

## THE TEMPORAL EFFICIENCY OF THE RURAL MARKET SYSTEM IN KENYA

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Market data has been collected for thirty-six of the forty-one districts of Kenya. Mombasa District and the former Nairobi Extra-Provincial District, which are predominantly urban, have been excluded and data are not available for three other districts: Samburu, Garissa and Kilifi. It is unlikely that markets exist in Samburu and Garissa since they are both sparsely settled, pastoral areas and field survey suggests that markets, of the type observed elsewhere in Kenya, do not occur in Kilifi District, although there is no official information to verify this suggestion. Thus the data can be considered as providing almost complete national coverage. Nine of the thirty-six districts do not have any markets so that the number of districts considered in this study is twenty-seven. In all there are 984 official rural markets.

As a direct result of European influence, all markets in Kenya work to a schedule based on the seven-day week. The frequency of market meetings varies from market to market. 49% of the markets meet weekly, 37% meet twice weekly, 9% meet daily and 5% three times weekly. No markets meet six times per week, one market meets four times per week and one market meets five times per week. This gives a total of 1974 market meetings per week. The distribution pattern and periodicities of these markets have arisen gradually as a result of a multitude of independent decisions made within a common framework by numerous local government bodies over the past forty-five years. Two questions arise concerning the temporal efficiency of this haphazardly developed rural market system:

Is there an equitable temporal supply of rural markets?

In any area containing markets, an efficient arrangement of market periodicities is one that ensures an equitable temporal supply of operating markets i.e. there should be an equal number of market meetings on every day of the week so that every day is neither over- nor underprovided with market meetings. In a study of 421 seven-day markets (with a total of 499 market days) in the four Hausa Emirates of northern Nigeria, it was found that there is a significantly greater number of market meetings on Friday, the main religious day for Moslems, than on any other

day of the week.<sup>1</sup> In a smaller comparable study in three areas of southern West Africa, where Islam is not the dominant religion, in only one area, southern Ghana, is there a significant difference in the number of market meetings from day to day. In this area there is a heavy concentration of market activity on Tuesday, Wednesday, Thursday and Friday.<sup>2</sup> Table 1 shows the number of official market meetings on each day for every district of Kenya and for the country as a whole.

A chi-squared test carried out on the data for Kenya shows that the hypothesis that there is no significant difference at the national level in the number of meetings on each day of the week is incorrect. An inspection of the data suggests that the hypothesis may be incorrect because of the lower number of markets that occur on Sunday. When a chi-squared test is carried out on the data but excluding Sunday the hypothesis is accepted. Thus at the national level there is a significant avoidance of Sunday as a market day but there is an almost equal provision of market meetings on every other day of the week. The lower number of market meetings on Sunday is a reflection of the importance of those Christian religions that regard Sunday as the day of rest. This is in marked contrast to the situation in northern Nigeria where the main religious day, Friday, is the day of most market activity. There is evidence that some of the markets which are recorded as daily in Kenya do not operate on Sunday such that the Sunday figure may in fact be an overstatement.

A chi-squared test carried out on the district data shows that there is no significant difference between the number of market meetings on each day of the week in nineteen of the twenty-seven districts. An inspection of the data for the remaining eight districts suggests that in most of the districts one day is less important as a market day than the other six days. A chi-squared test was carried out on these eight districts excluding the day with the smallest number of market meetings in each district. In five of the districts, Siaya, Kirinyaga, Kitui, Machakos and Meru, the hypothesis that there is no significant difference in the number of market meetings on six days of the week is accepted. In the other three districts, Kisii, Nyandarua and Nakuru, the same hypothesis is rejected. In Kisii there is an avoidance of market meetings on Saturday but there is also a concentration of meetings on Thursday and Sunday. The avoidance of Saturday is

related to religion: Kisii is the Kenyan stronghold of the Seventh Day Adventist Church which regards Saturday as the day of rest. No explanation can be given as to why there is an overconcentration of meetings on two days of the week. It is likely that the official market meetings in Kisii do not accurately reflect the actual frequency of market meetings because of the considerable use of markets in this district on unofficial days. However, it is possible that, because of the officially uneven temporal supply of markets, the population has a need to use the markets on unofficial market days i.e. the unofficial use of market places may be an adjustment to the inefficient temporal provision of markets. There does not seem to be such extensive use of market places on unofficial days in any other part of Kenya.

Nyandarua and Nakuru both have an overconcentration of market meetings on Sunday and Wednesday. Both these districts formed part of the former White Highlands and it is likely that the importance of Sunday as a market day reflects the fact that this was the only free day for labourers on the European farms. If an extra day was later inserted into the weekly schedule of market meetings then either Wednesday or Thursday would have been the obvious choice of market day.

Thus in nineteen of the twenty-seven districts there is an approximately equal provision of market meetings on each day of the week. In five other districts there is an avoidance of market meetings on one day of the week for religious reasons but there is an even provision of meetings on the other six days of the week. In only three districts is there an inequitable temporal supply of market meetings.

Is there a temporally efficient arrangement of market meetings at any one market place?

An efficient temporal arrangement of market meetings at any one site is one that both minimizes the lengths of the marketless periods and prevents an over-concentration of market meetings at any one time of the week. For markets meeting six days a week, as well as for both daily and weekly markets, only one

combination of market and marketless days is possible. However for markets meeting two, three, four and five days a week, a variety of combinations of market and marketless days is possible. The range of possibilities for these four periodicity types is shown in Table 2, where for each periodicity type, the most efficient temporal arrangement of market days is given first. Table 2 also shows the number of markets with each schedule. In summary, 87.0% of the two, three, four and five day markets in Kenya have the most efficient market day schedules and only 1.7% have the least efficient market day schedules.<sup>3</sup>

Thus it seems reasonable to conclude that in general, despite its piecemeal development, the rural market system in Kenya is temporally efficient.

#### NOTES

1. P. Hill and R.H.T. Smith, "The spatial and temporal synchronization of periodic markets: evidence from four Emirates in northern Nigeria", Economic Geography, 48 (1972), 346-347.
2. Ibid., 348
3. Two small but comparable studies have been done on seven-day markets in West Africa: V.G. Pagerlund and R.H.T. Smith, "A preliminary map of market periodicities in Ghana", Journal of Developing Areas, 4 (1970), 342; P. Hill and R.H.T. Smith, op.cit., 348.

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TABLE I  
NUMBER OF OFFICIAL MARKET MEETINGS ON EACH DAY OF THE WEEK IN KENYA BY DISTRICT

DISTRICT	NUMBER OF MARKET PLACES	NUMBER OF MARKET MEETINGS	MEAN NO. OF MARKET MEETINGS per day	MON	TUE	WED	THU	FRI	SAT	SUN	CHI-SQUARED TEST (7 DAYS)	CHI-SQUARED TEST (6 DAYS)
South Nyanza	137	214	30.57	31	32	35	29	31	20	36	5.43	
Kisii	66	81	11.57	7	8	9	22	9	1	25	38.71*	23.84*
Kisumu	46	153	21.86	21	21	21	22	24	26	18	1.74	
Siaya	53	93	13.29	15	19	11	13	19	14	1	17.23*	3.50
Busia	69	119	17.00	16	18	20	17	14	24	10	6.86	
Kakamega	72	181	25.86	24	30	30	26	24	31	16	4.45	
Burcooma	31	118	16.86	16	18	16	17	17	18	16	0.26	
Kejiado	4	6	0.86	0	2	0	2	0	2	0	7.95	
Lakuru	13	38	5.43	2	2	13	2	4	2	13	11.17*	25.02*
Kericho	46	55	7.86	4	10	10	7	8	7	9	3.39	
Baringo	46	52	7.43	3	6	10	6	8	5	9	2.64	
Egeyo-Marakwet	22	23	3.29	0	4	3	4	3	5	4	4.66	
Jasin Gishu	4	17	2.43	2	2	2	3	2	2	4	1.53	
Bandi	10	10	1.67	0	1	1	1	1	1	4	6.72*	
West Pokot	7	31	4.43	4	4	4	5	4	5	5	0.36	
Kiambu	42	83	11.86	14	12	13	15	10	12	7	3.59	
Muranga	47	85	12.14	14	13	13	15	12	14	4	6.83	
Kirinyaga	25	49	7.00	3	10	11	7	10	7	0	9.72*	1.31
Ryeri	33	81	11.57	11	10	13	13	14	11	9	1.72	
Nyandarua	19	43	6.14	2	2	13	5	2	4	15	29.79*	23.86
Kitui	35	39	5.57	6	6	4	10	6	7	0	10.00*	3.00
Machakos	54	86	12.29	12	11	15	13	9	21	5	12.51*	6.49
Embu	16	34	4.86	8	5	3	8	5	3	2	7.14	
Neru	55	157	22.43	25	25	27	25	26	23	6	14.40*	0.33
Kwale	14	98	14.00	14	14	14	14	14	14	14	0.00	
Taita	12	21	3.00	2	5	4	2	3	4	1	3.98	
Tana River	6	7	1.00	1	1	1	1	1	1	1	0.00	
KENYA	964	1974	282.00	288	291	312	304	279	288	232	14.93*	4.46

\*Significant at the 5 per cent level.