

BIBLIOGRAPHIC DATA SHEET

1. CONTROL NUMBER

FN-AAH-871

2. SUBJECT CLASSIFICATION (998)

DG00-0000-G162

3. TITLE AND SUBTITLE (100)

South African mine wages in the seventies and their effects on Lesotho's economy

4. PERSONAL AUTHORS (100)

Eckart, Jerry; Wykstra, Ron

5. CORPORATE AUTHORS (101)

Colo. State Univ. Dept. of Economics.

6. DOCUMENT DATE (110)

1980

7. NUMBER OF PAGES (120)

30p.

8. ARC NUMBER (170)

LT331.2968.E19

9. REFERENCE ORGANIZATION (190)

Colo. State

10. SUPPLEMENTARY NOTES (500)

(In LASA research rpt. no. 7) (Financial support rendered under AID Cooperative Agreement AID/ta-CA-1 under AID Basic Memo no. AID/ta-BMA-6)

11. ABSTRACT (950)**12. DESCRIPTORS (920)**

Lesotho	Mining
Salaries	Income
South Africa	Le or economics
Economic development	Migrant workers

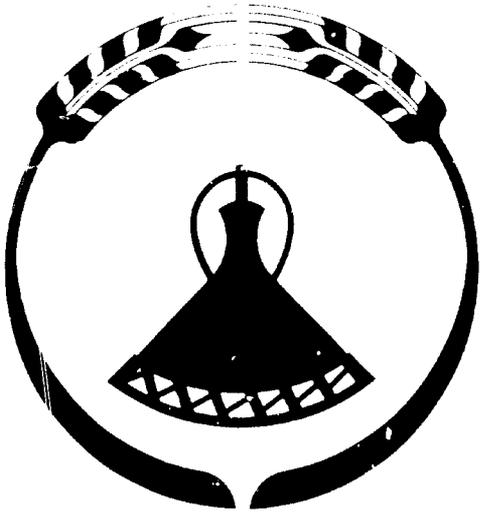
13. PROJECT NUMBER (150)**14. CONTRACT NO. (147)**

AID/ta-BMA-6

15. CONTRACT TYPE (140)**16. TYPE OF DOCUMENT (160)**

PN-AAH-871

LT
331.2968
E19
LASA
Research
Report



LESOTHO
AGRICULTURAL SECTOR
ANALYSIS PROJECT

Ministry of Agriculture
Kingdom of Lesotho
Department of Economics
Colorado State University

**SOUTH AFRICAN MINE WAGES IN THE SEVENTIES
AND THEIR EFFECTS ON LESOTHO'S ECONOMY**

Research Report No. 7
Lesotho Agricultural Sector Analysis Project

by

Jerry Eckert and Ron Wykstra

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Prepared with support of the United States Agency for
International Development, Cooperative Agreement AID/ta-CA-1.
All expressed opinions, conclusions or recommendations are
those of the authors and not of the funding agency, the
United States Government or the Government of Lesotho.

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May 1980

EXECUTIVE SUMMARY**SOUTH AFRICAN MINE WAGES IN THE SEVENTIES
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Jerry Eckert and Ron Wykstra

During the decade of the 1970s the mining industry in South Africa raised their real wage rate dramatically in an attempt to attract higher numbers of South Africans into mining. In the space of 30 months mine wages increased by 500 percent in monetary terms. South Africa's very heavy dependence on foreign mine labor was reversed as a result. An unprecedented wage increase of this magnitude was certain to have significant economic implications for those countries supplying migrant workers to the South African mines. The impacts on Lesotho were particularly severe because of this country's very heavy involvement in migration to South African mine employment. This paper quantifies the more significant of these impacts for the purposes of 1) identifying the cause behind major economic developments in Lesotho and 2) suggesting the magnitude of the reversal that may occur if migration opportunities diminish.

The first major section analyzes selected long-term characteristics of Basotho migration. Among the conclusions reached are the following:

- a) Basotho have been involved in migration with approximately the same intensity throughout this century.
- b) The number of migrants to South Africa is currently almost entirely determined by the employing industry.
- c) The availability of male labor for farming and other employment in Lesotho is now at all time high levels.
- d) Basotho migration has become increasingly concentrated in mining since the middle of the century with the result that migrant employment and remittances are now very heavily determined by events in this one industry (pp. 2-4).

The analysis then describes in detail the magnitude of the wage shift during the 1970s. It is shown that wages per shift peaked in 1976 at levels 3-4 times higher than ever recorded (pp. 4-5).

Selected impacts on the national economy of Lesotho are then developed with the following major conclusions:

- a) Nearly three-fourths of all increases in real per capita income since independence have resulted from migrant remittances (pp. 5-7). These incomes have resulted in a severe distortion in Lesotho's balance of trade, especially since 1973, with the most recent deficit exceeding 200 million Rand (pp. 7 and 8).
- b) Much of the increase in government revenues over the last few years have been the result of Customs Union receipts which are shown to be directly related to the real wage situation for migrant employees (Table 4).
- c) During the mid-1970s income rose more rapidly than the domestic economy could accommodate with the result that there was almost a 1:1 correspondence between increased income and increased imports (pp. 8-11).
- d) As Basotho consumers turned their new incomes towards imported commodities there was, in fact, some diversion of purchasing power away from the domestic economy. A marginal propensity to import exceeded 1.0 for three successive years (Table 6).

An examination of the impact of migrant remittances on rural household incomes reveals that the trend in mine wages severely effected the incentives for crop and livestock production. Migrant remittances as a percent of household income rose from below 40 to more than 70 percent in a very few years (pp. 12-14).

Data on planted acreage of major crops indicates that the sudden rise in foreign source income was a direct cause of the abandonment of cultivation on some 50-60,000 hectares (pp. 14-16). Figure 1 shows relationships between the migrant remittances and planted area. There was even a reasonable possibility that the recent jump in reported agriculture yield levels can be explained by the dynamic response to migrant remittances as viewed by individual household decision makers (pp. 17-19). The impact of these economic trends on livestock trade and livestock product consumption is discussed and figures presented to show that the mine wage increase caused net imports of nearly 100,000 animals annually, a level that is totally unprecedented in Lesotho's history. Implications are developed for the age structure of the resident herd as well as for per capita meat consumption (pp. 19-20).

The final section suggests possible trends during the third Five Year Plan period. These include the possibility of a significant decline in per capita remittances, the necessity of offsetting negative growth rates in remittances with higher than normal domestic growth rates, and the possibility that a new incentive situation will gradually develop for household/farm decision makers (pp. 21-23).

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SOUTH AFRICAN MINE WAGES IN THE SEVENTIES AND THEIR EFFECTS ON LESOTHO'S ECONOMY

by

Jerry Eckert and Ron Wykstra¹

Introduction

In 1974 the mining industry in South Africa increased mine wages to rates considered more competitive with those in non-mining industries. The wage per underground shift of R0.50 that prevailed during the first six months of 1973 was escalated in rapid steps to R2.20 which became effective June 1, 1975, followed by R2.50 one year later. The purpose of this dramatic increase was ostensibly to make underground mining more attractive to South Africa's own Black workers in an effort to reduce dependence on foreign sources of mine labor supply. At the time of the decision some 80 percent of the mine work force were migrants. The mining industry adopted the target of 50 percent from domestic sources which was achieved in April 1978.

The increase in real mine wages from 1974 to 1976 was unprecedented. Whatever its impact in the Republic of South Africa, it was certain to generate significant economic changes in the surrounding labor supplying nations. Lesotho, as the most extreme example of a labor exporter, with some 50 percent of its male labor force in the Republic and approximately three-fourths of these in mining, could not help but be the most seriously affected. The Government of Lesotho took no steps to limit these impacts; instead the economy and the individuals within it were free to respond as they would to rapidly changing economic incentives.

This paper examines the principal effects wrought by the mine wage increase on various components of Lesotho's economy. The analysis serves to explain several of the economic distortions presently evident within the country and suggests the probable magnitude of change should the situation be reversed through a reduction of migrant employment. Lesotho's recent experience serves as a case study of response to rapidly acquired increases in real cash incomes and drastically altered relative incentives.

¹ Authors are Team Leader, Lesotho Agricultural Sector Analysis Project and Professor of Economics, Colorado State University, respectively.

Selected Economic and Demographic Characteristics of Migration from Lesotho

Movement of Basotho to employment in South Africa began in earnest with the discovery of major minerals deposits and the opening of the mines, well before the turn of the present century, at Kimberley and then Witwatersrand. Large scale migration followed almost immediately. Early reports note some 30,000 Basotho migrants as early as 1873, with 78,000 listed in 1908 (Pim, 1935:34). This latter figure, however, is probably high since it would have equalled some 90 percent of the Basotho male labor force (ca. 87,000) at the time.

Data on Basotho migration are available from several sources. The best long-term series are those collected by the Chamber of Mines on the employees of their members. Their usefulness for historical analysis is limited by the fact that the Chamber has included varying proportions of the mining industry over time plus the additional fact that mining has constituted a variable percentage of the destinations of migrants from Lesotho.

Two comparable sets of data do exist from the first and second half of the present century and are presented in Table 1. Several interesting conclusions result. First, some 12-13 percent of the population has been engaged in migration throughout the 1970s. While this is quite high it is by no means unprecedented since similar and even higher percentages occurred fifty years earlier. The contemporary statement, well supported by data, is that "approximately half" of Lesotho's adult male labor force is employed in the Republic". This statement, however, was first made in 1935 to characterize the situation for earlier years (Pim, 1935:34). The conclusion is clear: the Basotho people have been involved in migration more or less with the same intensity throughout the century.

The second conclusion from Table 1 is that there was practically no change in migrant numbers during the 1973-76 period when real wages rose dramatically. The absence of a response in the form of increased migrant numbers would tend to confirm the hypothesis raised elsewhere (Eckert and Wykstra, 1979b:8) that the flow of migration to RSA is solely determined by employing industries in South Africa at the present time.

Third, an important observation that has apparently not previously been recognized results from Table 1. If the percent of the population involved in migration has remained constant then so too has the remainder. As population grows, the absolute size of both groups should increase. The final column of Table 1 estimates the size of the non-migrant male labor force; those still available for work in Lesotho. While these figures must be taken only as approximations due to the methodology involved¹ they nonetheless give a clear indication that there has been no long-term decline in male labor available for agriculture. Instead they

¹ It was necessary to assume a constant age and sex structure to the population. 1976 figures were applied to both early and late periods.

suggest that domestic male labor is at all time record levels. When coupled with the reduction of mine employees (all male) occurring since 1977, one concludes that this situation will continue with a steady rise in male labor available for agriculture.

Table 1. Historical Comparison of Selected Demographic Parameters of Basotho Migration

Year	Migrants		Mining as Percent of Total	Population ³	Migrants as % of Pop.	Residual Male Labor Force in Lesotho
	Mining	Total				
1921	33.9	69	49	543	12.7	56
1922	23.9	58	41	550	10.5	69
1923	26.4	76	35	557	13.7	53
1924	32.0	89	36	565	15.7	41
1925	22.9	80	29	572	13.9	52
1926	34.5	96	36	580	16.5	38
1927	24.9	58	43	587	9.9	78
1928	25.5	54	47	595	9.1	83
1929	28.7	75	38	603	12.4	64
1930	28.5	65	44	611	10.6	76
1931	26.8	67	40	619	10.8	76
1932	25.8	58	44	627	9.3	87
1933	25.8	52	50	635	8.2	95
1970	89	134 ²	65 ¹	1063	12.6	111
1971	87	129 ²	67 ¹	1087	11.9	122
1972	101.7	147	69	1112	13.2	110
1973	111.1	155	72	1138	13.6	108
1974	102.2	142	72	1163	12.2	127
1975	116.4	154	76	1190	12.9	121
1976	125.4	160	78	1217	13.1	121
1977	128.5	160	80	1244	12.9	127
1978	124.6	155	80	1273	12.2	139

¹ Estimated by extending linear trend calculated for 1972-1978.

² Calculated from known figure for mining adjusted by estimated percentage of total engaged in mining.

³ Estimated by using compound growth rates between census estimates.

Sources: 1921-33, total migrants and those in mining from Pim, 1935:195; 1970, 1971, migrants in mining only from IBRD, 1957:75; 1972-78, Central Planning and Development Office, unpublished data.

One of the more significant conclusions is the gradual concentration of migrant employment in one industry - mining. In the early period mining ranged between 30-50 percent of total migration with somewhat less annual variability than in non-mining migration.¹ In the 1970s mining rose to represent 80 percent of the total and total migration was quite stable. Lesotho's migrant employment is now much more dependent on developments in the mine industry than previously. Taken together with the fact that Basotho now constitute 46.7 percent of the total foreign mine work force (Eckert and Wykstra, 1979:17), one could conclude that since WWII Lesotho's vulnerability to economic and political factors affecting a single segment of South Africa's economy has increased substantially.

Table 2 presents the mine wage pattern during the 1970s. Mine wages are deflated separately by consumer price levels and by the maize price in order to show changes in real value from these two perspectives. Rapid increase began during 1973 and continued through the increase of June 1, 1975. Thereafter mine wages have increased more slowly, almost exactly approximating the rising cost of living index. The absence of almost any change in real wages per shift since 1976 suggests that shift rates have been artificially pegged to the cost of living index itself and that a policy of holding real mine wages constant has since prevailed.

The only possible comparison between real mine wages in the past decade and those of the earlier period shown in Table 1 lies in their effective purchasing power for basic commodities. Entry level shift rates were recorded at 2s. 1d. for the three years, 1931-33. At prevailing maize prices one shift provided income sufficient to purchase approximately 18 kilograms of maize (Pim, 1936:35, 190). By the beginning of the 1970s this figure had eroded to approximately 10kg/shift. The wage escalation raised the maize equivalent by more than 400 percent to a record level in excess of 43 kg/shift in 1976.

Recent estimates indicate that Basotho in Lesotho consume approximately 180 kilograms of foodgrains per year² (Anderson, 1978). Furthermore, Basotho earn higher than entry level wages due to accumulated experience in the mines. In 1976 the average Mosotho in the mines had a wage equal to 125 percent of entry level (CPDO, unpublished estimates). Using a weighted average of cereals prices prevailing in 1978, the average Mosotho miner needed only to work 4.8 days to provide the annual cereals requirements of each member of his family.

Since 1976 an increase in the relative prices of foodgrains has reduced the foodgrains (or maize) equivalent value of mine wages even though real wages have remained essentially constant.

¹ Coefficients of variability of 7.5% and 11.7% may be calculated for mining and total migration respectively.

² Maize, sorghum and wheat in the ratio 50:20:30.

Table 2. Underground Mine Wages in South Africa¹

Year	Date of Change	New Wage ²	Average for year ²	Consumer Price Index ³ (1970=100)	Real Wage Per Shift	Maize Price ³ (R/Kg)	Mine Wages in Maize Equivalent (Kg/Shift)
1970	----No change--		0.400	100.0	.400	.039	10.3
1971	1/6/71	0.42	0.412	106.0	.389	.039	10.5
1972	1/6/72	0.50	0.467	113.7	.411	.040	11.7
1973	1/4/73	0.65					
	1/12/73	0.72	0.618	123.8	.499	.042	14.7
1974	25/6/74	1.20					
	1/12/74	1.60	1.004	138.5	.725	.046	21.8
1975	1/6/75	2.20	1.950	156.3	1.248	.049	39.8
1976	1/6/76	2.50	2.375	174.3	1.363	.055	43.2
1977	1/8/77	2.65	2.562	193.3	1.325	.065	39.4
1978	1/7/78	2.95	2.800	215.3	1.300	.078	35.9
1979	1/7/79	3.34	3.134	242.2	1.299	.092	34.2

¹ Basic wage data courtesy of The Employment Bureau of Africa Ltd.

² Figures are entry level rates per underground shift.

³ Wholesale price computed from South Africa DAMR, 1980.

To summarize, in thirty months (Jan 1, 1973 to June 1, 1976), mine wages increased by 500 percent in monetary terms and by 332 percent in real terms. Since then real wages have been held essentially constant at the higher level. As in any economy, adjustments to significant income changes require time for new consumption and savings patterns to emerge. Given the enormity of this unique wage adjustment plus the very high dependency of Lesotho on mine wages, the full adjustment has undoubtedly not yet been completed. Nevertheless, sufficient time has elapsed to monitor the major changes underway and to analyze their impact on development efforts. The balance of the paper addresses these issues.

National Economic Impacts

Table 3 presents the history of national income estimates since Lesotho's independence. Gross National Income (GNI) is taken as the sum of Gross Domestic Product (GDP) and migrant remittances. As such it excludes those wage and kind payments which are consumed by miners in South Africa and do not enter the economy of Lesotho. The price index used in Table 3 does not exactly equal that in Table 2 because inflation rates from Lesotho are used for the post-1972 period in Table 3.

Table 3. Estimated Growth in Real Value of National Income
Lesotho, 1966/67-Present (values in thousand Rand)

Year	At Market Prices			Price Index 1970=100	In 1970 Prices			Population	Real Per Capita		
	GDP	Migrant Remittances	GNI		GDP	Migrant Remittances	GNI		GDP	Migrant Remittances	GNI
1966/67	40,512	7,755	48,267	88.8	45,576	8,724	54,300	978	46.60	8.92	55.52
1967/68	42,331	10,640	52,971	91.6	46,235	11,621	57,856	1,000	46.24	11.62	57.86
1968/69	43,891	11,744	55,635	93.3	47,026	12,583	59,609	1,023	45.97	12.30	58.27
1969/70	47,121	12,498	59,619	96.0	49,084	13,019	62,102	1,046	46.92	12.45	59.37
1970/71	49,060	14,067	63,127	101.3	48,414	13,882	62,296	1,070	46.28	13.27	59.55
1971/72	54,683	15,545	70,228	107.6	50,842	14,453	65,295	1,094	46.47	13.21	59.68
1972/73	62,216	20,678	82,894	114.7	54,258	18,033	72,291	1,119	48.49	16.11	64.60
1973/74	76,300	29,683	105,983	128.0	59,609	23,190	82,799	1,144	52.11	20.27	72.38
1974/75	85,500	59,860	145,360	144.9	59,011	41,314	100,325	1,170	50.44	36.11	85.75
1975/76	102,500	89,970	192,470	165.3	61,996	54,413	116,413	1,197	51.79	45.46	97.25
1976/77*	130,900	103,100	234,000	184.0	71,141	56,033	127,174	1,224	58.12	45.78	103.90
1977/78*	160,200	118,280	278,480	213.3	75,094	55,443	130,537	1,251	60.03	44.32	104.35
1978/79		123,650		240.0		51,521		1,279		40.28	

*Preliminary

Sources: 1966/67, Economic Commission for Africa, Summaries of Economic Data-Lesotho 1972, (compiled Dec. 1973).
1967/68-1972/73, Bureau of Statistics, 1978. Annual Statistical Bulletin 1977.
1973/74-Present, World Bank, Economic Memorandum on Lesotho, Report No. 2251-LSO. February 1979.

Real per capita GNI, with a compound growth rate of 5.9 percent, nearly doubled by 1977/78. However, of the total increase in per capita GNI of R48.83, some R35.40 or 72.5 percent had been derived from increased migrant remittances by 1977/78. Comparing this latter year with 1966/67, real per capita migrant remittances grew at 15.7 percent annually while real per capita GDP achieved only a 2.3 percent growth rate. Thus, until very recently the large majority of the rising real incomes enjoyed by Basotho have been the result of wage payments earned by migrants. The impact of the dramatic increase in real mine wages in the mid-1970s was obviously the major contributor, accounting for most of Lesotho's growth.

Since 1977 remittances have declined in real value. This trend reflects two factors. First, it appears that mine wages are presently tied to the South African cost of living index which normally is 1-1.5 percentage points less than that for Lesotho. Second, a decline in the number of migrants began in 1978 and is still continuing. A discussion of several potential consequences of a continued, long-term reduction in migrant numbers is presented in the final section of this paper. For the present we simply note that a certain amount of growth in GDP will be necessary each year merely to hold per capita real incomes constant in the face of declining remittances.

Data from the period 1970/71 to 1978/79 show the following relationships between the real values of remittances and mine wages:

$$\text{Eq. 1: Remittance/migrant} = R31.64 + 2.45 \times (\text{shift rate in cents}) \\ (r = .96)$$

The importance of this relationship is derived from the significance remittances have had as a component of GNI during the past decade. Total remittances are simply the remittance per migrant (essentially determined by the shift rate) multiplied by the number of migrants. And total remittances were, by far, the principle determinant of change and growth in national income.

One of the characteristics of Lesotho's particular enclave economic situation is ready access to South African markets. With the Customs Union in effect, Lesotho's effective demand for goods and services can be readily met by the highly developed economy of South Africa. The result is a high propensity to import on the part of Basotho and strong disincentives for domestic production. For the period 1973/74 to 1977/78 the elasticity of demand for imports with respect to migrant remittances was 0.78.

Table 4 presents data on the aggregate value of trade since independence. Both imports and exports have increased dramatically in value. Exports have grown slightly faster in percentage terms but due to their small absolute value have not offset absolute changes in the value of imports. Consequently since 1970, the trade deficit (exports minus imports) has grown at the rate of 35 percent per year if measured in current prices and at 21 percent per year if measured in constant 1970 prices.

Table 4. Value of Imports, Exports and Customs Union Receipts
(Figures in thousands)

Year	Imports	Exports	Balance of Trade	Real Value (1970 Prices)		Customs Union Receipts	
				Imports	GNI**	Actual	1970 Prices
1966	22,917	4,387	-18,530	26,191	54,300	1,566	1,790
1967	23,800	4,168	-19,632	26,187	57,856	1,934	2,128
1968	23,938	3,380	-20,558	25,775	59,609	1,916	2,063
1969	23,907	4,069	-19,838	25,077	62,103	4,739	4,971
1970	22,876	3,716	-19,160	22,876	62,296	6,317	6,317
1971	27,997	2,197	-25,800	26,406	65,295	5,932	5,595
1972	42,972	6,093	-36,879	38,054	72,291	6,718	5,949
1973	64,575	8,770	-55,805	51,795	82,799	14,627	11,732
1974	81,652	9,809	-71,843	58,043	100,325	17,287	12,289
1975	122,817	9,240	-113,577	76,665	116,413	15,200	9,488
1976	178,757	14,645	-164,112	99,683	127,174	14,099	7,862
1977	195,670	12,180	-183,490	94,997	130,537	32,842	15,945
1978	238,449*	28,319	-210,130	102,196	NA	56,137	24,059
1979	NA	NA	NA	NA	NA	71,134	26,743

*Provisional

**From Table 3 for fiscal years beginning in March of year shown here.

Source: Customs and Excise Department, 1980.

It was shown above in Equation 1 that remittances per migrant are almost completely determined by wage rates in South Africa. It was further discovered that nearly three-fourths of the growth in GNI during the 1970s was provided by migrant remittances. Equation 2 below relate growth in GNI to the value of imports (both in constant 1970 prices and all values in million Rands).

$$\text{Eq. 2: Real Value of Imports} = -40.86 + 1.05 (\text{Real GNI}) \\ (r = .99)$$

Given the almost perfect correlation between these two measures, the slope of the relationship takes on interesting significance. Equation 2 states that during the decade of the 1970s each R1.0 million increase in national income was associated with an increase of R1.05 million in imports from South Africa. In other words every Rand of additional income was matched by a Rand of additional imports. Allowing for some impact of foreign assistance related imports, one can still say that little of the increase in purchasing power during the 1970s was captured by the domestic economy.

One must also note the relationship between imports and Customs Union receipts. While the formula is complex, two basic factors are the value of Lesotho's imports in a given year plus the difference between that value and the equivalent figure two years later. These operate as follows:

- a. The higher is the value of imports, the higher the numerator of the Customs Union revenue formula, and thus the higher are receipts.
- b. The faster this value grows, the larger will be the difference over two years. This difference is also added to the numerator, thus increasing revenue receipts by Lesotho.
- c. Because of the inclusion of the two-year differential, a change in imports only shows up in changed revenues two years later.

As imports rose following the mine wage increase the foundation was built for a major increase in Customs Union revenues. However, as mine wages stopped rising in real terms so also did the value of imports. As a result the real value of SACU revenue will tend to stagnate as well, although the correspondence is not perfect due to the five other components of the revenue equation. Should the value of imports remain constant in actual monetary terms then SACU revenues would decline as a result of the disappearance of the two year difference component.

Finally, a decline in migration has been projected for Lesotho (Eckert and Wykstra, 1979a). If this phenomenon occurs and South African mine wages remain constant, real income growth in Lesotho will be depressed. If, in fact, real GNI declines, then Equation 2 would suggest a direct decline in imports would occur. In such a case, government revenue from the Customs Union could decline precipitously.

Table 5 examines aggregate demand and supply in detail. Prior to the 1970s, little growth is evident in any column. In real terms aggregate supply (GDP plus imports) was almost exactly the same in 1970/71 as it had been at independence in 1966. By contrast substantial change has occurred since 1970/71 with the real value of imports and GDP increasing annually at 23 percent and 6.5 percent respectively.

Examining aggregate demand since 1970/71 presented in Table 5 in current prices, one finds the fastest growth rate occurring in gross domestic investment. During the period, largely as the result of major increases in donor commitments to the development effort, investment rose from 6.8 to 10.9 percent of total demand. Government and private consumption expenditures both increased at approximately 25 percent annually in monetary terms.¹ Together they accounted for 78 percent (236.5 out of

¹ Government spending rose at 27 percent per year and private spending at 24 percent from a much higher base.

Table 5. Aggregate Supply and Demand in Lesotho

Year	Aggregate Demand					Aggregate Supply				
	Consumption		Gross Domestic Investment	Exports (Goods & NFS)	Total	Current Prices		Imports ÷ GDP	1970 Prices	
	Gov't	Private				GDP	Imports		GDP	Imports
1966/67	5.1	49.8	4.1	4.4	63.4	40.5	22.9	.57	45.6	25.8
1967/68	6.8	50.5	4.7	4.2	66.2	42.3	23.9	.57	46.2	26.1
1968/69	6.2	53.8	4.7	3.2	67.9	43.9	24.0	.55	47.1	25.7
1969/70	6.1	55.3	4.9	3.8	70.1	47.0	23.1	.49	49.0	24.1
1970/71	6.2	58.6	5.0	3.4	73.2	48.9	24.3	.50	48.3	24.0
1971/72	8.3	67.7	7.5	2.6	86.1	55.5	30.6	.55	51.6	28.4
1972/73	(details unavailable)			6.8	108.7	62.2	46.5	.75	54.2	28.5
1973/74	9.6	95.8	16.1	18.5	140.0	76.3	63.7	.83	59.5	49.8
1974/75	9.5	129.6	11.8	20.7	171.6	85.5	86.1	1.01	59.7	59.4
1975/76	19.6	156.2	28.4	24.1	228.3	102.5	125.8	1.23	62.0	76.1
1976/77	24.1	216.1	34.8	32.5	307.5	130.9	176.6	1.35	71.1	96.0
1977/78	32.9	268.4	41.4	34.2	376.9	160.2	216.7	1.35	75.1	101.6

Sources: 1966/67 to 71/72 - IBRD, 1976; 1973/74 to 1977/78 - IBRD, 1978.

Note: Figures differ slightly from other tables in this report due to difference in sources. While these figures are not official they are developed with a consistent methodology through time.

303.7 million) of the rise in monetary value of aggregate demand. In the absence of equal growth in domestic production, the rapid increase in incomes found its outlet in South Africa with the result that the earlier relationship between GDP and imports was reversed dramatically after 1972.

Table 5 leads to another interesting conclusion. Excluding foreign demand (exports) from GDP leaves an estimate of GDP allocated to domestic demand. Table 6 summarizes the calculations drawing selected data from Table 5 and the price index from Table 3. Since 1970/71, real demand (excluding foreign demand) has grown at 12.9 percent annually while the component of GDP intended for domestic utilization has grown only at 4.0 percent. As a consequence imports grew at 22.9 percent in real value. As incomes began to rise rapidly so did the marginal propensity to import. During the period of most rapid growth in mine wages (1972-75) the propensity to import goods and services exceeded 1.0 and there was actually a slight diversion of purchasing power away from the domestic economy. As the domestic economy began to grow (1976 onwards) it has been possible to partially reverse this situation with the domestic economy capturing a larger share of annual growth in total demand. In part, however, this has been facilitated by the lower growth rate in incomes (demand) that are now occurring because of declines in real remittances which began in 1976.

In summary, the mine wage increase elevated incomes in Lesotho much more rapidly than the domestic economy could accommodate. The result was very heavy growth in imported goods of all kinds, a serious imbalance in the trade deficit and a dramatic increase in the dependency of Basotho consumers on the South African market. Data in Table 6 imply that stagnation of the domestic economy was prolonged and accentuated during the actual period of the increase (1972-1975). It has only been since mine wages stopped growing in real terms that Lesotho's economy has shown measurable growth based on its own internal demand.

It is only fair to point out that part of the above time path is a historical accident and that mine wages cannot be solely responsible for the sequence of events depicted. Lesotho's First Five Year Plan was conceived as a period of preparing the groundwork for development. It was only during the Second Five Year Plan (1975-80) that development programs began to have measurable impact on economic growth. Consequently, progress toward a more healthy domestic economy would have become apparent toward the end of the decade even without a plateau in mine wages.

Table 6. Allocation of Lesotho's Aggregate Demand excluding Demand from Foreign Sources (figures in millions, 1970 price level)

Year	GDP	Exports	GDP for Domestic Economy	Demand Excluding Exports		Imports		Marginal Propensity to Import
				R	Δ	R	Δ	
1966/67	45.6	5.0	40.6	66.4	-	25.8	-	-
1967/68	46.2	4.6	41.6	67.7	+ 1.3	26.1	+ 0.3	*
1968/69	47.1	3.4	43.7	69.3	+ 1.6	25.7	- 0.4	*
1969/70	49.0	4.0	45.0	69.1	- 0.2	24.1	- 1.6	*
1970/71	48.3	3.4	44.9	68.9	- 0.2	24.0	- 0.1	*
1971/72	51.6	2.4	49.2	77.6	+ 8.7	28.4	+ 4.4	.51
1972/73	54.2	5.9	48.3	88.8	+11.2	40.5	+12.1	1.08
1973/74	59.6	14.4	45.2	94.9	+ 6.1	49.8	+ 9.3	1.52
1974/75	59.7	14.2	45.4	104.1	+ 9.2	59.4	+ 9.6	1.04
1975/76	62.0	14.6	47.4	123.5	+19.4	76.1	+16.7	.86
1976/77	71.1	17.7	53.4	149.5	+26.0	96.0	+19.0	.77
1977/78	75.1	16.0	59.1	160.7	+11.2	101.6	+ 5.6	.50

*Changes too small for significant measurement.

Source: IBRD as presented in Table 5.

Migrant Remittances and the Economics of the Household

Incomes changes of the magnitude depicted above must have profound implications for individual households. Dramatic changes in income from different sources can alter household consumption patterns as well as the incentives faced by household head/farm managers. This section briefly examines changes occurring in the incomes of rural households caused by the mine wage increase.

Two existing studies detail rural household incomes by source. The first is based on field surveys conducted in 1967-69 and offers a picture of the situation preceeding the mine wage increase (Monyake, 1973). The second is a study by van der Wiel (1977) based on primary data from baseline surveys in the Thaba Tseka, Phutiatsana and Thaba Bosiu project areas. His much quoted work summarizes the composition of rural household incomes as of 1976, the final year of dramatic mine wage increases.

Table 7 combines these two sources with estimates for years surrounding 1976. To estimate 1974, 1975, 1977 and 1978, van der Wiel's figures were adjusted up or down by indices developed separately for each income source. Crop income adjustments reflect Lesotho's recorded production of five major

Table 7. Estimates of the Composition of Rural Household Income

		1967/68- 1968/69	1973	1974	1975	1976	1977	1978
Crops	Rand (%)	NA	NA	73 (14.6)	57 (8.5)	47 (6.0)	111 (11.7)	129 (12.3)
Livestock	Rand (%)	NA	NA	76 (15.1)	82 (12.2)	90 (11.5)	94 (9.9)	102 (9.7)
Subtotal, agriculture	Rand (%)	120 (40.8)		149 (29.7)	139 (20.7)	137 (17.5)	205 (21.5)	231 (22.0)
Off-farm, in Lesotho	Rand (%)	61 (20.7)	NA	62 (12.3)	75 (11.2)	92 (11.7)	114 (11.9)	140 (13.3)
Subtotal, Lesotho	Rand (%)	181 (61.5)		211 (42.1)	214 (31.8)	229 (29.2)	319 (33.4)	370 (35.3)
Migrant Remittances	Rand (%)	113 (38.4)	152 (45-50)	290 (57.9)	453 (68.2)	554 (70.8)	635 (66.6)	679 (64.7)
TOTAL	Rand	294	NA	501	672	783	954	1049
Source:		Monyake 1973		est.	est.	van der Wiel, 1977	est.	est.

Notes: Rand figures are in current values.
Methodology for estimated columns is described in text.

crops, each multiplied by its respective price index. Comprehensive data are unavailable for livestock production. Consequently, production was assumed constant and income adjusted to reflect producer's prices for livestock products. Off-farm employment incomes were inflated or deflated by the growth in modern sector jobs multiplied by Lesotho's price index as a proxy for wage levels. Migrant remittances per household were simply adjusted up or down in proportion to total migrant remittances from Table 3.

At the beginning of the decade remittances contributed approximately 40 percent to rural household incomes. By the end of 1976 this had escalated to 71 percent. The remittance component alone in 1976 exceeded the total household income estimate of just two years earlier. While details of other sources are not available, the remittance figure for 1973 is included to emphasize the rapidity with which this single element has changed.

With a change of this magnitude one would expect a rapid, though perhaps temporary, readjustment in household priorities. Sources of income requiring a substantial commitment of effort yet not showing much growth would tend to be de-emphasized. It is argued below that this is exactly what happened in the crops subsector. The very low figure for crop incomes in 1976 is a result of an abrupt decline in planted and harvested acreage together with excessive rainfall in 1976 which reduced yields of maize and sorghum to the lowest levels in history. In part, therefore, the reason that migrant remittances stood in 1976 at 70 percent of household incomes is because remittances had grown so rapidly and stood at such high levels by historic comparison that the incentives to seek incomes from other sources had been substantially reduced. Cropping, where investment decisions are made anew each season, suffered the most serious neglect. Food requirements were increasingly met by imported commodities purchased with remittance incomes. Such a substitution of purchased food for home produce is particularly easy when a country already imports 40-50 percent of its food and food marketing channels are well established.

The estimates in Table 7 reflect official statistics on crop production. Consequently these list a sharp rise in crop production and the resulting crop incomes following 1976. If, say, the 1977 figure is compared with 1974, annual growth can be measured at 15 percent, a rate only slightly higher than the rate of inflation. A cursory attempt to rationalize the existing crop statistics in light of the mine wage increase is presented in the section below.

Cropping and Mine Wage Levels

If the disincentives to cropping postulated above are fact, then significant adjustments must be apparent in national aggregate data. Two sets of time series data are available with which to test this hypothesis.

The first is data on acreage planted, presented in Table 8. After a gradual rise from the first census in 1949/50, planted area began a precipitous decline in 1973, concurrently with the mine wage phenomenon. By 1976/77 planted area had dropped 38.3 percent. Excessive rains fell in November of 1974 plus November and December of 1975. Farmers complained of too much water preventing plowing and planting of summer crops. Had planted area returned to normal levels in 1976/77, the declines of the two previous years could have been attributed to this factor. Instead, planted area fell by an additional 25 percent to the lowest figure on record.

Since planted area trends seem to be more thoroughly explained by the incentive pattern resulting from remittances, it is probable that this was the dominant factor in operation. At the same time a contributory role must be assigned to rainfall during the two years mentioned. However, the most persuasive explanation of overall area trends is that faced with a sudden rise in money income many households made a choice between additional (low paying) work in the fields and leisure and simply left many fields fallow. It is probably not coincidental that planted area has risen slightly in the last two years at the same time that the real value of migrant remittances has declined.

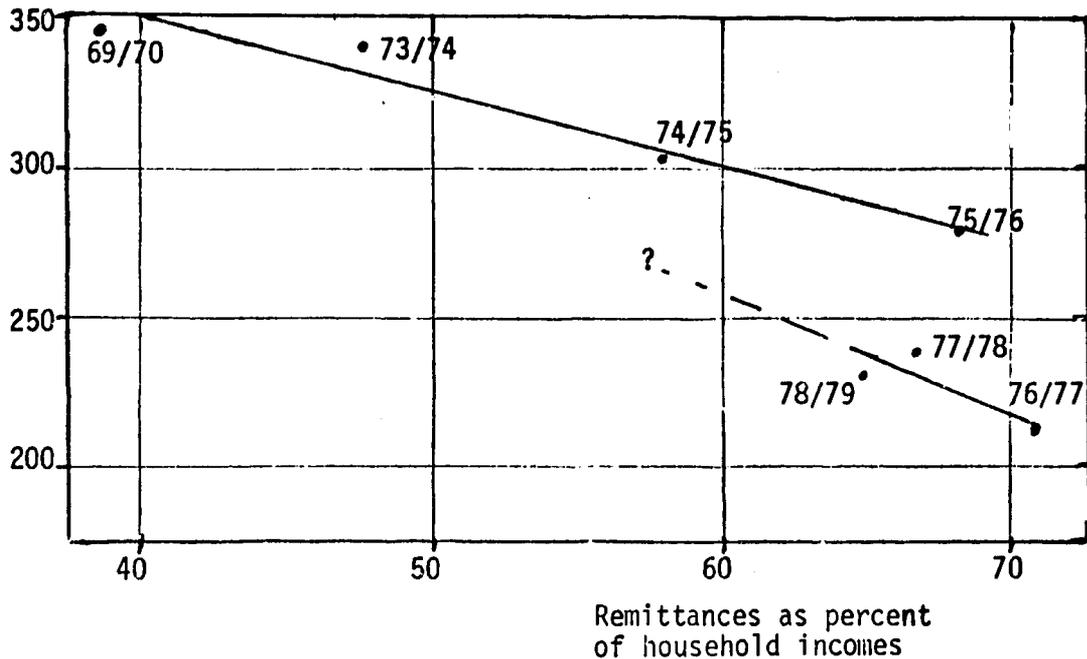
One could hypothesize that the amount of time invested in crop farming is inversely related to the proportion of household income derived from migrant remittances. Figure 1 depicts this relationship from data covering the past decade. A fairly close linear relationship characterized the adjustment path until 1976/77. In that year alone planted area dropped 25 percent from the previous figure, representing a significant de-emphasis of cropping as household heads became more confident in the permanence of their new income level. Data for the last three years tentatively suggest that at present a new relationship between remittance income and planted acreage exists representing a semi-permanent abandonment of 50-60,000 hectares. Perhaps only when migrant remittances decline well below half of household totals will planted area expand to former levels, if it does so at all. It is equally possible, however, that planted area will not again exceed 300,000 hectares and that Lesotho's transformation from an agrarian economy to an industrialized wage economy has been irreversibly launched.

Table 8. Area Planted to Field Crops in Lesotho
(All data from field surveys, in thousand hectares)

Crops	1949/50	1960/61	1969/70	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79
Maize	179.4	163.4	129.3	140.9	126.4	115.5	92.6	111.5	122.3
Sorghum	56.2	68.4	82.6	84.8	68.4	55.4	46.8	62.0	54.1
Wheat	49.2	67.7	106.4	82.1	63.4	59.7	43.9	45.6	38.0
Peas	8.5	17.6	12.2	11.8	14.4	13.1	9.7	5.7	6.6
Beans	2.5	5.6	16.4	21.3	30.7	35.1	17.3	14.3	11.9
Area Planted	295.8	322.7	346.9	340.9	303.3	278.8	210.3	239.1	232.9
Area Harvested	NA	309.8	296.5	319.5	255.8	224.7	186.2	219.0	214.7
Area "Failed"	NA	12.9	50.4	21.4	47.5	54.1	24.1	20.1	18.2

Sources: 1949/50 - Douglas and Tennant, 1952;
 1960/61 - C.M.H. Morojele, 1962, Vol. 4;
 1969/70 - Bureau of Statistics, 1972;
 1973/74 onwards from Annual Statistical Bulletins of the Bureau of Statistics.

Figure 1. Relationships Between Planted Area and Migrant Remittances



The second set of data concerns crop yields and is presented in Table 9. Yield data from the 1949/50 census have been soundly criticized on methodological grounds (Morojele, 1962) and are thus omitted. It must also be pointed out that yield data produced since 1969/70 have been controversial because of their severe fluctuations. Nonetheless, we believe that at least part of the major shifts can be interpreted in terms of the impact of rising remittances.

Using an average of 1960/61 and 1973/74 to represent the normal situation, recorded yields of all but wheat and beans dropped below "normal" levels in 1974/75 and 1975/76. By an extension of the logic employed above, if the incentive situation in these two years led to declining areas planted, then these same incentives should have led to a reduction in inputs applied. In Lesotho's context the input most likely to have been curtailed is weeding labor which has been shown to be one of the most important determinants of yield levels (Weinmann, 1966). Yields of maize, sorghum and beans were further depressed by excessive rain in 1975/76 as already noted. Wheat and peas did not suffer equally because a substantial portion of their total area is grown as a winter crop. The effects of the rainfall situation on yield could have been caused by three factors:

- a. Planting delayed until December or later, too late for optimal yield.
- b. Waterlogging under certain soils environments.
- c. Nutrient loss through excessive leaching.

Table 9. Crop Yields Recorded by Uniform Crop Cutting Field Surveys in Lesotho. (Yields in kg/ha)

Crop Year	Maize	Sorghum	Wheat	Peas	Beans	Comments	
						Rain	Evaluation
1960/61	687	783	850	683	243	+15%	Normal-good
1969/70	514	688	544	365	224	-30%	Severe drought
1973/74	945	1,008	745	706	381	+ 3%	Normal
"Normal" Average ¹	816	896	798	694	312		
1974/75	652	684	823	580	477	+10%	Normal-good
1975/76	579	555	799	569	292	+39%	Too much rain
1976/77	1,568	1,467	1,373	991	143	+15%	Normal-good
1977/78	1,408	1,447	1,359	1,018	974	+14%	Normal-good
1978/79	1,058	1,345	952	1,204	822	-16%	Oct-Nov very dry

Sources: Same as Table 8

¹ Average of the two years, 1960/61 and 1973/74.

Concurrent with the sharp drop to 210,000 planted hectares in 1976/77, recorded yields soared to unprecedented levels. This phenomenon has been sustained through the last three annual surveys and has become one of the more controversial issues in Lesotho's statistical base. Some changes in sample coverage were made in 1976 with the intent of including crops grown in the garden next to the house in national totals. However, recent re-examination of the primary questionnaires indicates that the area of major crops (as opposed to garden vegetables) included in the farmstead plots is nominal and could not have made more than a 3-5 percent change in the national yield averages. None of the other changes made in 1976 (such as the conversion to metric measurements) should have had any impact on recorded yields. Consequently, the abrupt change remains unexplained and has cast serious doubt on the validity of the data.

Two possible explanations may be suggested. First, when faced with an incentive to reduce or de-emphasize cropping, the rational farmer will leave his least productive fields fallow first. In Lesotho, with a

wide variety of soil types, a great many farmers had the option of constraining their cropping to good land and letting their marginal (or distant) fields return to grass. Second, having reduced cultivated acreage by nearly 40 percent in three years farmers were able to concentrate their inputs on the remaining area. The combination of much higher levels of inputs per hectare being applied to the more fertile and responsive soils is the only rationale that can explain a sudden and sustained jump of the magnitude recorded for crop yields.

Livestock Dynamics

Finally, the sudden increase in wages and consequent incomes wrought important changes in the livestock subsector. The most important of these was a sudden reversal of Lesotho's historic role as a net exporter of livestock. The balance shifted abruptly in 1975 when cattle imports hit an all time high and the trend continued, reinforced by a similar pattern in sheep and goats. By the end of the decade Lesotho was a net importer of nearly 100,000 live animals a year. The trend was exacerbated by the collapse of the livestock marketing system that handled exports. However, this factor cannot detract from the overall conclusions that the mine wage increase generated a fundamental shift in livestock trade for Lesotho.

The question of the destination of these massive imports is not yet fully explained. Numbers of animals in the resident herd do not reflect an accumulation as might be suggested by the trade data. Cattle numbers have risen only modestly (35-40,000) and sheep and goat numbers have declined rather sharply. One possibility is that most of the imported animals die shortly after arrival, but this hypothesis exists only in conjecture, not in the statistics nor the laboratory reports.

A more plausible explanation is that consumption of meat has risen sharply in response to higher incomes. Meat invariably has a relatively high income elasticity of demand. Furthermore the Basotho are known to prefer to sell only old stock after their utility has begun to decline. Cows are sold when too old to calve, oxen when they can no longer plow. It seems likely then that animal imports were largely for replacement of animals consumed and that a lowering of the average age in Lesotho's herd as well as an increase in per capita meat consumption have occurred simultaneously. Support is gained from the fact that the quantity of slaughtered meat imported to Lesotho increased 359 percent between 1973 and 1976. The different trends noted between large and small stock may simply reflect the strong Basotho preference for mutton and chevon which could have caused a disproportionate slaughter of sheep and goats. The concentration of cattle in the import mix reflects social as well as economic factors. The result has been a shift in the composition of the national herd toward a higher percentage of large stock. If sustained, this development will ultimately affect Lesotho's export trade in wool and mohair.

Table 10. Imports and Exports of Livestock (live animals)

Calendar Year	Cattle			Equines			Sheep and Goats			Net Total	
	Imports	Exports	Net	Imports	Exports	Net	Imports	Exports	Net	Actual	LSU*
1970	4,730	11,408	- 6,678	4,287	29	4,158	12,862	16,143	- 3,281	- 5,801	- 3,088
1971	6,869	9,556	- 1,787	4,842	67	4,775	16,253	10,867	5,386	8,374	2,990
1972	5,028	8,918	- 3,890	1,966	80	1,886	6,326	31,766	-25,440	-27,444	- 6,880
1973	4,067	12,894	- 8,827	2,867	132	2,735	3,691	31,211	-27,520	-33,612	-10,651
1974	3,046	9,225	- 6,179	502	120	382	3,205	19,141	-15,936	-21,733	- 7,863
1975	31,756	3,503	28,253	1,752	-	1,752	6,365	7,035	- 670	29,335	23,695
1976	33,821	1,250	32,571	2,086	-	2,086	9,236	2,267	6,969	41,626	28,911
1977	47,673	1,223	46,450	2,446	-	2,446	17,698	533	17,165	66,061	42,305
1978	57,787	592	57,195	4,569	-	4,569	36,361	486	35,875	97,639	56,129
1979	50,133	793	49,340	2,932	-	2,932	44,051	402	43,649	95,921	50,254

*Large stock units (LSU) calculated using following conversions:
 bovines = 0.8, equines = 0.7, small stock = 0.2.

Source: Livestock Division, Ministry of Agriculture.

Future Developments

Recent research has defined a series of economic conditions in South Africa which will determine the future of Basotho migration to that country. An unemployment crisis among South Africa's own Black labor force has forced a restructuring of employment policy to give highest priority to the allocation of almost all new employment to their domestic labor force. In addition, South Africa's productive capacity has been rapidly capitalized in recent years with the result that labor:output ratios have dropped to historically low levels. Much of this development has occurred recently so that it will be difficult to reverse the trend with many firms and industries presently operating with fairly new modern machines. Both of these factors will seriously limit options for the foreign worker in the future.

The best available estimate of the future for Basotho migrants is that numbers will decline gradually to approximately half of present levels by the end of the century. This probable outcome can be fairly well approximated by a compound rate of decline of 3 percent annually (Eckert and Wykstra, 1979). This reduction has apparently begun already since recent data show a decline of approximately 4 percent annually for the last two years.

Simultaneously it is believed that South Africa will respond to the recent rise in minerals prices (especially that of gold) by permitting a gradual increase in real wages for miners. For the sake of estimation an increase of 2 percent annually is assumed for the next five years. Using the relationship estimated in Equation 1, probable migrant remittances to Lesotho can be estimated as shown in Table 11 below.

Table 11. Estimated Future Pattern of Migrant Remittances to Lesotho
(Constant 1970 values)

Year	Real Wage/Shift ¹	Remittances Per Migrant ²	Number of Migrants ³	Total Remittances (000)	Remittance per Capita
1980	R1.300	R350	150,000	R52,521	R40.10
1981	R1.326	R357	145,500	R51,872	R38.68
1982	R1.353	R363	141,100	R51,236	R37.31
1983	R1.380	R370	136,900	R50,617	R35.99
1984	R1.407	R376	132,800	R49,980	R34.71
1985	R1.435	R383	128,800	R49,358	R33.47

¹ Estimated to grow at 2% annually.

² Derived from estimated real wage using Equation 1.

³ Estimated to decline at 3% annually.

These two factors together suggest that the remittance component of GNI will decline at 1.2 percent annually in real terms in the near future. It is also possible that a much more substantial decline could occur. Table 11 projects an annual 2 percent growth in real mine wages, which has not occurred in the recent past. In fact, Table 2 shows that real shift rates have declined at 1.6 percent each year since 1976/77. If this pattern is continued, remittances could decline at 4-5 percent annually.

To the decline in total remittances must be added the growth of population at 2.4 percent. Table 11 includes these calculations, again with an assumed growth of 2 percent annually of mine wages. If instead mine wages, and thus remittances per miner remain constant, then total remittances will decline at 3 percent annually and remittances per capita will decline at 5.4 percent per year reaching R30.83 per person by 1985. It will be noted in Table 3 that real per capita remittances dropped more than 9 percent in 1978/79 alone.

Whichever scenario or combination of events occurs, the future of migrant remittances will be one of decline. It is unrealistic to assume either stability in the number of Basotho migrants or that mine wages will increase fast enough to offset the decline in numbers of migrants. The remaining question then is how fast, not whether.

Growth in per capita real incomes will depend on a growth rate in GDP that offsets both the decline in foreign source income as well as increases in population. The probable range in GDP growth rates needed to maintain constant incomes is between 3.6 and 5.4 percent.¹ Lesotho has achieved an average growth rate of 4.4 percent in real per capita GDP since 1971/72 (Table 3). It would seem that for the near future a continuation of this annual accomplishment may be necessary just to prevent a decline in incomes.

It is thus apparent that for the next five years incomes may very likely stagnate. If so, one can anticipate a leveling off in the real value of imports with quite possibly no further increase. On the positive side this would gradually create a more healthy balance between imports and domestic production. Such a development would be a logical continuation of the type of change shown between 1976/77 and 1977/78 in Tables 5 and 6. On the negative side, a cessation of growth in the value of imports will be followed by a decline in the growth of Customs Union revenues.

Extending the above analysis to the household level, one would expect a continued decline in remittance contributions to household income as appears in the last two years of Table 7. The incentive structure should reverse to place more importance on domestic income sources including farming. This factor suggests that the situation will improve in

¹Population growth at 2.4 percent plus either 1.2 percent or 3.0 percent to cover declines in remittances discussed in paragraphs above.

the near future insofar as the prospect of agricultural development programs is concerned. Rural residents have adjusted their consumption patterns to accommodate their much higher incomes. As the migration option closes out and remittances diminish, they will seek to preserve their income level through domestic employment and more serious attention to farming. Acreage planted should increase, but probably along the more recent relationship shown in Figure 1. Available male labor per planted hectare should continue to increase and there should be a slow but perceptible reversal of the balance between male and female headed households.¹

Thus, simultaneously Lesotho's rural population should experience a growing incentive to generate incomes from agriculture and an increasing capacity to do so. The challenge for the development effort lies in providing enough appropriate means and knowledge to support farmers in this effort.

¹ Females head some 60-70 percent of households today.

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