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Volume Author/Editor: J. Clark Leith

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Chapter Author: J. Clark Leith

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CHAPTER IV

Growth factors

1. Introduction

Economic growth as a means of achieving high living standards has long been one of the primary objectives of Ghanaian policy. Attention has repeatedly been focused on measures to accelerate economic growth. A significant manifestation of this emphasis has been a series of development plans dating back to the 1920's.[1] With the attainment of independence in 1957 planning for growth and development was given a renewed emphasis and the preparation of a five year plan begun.[2]

In launching the plan on March 4, 1959, Prime Minister Nkrumah set out the objective: "to give us a standard of living which will abolish disease, poverty, and illiteracy, give all people ample food and good housing, and let us advance confidently as a nation."[3] The swing to socialism in the early 1960's changed the techniques, but not the objectives. The Seven Year Plan, designed within the guidelines of the socialist Program of Work and Happiness of the Convention People's Party, emphasized that the choice of a socialist form of society was designed to "assure Ghana a rapid rate of economic progress without destroying that social justice, that freedom and equality, which is a central feature of our traditional way of life."[4] And after the overthrow of President Nkrumah the National Liberation Council's Two Year Development Plan included both the short-term objective of providing the foundations of self-generating growth and the long-term objective of "an improved rate of growth of national income through a sustained high rate of development... ."[5]

1. The first plan was Governor Guggisberg's Ten Year Development Plan (1920–1930), designed to provide the country with an advanced physical and social infrastructure. In the post-World War II period the "ten year plan" was launched in 1951.
2. This is referred to as the Second Five Year Plan, while the 1951 plan is referred to as the First Plan.
3. Quoted by E.N. Omaboe in W. Birmingham *et al.*, eds., *A Study of Contemporary Ghana*, Vol. I, *The Economy of Ghana*, Northwestern University Press, Evanston, 1966, p. 446.
4. Quoted by Omaboe, *ibid.*, p. 453.
5. Republic of Ghana, *Two Year Development Plan: From Stabilization to Development for the Period Mid-1968 to Mid-1970*, Accra, 1968, p. 2.

The ambitious statements of intention have not been matched by performance. The key indicator of real per capita gross national product posted even a decline during the 1960's (see Table A-1). Further, if we consider the relationship between growth of factor supplies and growth of output, we discover not the usual positive residual, but a negative one. In real terms, the difference between the growth of output and the growth of factor inputs (weighted by 1960 factor shares) over the period 1960 to 1969 amounts to −16 percent.[6] The coincidence between the evolution of a restrictive trade and payments regime and the economic atrophy is obvious, and poses the question to be faced in this chapter: what effect, if any, did the restrictive system have on the factors directly influencing economic growth?

A generally necessary but by no means sufficient condition for growth in the productive capacity of an economy is accumulation and efficient use of capital. For this reason we begin with a review of Ghana's savings and investment performance (section 2). We then consider the nature of the relationships between the control system and the processes of saving and of investing (section 3). Finally, we examine in as much detail as possible the specific growth-related responses of economic units to the control system (section 4).

2. *Savings and investment performance*

During the 1960's Ghanaian savings and investment performance deteriorated rapidly. The available evidence indicates that the domestic savings potential was not tapped, with the result that savings as a proportion of income fell. Investment, often treated as an objective rather than a cost, was maintained via an import surplus, but with a very low productivity.

We shall first consider domestic savings. The savings series is derived as a residual, as no direct estimates are available. We deducted from total gross domestic fixed capital formation the contribution made by the import surplus to yield a rough approximation of internally generated savings (including depreciation) that were applied domestically (Table IV-1). Looking at the

6. The output measure is the real percentage growth of GDP, which grew by 24.5 percent (Table A-1). The growth of real capital stock was 103.1 percent, and the growth of labor force was 26.8 percent. Shares of output in 1960 were 0.18 for capital and 0.82 for labor. These data are from T.M. Brown, "Macroeconomic Data of Ghana," *Economic Bulletin of Ghana*. Second Series, Vol. 2, No. 1, 1972. Note that Brown's share of capital in output for 1960 is probably understated, resulting in an (absolutely) understated residual. For example, if the share of capital were 0.30 the residual growth would have been −25.2 percent. This calculation omits the contribution of land for which no data are available. In the context of Ghana in the 1960's this is not a major omission, for there was neither a major shortage of land nor a major increase in land under cultivation.

Table IV-1
Domestic capital formation and related macro variables at current market prices
(in millions of new cedis)

	Gross national product (1)	Gross dom. fixed capital formation (2)	GDFCF percent of GNP (3)=(2)/(1) percent	Import surplus (IS) (4)	Dom. sav. = GDFCF minus IS (5)=(2)−(4)	Dom. sav. as percent of GNP (6)=(5)/(1) percent
1955	676	104	15.4	−9	113	16.7
1956	701	112	16.0	15	97	13.8
1957	734	112	15.3	21	91	12.4
1958	776	110	14.2	−30	140	18.0
1959	884	154	17.4	12	142	16.1
1960	945	194	20.5	50	144	15.2
1961	1,008	210	20.8	82	128	12.7
1962	1,084	184	17.0	30	154	14.2
1963	1,190	218	18.3	56	162	13.6
1964	1,345	232	17.2	36	196	14.6
1965	1,589	271	17.1	124	147	9.3
1966	1,779	246	13.8	66	180	10.1
1967	1,757	213	12.1	35	178	10.1
1968	2,028	224	11.0	−15	239	11.8
1969	2,285	242	10.6	−31	273	11.9

Sources: IMF, *International Financial Statistics,* 1971 Supplement; *Economic Survey,* 1969, for 1968 and 1969.

domestic savings relative to gross national product one sees that, despite the year-to-year fluctuations, there are three distinct periods: a moderately high rate in the pre-restriction period (1955–1961), a lower average level – by about 2 percentage points – in the restrictive period of the Nkrumah regime (1962-1965), and an even lower – by a further 3 percentage points – but more stable average level under the National Liberation Council government (1966-1969).[7]

A major shortcoming of the residual approach to calculating savings is that many of the errors and omissions in national accounts data are incorporated in our savings estimate. As a proportion of national product these errors may be small, but as a proportion of savings they are probably large. Nevertheless,

7. We have not included a similar calculation based on a constant price series, largely because the magnitude of the import surplus in constant prices fluctuates drastically from year to year due to the instability of cocoa prices, which in the Ghanaian case is not an exogenous price movement.

the changing pattern we observed in the series is so strong that it is difficult to imagine that data problems are entirely responsible.

On the investment side, gross domestic fixed capital formation relative to GNP, while highly variable as in any country, also shows some clearly discernible periods. From 1955 to 1960 with a relatively open economy, investment maintained a moderate level peaking in 1960 and 1961, then declining throughout the subsequent restrictionist period, and dropping further with the post-*coup* austerity.

Of more interest is the response of output to the substantial additions to capital stock, for this indicates the extent to which the capital was used productively. One measure is the incremental output–capital ratio. In order to smooth out erratic year-to-year fluctuations in the series we have computed three-year moving averages centered on the mid-year for each of incremental gross domestic product and gross domestic fixed capital formation, both in constant 1960 prices. While this is inevitably a crude measure, it does provide us with an indication of broad trends. The results (Table IV-2) strongly suggest that the overall productivity of capital declined sharply in the period

Table IV-2

Gross domestic product, gross domestic fixed capital formation; three-year moving averages of incremental GDP and GDFCF (centered on mid-year), and ratios of moving average GDP/GDFCF (constant 1960 prices, in millions of new cedis)

Year	GDP (1)	GDFCF (2)	Moving average increm. GDP (3)	Moving average GDFCF (4)	Ratio (5) = (3)/(4)
1955	710	120			
1956	752	120		118.7	
1957	776	116	18.0	117.3	0.153
1958	774	116	45.7	132.0	0.346
1959	889	164	60.0	158.0	0.380
1960	956	194	75.3	186.0	0.405
1961	990	200	49.7	192.0	0.259
1962	1.038	182	39.3	199.3	0.197
1963	1,074	216	35.7	206.3	0.173
1964	1,097	221	28.0	229.0	0.122
1965	1,122	250	13.0	226.0	0.058
1966	1,113	207	12.0	203.7	0.059
1967	1,133	154	9.0	167.7	0.054
1968	1,149	142	25.7	147.7	0.174
1969	1,190	147			

Sources: (1) and (2), *Economic Survey*, 1967 and 1969, for 1959 through 1969; Birmingham *et al.*, *Economy of Ghana*, p. 50, for 1955 through 1958.

Table IV-3
GDP, capital stock, and output/capital ratios
(in millions of new cedis, constant 1960 prices)

Year	GDP (1)	Capital stock (2)	Output/capital ratio [(3) = (1)/2]
1955	710		
1956	752	417.6	1.8008
1957	776	504.53	1.5381
1958	764	583.8	1.3087
1959	889	701.61	1.2671
1960	956	842.15	1.1352
1961	990	979.61	1.0106
1962	1,038	1,091.3	0.9512
1963	1,074	1,229.84	0.8733
1964	1,097	1,363.33	0.8046
1965	1,122	1,516.88	0.7397
1966	1,113	1,616.19	0.6887
1967	1,133	1,656.03	0.6842
1968	1,149	1,681.36	0.6834
1969	1,190	1,710.18	0.6958

Sources: (1) same as in Table IV-2; (2) computed by T.M. Brown, *op. cit.*

following restrictions, plummeted to incredibly low levels in the late Nkrumah period and the austerity of the early NLC government, and only began to recover slightly in the late NLC period.

A second, related, measure involves the use of a capital stock series as constructed by T.M. Brown.[8] The resulting output–capital ratios (Table IV-3) show a similar rapid decline in the average productivity of capital, in constant 1960 prices, which was checked only by 1969.

Several explanations of the deteriorating savings and investment performance of the Ghanaian economy are available. While a full explanation of the determinants is beyond our scope, an important issue requires our attention: what was the role of the restrictive trade and payments regime in the results we have just outlined? In answering this question we consider in the next section the mechanism whereby the restrictive regime was a permissive ele-

8. T.M. Brown, "Macroeconomic Data of Ghana," *op. cit.* This series was built up by using Szereszewski's estimates of gross capital stocks for 1960 (as contained in W. Birmingham et al., *op. cit.*), and assuming that they were one-half depreciated at that time. Given this benchmark, annual stocks were estimated from this benchmark, using the perpetual inventory concept – with gross investment providing additions to, and depreciation in capital destruction providing deductions from, the stock for each period. The aggregate stock figures were built from three separate series: plant and construction, transport equipment, and machinery and equipment.

ment in the poor savings and investment performance. Then in section 4 we consider a number of specific ways in which the restrictive regime may have contributed to the situation.

3. Saving, investing, and the restrictive regime

In this section we examine the role of the restrictive regime, broadly defined, in making possible the poor savings and investment performance. Consider first the savings rate. Potential savers regard actual saving as costing them something-foregone current consumption. If the return to them in terms of increased future real consumption is not worth the cost they simply refrain from saving, preferring instead to consume today.

Ghana is a country with limited monetization. This combined with unresponsive nominal rates of interest in the monetized sector (see below) severely limits the opportunities to hedge against inflation via higher nominal rates of return on financial assets. As a result, the savings rate in Ghana is particularly vulnerable to inflation. When the control system closed the economy, permitting the emergence of domestic inflation (see Chapter II, section 6), potential savers appear to have discovered that the real gain from foregone consumption was less because of inflation. Evidently they responded as could be expected: savings rates declined. Our hypothesis is that this negative relationship between inflation and savings was more than mere coincidence.

Precise specification of the relationship between inflation and the savings rate is complicated by a number of factors. First, as we noted earlier, the savings series is far from ideal. The data are derived as a residual, with the resulting incorporation of errors and omissions in the savings series. A second difficulty arises from the fact that disaggregated data are not available, obviating study of the important individual sectors such as government, household, and business. Government saving is particularly difficult to deal with, because it may not respond to inflation the way the private sector does, and major policy shifts, such as the austerity of the NLC government, can mask the overall relationship. Third, the response of savings rates to inflation is slow and uncertain in Ghana, but annual data make it difficult if not impossible to discover meaningful lag relationships. For these reasons any estimate of an aggregate relationship between inflation and savings is open to wide margins of error.[9]

9. It is worth noting in passing that a simple naive model does seem to work. We regressed the savings rate on the inflation rate, using a dummy variable to capture the effect of the NLC austerity period in reducing government savings. To smooth out erratic year-to-year changes and to allow for the slow and uncertain response of savings rates to inflation we used the (weighted) average savings rate in percent over the previous three years (SAVE RATE) as our dependent variable for each year, and

The low productivity of investment also requires some explanation. In this, the key point is that investment is a cost to the economy because it uses up real resources. It is not an objective to be attained. Potential investors, however, only regard it as a cost to the extent that they bear the costs. If the system is such that the real benefits are overstated or real costs understated to the investor, the real productivity of investment will likely be low.

There were two ways in which such misstatements of real benefits and costs of investment arose. First, the restrictive trade regime changed the relative attractiveness of export- and import-competing production. Thus we saw in Chapter II, section 6 how the price-level-deflated effective exchange rates for non-cocoa exports declined relatively more than the rate for imports during the decade of the 1960's (Table II-8). And on the import side the licencing system induced quota premia which acted in addition to the effective exchange rate to further pull resources toward import-competing production. We then saw in Chapter III, section 1 the shifts in the structure of domestic production valued at current domestic prices. Export sectors such as mining, sawmilling and cocoa showed relative declines while the largely import-competing manufacturing sector moved ahead. To accomplish such shifts in the relative structure of domestic production required the transfer of real resources between the sectors. In nominal terms, output in the expanding sectors rose; but higher and higher cost resources were called upon to increase the output, so that the relative real expansion of output did not keep pace with the nominal. As a result, the real productivity of the resources drawn into the favored sectors deteriorated.

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the average compound percentage rate of inflation from 3 years previous (INFL RATE) as the independent variable. From the savings rates and the inflation rates computed in this way (from Tables IV-1 and IV-5) we obtained the following result:

$$\text{SAVE RATE} = 15.64 - 0.323\ \text{INFL RATE} - 2.57\ D$$
$$(29.94)\ (4.142)\qquad\qquad (3.98)$$

$R^2 = 0.85$
D.W.= 1.41
D.F. = 8

(D = 0 from 1959 through 1966; D = 1 from 1967 through 1969)

The explanatory power of the equation is high; the coefficients are significant at the 1 percent level (two-tailed test); and the Durbin–Watson is inconclusive. The savings rate does appear responsive to the rate of inflation. An increase of 5 percentage points in the rate of inflation is met by a decrease of about 1.6 percentage points in the percentage of GNP saved. At the means, the elasticity of the savings rate with respect to the inflation rate is −0.145. In addition, the austerity of the NLC period apparently reduced the savings rate significantly.

Second, there emerged specific discrimination among otherwise equally productive sources and uses of investable resources. Different savers arbitrarily received different rates of return. And the available savings were distributed arbitrarily among investors. This arose from the increasingly noncompetitive segmentation of the Ghanaian capital market.

Since we have not dwelt on this theme in previous chapters, it merits some elaboration here. A highly developed capital market often contains numerous segments designed to provide a variety of instruments which differentiate among lenders and borrowers on various economic bases such as risk, size and term of investment. Such differentiation and a consequent appearance of segments is typically the result of a competitive market working to meet the special needs of a great variety of savers and investors. But because it is a consequence of a competitive market, each segment is linked closely with all others, and the system as a whole adjusts rapidly to the changing circumstances.

The segmentation of the Ghanaian capital market was in sharp contrast with such a competitive segmentation. The prime mover in the capital market was the government. It correctly recognized that an efficient well-developed capital market would be a major source of strength in promoting economic development. Its basic strategy – creating several new capital market institutions – was undoubtedly correct. The difficulties arose in the socially suboptimal policies followed by many of the capital market institutions, both old and new. As we noted above, low interest rates probably contributed to the deteriorating savings performance, while loan allocations unrelated to the real productivity of investment contributed to the falling productivity of capital. A further element, which we shall explore in the next section, was the distorted choice of techniques in production arising from non-price rationing of loans.

The government relied on the Bank of Ghana for a large proportion of the credit required to float the new institutions. The Bank's claims on the government grew rapidly from 1962 onwards, exceeding 30 percent of total domestic credit by 1965, and remaining above that figure since.[10] The extension of a large volume of credit to the government is not in itself an unusual development, as governments the world over frequently rely on the Central banks to finance their own deficits. It does however represent a change from the previous system in which government deficits were largely financed from abroad. No longer was the test of credit worthiness immediately faced as deficits expanded. Money creation could be used instead.[11]

10. See IMF, *International Financial Statistics*, Line 12c.

11. N. Ahmad has estimated that 36 percent of the government deficits in the period 1962 through 1965 were financed by money creation. Ahmad, *op. cit.*, Table 4, p. 43.

The government used its newly acquired credit not only to finance its day-to-day deficits, but also to direct large blocks of the funds at its disposal to a variety of new government financial corporations. First, in 1963, it established the National Investment Bank (NIB) as a loan window to "finance, promote and assist enterprises in all sectors of the national economy."[12] Using a paid-up capital beginning at N¢ 6.5 million (1963) and rising to N¢ 10.2 million (1970) – about 70 percent of which was paid by the government – and borrowing on the capital, the NIB has made loans, issued guarantees and purchased equity in a variety of projects.[13] It has undoubtedly met a demand for small and medium-sized loans (N¢ 10,000 to N¢ 1,000,000) on longer terms of three to twenty-five years that was not being met by other segments of the capital market. What is not so evident is whether or not the NIB has allocated capital as a scarce resource. Its loan rates, reportedly generous, have not been published. The NIB has not, however, generated a substantial return on shareholders' equity, yielding 2.64 percent (1968), 2.83 percent (1969), and 2.73 percent (1970).[14] In the absence of substantial default on risky investments this does not represent a high rate of return on the capital at its disposal.

A second government financial institution, the Agricultural Development Bank, has been operating under various names and forms since 1964. Its major function has been the provision of credit to agriculture, although it also accepts deposits. Its lending resources have been made up almost entirely of paid-up capital from the government and the Bank of Ghana, plus some borrowing, and very limited deposit accounts.[15] The infusion of capital into the agricultural sector was not insignificant relative to the commercial banks' activities in that sector. The ADB had outstanding loans exceeding N¢ 6 million at the end of 1970, compared with commercial banks' loans and advances outstanding of N¢ 10 million to the same sector at the end of 1969 (latest date figures available). However, relative to total commercial banks' loans and advances for all sectors (N¢ 149 million, end of 1969) the combined loans of the commercial banks and the ADB to the agricultural sector has been small, given the size of the agricultural sector in the economy. The rate charged on loans has ranged from 7 percent to 9 percent, based on factors such as the bank rate, the ADB's borrowing rate, the rate at other Gha-

12. National Investment Bank, *Directors' Report for the Year Ended 31 December*, 1969.
13. It of course has some additional functions including investment promotion, post-financing surveillance of projects, and consulting services.
14. Calculated from NIB profit statements and balance sheets for the years indicated.
15. While growing rapidly from a small base, at the end of 1970 deposits amounted to N¢ 368,000 compared with paid-up capital on N¢ 10,554,000, or 3.5 percent of the latter.

naian financial institutions, and the financial prospect of the project.[16] While clearly not a deliberate low-interest policy, given a similar level of rates by commercial banks, the interest rate range has been narrow and has not extended to levels that would permit loans to riskier ventures.

The most important government financial corporation by far, is the Ghana Commercial Bank. Established in the early 1950's, it has now become the largest commercial bank, with about 75 percent of the total commercial bank assets in the country by mid-1970, and is currently a highly profitable operation. In many ways it has met the original objective of setting the pace for the expatriate commercial banks, showing the way in expansion of branches and engaging in a less-risk-averting loan policy. It has, however, continued to pay the same low interest rates on deposits as its competitors.

Fourth, the Ghana Savings Bank was designed to provide a convenient deposit window for savers throughout the country. While it succeeded in doing that, its deposit rate has, along with the commercial banks, been low.[17] This, combined with the bureaucratic nature of the operation, kept the level of deposits at a relatively low and stagnant level throughout the 1960's. From N¢ 10 million at the end of 1960, deposits declined to N¢ 8.4 million at the end of 1963, and subsequently recovered to N¢ 9.7 million at the end of 1970.[18]

Fifth, a major segment of the organized mortgage market has been a small government-sponsored intermediary, the First Ghana Building Society. It has issued shares (mostly to the government) and accepted deposits with limited withdrawal privileges at interest rates in 1971 of 5 percent and 6 percent, but formerly 4½ percent and 5 percent. Its deposits were less than N¢ 270,000 at the end of 1969. Additional funds from shares amounting to N¢ 2.60 million enabled the Society to hold 651 mortgages at the end of 1969, valued at N¢ 2.63 million. Lending rates have been about two or three percentage points above the borrowing rates.[19]

The government did not confine its transfer of credit to its own financial institutions. Large amounts of capital were made directly available to government corporations. The original share capital was provided sometimes in total, sometimes in part, by the government. In addition, loans at zero interest rates were made in a variety of ways to several public enterprises. Occasionally these loans were in the form of advances to undertake specific activities, but more often than not they were made necessary by the public

16. Agricultural Development Bank, *Organization and Functions*, Accra, 1968.
17. To early 1971, the deposit interest rate was $2\frac{1}{2}$ percent, and subsequently 5 percent.
18. IMF, *International Financial Statistics*, 1971 Supplement, and December 1971.
19. See latest available First Ghana Building Society, *Annual Report*, 1969, Accra, March 1971. Since its inception in 1956 the total number of mortgages issued has been 838.

enterprise's deficit which the commercial banks would not cover. The data on such loans are limited, but what is known appears as a line in the government accounts (see Table IV-4).

Various other methods of borrowing from the government have been used by the state enterprises. For example, the Auditor General noted, in reporting on the last year of the Nkrumah era, instances in which state enterprises were unable to pay accrued indirect taxes such as Social Security Fund contributions and Sales Tax liabilities, and cases in which the authorized capitalization was exceeded by unauthorized investment in machinery.[20]

Two expatriate commercial banks, subsidiaries of Barclay's Bank D.C.O. and of the Standard Bank group, have a long history in Ghana, mostly financing the large traders and cocoa exports. While relatively less significant in the overall picture than they were during the colonial era – due to the growth of the Ghana Commercial Bank and the Bank of Ghana – their conservative practices seem to have set the tone in many aspects of commercial banking. For example, the interest rate on savings deposits since 1960 remained within one-half a percentage point of three percent. The prime rate on loans and overdrafts secured by government securities ran at $5\frac{1}{2}$ percent in the early 1960's, rising to 7 percent in the austerity period following the *coup*, then falling to $6\frac{1}{2}$ percent at the time of the 1967 devaluation – where it has since remained. Further, the unsecured loan rate range begins at only one-half to 1 percent above the prime rate, and rises to only 10 percent, a ceiling which remained constant throughout the 1960's.[21]

This quick review of segmentation in the Ghanaian capital market strongly suggests that segmentation developed not because the competitive market was at work, but often because the competitive market was suspended. For particular investors the admittedly imperfect capital market allegedly did not provide "adequate" or "cheap" enough capital, and special institutions were established to do just that, sheltering these investors from competing demands for capital. In a similar vein, developments on the savings side in no way suggest a competitive differentiation designed to provide for a variety of situations. Rather, the policy toward savers appeared to have been one of almost total neglect, with little long-term development of new instruments.

The noncompetitive segmentation of the organized and regulated sector of

20. See Republic of Ghana, *Report by the Auditor General on the Accounts of Ghana for the Period 1 January, 1965 to 30 June, 1966*, Accra, March 1968.

21. For details, see Bank of Ghana, *Report of the Board for the Financial Year Ending 30 June*, 1970, p. 59. Unfortunately no data are available on the actual rates at which loans were made, which might give a picture of more flexibility than the published rates do. However, the very strong impression one obtains in Ghanaian banking circles is that non-price rationing of credit is a major device extensively employed.

Table IV-4
Central government capital account
Payments: loans to public enterprises, 1961–1969 (in thousands of new cedis)

Year	Value
1961	2,968
1962	95
1963	–
1964	–
1965	26
1966	580
1967	333
1968	1,332
1969	–

Source: *Economic Survey*, 1969, p. 113.

the Ghanaian capital market has made it possible to maintain low nominal interest rates in the face of substantial changes in the domestic price levels. Two issues are important: the rate of inflation, and variations in that rate. Using the GDP deflator as a price index (Table IV-5), the average compound rate of inflation during the decade of the 1960's was nearly 8 percent per annum. There was, however, considerable year-to-year variation, such as the rapid inflation of 1965 and the deflation of 1966–1967. This experience, when set against the interest rates on deposits and loans in the organized institutional segments of the capital market, suggests that : (a) most deposit rates were on average negative in real terms; (b) few lending rates were much above zero in real terms; (c) changes in the rate of inflation were seldom reflected in deposit and lending rates. In sum, the institutional capital market's nominal rates were extremely low relative to, and unresponsive to changes in, the degree of domestic inflation.[22]

Given the negligible attention paid to pricing of capital in response to domestic developments, it is not surprising to find also a neglect of foreign developments. The use of capital account controls to isolate the domestic capital market from international capital markets could be considered an appropriate strategy. To the extent that the social marginal productivity of capital in the domestic economy exceeded the rate of return on capital abroad, the isolation of the domestic capital market from foreign influences could divert domestic savings to domestic uses which would be a social gain.

22. This does not suggest that individual institutions were behaving irrationally. On the contrary, the large volume of credit flowing through particular segments such as the commercial banks may have proved highly profitable.

Table IV-5
GDP deflator index, 1956–1969 (1960 = 100.0)

Year	Index	Percent change from previous year	From 3 years previous	
			Percent change	Annual compound rate (percent)
1956	91.97			
1957	92.32	0.38		
1958	101.11	9.52		
1959	100.11	−0.99	8.85	2.9
1960	100.00	−0.11	8.32	2.7
1961	103.20	3.20	2.07	0.7
1962	105.40	2.13	5.28	1.7
1963	112.48	6.72	12.48	4.0
1964	123.70	9.98	19.86	6.2
1965	144.60	16.90	37.19	11.1
1966	161.10	11.41	43.23	12.7
1967	156.93	−2.59	26.86	8.3
1968	179.90	14.64	24.41	7.5
1969	195.63	8.74	21.43	6.7

Source: Computed from GDP at current and at constant prices, *Economic Survey*, 1967 and 1969, for 1959 through 1969, and Birmingham *et al.*, *Economy of Ghana*, p. 50, for 1955 through 1958.

Yet despite the imposition of exchange control, the Ghanaian capital has remained linked to outside markets. Borrowers not satisfied in the domestic market, including the government, frequently turned to the international capital market, and often at substantially higher rates of interest. A large external debt was accumulated at rates of interest ranging from near zero up to 15 percent or more on suppliers' credit (Table IV-6). In addition to formally contracted loans, less explicit borrowing took place via devices such as the compulsory 180-day credit scheme on imports, arrears on foreign-exchange remittances for imports, and limitations placed on remittances by foreign-owned firms.[23] Ghana inevitably was charged interest on these loans either explicitly or implicitly, at rates which reflected the cost of capital in the supplying countries plus a risk premium to cover the lenders' uncertainty over Ghana's prospects.[24] In sum, Ghana borrowed substantial amounts from

23. The extent of the borrowing is impossible to estimate. Many of these devices can be circumvented in whole or in part.
24. This, of course, does not apply to funds which were blocked initially when exchange control was imposed.

Table IV-6
Externally held debt, 1968, 1969 (in millions of new cedis)

Item	End of June 1968	End of June 1969*
1. Government debt		
Stocks	2.9	3.2
IMF	104.2	106.7
Joint consolidated & misc. funds	15.7	6.3
Volta river project	82.2	82.2
Counterpart funds	15.8	27.7
Tefle bridge	5.1	5.1
USAID commod. prog.	4.1	5.6
W. Ger. commod. loan	8.3	8.9
UK loan	10.5	14.4
PL 480	25.9	28.2
Danish loan	0.1	0.2
2. Other debts**	90.2	38.2
3. Suppliers credits	372.6	374.5
Total	737.6	701.2

Notes: * Provisional.
** Arrears of trade bills, banking, and private sector debts.
Source: Bank of Ghana, *Report of the Board for the Financial Year Ended 30 June*, 1970, p. 64.

foreign capital markets at rates far in excess of the rates paid on the domestic capital market.

Ghanaians also saved in foreign capital markets. Despite exchange control prohibition of capital transfers for such purposes, various devices have been available to the interested person, ranging from the purchase of foreign exchange on the black market through more sophisticated devices such as over-invoicing on imports. All typically involved a higher price of foreign exchange initially, but given the expectation that in the long run reconversion to local currency would involve at least an equal price of foreign exchange due to higher black market prices and/or official devaluation, the Ghanaian saver could in the long run expect to obtain both the higher rate of return offered on savings abroad and the possibility of a profit on the exchange transaction.[25] Hence, not only did Ghanaians borrow from abroad, they also lent abroad, both at higher rates of interest than obtained in most institutional segments of the local capital market, and at substantially higher transactions costs.

25. We are excluding consideration of capital flight for precautionary purposes.

Table IV-7
Selected interest rates in the UK and Ghana, 1960 to 1969 (percent)

UK (averages for year)					Ghana, Commercial banks (end of year)			
Year	Treasury bills	Euro-dollar London	Gov't. bond yield (LT)	Gov't. bond yield (ST)	Savings deposits	6 month fixed deposit	Bills discounted	Loans secured
1960	4.88		5.43	5.60				
1961	5.13		6.22	5.98	3 to 3.5	2.5	7.0	5.5 to 7.0
1962	4.18		6.00	5.31	3 to 3.5	2.5	7.0	5.5 to 7.0
1963	3.66	3.95	5.59	4.83	3 to 3.5	2.5	7.0	5.5 to 7.0
1964	4.61	4.32	6.03	5.54	3 to 3.5	2.5	7.0	5.5 to 7.0
1965	5.91	4.81	6.42	6.57	3 to 3.5	2.5	7.0	5.5 to 7.0
1966	6.10	6.12	6.81	6.77	3 to 3.5	2.5 to 2.75	7.5 to 9.5	7.0 to 9.0
1967	5.82	5.46	6.70	6.67	3 to 3.5	2.75 to 3.25	7.0 to 10.0	6.5 to 10.0
1968	7.04	6.36	7.40	7.59	2.5 to 3.5	2.75 to 3.0	6.0 to 10.0	6.5 to 10.0
1969	7.63	9.76	8.89	8.82	2.5 to 3.5	2.75 to 3.0	7.0 to 10.0	6.5 to 10.0

Sources: UK, from IMF, *International Financial Statistics,* 1971 Supplement. Ghana, from Bank of Ghana, *Report of the Board for the Financial Year Ended 30 June,* 1970, p. 59.

Despite these links with foreign capital markets, institutional segments of the Ghanaian capital market were largely unresponsive to outside developments. The restrictive trade and payments regime was an important permissive element, allowing domestic institutions the apparent freedom to proceed in their own way. An important example of this assumed independence was the lack of Ghanaian response to the rising nominal international interest rates in the period following 1963. As a proxy for foreign rates, consider the selected interest rates prevailing in the United Kingdom in contrast with the Ghanaian rates on deposits and loans (Table IV-7). Foreign rates began to rise from 1963 and almost doubled by 1969. Ghanaian rates did not respond, remaining constant until the deflationary period following the 1966 coup. Even with the 1966 adjustment, by 1969 Ghanaian rates were not nearly double those of 1963.

The strategy of developing new capital market institutions to meet the needs of the Ghanaian economy thus failed to develop a strong interconnected domestic capital market. Instead, there emerged several noncompetitive segments, largely isolated from one another and unresponsive to new economic situations. The strategy of isolating the domestic capital market from the rest of the world was not successfully implemented. Instead, reliance on international capital markets by both savers and investors continued. but the domestic capital market was largely unresponsive to international developments. These results suggest the possibility of major misallocations. The final task, to which we now turn, is to examine the consequences of the system.

4. Responses to the control system

The non-price rationing of the import licencing system and the segmented capital market were employed by the policymakers to ensure that particular activities were favored in the allocation of capital and of licences for imported materials. For the favored ones, the constraints of capital and imported materials were frequently eliminated over the relevant range of their potential demand. Yet output and employment did not respond as they "should" have to this generous treatment. Why? The answer lies in large part with the signals individuals received from the allocative system: cheap and relatively plentiful supplies of capital and imported materials for the favored ones. The response was to treat them as cheap and plentiful.

This section concerns the responses of various sectors of the economy to the control system. While the evidence is fragmentary and no single piece alone covers the entire picture, altogether the evidence which follows provides considerable insight into the response of economic units.

(a) Output and input intensities

Consider first the typical response of favored producers to the implicit subsidies arising from their special treatment by the licencing authorities and the capital market. A convenient method of specifying the way such favored producers respond to cheap and plentiful allocations of capital and foreign exchange is to start from an initial no-distortions situation and examine their response to a cheaper input. Assume that some inputs such as capital and foreign exchange are available to a producer at a fixed price but that at least one input, say labor, is available only at increasing costs. Assume further that the price of output is given for the producer. Given the price of output and the fixed-price inputs, the producer adjusts output to the point that his marginal unit cost of all the inputs equals the price of output. Now, keeping the unit price of output constant, introduce a subsidy in some form on one of the fixed-price inputs. For the same outlay the producer can purchase more inputs, enabling him to draw on higher cost variable-price inputs to the point again that his marginal costs are equal to the output price.

The input subsidy stimulates output. And if the production function is such that there is any substitution between the subsidized and other inputs, the subsidy also induces the producer to use that input relatively more intensively.

A subsidy on an input thus achieves two objectives: it stimulates output, and it induces the producer to use the subsidized input relatively more intensively. If these two objectives coincide, clearly the input subsidy approach is a simple two-pronged instrument that may be easier to employ than alternative combinations of instruments. However, when the objective is to expand output only but not induce a shift in relative input intensities, the input subsidy becomes a far less attractive instrument: it is less effective than an output subsidy of the same value, and has the unwanted effect of inducing substitution opposite to that desired. Yet Ghanaian policy during the restrictive period frequently resorted to implicit input subsidies in the form of cheaper capital and/or foreign exchange, together with plentiful supplies over wide ranges to favored recipients.

To examine this phenomenon in more detail it is useful to specify a functional form for the production function. At the industry level the most plausible, and at the same time convenient form of the production function is a Cobb–Douglas. Our empirical estimates reported below provide a reasonably good fit to this form. Also, the only other industry-level production function work on Ghana which we are aware of provides some support to the view that the elasticity of substitution in a variety of Ghanaian industries is not substantially different from unity.[26] There are, however, numerous

26. M. Roemer, "Elasticities of Substitution in Ghanaian Industry," mimeograph, Accra, September 1971. His estimates are based on pooled cross-section and time-series data for the period 1962 to 1968, and refer to value-added only, not (as our estimates do) to gross output.

theoretical and empirical problems associated with our use of a neoclassical production function[27] on the Ghanaian data, the most serious problem being the set of competitive assumptions underlying the analysis. While we do not wish to minimize these problems, the neoclassical production function does provide us with a convenient framework within which we can illustrate the direction of industry responses to the system. In other words, what follows should be taken as nothing more than illustrative of the general type of response exhibited by the Ghanaian industries.

Our Cobb–Douglas production function takes the form:

$$X = AK^{\alpha}L^{\beta}M_F^{\delta}M_D^{\gamma} \qquad \text{(IV.1)}$$

where X = quantity of output, A = a constant, K = capital services used per period, L = labor services used per period, M_F = foreign materials consumed per period, M_D = domestic materials consumed per period, and the exponents are constant.

The response relationships of output and input intensities to a subsidy are readily specified.[28] The key is to identify one input as the constraint on expanding output. Given that, it is possible to derive expressions showing the expansion of output and the expansion of input uses in response to the introduction of subsidies. These are all functions of the input coefficients, the rates of subsidies on the inputs, and the elasticity of supply of the constraining input.

The remaining task is to apply the relationships to a few cases. First, we have estimated the Cobb–Douglas production functions for three industry groups using cross-section data from the 1968 Central Bureau of Statistics industrial survey.[29] We were limited to three groups because complete data were available on a sufficient number of establishments in only the shoe industry, the sawmilling industry, and the furniture industry. These nevertheless do provide a range of illustrative input intensities and differing characteristics.

Our data were the following:

(a) Output. We used value of gross output, as insufficient establishments reported quantities to permit us to construct quantity indexes.

(b) Labor. The total number of employees reported by the establishment was our indicator of labor inputs. Man-hour data were not reported.

(c) Capital. Depreciation data were reported, but not capital stock, so it was

27. For a useful discussion see: Murray Brown, *Theory and Measurement of Technical Change*, Cambridge University Press, Cambridge, 1966; and Marc Nerlove, *Estimation and Identification of Cobb–Douglas Production Functions*, North-Holland, Amsterdam, 1965.

28. The details are contained in Appendix D.

29. See Appendix C for further discussion of these data.

impossible to check the reasonableness of the depreciation figures. We experimented. using reported depreciation data in our estimates, and found none of the capital coefficients to be significant (and two were negative). Because capital services actually used is the variable we wish to employ, we also attempted to adjust the depreciation data for reported capacity utilization in the two industries for which this was possible, but again obtained inclusive results. We therefore fell back on non-wage value-added as our proxy for capital services.

(d) Imported materials. Here we simply used the value of imported materials consumed in production.

(e) Domestic materials. Again we used values of materials consumed, plus values of fuels and electricity consumed.

Equation (IV.1) is linear in logs, which we used as our estimating equation in the following form:

$$\log X = \log A + \alpha \log K + \beta \log L + \delta \log M_F + \gamma \log M_D$$

The resulting least squares regressions are set out in Table IV-8. The overall fits are high, and the important coefficients in each industry are significant. In the case of shoes the coefficient for domestic materials is not significantly different from 0 at the 10 percent level primarily because many establishments use no domestic materials, and others very limited amounts. For the same reason the foreign materials coefficients for sawmilling and furniture are not significant. The sums of the coefficients suggest the possibility of some limited scale economies in the furniture industry, but not the others.

The small number of establishments in most other Ghanaian industries made it impossible for us to do cross-section estimates of their production functions. As a consequence, our three industries do not include a representative of the numerous assembly-type import-substitution industries which frequently have only one or two establishments. Since these industries are an important part of the Ghanaian industrial picture, we have arbitrarily selected a "representative" case, that of a radio and television assembly operation, to supplement the illustrative calculations. Using the same variables as in our production function estimates, we calculated relative shares of output paid for capital, labor, imported materials, and domestic materials in place of our coefficients α, β, δ, and γ. These values were: $\alpha = 0.141, \beta = 0.090, \delta = 0.695$, $\gamma = 0.074$. The sharp contrast with the other industries is evident in the dominance of imported materials.

Second, we require some indication of the degree of subsidies received by the industries. There is a variety of approaches available to specify these subsidies, depending on the norm chosen. The norms include various "shadow price" concepts such as the equilibrium price in the absence of distortions, or

Table IV-8
Regression results for Cobb–Douglas production functions cross section, 1968

Industry	Degrees of freedom	R^2	$\log X = \log A + \alpha \log K$	$+ \beta \log L$	$+ \delta \log M_F$	$+ \gamma \log M_D$	Sum of significant coefficients
Shoes	8	0.986	4.220 (6.425)**	+ 0.543 log$K$ (6.020)**	+ 0.316 log$L$ (3.318)**	+ 0.136 logM_F (1.566)**	+ 0.054 logM_D (1.095)	0.995
Sawmilling	19	0.985	1.113 (2.298)**	+ 0.181 log$K$ (2.950)**	+ 0.050 log$L$ (3.650)**	+ 0.004 logM_F (0.331)	+ 0.864 logM_D (13.250)**	1.095
Furniture	8	0.953	3.554 (3.593)**	+ 0.679 log$K$ (3.393)**	+ 0.066 log$L$ (1.791)*	+ 0.016 logM_F (0.527)	+ 0.423 logM_D (2.681)**	1.168

Notes: a. The values of R^2 not adjusted for degrees of freedom. b. t values in parentheses, * indicates significant at 10 percent level, and ** at the 5 percent level (one-tail test).

the marginal value of an actual restricted supply. Empirical estimation of such values, however, would require a major study in itself and would take us far beyond the scope of the present work. Instead, we have fallen back on the national average as the norm against which we judge whether or not a subsidy is involved.

For imported goods we must recognize that the average value of foreign exchange expended on them is made up of the various taxes on imports, both explicit and implicit, which we detailed in Chapter II, Table II-1. In addition there is the premium attributable to the restrictive licencing. On an economy-wide basis various "guesstimates" for 1968 have put this latter value at at least 15 percent of the official exchange rate. When added to the average taxes on imports of over 36 percent in 1968 (Table II-1) we have an average premium value of foreign exchange of 51.5 percent. For our illustrative purposes we have rounded this down to 50 percent, and on this basis calculated the implicit subsidy rates on imported materials contained in Table IV-9. We do not mean to suggest that these numbers are anything more than approximations of actual implicit subsidies, but they clearly illustrate (conservatively) the nature of the problem.

For capital, a convenient norm is the marginal productivity of capital derived from an aggregate nonagricultural production function study by Peter Newman. Using a cross section of the seven Ghanaian regions, he fitted a Cobb–Douglas production function for 1960. Given the capital coefficient and the capital stock, the marginal productivity of capital was 17.2 percent, before depreciation.[30] If we correct for depreciation by deducting from value-added, Brown's estimate of depreciation for the same year, the marginal productivity of capital is 14.9 percent.[31] Since this was for 1960, and since the actual productivity of capital has subsequently declined, a conservative illustrative magnitude might be on the order of 12 percent for 1968.

The actual rates at which these industries are able to obtain capital are equally elusive. However, to illustrate the significance of the issue at hand,

30. From Peter Newman, "Capacity Utilization and Growth." mimeograph, January 1970. The data by region for gross value-added and capital stock were from R. Szereszewski. Chapter 4, in W. Birmingham *et al.*, *The Economy of Ghana, op. cit.* Employment data by region were from the 1960 census. His estimate was:

$$\log Y = 0.447 + 0.615 \log K + 0.371 \log L$$
$$(7.760) \qquad (3.235)$$

where Y = gross value-added at factor cost, K = capital stock (value), L = employment (numbers) in the nonagricultural sector: t-values are in parentheses, and R^2 = 0.990. The value-added was N₵ 418 million, and capital stock N₵ 1,500 million for 1960, which with the capital coefficient yields 17.2 percent as the marginal productivity of capital.

31. T.M. Brown, "Macroeconomic Data of Ghana," *op. cit.*, estimates depreciation for 1960 equal to N₵ 53 million.

Table IV-9
Implicit industry average subsidy rates on imported materials, 1968

Industry	Av. import tax rate (percent) (1)	Adjust for other trade taxes (percent) (2)	Total rate on imp. mat. (percent) (3)	Implicit subsidy rate (percent) (4)
Shoes	28.08	10.40	38.48	7.68
Sawmilling	3.28	9.16	12.44	25.04
Furniture	4.12	9.21	13.33	24.45
Radio/TV	0	9.00	9.00	27.33

Sources: 1. Average import tax rate is total duties paid on imported materials with respect to imports of materials, weighted by use of imported materials. Data are from establishment returns to the CBS annual survey of industry.
2. The adjustment for other trade taxes takes into account the 180-day credit scheme on imports on the assumption that it increased the c.i.f. price by 5 percent (and thus is included in the base for the duty and other collections) plus the allowable 6 percent per annum (i.e., 3 percent of value) interest cost. This column also includes the 1 percent import licence fee in 1968.
3. This is the sum of columns (1) and (2).
4. The implicit subsidy rate is the difference between the norm of 50 percent premium and the rate in column (3) as a proportion of 100 percent plus the norm.

assume that they are able to obtain capital at the maximum unsecured loan rate of the commercial banks, a nominal 10 percent per annum. Taking into account the average compound rate of inflation in the period 1966 through 1969 of 6.7 percent, this suggests a real rate of access to capital at 3.3 percent per annum. And, *vis-à-vis* our norm of 12 percent, we are speaking of a subsidy rate on capital at 72.5 percent or to round down, 70 percent. At first glance this appears to be an excessively high subsidy rate, but when we note that most private industrial establishments are able to obtain capital at nominal rates much below 10 percent, and publicly owned industries often at zero nominal rates, this implicit subsidy rate appears to be very conservative. To be even more conservative, a 50 percent subsidy rate is also considered.

Finally, we need to specify the constraining input for each industry. On the basis of our subjective knowledge of the industries involved, we have selected labor as the constraining input for the shoe and radio–television assembly industries, primarily because these employ some high-skilled labor, which is likely to require higher wages in order to induce an expansion of supply. For the sawmilling and furniture industries we have assumed the constraining input to be domestic materials. Further, we have arbitrarily assumed that the elasticity of supply of each constraining input is unity.

Given our illustrative implicit subsidy rates, together with the industry

Table IV-10a
Responses of output to assumed subsidies on capital and imported inputs

Industry	Coefficients[a]				Constraining input[b]				Output changes dX/X	
	Capital α	Labor β	For. mat. δ	Dom. mat. γ	Input name	Elast. assumed	dp_i/p_i sub_k=0.7	sub_k=0.5	sub_k=0.7	sub_k=0.5
Shoes	0.543	0.316	0.136	0	Labor	e_l=1	7.18	2.39	65.86	10.49
Sawmilling	0.181	0.050	0	0.864	Dom. mat.	e_{md}=1	0.29	0.16	0.66	0.32
Furniture	0.679	0.066	0	0.423	Dom. mat.	e_{md}=1	5.92	3.04	46.89	8.24
Radio/TV[d]	0.141	0.090	0.695	0.074	Labor	e_l=1	76.43	33.76	5,993.63	1,207.47

Table IV-10b
Responses of inputs to assumed subsidies on capital and imported inputs

Industry	Input changes[c]				Ratios output to input changes			
	Cap: dK/K		For. mat.: dM_F/M_F		Output/capital		Output/inp. mat.	
	sub_k=0.7	sub_k=0.5	sub_k=0.7	sub_k=0.5	sub_k=0.7	sub_k=0.5	sub_k=0.7	sub_k=0.5
Shoes	221.88	21.97	71.43	11.44	0.297	0.477	0.922	0.917
Sawmilling	4.52	1.67	–	–	0.146	0.192	–	–
Furniture	158.62	17.48	–	–	0.296	0.471	–	–
Radio/TV[d]	19,981.10	2,415.94	8,248.45	1,662.02	0.300	0.500	0.727	0.727

Notes: a. Only significant coefficients: those insignificant at 10 percent level set equal to zero. See Table IV-8 for estimated equations.
b. The proportionate price change dp_i/p_i is that of the constraining input.
c. Constraining input changes by the same proportion as its price changes (assuming its e = 1).
d. Coefficients not derived from production function estimation. See text.
e. Subsidy rate on imported materials from Table IV-9.

coefficients, we have calculated response ratios of output and input uses for each industry. The results are contained in Table IV-10. The responses of output are large, ranging from 32 percent (sawmilling) on up to virtually infinity (radio and TV assembly). The magnitudes of the response arise mostly because of the subsidies on capital of 6 to 8.5 percentage points on the interest rate which amount to massive relative subsidies on the use of capital.

There is considerable variation between industries in the response of output. For similar input subsidy rates, the response of output depends directly on the size of capital and imported materials coefficients, and inversely on the size of the constraining input coefficient. Hence the large output response for the radio and television assembly industry arises mostly from the high foreign materials coefficient and the low labor coefficient. And the sawmilling industry's response is considerably smaller because of the relatively small capital coefficient and large domestic materials coefficient.

The elasticities of output with respect to subsidized input changes are low. Even for the very conservative assumption of a 50 percent rate of subsidy on capital, the elasticity of output with respect to capital addition is 0.5 or less. Imported material elasticities are not as low (largely because the subsidy rates are not as high as for capital), but even an 8 to 27 percent drop from a unitary elasticity is considerable cause for concern.

To sum up, using representative magnitudes of industrial structure and relative subsidy rates, we have illustrated in a Cobb–Douglas framework how: (1) output is generally highly responsive to relative subsidies on inputs; and (2) use of subsidized inputs increases at a relatively (sometimes considerably) greater rate than output. We emphasize that these results should be taken as nothing more than illustrative. If however these magnitudes are anywhere nearly representative of the Ghanaian situation, we now have a major clue in explaining the response of the industrial sector to the control regime. Cheap and virtually unlimited supplies of foreign exchange and capital for the favored ones stimulated output, but the use of imported materials accelerated and the output–capital ratio plummeted.[32]

The growth consequences of the set of policies which permitted large relative subsidies on capital and imported materials were serious. Favored sectors flourished.[33] Other sectors suffered seriously: access to capital and foreign exchange was, for most, blocked and little or no growth occurred.

32. Further, when we take into account the fact that a high proportion of recorded capital formation is made up of imports, the increased use of foreign exchange by favored recipients is further increased. In 1969 imports of durable producers' materials (mostly construction materials) plus producers' equipment amounted to N¢ 119.7 million while gross domestic fixed capital formation was N¢ 242 million (*Economic Survey*, 1969, pp. 117, 116).

33. See Chapter III.

The overall effect was one of stagnation accompanied by apparently worse capital and foreign-exchange "gaps" for the economy as a whole.

(b) Other responses

Other responses to the control regime suggest themselves. Overbuilding of plant, low capacity utilization, excessive inventories, limited technical progress, and diversion of entrepreneurial talent are commonly cited as problems arising from a control system. Undoubtedly in individual cases serious problems along these lines developed in Ghana during the control period. The available evidence, however, generally indicates that the case against controls on these grounds is not proven. The lack of proof may well rest on incomplete and unsatisfactory data. We suspect, however, that many of the problems associated with the import-substituting industrialization stemmed from problems other than the control system *per se.* Excessively long settling-in periods, combined with inexperienced management and labor were frequently responsible for poor performance in the industrial sector, rather than controls *per se.*

The evidence consists of a variety of isolated observations over the period, and some more detailed data for 1968. Consider first the issue of capacity utilization. During the late Nkrumah period (1964 and 1965) serious shortages of materials and spare parts were common, resulting in substantial underutilization of capacity (see Chapter II, section 5). In the immediate post-coup period low capacity utilization due to import shortages remained a serious problem. In setting out its plea for additional aid required for 1967, the NLC government put as its goal the attainment of "roughly some 50-55 percent of the theoretical 100 percent capacity on a one-shift basis."[34] Steel's interviews in 1968 of the 41 manufacturing firms in his sample found capacity utilization rates for 1967-68 ranging from 10 percent to 100 percent, with an average of less than 50 percent.[35] Finally, our data from the CBS 1968 Industrial Survey contained estimates of full capacity for some establishments which, given the reported actual output data, enabled us to compute capacity utilization rates. The range of capacity utilization rates was as broad as Steel's, with an unweighted mean of 57 percent and a standard deviation of 32 percent. The CBS Survey also contained responses from some establishments concerning the licences applied for and the licences utilized. This enabled us to compute licence utilization rates with respect to the licence

34. Republic of Ghana, *Ghana's Economy and Aid Requirements in 1967,* Accra, May 1967, p. 22.

35. W.F. Steel, "Import Substitution and Excess Capacity in Ghana," op. cit. He defined full capacity as "the realistic maximum level at which the firm would operate over a continued period of time if there were no restrictions in terms of demand or availability of inputs (at existing prices)," p. 225, footnote 4.

applications as a potential capacity utilization explanatory variable. While clearly subject to some serious shortcomings (e.g., unknown accuracy of responses, and inflation of licence applications), this ratio in theory represents the extent to which import licences actually made available and used corresponded to the desired flow of import licences.

These data permitted us to test the hypothesis that the rate of capacity utilization (CUT) is a function of licence utilization (LUT).[36] Regressing the former on the latter yielded the result:

$$\begin{array}{ll} \text{CUT} = 38.33 + 0.398\ \text{LUT} & R^2 = 0.133 \\ \quad (1.25)\quad (1.96) & \text{DF} = 25 \end{array}$$

The explanatory power of the estimated equation is low, the licence utilization coefficient is significant at the 5 percent level (one-tailed test), and the elasticity of capacity utilization in response to licence utilization at the mean is about 0.3 across the establishments. While the response of capacity utilization to licences is significant, licencing alone is not apparently a major determinant of capacity utilization.

Second, the existence of a licencing system could result in a diversion of investment flows into inventory holdings. We were unable to test this hypothesis fully. However, our 1968 cross-section data on the industrial sector enabled us to test the hypothesis that actual material inventories are a function of import dependency of inputs. Hence regressing material stocks at the beginning of the period as a percent of material used during the period (ST/USE) on the percent of imported material used in total material purchases (IMP/TOT) yielded:

$$\begin{array}{ll} \text{ST/USE} = 25.48 + 0.805\ \text{IMP/TOT} & R^2 = 0.075 \\ \quad (1.480) & \text{DF} = 27 \end{array}$$

The explanatory power of the estimated equation is very low and the coefficient is not significantly different from zero at a reasonable confidence level. We therefore reject the hypothesis that in the presence of the 1968 QR regime the more import-dependent an establishment the greater its inventory

36. The licencing argument follows from the point that availability of materials affect the level of attainable output. We also attempted to take into account the possibility that inventories of materials would perhaps have additional explanatory power. However, inclusion of the percentage of materials used during the period in stock at the beginning of the period did not yield a significant coefficient. Also, because the extent of the effect of LUT on CUT might depend on the import dependency of the establishment, we included the percent of imported materials in total material purchases as an explanatory variable. Again the coefficient was insignificant.

holdings. However, one will note that while the restrictive regime may shift the demand for inventories outward, it may also prevent the satisfaction of that demand. This can result in a situation where inventories can expand only when the QR system is relaxed, and if the relaxation of the system is not accompanied by an inward shift of the inventory demand, a substantial accumulation in inventories may well occur.[37]

Third, technical progress seems to have been absent during the period of the restrictive regime. Absent also is any major empirical work on the subject. However, as we noted in the introduction to this chapter, there was a negative residual between growth of output and growth of input at the aggregate national level. This clearly does not suggest the presence of substantial underlying technical progress.

Focusing more narrowly on inward transfers of technology, recent work by H. Baumann indicates that such transfers have been relatively limited. For example, a crude indicator such as patent applications by foreigners, 1963 to 1968, shows Ghana relatively low in relation to many other LDC's.[38] Baumann also constructed a composite index of technological transfer for a selected list of LDC's over the period 1958 through 1967, which again shows Ghana on the lower end of the scale relative to the other countries considered.[39]

Finally, the diversion of entrepreneurial talent from innovative endeavors is a potentially serious consequence of the restrictive system. The extent of the loss is impossible for us to quantify. The nature of the problem is, however, clear. As J.H. Mensah declared while he was Minister of Finance and Economic Planning, one of Ghana's major problems is weakness in her high level manpower:

> When one watches the cruel ineffectiveness with which so much expensively acquired equipment is operated in Ghana, when one realizes the inability of most parts of our administrative and managerial machinery to deliver the high quality performance which is required for a more rapid pace of national progress, then one realizes that Ghana may possess an articulate and polished elite in comparison with other African countries but she does not yet possess the managerial resources for running a fully modernized country.[40]

Yet because of the substantial gains to successful recipients of licences and other concessions and the large numbers of the available talent which were

37. For example, in 1965 and again in 1971, a surge of imports built up inventories largely in anticipation (subsequently shown to be correct) that a tight licencing system would return.
38. See H. Baumann, "Technological Change in Ghana's Economic Development," mimeograph, University of Western Ontario, January 1972, Table 1.
39. *Ibid.*, Table 5.
40. From a lecture delivered to the National Union of Students, Legon, 23 April, 1970.

required to administer the detailed regulations, a portion of the nation's entrepreneurial talents was diverted into coping with and running a control system. This was a serious loss.

5. Concluding remarks

We have presented a variety of evidence which links Ghana's control regime and its economic atrophy in the 1960's. We have shown that during this period both the savings rate and the productivity of investment declined significantly. The control regime was an important contributor to this poor performance. By choosing to employ controls to close the external deficit, pressure on domestic demand was vented on the domestic price level, resulting in reduced domestic savings rates. On the investment side the control regime shifted resources into favored activities with lower real productivity and isolated the domestic from the international capital market, making it possible to engage in discriminatory allocation of investment to less than optimal uses. Favored activities responded by using relatively more, not less, of the apparently "scarce" capital, foreign exchange and entrepreneurial talent.

In sum, there are reasonable grounds for attributing part of the poor growth performance to the control regime. It is important, however, not to overdraw the negative contribution of the control regime. The case against controls is largely that controls permitted errors in policy to have adverse effects on economic growth. Elimination of the set of trade and exchange controls employed for most of the 1960's could thus be expected to alleviate adverse growth effects only indirectly and with a long lag, providing ample opportunity for substitute policies to be instituted which might just as effectively stifle economic growth as the existing set of policies did.

Despite the slow and indirect ways in which the adverse effect emerged, during the second half of the 1960's the undesirable consequences of the control system received considerable attention. The result was an attempt to extricate the Ghanaian economy from the morass of trade and payments controls. Yet after four and one-half years the liberalization experiment failed, leaving the control regime fully intact. We turn now to focus on the liberalization experiment.