farm-operator and non-farm-operator households. Incorporation of this distinction into the survey designs merits consideration since it gets to the heart of many income issues and would also be useful in making interregional comparisons — and indeed in permitting meaningful intercountry comparisons as well.

Points Brought Out in Discussion

Importance of Non-Agricultural Employment in Gapan-Area. Making a very crude estimate based on national labor force data, it would seem non-agricultural employment in an area like southern Nueva Ecija would be at least 25% of total employment and probably 30% or more.[7] Thus, the income/employment multipliers are operating on a significant proportion of the total labor force.

The Local Urban Center has relatively more of the non-agricultural employment than do the Rural Towns. For example, in stores and shops (Store Fronts), Gapan accounts for roughly 60% of the employment in the four towns we are stydying (I am now adding in the third, "intermediate" Rural Town) although it accounts for only 40% of the total population of the Gapan-area.

Longer Run Prospects for the Employment Which is Being Created

The employment being created, though sometimes attaching to intermediate technologies such as in tricycle driving, appears substantial enough, not likely to be displaced quickly by factory production. The small industries specialists have long maintained that household demands — both for consumption and investment — fall in a geographical pattern determined by a variety of locational and technical considerations and that for a significant number of products the comparative advantage of "local" production explains why local small industries tend to persist tenaciously through the successive stages of economic growth. Our research suggests this view fits the pattern of growth in the Gapan-area. We have yet to calculate leakages to the industrial areas but it is not difficult to see whence the substantial amount of local value added derives in many industries. To cite one example of an economic activity which we are wont to see as having shifted from village to factory production, we estimate that close to 50% of the value in clothing is added locally despite the fact all the cloth is factory-made. There is no reluctance to buy ready-made clothes of equal quality to that provided by the personal tailor, but good quality is not yet available in locally-manufactured clothing and imports are prohibitively expensive.

Residential Construction Activity. The 4% of the non-seasonal employment found in construction-related activities covers the "regular" workforce engaged in making furnishings, cement construction blocks, windows and doors, and metal window grills, gates, fences, and railings. During the dry seasons employment in such industries doubles and to this must be added the construction workforce itself. The value added locally in the components, materials, and furnishings is roughly 50% when wood is locally available, and it seems unlikely such activity will be reduced greatly by factory competition in the foreseeable future.

A secondary point with special implications for regional growth and migration is that a considerable part of the construction activity in the past five years has been in town houses of substantial quality — so called "Manila-style" housing with protective walls and all the modern conveniences and gadgets. There is not just a little of this in absolute terms and it ~~is~~ found in Rural Towns as well as in the Local Urban Center. Most is built by non-agricultural families — predominantly landowners and businessmen (often synonymous), professionals, and civil servants — who clearly have decided they are now willing to make their homes in the countryside.

Representativeness of the Gapan Area. Along with the other Local Urban Centers in Nueva Ecija, Gapan is known as a "progressive" town but it is still very much of a rural town in size and aspect. It has an edge over the others by virtue of being closer to Manila but, if productivity per hectare of rice is used as a measure of modernization, the Gapan-area is similar statistically to the rest of the province. As a result, agriculturally it is generally considered representative of rice-growing areas in Central Luzon. Having said this much, it remains to enter some important qualifications which on balance place the area ahead of other areas so far as non-agricultural activity is concerned. But the direction and pattern of change appear to be quite representative of Central Luzon as a whole.

The first qualification is that the Gapan-area was relatively well irrigated throughout the past decade. Its growth really started in earnest in the early 1960s with the widespread adoption of commercial fertilizer use in rice production.The ayailability of dependable water made introduction of this practive easier, though less favored areas followed within less than five years. Other Nueva Ecija areas will draw even with Gapan agriculturally in the mid-1970s when a major new irrigation system has been completed.

The second is that as much as one-third of the rice milled in Gapan is grown farther north. Being a milling center is a characteristic of Local Urban Centers, and the closer to Manila a town is the more advantageous it seem to be. Being in the south of the most important rice-growing province in Central Luzon, Gapan has two to three times the number of rice mills found in other Local Urban Centers.

Third, two of the adjacent Rural Towns benefited considerably during the 1960s through the development of poultry production for the Manila market. How typical such specialty production is is difficult to assess, for such industries are often inconspicuous. Each area in Central Luzon seems to have a specialty of some sort but the poultry production in the Gapan-area is among the more substantial. Here again it seems the difference is importantly one of timing, for commercial livestock production is now widespread. It is an older industry in southern Central Luzon, however.

Concluding Comments

As I see it, the principal implication of this research on which I have reported for income distribution analyses is an indirect one. It is that for these purposes the present classification, "urban", as defined in most LDCs is deficient in one important respect. The problem is that "urban" is increasingly including agriculturally-based towns and cities which need to be differentiable from "non-agriculturally-based urban areas". For example, all of the towns on which I have reported this morning are now classified as "urban" for statistical purposes. During the 1950s and 1960s the "urban-rural" classification in LDCs, though crude, served relatively well, at least to the extent that agricultural market centers tended more to fall in the rural classification while "urban" mainly encompassed the industrial and export enclaves. This classification is no longer sufficient for the 1970s which are seeing large agricultural towns and growth that is agriculture-led as well as industry/export-led.

With the impetus for change coming from two quite different directions and falling differentially on "urban" areas, survey data on "urban" households will be less useful for many purposes if it is not possible to discern what the source of income changes is — whether agricultural or non-agricultural. In addition, for income distribution studies there is a crucial index number problem since agriculturally-based urban areas tend ~~to~~ enjoy a relatively low cost of living — even lower than is indicated by regional cost of living indexes since these are often biased upwards by the presence within the region of one or two high-cost, highly monetized enclaves of industrial or export production.

There are two facets to this problem which make it relatively easily remedied. First, any disaggregation of "urban" which distinguishes data for industrial/export enclaves from the rest of the "urban" data will be an improvement. The distinction need not be exactly defined to begin being useful. Second, by their very nature the industrial/export enclaves tend to be treated separately in data collection programs — even in sample survey designs. Thus, making data on them retrievable is often not difficult, under the best of circumstances requiring little more than a single vacant column in a key punch card.

As to the question of distinguishing an agriculturally-based from a non-agriculturally based urban area, the answer is often intuitively obvious — many of us make the distinction to our own satisfaction whenever we think in terms of major urban areas versus the countryside with its many market centers. Arriving at entirely objective criteria for any given country could no doubt be time consuming. But for immediate working purposes a thoughtful pragmatic classification would probably suffice in many cases.

For example, in the Philippines selecting certain obvious provinces plus chartered cities of over a certain size would work well enough.[8] So also would a selection of urban areas according to municipal revenue class. Possibly the most powerful device would be a population density criterion. In the Philippines in 1960 a density of 1000/sq. kilometer or above — which was the criterion for Category I urban areas — discriminated almost perfectly non-agriculturally-based urban areas from agriculturally-based ones over a wide range of urban population size. This suggests that the latter urban areas are characterized by a tendency to sprawl while the former tend to be concentrated, a suggestion which is easy enough to accept intuitively.

In sum, I am suggesting that the rapid changes occurring in "urban" areas in the countryside such as we are studying are significant for income distribution studies but that the standard "urban-rural" classification of households requires modification if survey data is to capture these changes. If "urban" is split in two as suggested and the data is cross-classified by the occupation of the head-of-household, it will be possible to sum the data for non-agricultural households in the "rural" and "urban/agricultural-based" categories to produce an aggregate of the non-agricultural households whose incomes are, directly or indirectly, agriculture-related. I believe that such an aggregate would provide a considerably improved basis for analysis of many of the questions on employment and income distribution that will be concerning us in the 1970s.

FOOTNOTES

1. The 1970 populations of these towns were about 5,000 for the Rural Towns, 12,000 for the Local Urban Center, and 50,000 for the Regional Urban Center.

2. The region here would be a sub-region by comparison with the statistical categories normally employed in LDCs. For example, Region IV in the Philippines (Central Luzon) is composed of four such regions.

3. Store Fronts are units of commercial space in or near the town proper. Tricycles are the motorcycles-cum-sidecars which have become the work-horse of the countryside since 1966, replacing the horse-drawn calesa rig.

4. In the Philippines most of the cost of secondary education is borne privately, even in public schools. The private costs, none of which occur at the elementary level, include: monthly school fees (the source of teachers' salaries), transportation to school, pocket money (and books) allowances, presentable clothing, and the foregone earnings of a 13-17 year old.

5. Takahashi, Akira, Pesantization of Kasama Tenants: Socio-Economic Changes in a Central Luzon Village (mimeo of presentation to a seminar at International Rice Research Institute, Los Banos, Philippines, August 19, 1971), page 8.

6. Idem, p.5

7. In October 1968, in the Philippines in areas classified "Rural" (which included the towns in such areas) just over 25% of the total employment was reported as non-agricultural, just under 25% of the male employment being so reported. Considering that none of the Gapan-area towns was so small as to be classified "rural", it seems likely the proportion of non-agricultural employment is more like 30-33%. The October data series is relatively accurate in associating job-holders with their primary source of income.

8. Roughly this approach was tried on Philippine labor force survey data for October, 1968, in my paper A Note: Defining the Non-Farm Employment Question presented to the Conference on Manpower Problems in East and Southeast Asia, May 22-28, Singapore. This paper was also issued as U.P. School of Economics discussion paper Number 71-14.

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Working Notes

RELIMINARY RESULTS: % CHANGE (1966-1971) IN CERTAIN INDICATORS OF NON-FARM EMPLOYMENT/INCOME SOURCES IN CERTAIN CENTRAL LUZON TOWNS*

egory	Local Urban Center 1971 Employment# No.	%	'66-'71 Change	Remarks* % Change In RT^W	In RT^P	
al Employment in Store Fronts	928	30	+65%	+40	+25	
Retail:Traditional Goods	(342)		+40	+45	+45	
Retail:Non-Trad Goods plus Pers/Rec Services	(344)		+75	+70	+0	
/Sub: S Sector in SFs +55%/				+60	+25	
Mfrg in SFs (mainly tailoring)	(242)		+90	+20	+0	
i-Sari (Variety) Stores	282	9	?			
ycles Operating Commercially	490	16	+40%			
From farm barrios	(340)		+55			90% are owner-operated
From town barrios	(150)		+20			All are owner-operated
Sub-Total A		(55)				
ndary Ed Enrollments (1971)						Started growing early'60s
rom farm barrios /940/						'61-'71 up 165%
rom town barrios /660/						'61-'71 up 125%
sales (kgs) in town market			+25%			Also up 25% in RT^W
hers	378	12	+30%			
rnment Services	184	6	+30%			
ocal government			+0			
ational government			+40			Esp. in rural-related activities
Sub-Total B		(18)				
Milling	230	8	(est)+25%			Mills increased by 10 to 50 after 1967.
Agro-related Mfr and Trans	170	6	25-50%			
Mfr for local demands sp const components & materials and furnishings	110	4	(est)+25-50%			
Mfr for regional demands	290	9	(est)+100%			Mainly to other ag towns
ippers						Revival of defunct industr
ttan furniture						New growth in old industry
Sub-Total C		(27)				
	3,262	100				

agricultural market centers being studied are a Local Urban Center (Gapan) two Rural Towns (RTs) served by it, namely, San Isidro, a wealthy town (RT^W) Peñaranda, a poor town (RT^P). They are in southern Nueva Ecija Province.

covers only non-seasonal employment. Virtually all are full-time jobs.