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CHAPTER ONE: INTRODUCTION AND SUMMARY

This report examines the mortgage credit and subsidy policies of the National Housing Trust (NHT) and the Caribbean Housing Finance Corporation (CHFC)--Jamaica's two largest public sector shelter finance institutions.

Credit is only one element of shelter production, and credit subsidies are only part of the total subsidy made available to the shelter sector. As the Government of Jamaica (1986, 1987) has recognized, a true shelter sector strategy will require an integrated approach that ranges from rationalization of land titling and development regulations to a shift in output mix away from finished housing toward gradual site development over time, as well as supportive credit policies.

Nonetheless, credit institutions and credit policy are a critical part of the sector. In Jamaica, as in many other countries, credit subsidies constitute by far the largest subsidies provided for housing development. An understanding of how these subsidies are delivered, who benefits from them, their dollar costs, and the impacts they have on both private finance for the shelter sector and financial markets at large is essential to future sectoral policy reform.

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EXECUTIVE REPORT

SHELTER SECTOR MORTGAGE CREDIT AND SUBSIDY POLICY: The National Housing Trust and Caribbean Housing Finance Corporation

The Urban Institute
December 1989
(Revised March 1990)

This Executive Report was prepared by George E. Peterson and Thomas Klak. It is based on original analysis contained in Thomas Klak and George E. Peterson, *Credit and Subsidies in Jamaican Government Housing Programs*, a study commissioned by the Jamaican Ministry of Management, Production, and Planning; the Jamaican Ministry of Construction (Housing) and the United States Agency for International Development, and conducted by The Urban Institute.

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The conclusions and opinions expressed in this report are those of the authors alone. They do not necessarily reflect the views of The Urban Institute or its Trustees, USAID/Jamaica, the USAID Caribbean Regional Office of Housing and Urban Programs, or any of the Jamaican institutions in the shelter finance sector.

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CHAPTER ONE: INTRODUCTION AND SUMMARY

This report examines the mortgage credit and subsidy policies of the National Housing Trust (NHT) and the Caribbean Housing Finance Corporation (CHFC)--Jamaica's two largest public sector shelter finance institutions.

Credit is only one element of shelter production, and credit subsidies are only part of the total subsidy made available to the shelter sector. As the Government of Jamaica (1986, 1987) has recognized, a true shelter sector strategy will require an integrated approach that ranges from rationalization of land titling and development regulations to a shift in output mix away from finished housing toward gradual site development over time, as well as supportive credit policies.

Nonetheless, credit institutions and credit policy are a critical part of the sector. In Jamaica, as in many other countries, credit subsidies constitute by far the largest subsidies provided for housing development. An understanding of how these subsidies are delivered, who benefits from them, their dollar costs, and the impacts they have on both private finance for the shelter sector and financial markets at large is essential to future sectoral policy reform.

NHT AND CHFC IN PERSPECTIVE

The National Housing Trust is the largest source of residential mortgage credit in Jamaica. Together with the Caribbean Housing Finance Corporation, it has financed roughly half of all formal-sector housing units in recent years, and has issued somewhat more than one-third of all mortgage loans in dollar value. To place the two public institutions in perspective, Table 1 provides a general overview of the sources of funds used to finance Jamaica's shelter sector investment.

NHT (and to a lesser degree, CHFC) provides credit for shelter development on highly subsidized terms. The current rates of interest on NHT mortgages average slightly over 9 percent, or more than 50 percent below the rates charged by private-sector building societies, whose rates in turn are lower than those found in the commercial banking sector. NHT is a large source of credit in the Jamaican economy. Its total net lending to the shelter sector and to Government amounts to some J\$350 million per year. NHT's (and to a lesser degree CHFC's) credit policies therefore are of key concern both to the shelter sector and to Jamaican financial markets.

The interest-rate structure on NHT mortgages has become a principal policy issue, both for Jamaica and for the international agencies that provide credit to the Government. This report does not address directly the question of what NHT or CHFC's interest rates "ought" to be. Rather, it provides background information on the costs and characteristics of NHT and CHFC mortgage programs, so that a better informed decision about sectoral credit policy can be made.

Table 1

Estimated Structure of the Jamaican Housing Finance Market
as of June 1987
(J\$ in millions)

<u>Mortgage Finance Institute</u>	<u>Mortgage Loans Outstanding</u>	<u>Market Share</u>
NHT	\$812.6	28.4%
Building Societies	585.3	20.5%
Commercial Banks	456.8	16.0%
Life Insurance Companies	336.0	11.8%
Trust Companies	239.6	8.4%
CHFC	183.6	6.4%
Merchant Banks	122.1	4.3%
Credit Unions & Coops	97.0	3.4%
Other	24.0	0.8%
Total Mortgage Finance Institutions	2,956.9	100.0%

Source: Elaine Weis, "Housing finance Strategy--A Sectoral Approach to Housing Finance Policy in Jamaica," report prepared by USAID Regional Office of Housing and Urban Programs, Caribbean: March 1988.

The report, however, has been prepared against the background of the authors' perspective on appropriate housing finance policy, which perhaps should be stated explicitly:

◆ Credit terms for shelter development should be consistent with the terms of credit extended to other sectors of the economy. Although this does not necessarily mean that interest rates across sectors should be identical, it does mean that interest-rate policy in the shelter sector should be established jointly with interest rates in other sectors. In the absence of special justification for sectoral preferences, there is a presumption in favor of uniform interest rates throughout the economy.

◆ A public credit institution should not undercut the interest-rate structure of the rest of the shelter sector, and particularly of the private financial institutions in the sector. Below-market credit terms offered by one financial institution will not expand credit availability to the shelter sector as a whole, unless at the same time the institution opens up lending to a segment of the market that otherwise would not receive mortgage loans. In the absence of such targeting, subsidized government lending will merely displace other (private-market) financing. NHT's

mortgage policy has delivered large subsidies to part of the housing market, but its middle-income orientation has limited its impact on aggregate credit flows.

◆The subsidy inherent in below-market lending is a cost to government and ultimately to all taxpayers. NHT in particular controls a large, recurring flow of capital, which if invested at market rates could be used to defray public budget expenses. Accordingly, the subsidy component of mortgage credit should be narrowly targeted to low-income households.

◆Subsidized mortgage credit also should be used to support the changes in output mix that Government shelter policy wants to achieve. That is, if cost studies show that the only realistic way to deliver better shelter to the bulk of the population is to rely more on the informal sector and gradual upgrading, ways should be found to channel a greater volume of mortgage credit for these activities rather than for finished units.

DATA METHODS AND DEFINITION OF "SUBSIDY"

The results reported in this study are based on original analysis of NHT's and CHFC's computerized data files. Data records for NHT were copied in May 1988. Data records for CHFC were copied in September 1988. After the files were cleaned to remove cases with missing data or obvious keypunching errors, a total of 20,540 mortgage accounts at NHT and 15,884 mortgage accounts at CHFC were analyzed. In addition, it was possible to match a subset of 9,196 NHT borrowers with income data maintained in NHT's contributor files; this subset was used to examine the distribution of interest-rate subsidies and arrears by income level.

The overall quality of the data files used in the analysis is good. However, two potential problems have been identified by NHT managers and reviewers of earlier drafts of this study. First, NHT managers believe that in at least one respect--the initial value of mortgage loans--their data files overstate true loan values. This issue is discussed in the text. The practical impact on the analysis reported is limited, as initial loan values have not been utilized for most of the research. The accuracy of the data files does affect one issue: the extent to which NHT mortgages are "affordable" by different segments of the income distribution. In discussing this question, we have placed more reliance on "remaining loan balance" as a proxy value for initial mortgage amount, while also reporting the initial loan values recorded in NHT's files.

The second data problem concerns the income distribution of NHT borrowers. A match with income characteristics for NHT borrowers can be made only for 1980 wage income, as reflected in NHT's contributor file. To compare the income distribution of NHT's borrower population with today's income levels, we have adjusted reported 1980 earnings to their 1988 equivalent, by use of the Consumer Price Index (CPI). This adjustment calculates the 1988

purchasing power of 1980 wages.¹ To the extent that wages have lagged behind prices since 1980, or the wage distribution has changed, the CPI adjustment will not recreate the true 1988 wage distribution (see discussion in text). This issue, too, has only a modest impact on the findings reported here. Most of the analyses of income levels involve relative comparisons within the 1980 data set. (For example, do NHT contributors who receive mortgage loans have higher or lower income levels than NHT contributors as a whole?) These comparisons are not affected by the way 1980 wages are adjusted to 1988 equivalents. However, some reviewers have expressed the belief that, because wages have not kept pace with price inflation, adjustment by the CPI is likely to give a misleadingly high figure for the current wage earnings of borrowers under NHT programs.

Definition of "Subsidy"

There are two dimensions to the "subsidy" contained in most public sector mortgage finance programs. First, the interest rate on mortgage loans often is below the market rate. Second, public institutions often do not collect the monthly payments due them as aggressively or successfully as do private mortgage lenders. Thus "arrears" become an unintended, and sometimes unacknowledged, element of the subsidy package.

There are many alternative ways in which subsidy amounts could be quantified. We have chosen to measure the annual interest-rate subsidy on a mortgage as the difference between the interest that the mortgagor actually pays (or accrues in the case of a negative amortization loans) and the interest he would pay if his loan carried the interest-rate terms prevailing for a private-sector building society mortgage. Since the vast majority of building society mortgages now are variable-rate mortgages, while almost all NHT and CHFC mortgages are made at fixed-rates, the value of the interest subsidy will fluctuate from year to year with the market rate of interest. The bulk of the analysis reported in the text takes 1988 as the reference year, and calculates subsidies with respect to the private market mortgage interest rate of 16 percent then prevailing. However, at several points we also calculate the greater subsidy level in effect in December 1989 after private market interest rates were raised.

Annual arrears costs have been measured in two ways: as the annual loss of revenue resulting from non-collection of current monthly payments due, and as the annual interest earnings lost as a result of the failure to collect the cumulative value of arrears compiled over the lifetime of a mortgage. If this backlog of amounts due could be collected, it could be

1. The 1980 wage data themselves are highly reliable, as they are the basis of the payroll deductions used to finance NHT. However, the data significantly understate total household income, by excluding non-wage income, including income from self-employment or informal sector activities, as well as wages earned by other household members. For this reason, 1980 (and 1988 adjusted) total household income would be higher than the figures reported here.

invested to yield a current income flow. The sum of these two measures is the total annual cost of non-collection or arrears.

How much of the arrears cost can fairly be judged to constitute a "subsidy" is more difficult to determine. Some non-collection is a normal cost of doing business. If the "arrears subsidy" were calculated in a manner consistent with the "interest-rate subsidy," only the excess revenue loss over private market collection rates would be treated as a "subsidy." Unfortunately, we were unable to obtain data on arrears rates at the building societies. We therefore have chosen to emphasize in the text the costs of arrears or non-collections, rather than attempt to isolate the subsidy element.

SUMMARY OF FINDINGS

PATTERN OF MORTGAGE LENDING

NHT is financed by mandatory payroll contributions from employers and employees. In recent years, a little more than half its net flow of resources has been used to finance residential mortgages; the rest has been used to purchase debt instruments issued by the Government. Over its lifetime of operations, dating back to 1976, NHT has provided mortgage loans to approximately 5 percent of its contributors, or some 25,000 loans for 500,000 contributors. An average of about 2,300 new loans per year have been made since 1983. The vast majority of mortgages have been used to finance newly built housing. NHT has financed between 40 and 45 percent of formal-sector new construction in Jamaica, but its output is small relative to the volume of housing production needed if the country was to adequately house all of its population within the next two decades. Housing needs, defined in this way, have been estimated by the Government at 16,000 new housing units and 9,700 upgraded ones per year.

CHFC does not have a steady source of funds. Instead, it services mortgages initiated by other lenders, or borrows funds from external sources to finance specific housing programs. Its principal new activities in recent years have been the servicing of more than 5,000 MOC(H) mortgages in 10 heterogeneous housing schemes, and the on-lending to private financing institutions of USAID housing funds.

Size of Loans

The average size of NHT loans is difficult to determine because of the presumed errors in NHT records. These records show a mean loan size, at the time of the original loan, of \$156,000 (1988 dollars). By contrast, the average remaining loan balance, from which monthly payment obligations are calculated, is only \$44,725. The largest part of this difference, of course, stems from the fact that mortgage loans in Jamaica are not indexed to inflation; therefore, the current value of older loans is greatly eroded by inflation (as well as reduced to some degree by positive amortization). However, it appears that the average size of

new loans, measured in real terms, has declined in recent years, partly because there is now a greater mix of type of loans.

CHFC's mortgage loans, when converted to 1988 dollars, have had a mean size of about \$47,000, and are becoming smaller as CHFC programs target a lower income population.

Affordability

The active loans that NHT and CHFC carry on their books are, by now, remarkably affordable. The mean monthly payment at NHT is \$261, a level that is affordable by households in the fourth decile of the income distribution. The mean monthly payment for CHFC mortgages is only \$115.

Affordability is a function of original loan size, interest rate, and mortgage terms. NHT mortgages, in particular, have been deeply subsidized. However, today's low monthly payments reflect, more than anything, the fact that fixed monthly payments have lost much of their value due to inflation. Under conditions of rising prices and rising nominal incomes, the "affordability" of mortgage loans is most constraining in the first years of the mortgage term. Both NHT and CHFC have tried to broaden access to their mortgage loans, by introducing Graduated Payment Mortgages (GPM), which have negative amortization over as much as the first 10 years. GPMs broaden eligibility for mortgage borrowing, but managers at both public financial institutions report considerable resistance, both from borrowers and from their own staff, to the concept of negative amortization.

Income Distribution of Borrowers

The fact that mortgages are affordable by moderate income households does not mean that such households actually receive them. Wage income in 1980 could be matched with mortgage accounts for a subset of NHT borrowers. The results show that NHT mortgage lending is skewed toward the upper end of the income distribution, both for Jamaica as a whole and for the contributors who finance NHT.

NHT participants who receive mortgages have much higher incomes than the average NHT contributor. The mean income of those receiving mortgages has been more than twice the mean income of the entire NHT contributor population. A wage earner in the eighth decile of NHT's income distribution has had a seven times greater probability of receiving a mortgage loan than an earner in the third decile.

Measured in 1988 dollars, the median annual income of NHT borrowers in 1980 was \$43,440. This is more than twice the median household income of the Jamaican population, and in fact falls within the 80th to 90th decile of the income distribution. It is possible that the real incomes of borrowers have fallen since 1980, but the income listed on NHT's files excludes additional earnings from self-employment as well as secondary earnings from other members of the household.

No income profile of CHFC mortgagors is available, since CHFC does not record this information on its computerized files.

One consequence of the fact that NHT's mortgages go to relatively high income households, coupled with the erosion of real loan values over time, is that NHT mortgage payments claim a low share of household income. The median ratio of actual 1988 mortgage payments to the median income of borrowers in 1980, adjusted to 1988 dollars for inflation, is only 7.2 percent.

INTEREST-RATE SUBSIDIES

NHT mortgage interest rates range between 4 and 10 percent, with a median rate of 8.0 percent for outstanding loans. These rates are far below market, and have become still more subsidized as tightened monetary conditions have raised market rates. The weighted mean interest rate on NHT mortgages (weighted by loan size) is 9.3 percent. This compares with a 1988 rate of 16 percent for mortgages issued by the private sector building societies. The building society rate has since risen to 19 percent, while NHT rates have remained fixed.

At present (December 1989), the subsidy delivered by NHT's interest-rate structure is approximately J\$110 million per year. As a measure of the opportunity costs associated with this subsidy, this amount of revenue could be used to build some 1,000 finished two-bedroom houses per year, at recent contribution costs, or provide almost 7,500 serviced sites per year, at a cost of J\$15,000 per site.

Interest-rate subsidies for individual mortgages are surprisingly large. At year-end 1989 interest rates, the average subsidy was roughly \$J4,360 per borrower, while 6,450 of NHT's mortgages received an annual subsidy of \$5,800 or more. This latter amount is equivalent to some 29 percent of median household income in Jamaica.

The subsidies enjoyed by those receiving mortgage loans from NHT are financed by the below-market returns that NHT contributors as a whole receive on their compulsory savings. The system thus taxes the bulk of participants to deliver deep subsidies to those who obtain mortgages. As noted, the beneficiaries of this policy are wealthier than the full universe of NHT participants. However, since payments into NHT are directly proportional to wage income, as well, the net distributive effect of the NHT system is uncertain.

Interest-rate subsidies at CHFC are more modest. The mean mortgage interest rate at CHFC is over 11 percent. (Note that the MOC(H) housing financed by CHFC mortgages carries a higher interest rate than government housing financed by NHT mortgages.) Compared to year-end 1989 market rates, the interest-rate structure implies about 12.6 million in annual interest subsidies.

Interest-Rate Spread

A special characteristic of NHT's financial structure is the unusually large spread between its costs of capital and investment returns. The average cost of capital at NHT is approximately 1.2 percent. Three-fifths of its capital flow consists of mandatory employer payroll contributions on which no interest is paid. The remainder consists of employee contributions, returned after 7 years at 3 percent interest. Combined with the mean mortgage rate of 9.3 percent, this implies a spread on funds invested in housing of more than 8 percentage points. The net spread on all of NHT's investments, including its financing of Government debt, is on the order of 12 percentage points. Both spreads are much higher than is found in the building subsidies, or in public-sector housing finance institutions in most other countries. The extent to which this spread has been used to pay for high operating costs, build up financial reserves, or for other purposes was not investigated as part of the study.

ARREARS AND ARREARS SUBSIDIES

The failure to collect monthly mortgage payments can be another form of subsidy. At NHT the average loan has accumulated 2.3 months of additional arrears for each year of payments due. The median mortgage loan in 1988 was 11.5 months in arrears. Arrears rates at CHFC are considerably lower; the median loan was only one month in arrears. However, CHFC has a core of problem loans, deep in arrears.

The cost of arrears is only a small fraction of the cost of interest-rate subsidies. Non-collection costs are estimated at about \$12 million per year for NHT and \$1.2 million per year for CHFC. NHT managers believe that their current collection experience has improved over the recent past.

The pattern of arrears at both NHT and CHFC reveals a good deal about the factors contributing to nonpayment. At NHT, home improvement loans have the worst repayment record. Build-on-own-land programs also have poorer than average repayments. Both of these programs represent attempts to provide financing to the less formal sector. The results indicate that, at least as NHT presently operates its collection process, these programs have brought higher repayment risk. There are also regional differences in arrears experience. Kingston-St. Andrews and Clarendon, for example, have above-average arrears. Low-income households have only modestly greater arrears problems than higher-income households, after control for type of housing program.

At CHFC, arrears are very highly concentrated in the MOC(H) Old Portfolio and a handful of other schemes. Arrears differentials appear to be related primarily to legal arrangements concerning land ownership and mortgage contracts. These MOC(H) loans were made under tenant purchase agreements. As a result, no mortgage contract exists during the loan payment period. Officials believe the lack of mortgage contracts has greatly reduced their legal leverage in demanding payment. Another problem scheme is a squatter upgrading project, which originally began as a leasehold project but was later converted to freehold

ownership at substantially higher cost to the occupants. Occupants believed that they had been promised one cost for the program, but that the cost was later raised (because of the land purchase). CHFC's market-rate mortgages have very low arrears experience; however, the relatively low value of these mortgages makes it difficult to know whether the same low arrearage would apply to a program with larger mortgages.

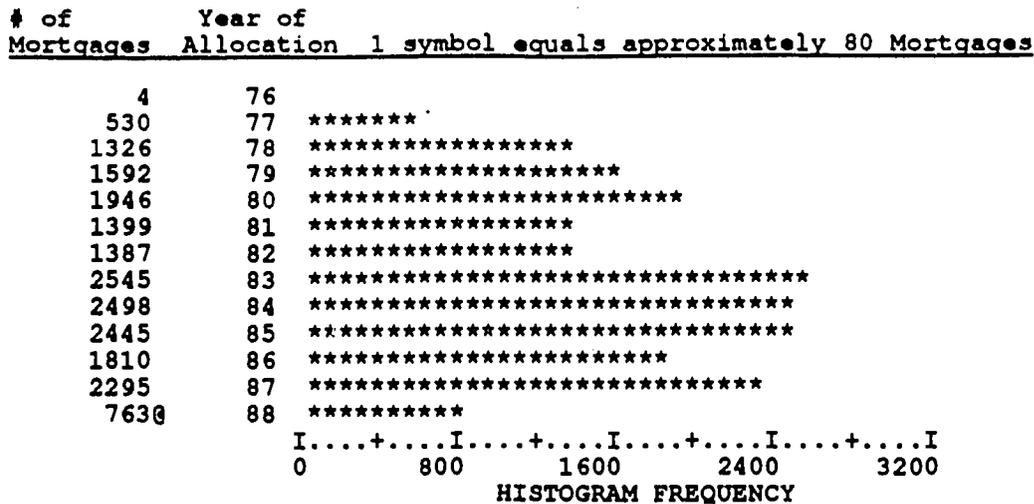
CHAPTER TWO: NHT'S MORTGAGE PROGRAM

The National Housing Trust was established in 1976 "to provide a roof over the heads of as many families as possible" (*Gleaner*, February 17 and March 18, 1976); NHT internal documents). NHT is financed through mandatory employer and employee payroll contributions at the rate of 3 percent of payroll for employers and 2 percent for employees. It makes mortgage loans only to participants in its financing system. However, NHT's mortgage lending priorities were to be set according to housing needs rather than by size of contribution to NHT. According to its first chairperson, NHT was "directed to the purpose of providing homes for those most in need of housing" (Ford in *Gleaner*, May 16, 1976).

Over its lifetime of operations, NHT has provided mortgage loans to approximately 5 percent of its contributors, or roughly 25,000 loans for 500,000 financing participants. Table 2 shows the distribution of active loans in 1988, by year of initial financing. As can be seen, NHT required approximately two years to gather full speed as a mortgage issuer. New loan activity peaked in the years 1983-85 and 1987. By contrast, 1981-82 were years of low loan output, reflecting the change in development priorities associated with the change of political party in power. (The loan totals reported in Table 2 are for a "cleaned" subset of mortgage accounts. See below.)

Table 2

Active NHT Mortgages by Year of Initial Loan Allocation



Descriptive Statistics for Loan Year for NHT Mortgages:

Mean	83.0	Median	83.0	Mode	83.0
Std dev	3.0	Valid cases	20540	Missing cases	0

All cases plotted.

@=through May 1988

During the years 1977 to 1987, NHT financed approximately 40-45 percent of the total output of formal-sector housing in Jamaica. Clearly it has had a substantial impact on homeownership rates in the country. However, the average annual rate of NHT mortgage financing--less than 2,000 loans per year--contrasts with estimates of production needs in the Jamaica Shelter Sector Strategy Report (December 1986) of about 16,000 new units and 9,700 upgraded ones per year, if existing and future housing needs are to be met in full within 20 years.

In recent years, NHT has targeted a little more than half its net savings flow to the housing sector, or some \$200 million of a total annual savings flow of \$350 million. The remaining funds have been used to finance the general government deficit, through the purchase of various government debt instruments.

COST OF FUNDS

The principal structural feature of NHT that distinguishes it from the private housing finance system is its low cost of capital. NHT receives the vast majority of its funds from compulsory payroll contributions. On employer contributions made between 1976 and 1979, NHT pays 3 percent interest. The principal amounts corresponding to these years are to be repaid after 25 years, starting in 2001. After 1979, interest payments and contribution refunds to employers were suspended, thereby making the employer contribution a pure payroll tax paid to NHT.

The 40 percent of cash flow that comes from employee contributions is treated as a compulsory below-market loan to NHT. Employees are entitled to refunds of their contributions, plus cumulative interest at the rate of 3 percent per annum, seven years after deductions were made from their paychecks. However, employees must apply for the refund. Because of the small amounts involved, many never bother to collect.

Given the above structure, the average cost of capital to NHT from payroll contributions in the 1980s has been approximately 1.2 percent per year. This compares with annual inflation rates that averaged 16.2 percent between 1981-82 and 1987-88 and a cost of capital to the private banking system that averaged 14.4 percent over the same period (Lumsden 1988).¹

NHT has tried to include the informal economic sector in its contributor population, classifying it as "self-employed" and requesting voluntary contributions. In actuality, very few informal sector workers participate, however. This presumably reflects the low probability that they will receive a loan in return for their below-market deposits. Thus, the informal sector has been excluded from NHT mortgage lending, despite the fact that it has the greatest housing needs (McLeod 1987).

1. This is the weighted average deposit rate paid by commercial banks.

Although the vast majority of NHT's new resources come from the payroll deductions described above, it has also taken some loans. For example, NHT has a loan of \$27.5 million from the Caribbean Development Bank "at a very low rate of interest" (THA 1986).

DATA SOURCES AND DATA METHODS

The analyses reported in this study are based primarily on original data obtained from NHT computer files. Two computer files have provided the bulk of the data:

1. The NHT Mortgage Master File maintains relatively current (3-4 months out of date) records for all mortgage accounts.

2. Far less current is NHT's Contributor File, which includes records on contributions to the NHT fund. The most recent, complete and computer-entered data for NHT's contributors, including annual income and contributions to NHT, are contained in the 1980 Contributor File. Income and other data for a subset of mortgage borrowers were obtained by matching records from the Mortgage Master File with income records for the same borrower continued in the Contributor File. The match was performed by SIF identification number.

Records in the Mortgage File were screened to eliminate closed accounts, accounts with obvious keypunching errors (e.g., negative loan values), and accounts with missing data. Approximately 1,000 cases were eliminated in this screening, leaving a total of 20,540 mortgage loans in the cleaned data set. Of this total, it was possible to match 9,196 loans to borrower income and socioeconomic characteristics in the Contributor File.

In addition to the loans excluded from analysis because of data errors, we estimate that some 4,000 loans have been excluded because they were made too late to be included in May 1988 computer files, the date on which NHT's files were copied.

It should be pointed out that some of the NHT data records are not in good shape, or at least have been challenged by NHT managers. For example, the sum total of the original loan values as recorded in the Mortgage Master File for the cleaned data set is \$1.825 billion, a figure that would imply total initial loan values of some \$2.25 billion for NHT's total portfolio in the fall of 1989, including loans excluded from the data set used for analysis. However, NHT's mortgage accounts manager has stated that he believes the actual total of initial loan values should be much less, perhaps no more than \$1.2 billion, a figure which corresponds more closely to the remaining loan values on which collections are being made. Repeated inquiries failed to resolve this discrepancy or to identify a probable source of error in the computer records.

In addition to making analytical studies more difficult, the possibility of poor data records (or the managers' conviction that account records are in error) greatly complicates the management of an agency of the size and significance of NHT.

NHT as an early priority should improve its data management system, which is a prerequisite for tighter management of the organization as a whole.

MORTGAGE LENDING PATTERNS

NHT makes long-term loans for new housing units, as well as shorter term loans for home improvement and squatter upgrading. Until 1982, almost all NHT mortgages consisted of level payment loans, sometimes with accelerated payment features. Since 1982, graduated payment mortgages, in which monthly payments are escalated annually during the first years of a loan, have predominated.

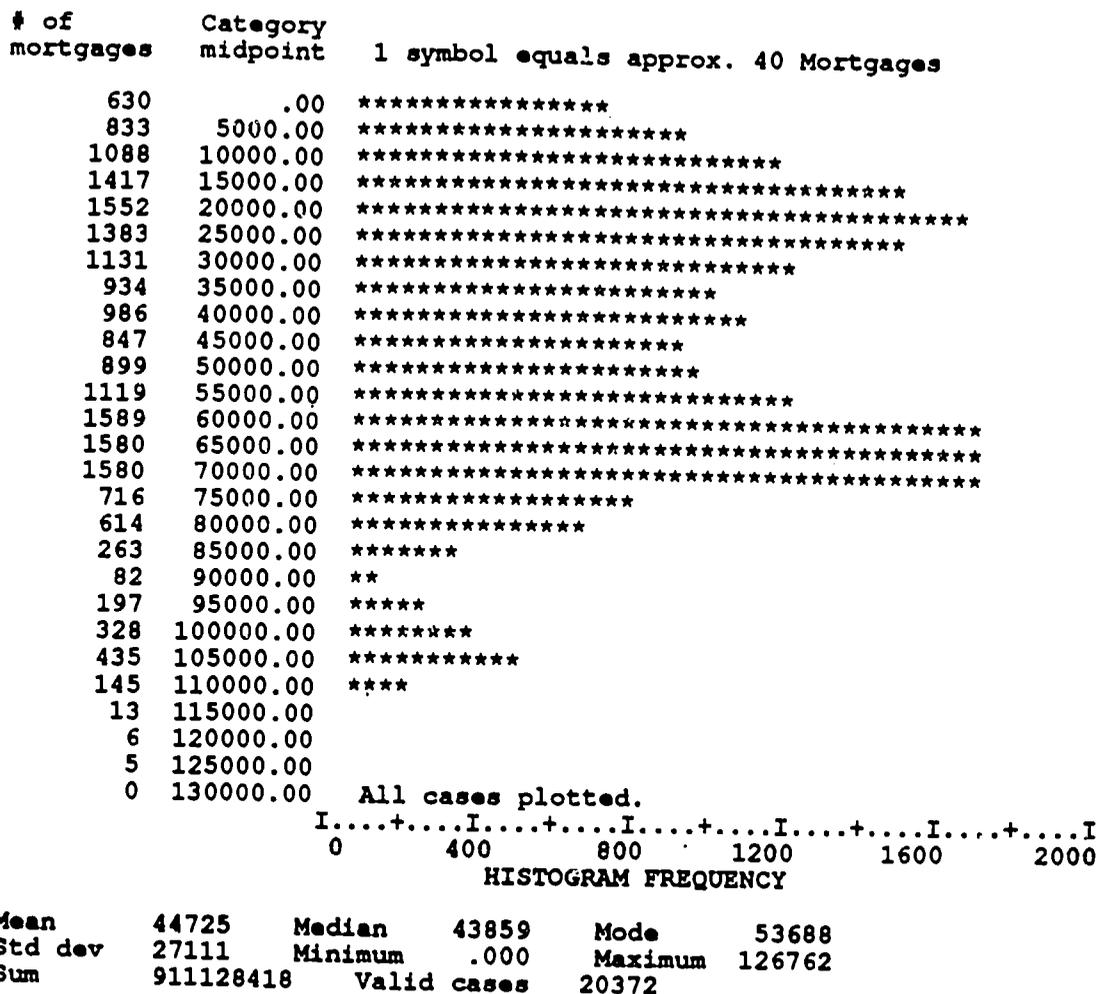
Size of Loans

As noted, there is skepticism among NHT managers as to the accuracy of the initial loan value records entered on the Mortgage Master File. However, NHT's own files show a mean initial loan, unadjusted for subsequent inflation, of \$88,900. If each of the individual mortgage loans is adjusted for inflation by the consumer price index,² the equivalent mean loan value in 1988 dollars is just under \$156,000 (the median is \$150,000). This compares with a 1988 price for a 500-square-foot, 2-bedroom new house produced under government programs of \$110,000. The comparison, if taken at face value, suggests that NHT loans have been generally larger than necessary to finance the least-expensive multi-bedroom completed units. They would be suitable largely for "middle-income" (i.e., 80th to 90th percentile) households.

-
2. The adjustment above is by the overall Consumer Price Index. The component of the CPI labeled "housing costs" measures housing prices in terms of rental rates, and shows a much lower rate of inflation than the overall CPI. In contrast, it is generally believed by economists and housing sector experts in Jamaica that the capital value of houses has increased by more than the overall CPI. If so, the 1988 purchasing power equivalent of NHT loans would be greater than that reported above.

Table 3

Descriptive Statistics and Plot for Current NHT Mortgage
Balance, in J\$ as of May 1988
(Values Restricted to a Range of J\$0-130,000)



NHT's records for current mortgage balance are perhaps more reliable than its records on initial loan values, or at least more "official," since they are used to calculate each borrower's mortgage repayment obligation. As of May 1988, the mean outstanding mortgage balance was \$44,725.³ The distribution of outstanding balances is shown in Table 3. The distribution is widely scattered, both because of the variety of programs NHT finances, ranging from low-value home improvement loans to acquisition of completed units, and because of the different dates at which the initial loans were made.

Monthly Payments and Affordability

Monthly mortgage payments are a function of original loan size, the interest rate charged, and mortgage terms. The monthly payment due is a separate variable in NHT's mortgage master file, which is used for actual billing. Table 4 displays the distribution of NHT mortgages by size of monthly payment.

The overall impression conveyed by Table 4 is that monthly payments are remarkably low.⁴ Some comparisons of the monthly payment levels with figures for Jamaica's income distribution will provide a gauge of the affordability of NHT loans. Income data are drawn from the estimated income distribution as calculated by Boyd (1989). A standard 25 percent debt-service ratio is used as the measure of affordability.

Using this standard, the median monthly mortgage payment under NHT mortgages, \$261, is easily affordable by the median household. Given Boyd's estimate of median household

-
3. The data do imply that either the recorded amounts for initial loan value or outstanding mortgage balance (or both) are in error. The mean recorded mortgage balance is slightly more than half the mean recorded initial loan value. However, the average loan is only five years old, and would not have paid off this great a proportion of principal, especially since many of the loans involve negative amortization. Whether it is more likely that, over time, the recorded loan amounts in NHT's computer files have been adjusted upward or the remaining mortgage amounts, on which collections are made, have been adjusted downward is impossible for an outside observer to determine. NHT managers believe the data for remaining loan balance are more accurate.
 4. In fact, monthly payments billed are much lower (by almost 20 percent) than if interest only were charged on the outstanding loan amounts at the recorded rate of interest. Although this situation is theoretically possible, if there is a large volume of graduated payment mortgages with negative amortization, the discrepancy in practice is unlikely to be fully explained in this way. NHT has many older loans on which monthly payments should exceed interest-only payments because of positive amortization. Coupled with the fact that outstanding mortgage balances are much lower than the levels that are implied by the recorded original loan values, the files suggest the possibility that NHT is not billing for the full amounts due it under the original loan terms.

income (\$20,800 per year), a monthly payment of \$433 would be affordable. The estimate of median income used in USAID housing programs in 1988 (\$18,000) implies affordable monthly housing costs of \$375. Median payments under NHT mortgage loans fit well within this limit, leaving room for other housing-related expenses. In fact, the median NHT payment would be affordable by households in the fourth decile of the income distribution.

The "affordability" calculations, of course, are greatly influenced by Jamaica's history of inflation, which has eroded the real value of fixed monthly payments. Fixed monthly payments for loans made several years ago tend to be almost universally affordable today, because of intervening inflation. However, using the standard rule of thumb regarding affordability, a level-payment mortgage of \$50,000 at NHT's average interest rate (8.7 percent) is barely affordable to the median household in the first year of a loan. This loan amount is now insufficient to purchase a new standard completed minimum unit. Thus, under conditions of inflation, "affordability" is primarily an issue for the first years of a loan. As long as nominal incomes can be expected to rise, it is appropriate to bring housing within the affordable range for greater numbers of households by lowering monthly payments in the initial years of a loan through graduated payment schemes. However, financial adjustments of this kind in mortgage terms can expand the affordability range only modestly. To reach lower income households, other types of loans, such as loans for serviced site development and home improvement, have to be made.

It needs to be emphasized that the standard rule of thumb on affordability may itself exaggerate Jamaicans' willingness to pay for housing. The household consumption studies on which Jamaica's Consumer Price Index is based found that housing costs on average constitute only 8.8 percent of household expenditure. In her study of informal sector housing, McLeod (1987) found that low-income households spend still lower shares of their income on housing, including some 30 percent of informal sector families who occupied their housing without any annual payment. These figures suggest that the 25 percent of income rule of thumb, imported from the United States and other developed nations, may exaggerate the level of housing costs that are "affordable" in Jamaica. In countries where food costs, in particular, must claim a much larger share of household income, the proportion of income that reasonably can be devoted to housing is correspondingly lower.

Table 4

Distribution of Monthly Payments for NHT Mortgages
in 1988 J\$

# of Mortgages	Midpoint of the Payment Category	J\$ # 1 symbol equals approx. 24 Mortgages
1	0	
50	20	**
536	40	*****
779	60	*****
978	80	*****
1155	100	*****
1193	120	*****
997	140	*****
874	160	*****
897	180	*****
1036	200	*****
736	220	*****
664	240	*****
651	260	*****
500	280	*****
619	300	*****
939	320	*****
895	340	*****
740	360	*****
871	380	*****
789	400	*****
1134	420	*****
909	440	*****
429	460	*****
339	480	*****
282	500	*****
331	520	*****
234	540	*****
212	560	*****
275	580	*****
101	600	****
60	620	***
92	640	****
53	660	**
56	680	**
20	700	*
18	720	*
10	740	
12	760	*
20	780	*
23	800	*

30 Mortgages with monthly payments between J\$810 and J\$1000 not plotted.

I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I
0 240 480 720 960 1200

HISTOGRAM FREQUENCY

Descriptive Statistics for Monthly Payments at NHT:

Mean	276	Median	261	Mode	321
Std dev	157	Minimum	10	Maximum	1000
Sum	5,674,570	Valid cases	20540	Missing cases	0

INCOME DISTRIBUTION OF NHT'S MORTGAGE LOANS

The fact that mortgage terms are affordable to a wide range of households, including lower income households, does not mean that these households actually receive the mortgages. In fact, there are financial incentives for lenders to skew their loans toward higher income brackets, where there is a greater margin of ability to repay the loan, and consequently less perceived default risk. As long as loans are made at below-market rates, higher income borrowers, too, have financial incentives to borrow as much as they can on subsidized terms and invest it in housing.

Unfortunately, matching NHT mortgage loans to the income of borrowers is not a simple task. The only comprehensive information on incomes in NHT's files comes from the 1980 contributors' file, which records the payroll earnings of each contributor in that year. (Note that this source substantially underestimates total household income because it excludes non-wage income, including income from self-employment or informal sector activity, as well as income earned by other family members.)

To adjust 1980 earnings to 1988 levels, the earnings reported for 1980 were inflated by the Consumer Price Index. It would have been preferable to adjust 1980 earnings by a wage index, or by an index of household income, but no such indices are available for Jamaica. Nor are there later data for the income levels of individual borrowers. In the absence of such data, adjustment by the CPI appears to be a reasonable approximation. Studies prepared by the Bank of Jamaica show that per capita real Gross Domestic Product (GDP), the closest available approximation to household earnings, was almost exactly the same in 1988 as it was in 1981 (Lumsden 1988), indicating that nominal per capita output increased over that period at about the same rate as prices. There undoubtedly were changes in the income distribution and in wages relative to other sources of income, but these are secondary influences which, in the absence of specific studies, cannot be taken into account.⁵

The income match, therefore, was made by identifying the 1980 wage income of each of 9,196 mortgagors, and inflating it to the 1988 constant dollar equivalent. The resulting income distribution of NHT mortgagors (in 1988 dollars) is shown in Table 5.

5. Wage income, in particular, almost certainly trailed price inflation over the period. Government and IMF wage guidelines were designed in part to lower real wage levels. Thus, adjustment by the CPI is likely to overstate the actual 1988 wage earnings of NHT contributors. The income figures should be literally interpreted as "the 1988 purchasing power equivalent of 1980 wage levels of borrowers under NHT programs."

Table 5

The Income Distribution of NHT Mortgages
in 1988 J\$

of Income Category
Mortgages Midpoint One symbol equals approximately 30 mortgages

92	0	***
31	2500	*
118	5000	****
22	7500	*
60	10000	**
37	12500	*
1359	15000	*****
76	17500	***
291	20000	*****
379	22500	*****
103	25000	***
292	27500	*****
403	30000	*****
102	32500	***
382	35000	*****
253	37500	*****
193	40000	*****
437	42500	*****
356	45000	*****
627	47500	*****
168	50000	*****
104	52500	***
44	55000	*
81	57500	***
304	60000	*****
423	62500	*****
22	65000	*
233	67500	*****
351	70000	*****
322	72500	*****
221	75000	*****
222	77500	*****
116	80000	****
29	82500	*
91	85000	***
121	87500	****
29	90000	*
54	92500	**
55	95000	**
10	97500	
72	100000	**
52	102500	**
25	105000	*
51	107500	**
39	110000	*
60	112500	**
36	115000	*
14	117500	
47	120000	**



As is immediately apparent, the average income level of NHT mortgagors (individual borrower's wages only) is much higher than the average *household* income for the Jamaican population as a whole. The mean annual income of NHT mortgagors is \$35,670 and the median, \$43,440, or more than double the median income level for the entire population. A household earning \$43,440 in 1988 would be in the 80th to 90th percentile of the Jamaican population (Boyd 1989).

At the same time, as can be seen from Table 5, households at many different income levels have received loans from NHT. The highest concentration of borrowers, in fact, occurs at the level of \$15,000 per year in earnings, significantly less than the national median. This reflects the fact that a number of special programs, such as home upgrading and build on own land, have been introduced for lower-income households. However, more than three-quarters of NHT's borrowers have earnings of \$22,500 or more. NHT appears to have made mortgage loans to a wide distribution of the Jamaican population, but has concentrated its lending (both in number of loans and more sharply in value in loans) on the upper half of the income distribution. This pattern of borrowing by income level is strong enough that it would remain after any plausible alternative adjustment for wage changes between 1980 and 1988.

One consequence of the fact that NHT's below-market mortgages go to relatively high income households is that the actual debt service ratio for those with NHT mortgages is very low. The ratio of median 1988 monthly mortgage payments to median adjusted (wage) income was only 7.2 percent. This implies both that NHT has acted conservatively in steering loans to those with excess ability to pay, and that upper income families have taken advantage of NHT's lending programs to obtain mortgage financing at below-market rates.

The relatively high incomes of those participating in NHT mortgage programs raise two related policy questions:

◆Is a middle or upper income orientation most appropriate for NHT, considering such factors as its source of funds (formal sector payroll deductions), scale of funding, subsidy policy, and housing need among different income groups?

◆How can NHT's traditional middle or upper income orientation best be integrated with other public and private financial sources to maximize housing access in the aggregate, particularly for those of low income, as stipulated in NHT's original objectives?

INTEREST-RATE POLICY AND SUBSIDIES

NHT is authorized to make mortgage loans over a range of interest rates between 4 and 10 percent. The lower rates are supposed to be targeted to lower income households and lower cost housing solutions. In practice, however, the great majority of NHT mortgages carry interest rates of 8 or 10 percent. For example, since 1980 88 percent of all mortgage loans have been made at 8 or 10 percent.

Table 6

Distribution of Interest Rates on Outstanding NHT Loans, 1988

# of Mortgages	Interest Rate	1 symbol equals approx. 240 Mortgages
698	4%	***
454	5%	**
902	6%	****
486	7%	**
7949	8%	*****
0	9%	
10051	10%	*****

Descriptive Statistics for Interest Rates at NHT:

Mean	8.7	Median	8.0	Mode	10.0
Std dev	1.7	Minimum	4.0	Maximum	10.0
Valid cases	20540	Missing cases	0	All Cases Plotted	

Interest-Rate Spread

The unweighted mean interest rate on NHT mortgages is 8.7 percent. Because larger loans have been made at higher interest rates, the dollar-weighted mean interest rate for NHT's outstanding loans is higher, 9.3 percent.

NHT's average cost of funds, in the 1980s, as noted earlier, has been 1.2 percent. The "spread" between NHT's cost of capital and its residential lending rate, therefore, is 8.1 percentage points. Such a spread is very high for financial intermediaries. NHT's total spread is still higher, since almost half of its net savings flows recently have been invested in Treasury bills or other government debt instruments, with an average spread in 1988-89 of about 18 percentage points. NHT's total net spread, then, has been on the order of 12 percentage points. This compares with an average spread between cost of capital and investment returns of 5.0 percent in 1987 and 6.2 percent in 1988 for the four private members of the Building Society Association of Jamaica (BSAJ 1989).

A spread of the magnitude of NHT's can be "spent" in one or more of several ways. It can pay for higher staff and other operating costs. It can be used to absorb low collection rates. Or it can be used to build up financial reserves, which in turn can be invested in more mortgages or more government debt instruments.

It was not part of the purpose of this study to examine NHT's use of its financial spread. A recent government-financed audit of NHT (Touche, Ross Thorburn 1989) has examined this issue. Judged strictly as a housing finance intermediary, however, NHT's large spread has impeded its ability to lower housing costs or pay higher savings rates to its contributors.

Subsidy Costs

As noted in Chapter One, there are many ways in which interest-rate subsidies can be measured. Perhaps the most basic measure is the savings that accrues to borrowers (and the interest earnings foregone by NHT) as a result of the differential between NHT's interest rates and the private-market rates for residential mortgage lending charged by the Building Societies.⁶ Building Society mortgages now consist almost exclusively of adjustable rate mortgages. Accordingly, the subsidy cost of NHT's interest-rate policy has been calculated by comparing the interest payable under NHT's actual interest rate structure with interest that would have been payable if mortgage rates were set at the Building Society rate.

In 1988, the dollar-weighted interest-rate subsidy at NHT was 6.7 percentage points, the difference between the Building Society mortgage rate of 16 percent and the NHT mean rate of 9.3 percent. Applied to the loan balance in our cleaned data set, this would imply an annual interest-rate subsidy in 1988 of some \$61 million per year. We estimate that this total should be raised by roughly one-quarter, to take into account loans excluded from the cleaned data set and loans made since the date the NHT data files were copied. Such an adjustment would produce a total interest-rate subsidy in 1988 of approximately \$76 million per year.

Subsidy costs, defined in this way, fluctuate with conditions in the overall financial market, since NHT loan rates are fixed but Building Society rates are variable. As of this writing, the Building Society mortgage rate is 19 percent, which would imply that the interest-rate subsidies delivered by NHT, relative to the current market rate of interest, have risen to approximately \$110 million per year.

As a measure of the opportunity costs associated with this scale of interest subsidy, NHT's annual interest earnings foregone at current rates, would be sufficient to build some 1,200 new two-bedroom minimum housing units, or provide some 6,500 serviced lots at an average cost of \$30,000 per lot.

Distribution of Interest-Rate Subsidies

Table 7 displays the distribution of annual interest-rate subsidies for the households in our cleaned data set. The subsidy is measured with respect to the 1988 private market interest rate of 16 percent. Interest-rate subsidies are surprisingly large. The mean value in 1988 was \$3,011 per borrower, while 6,450 of NHT's mortgagors received an annual subsidy of \$4,000 or more. At year-end 1989 interest rates, the average subsidy would have been 45 percent larger, or roughly \$5,250 per borrower.

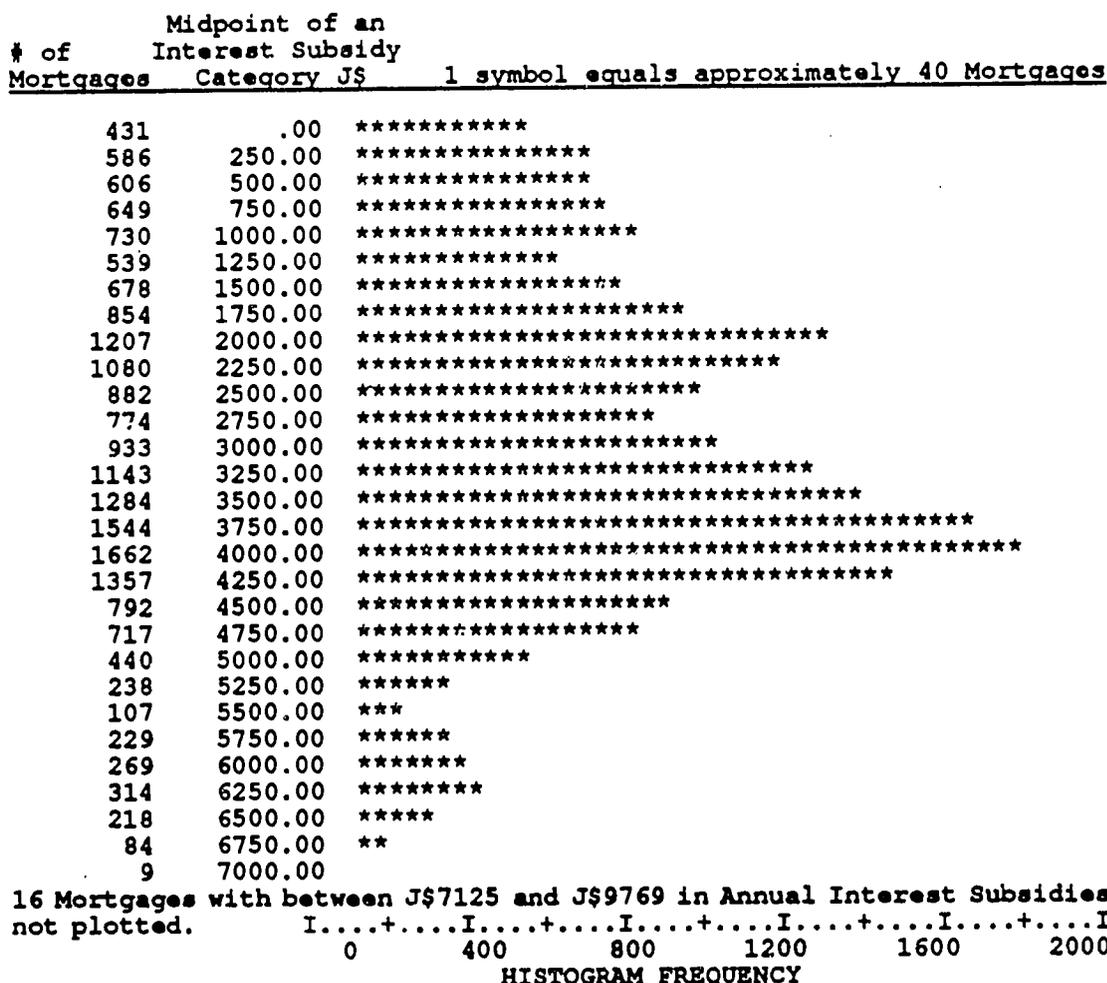
6. The term "private-market interest rate" is not altogether appropriate in Jamaica. Building Society deposit and lending rates are set in direct relation to Bank of Jamaica rates, as established by the Government.

For new borrowers, of course, the average interest-rate subsidy is still greater, since the loan value to which the below-market rates are applied is larger. On a \$100,000 mortgage loan, for example, the annual interest-rate subsidy now amounts to \$9,000 per year.

Just how greatly participants in NHT's mortgage programs benefit from interest-rate subsidies may be appreciated by comparing the annual interest saving with household income in Jamaica. Even in 1988 before market rates of interest were raised, the median interest-rate subsidy at NHT was equivalent to more than 15 percent of median household income, while the median interest-rate subsidy on new mortgage loans was equivalent to roughly 20 percent of median annual household income. Total subsidies for the small minority who qualify for an NHT mortgage loan are even greater, since land, infrastructure, and legal costs of housing development typically are subsidized, as well as the cost of credit.

Table 7

Distribution of Annual Interest Subsidies per NHT Mortgage in J\$ (1988)



Descriptive Statistics for Annual Interest Subsidies of NHT Mortgages:					
Mean	3011	Median	3184	Mode	3221
Std dev	1555	Minimum	.000	Maximum	9769
Sum	61331989.6*	Valid cases	20372		

NHT policy illustrates the dilemma that confronts housing finance policy in many developing countries. In an effort to make mortgage loans affordable to borrowers, NHT has subsidized borrowing so deeply that it can afford to extend loans only to a very small fraction of participants in the payroll deduction system.

The income redistribution that takes place under NHT mortgage financing is not systematically related to income level. Rather, a relatively small scatter of households at all income levels benefit. On the lending side, analysis shows that there is a slight *positive* correlation between borrower income and total interest-rate subsidy for those who do receive mortgages (the correlation is +.04). Although statistically significant, this represents a near random distribution of benefits by income class, for mortgagors. The larger loans given to higher income households are substantially offset by the lower interest rates available to lower income households, as well as the lower remaining balances on loans from the early years of NHT programs. However, as was shown in Table 5, the universe of mortgage participants is itself highly skewed toward the upper end of the income distribution. As a result, NHT's interest-rate subsidies are highly and positively related to household income. At the same time, however, *contributions* to NHT are also positively and strongly related to income level, making the net redistributive impact of NHT financing, by household income, difficult to determine.

A clearer distributive pattern exists with respect to type of housing program. This is shown in Table 8.

Table 8

NHT's Annual Interest Subsidies by Type of Loan
(1988)

Loan Type		Interest Subsidy		
		Mean	Std Dev	Cases
FOR ENTIRE POPULATION		3011	1555	20372
LOANTYPE	B (Build on own Land)	2738	1079	2936
LOANTYPE	H (Home Improvement)	663	583	2192
LOANTYPE	N (NHT Scheme)	3435	1401	14249
LOANTYPE	P (Purchase on Open Market)	2911	1510	995
TOTAL CASES = 20372				

Mortgages for housing in NHT's own projects enjoy the largest subsidy. This reflects the fact that loans for scheme housing have no *a priori* ceiling. Instead, loans are granted for the cost of the unit, which recently has been around \$100,000. Lower loan ceilings apply to units built on the mortgagor's own land or purchased on the open market.

Home improvement loans are for relatively small amounts, and thus carry smaller interest subsidies, even though the interest rate typically is lower than for other programs.

ARREARS AND ARREARS SUBSIDIES

The failure to collect mortgage payments as due is an unplanned element of credit subsidy. In some countries, such as Argentina, Panama, and Honduras, the implicit subsidy conveyed by intermediate finance institutions as a result of the non-collection of mortgage payments greatly exceeds the explicit subsidy conveyed by below-market interest rates (Buckley 1988; Peterson 1986; Peterson 1987). NHT's collection record indicates that arrears have also been an important element in NHT's *de facto* subsidy policy.

Mortgage arrears are greatly affected by the credibility of the threat of foreclosure. After all, it is the distinguishing characteristics of a mortgage loan that the lender can seize the property if the loan is not paid on time. NHT's official foreclosure policy is to take action on a property when payments fall six months or more past due. In practice, NHT takes action toward repossession and resale once arrears reach 9-12 months. At that point, NHT conducts an inquiry to ensure that its accounting of arrears is accurate, and that arrears have not been caused by "personal burden," such as financial hardship beyond what NHT considers to be the mortgagor's control. Households in default but with what NHT judges to be personal burden are allowed to reschedule the debt. If default has not been caused by personal burden, NHT attempts to sell the property by public auction, advertising the event in the *Gleaner*. After the property is sold through auction, NHT will move to evict the previous mortgagor in default to open the unit for the new mortgagor.

However, there are other reasons besides household hardship that explain why the foreclosure procedure outlined above often does not occur.

1. It is legally possible to foreclose only on properties which have titles and registered mortgages. Scheme housing units comprise the great majority (68 percent) of NHT mortgages, and only 30 percent of scheme units have titles and are registered. Homes sold on the open market or built on the mortgagor's own land (together, 19 percent of NHT loans) generally have titles and registered mortgages, and thus NHT has the legal capacity to foreclose. For home improvement loans (13 percent of all loans), foreclosure is hindered by the fact that the NHT loan is for only a portion of the property, and that there may be another mortgagee involved. Assuming that NHT has the ability to foreclose on 30 percent of its scheme loans, all of its open market and build-on-own-land loans, and none of its home improvement loans, foreclosure would be a realistic option for only about 39 percent of its portfolio.

2. If the property in arrears has no title and registered mortgage and the mortgagor is no longer residing in the NHT unit, NHT has another policy to pursue, that of attempting to "reallocate" the unit to another NHT contributor.

3. For the remaining scheme units without title and registered mortgage, with the mortgagor-in-default still living in the unit, NHT's only option is to sue to recuperate its losses. A law suit involves a slow and tedious process, however, so that in practice it is rarely employed.

As a result of these difficulties in implementing foreclosure and other collection strategies, NHT recovers only a small proportion of its serious arrears.

The lack of aggressive foreclosure practice is paralleled by the way that NHT approaches late penalty fees. NHT has a policy to charge late penalties on mortgages in arrears but does not appear to enforce it. This is evidenced by the fact that the variable in the mortgage master file called "current penalty balance" has either no data or zero entered into it. The fact that the computer mortgage records are at least three months out of date would in any event make it very difficult to implement a late payment fee policy. It is impossible to know, except by investigating individual account records, which accounts should be charged penalties. As a result of these difficulties, NHT's collection record is markedly inferior to that of CHFC, which collects perhaps one-third of what is owed in payment arrears through late payment penalties.

The Arrears Record

From NHT's own records, the mean mortgage account at NHT is 11.5 months in arrears.⁷ On average it has accumulated 2.3 additional months of arrears for each year of its existence. In other words, just under one-fifth of the monthly payments that should have been paid to NHT have not been paid. A general rule of thumb for housing finance institutions is that accounts with two months or less arrearage do not constitute an arrears problem. By this standard, only 14 percent of NHT's mortgages are in favorable condition. (By contrast, 61 percent of CHFC mortgages meet this standard of collections.) Table 9 shows the distribution of arrears on active accounts.

The failure to collect monthly payments as they become due in effect lowers the interest rate that is being paid on NHT loans. It is equivalent to lowering the (unweighted average) mortgage rate from 8.7 percent to about 7.0 percent.

7. The composition of the "cleaned" data set probably understates the full extent of NHT's arrearage problems, since it excludes accounts which have been closed because of default.

Table 9

Distribution of NHT Mortgages by Number of Months in Arrears

# of Mortgages	Monthly Payments in Arrears	Midpoint J\$	1 symbol equals approx. 80 Mortgages
1240	0		*****
3147	2		*****
3579	4		*****
2768	6		*****
1826	8		*****
1391	10		*****
996	12		*****
803	14		*****
633	16		*****
516	18		*****
424	20		*****
430	22		*****
354	24		****
295	26		****
227	28		***
186	30		**
196	32		**
157	34		**
127	36		**
105	38		*
99	40		*
82	42		*
80	44		*
78	46		*
44	48		*
58	50		*

Mortgages with between 51 and 99 payments in arrears not plotted.

I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I

0 800 1600 2400 3200 4000

HISTOGRAM FREQUENCY

Descriptive Statistics for Payments in Arrears at NHT:

Mean	11.5	Median	6.0	Mode	3.0
Std dev	15.3	Minimum	.0	Maximum	99.0
Sum	235866.0	Valid cases	20540	Missing cases	0

Subsidy Cost of Arrears

The subsidy cost of arrears can be calculated in various ways. As pointed out above, NHT's failure to make all collections is equivalent to lowering the median interest rate by another 1.7 percentage points, although the implicit subsidies conveyed by collection policy is much more highly concentrated.

A straightforward measure of the cost of arrears is the income foregone by NHT as a result of non-collection. At the average rate of non-collection over NHT's lifetime, this amount in 1988 would be approximately \$12 million per year for the accounts in the cleaned

data set if arrears were distributed evenly over the entire mortgage population, and somewhat less if they are concentrated at the low end of the loan distribution, as in fact is the case. It should be noted that NHT believes it has substantially improved its collection rate in recent years, so that the average experience over its lifetime exaggerates the extent of current nonpayment. NHT's account manager estimated that net arrears increased by only \$2 million between 1987 and 1988. However, this figure is not consistent with NHT's records, which show that the new mortgages issued in 1987 had already, by early 1988, accumulated \$2.9 million in arrears. These mortgages represented only slightly more than one-tenth of outstanding loans.

A third measure of the arrearage problem involves looking at cumulative arrears, and calculating the annual income equivalent that NHT could earn if it collected this amount and invested it. As of May 1988, the cumulative arrears on active accounts, as recorded in NHT's Mortgage Master File, was \$46 million. Invested at 16 percent per annum, the private market residential mortgage rate in that year, this sum, if collected, would yield some \$7.4 million annually in additional income to NHT.

Not all of the cost of arrears, of course, can be considered a "subsidy." Some level of non-collection is an unavoidable cost of mortgage lending. A general rule of thumb applied in other developing nations has held that non-collection rates between 5 and 10 percent represent acceptable performance. By this standard, NHT's collection record could be said to constitute a sizable but not critical problem.

Pattern of Arrears

What patterns can be found in NHT's arrears picture? A simple plot of monthly payments in arrears against borrower income shows that there is a modest negative relation overall (i.e., lower income families have modestly greater arrears, measured in this way, than do higher income families). However, the cases of extreme arrears (accounts in arrears by one year or more) are more highly concentrated among the low income population, and may well be associated with particular problematic housing schemes.

Dollar amounts in arrears, by contrast, show virtually a random relation with respect to income. The greater likelihood of arrears problems in the lower income population is offset by the greater value of loans, and consequently greater value of average arrears, in the higher income population.

To obtain a more exact understanding of arrears patterns, regression equations were run for the 9,113 cases where complete arrears records could be obtained and matched to household income from the NHT contributor file. Two representative empirical estimates of the factors explaining arrears are shown in Table 10.

Table 10

Analysis of Arrears, NHT

Dependent Variable: Monthly Payments in Arrears

<u>Variable</u>	<u>Coefficient</u>	<u>T-Statistic</u>
Age of Loan (years)	2.8	40.3
Home Improvement (dummy variable)	10.9	19.4
Open Market (dummy)	- 3.0	4.3
Build-on-own-land (dummy)	2.9	7.2
Kingston-St. Andrews (dummy)	3.9	10.7
Clarendon (dummy)	2.6	4.8
St. Anns(dummy)	- 3.3	4.8
Borrower Income (thousands)	- 5.6 (e-02)	3.8
Current Account Balance (thousands)	7.6 (e-02)	8.8

$$R^2 = .27$$

Dependent Variable: Dollar Amount in Arrears

<u>Variable</u>	<u>Coefficient</u>	<u>T-Statistic</u>
Age of Loan (years)	391	24.9
Home Improvement (dummy)	1,548	12.5
Open Market (dummy)	- 900	5.8
Loan in 1983 (dummy)	+ 914	11.4
Kingston-St. Andrews (dummy)	375	3.9
Clarendon (dummy)	1,519	11.4
Borrower Income (dollars)		not significant
Current Account Balance (dollars)	.05	25.0

$$R^2 = .13$$

Although the R^2 is low for both equations, this is typical of regressions run on individual data. The key explanatory variables enjoy a high level of statistical significance.

The results show that both the number of payments in arrears and the dollar amount of arrears rise steadily as a mortgage at NHT ages. There are pronounced differences in arrears experience associated with different types of housing programs. Home improvement loans have the worst repayment record. After control for other variables, home improvement loans

are an average of 10.9 months and \$1,550 more in arrears than other programs. Build-on-own-land projects also have greater than average arrears. In contrast, open market loans have significantly *lower* than average arrears, apparently reflecting the greater private market orientation of those mortgages. There are also regional differences in arrears experience. Payments in arrears are well above average, after control for other variables, in Kingston-St. Andrews and Clarendon, and below average in St. Ann's. These differences are most likely related to specific housing schemes, but this hypothesis could not be tested with the data at hand.

The regression results indicate that low-income borrowers have a modestly greater number of payments in arrears, other things equal, but that there is virtually no relation between income level and the dollar amount of arrears.

CHAPTER THREE: CHFC'S MORTGAGE PROGRAM

The Caribbean Housing Finance Corporation (CHFC) operates a diversified set of mortgage programs. For some programs, it serves as mortgage collector on housing schemes developed and financed by other organizations. For example, both the Ministry of Construction (Housing) and the Jamaica Mortgage Bank have turned over mortgage collection responsibilities on some of their projects to CHFC, on a fee basis. For other projects, CHFC raises capital on its own and initiates mortgage lending. It is presently acting as a wholesaler of \$55 million of housing funds provided by USAID. It on-lends the funds to other financial organizations such as building societies, banks, and credit unions which CHFC deems to be worthy creditors. Developers access the funds through these intermediaries.

Because CHFC does not have a regular flow of low-cost funds, such as the payroll deductions available to NHT, the cost of funds for its programs is both higher on average than NHT's and variable as between programs. Each housing program is separately financed from its own source of funds. Mortgage rates are set so as to recover the cost of capital on that program. Since different housing programs have been subsidized by public authorities to varying degrees, as well as launched at different times when there were different market rates of interest, CHFC mortgages display a broad range of interest rates. CHFC generally operates with a low interest rate spread. Under the USAID HG12 program, it charges a 1 percent spread to administer the program.

Table 11 provides a temporal picture of loan allocation for all of the mortgages that CHFC currently services. The plot excludes some of CHFC's oldest mortgages from the early 1960s that mortgagors already have paid off. Although CHFC has made loans throughout its history, its portfolio is concentrated in two lending periods: 1975-78 (comprising 38 percent of the loans); and 1983-87 (comprising 36 percent of the loans).

The first period of high lending is associated primarily with the JMB-financed Waterford (Portmore) housing scheme, in which over 3,100 mortgages were made in and around 1977. Waterford is by far CHFC's largest scheme, and also one of its most successful in terms of repayment, with a mean of less than one month of arrears. (The successful repayment record appears to reflect the fact that, in contrast to many other schemes on which CHFC now holds mortgages, monthly billings were initiated promptly at the outset by JMB.) The second high lending period is attributable principally to the MOC(H)'s New Portfolio, which contains 10 heterogeneous schemes and over 5,000 mortgages.

Despite these examples of surges in mortgage lending, on average CHFC and its affiliates have made only 548 mortgage loans per year, and about 500 per year since 1970. Further, lending appears to have dropped off recently. Although the data for 1988 cover lending only up to September, loan allocations for the first nine months of the year indicate that CHFC lending declined from 1983-86 levels.

Table 11

Active CHFC Mortgages by Year of Loan Allocation

# of Mortgages	Year of Allocation	Symbol	Notes
8	60		
5	61		
23	62		
44	63	*	
87	64	*	
85	65	*	
143	66	**	
182	67	**	
197	68	**	
362	69	*****	
371	70	*****	
135	71	**	
114	72	*	
463	73	*****	
443	74	*****	
715	75	*****	
2243	76	*****	} High Lending } Period 1
2051	77	*****	
964	78	*****	} High Lending } Period 2
493	79	*****	
374	80	*****	
123	81	**	
233	82	***	
2143	83	*****	} High Lending } Period 2
1022	84	*****	
606	85	*****	
1141	86	*****	
798	87	*****	
316	88	****	

I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I

0 800 1600 2400 3200 4000

HISTOGRAM FREQUENCY

Descriptive Statistics for Loan Year for CHFC Mortgages:
 Mean 78.8 Median 78.0 Mode 76.0
 Std dev 5.6 Valid cases 15884 Missing cases 0
 All cases plotted.

DATA SOURCES AND DATA METHODS

Analysis of CHFC mortgages was conducted primarily from original data maintained in CHFC's computer files. The data set used for analysis was cleaned to exclude inactive or closed accounts as well as records with obvious keypunching errors. A total of 15,884 mortgage accounts were analyzed of a total of 16,403 accounts on file as of September 1988.

The CHFC data file is rich in terms of mortgage characteristics and repayment records. Data quality generally is better than that in NHT's files. Unfortunately, however, the CHFC data set contains little direct information about the socioeconomic characteristics of the mortgagor. For example, household income is not entered on the computer file, although it is

available at CHFC on hand-written applicant records. For future analysis, recommendations were made to CHFC in July 1989 as to the socioeconomic variables that it would be valuable to include in the computer data base.

LENDING PATTERNS

CHFC's mortgage loans on average are considerably smaller than NHT's. Table 12 shows the value of mortgage loans, adjusted to 1988 dollars (inflated by the consumer price index from the original date of lending). Both the mean and median loan values (1988 dollars) fall in the range of \$46,000 to \$48,000. By contrast, NHT's records indicate that the average NHT mortgage (in 1988 dollars) has been more than three times as large (mean: \$154,000). Even if NHT's records are exaggerated by data error, as NHT managers affirm, there appears to be a substantial difference in loan size. In fact, the average CHFC mortgage is less than half the amount needed to buy a finished two-bedroom unit on today's market.

The relatively modest size of CHFC mortgages also is evident in a comparison of monthly payment amounts (Table 13). The mean monthly payment on CHFC's active mortgages is \$115, and the median only \$79. Eighty-six percent of all CHFC mortgagors pay \$200 per month or less.

Using the standard criterion that households can afford to devote 25 percent of income to housing costs, 86 percent of CHFC's outstanding mortgages would be affordable today for households earning \$9,600 per year, a level that falls within the third decile of the Jamaican income distribution (Boyd 1989).

The low burden of monthly payments reflects both the comparatively modest value of initial loan amounts and the effect of inflation, which has eroded the real value of fixed monthly payments over time. Household income requirements at the time of initial lending would be considerably higher.

In an attempt to broaden access to its mortgages, CHFC since 1983 has been using Graduated Payment Mortgages (GPMs) as the norm to calculate repayment schedules. By CHFC's estimates, GPMs are used in 80-90 percent of the MOC(H) New Portfolio mortgages. Monthly payments increase by 10 percent per year, in line with Government and IMF wage guidelines. The Eltham Phase 2 housing scheme being allocated during 1989 and financed by the Commonwealth Development Corporation also employs GPMs with 10 percent per year escalation. The loans carry negative amortization for the first 9-12 years (depending on the number of bedrooms) of a 25-year mortgage term.

Table 12

Descriptive Statistics and Histogram for Inflated
Loan Values, CHFC Mortgages
(in 1988 J\$)

Mean 47868. Median 46177. Mode 60430.
Std dev 26348. Minimum 20. Maximum 278800.
Sum 760,328,145 Valid cases 15884 Missing cases 0

of Inflated Loan Value
Mortgages Midpoint J\$ # One symbol equals approximately 40 Mortgages

```

 96      0  **
1056    5000 *****
 835    10000 *****
 346    15000 *****
 321    20000 *****
 220    25000 *****
1147    30000 *****
1651    35000 *****
1921    40000 *****
 460    45000 *****
 655    50000 *****
1776    55000 *****
1730    60000 *****
 308    65000 *****
 525    70000 *****
 447    75000 *****
 921    80000 *****
 267    85000 *****
 508    90000 *****
 106    95000 ***
 331   100000 *****
 21   105000 *
 11   110000
 50   115000 *
 24   120000 *
 59   125000 *
 24   130000 *
 3    135000
 3    140000
 51   145000 *
 1    150000
 0    155000
 9    160000

```

1 case at J\$278800 not plotted.



Number of Cases Plotted: 15883

Number of Cases Beyond Plotted Range: 1

note that the data displayed in this and the other histograms in this report are plotted around a midpoint of a category of values, which extends half way toward the next midpoint listed. The cases listed in the category with a midpoint of 0, therefore, range up to J\$2500.

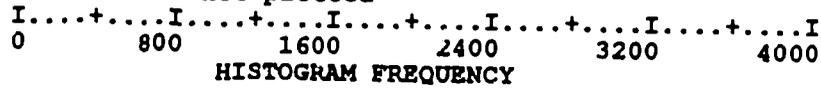
Table 13

Distribution of Monthly Payments for CHFC Mortgages
(in 1988 J\$)

of Mortgages Midpoint of the Payment Category J\$ # One symbol equals approximately 80 Mortgages

311	0	****
2570	20	*****
946	40	*****
1144	60	*****
3328	80	*****
388	100	*****
2516	120	*****
838	140	*****
914	160	*****
306	180	****
691	200	*****
123	220	**
194	240	**
277	260	***
190	280	**
184	300	**
222	320	***
441	340	*****
134	360	**
33	380	
17	400	
15	420	
11	440	
13	460	
12	480	
35	500	

31 cases between 510 and 1306 not plotted



Mean	115	Median	79	Mode	77
Std dev	93	Minimum	0	Maximum	1306
Sum	1,821,549	Valid cases	15884	Missing cases	0
15853 Cases Plotted		31 cases beyond plotting range			

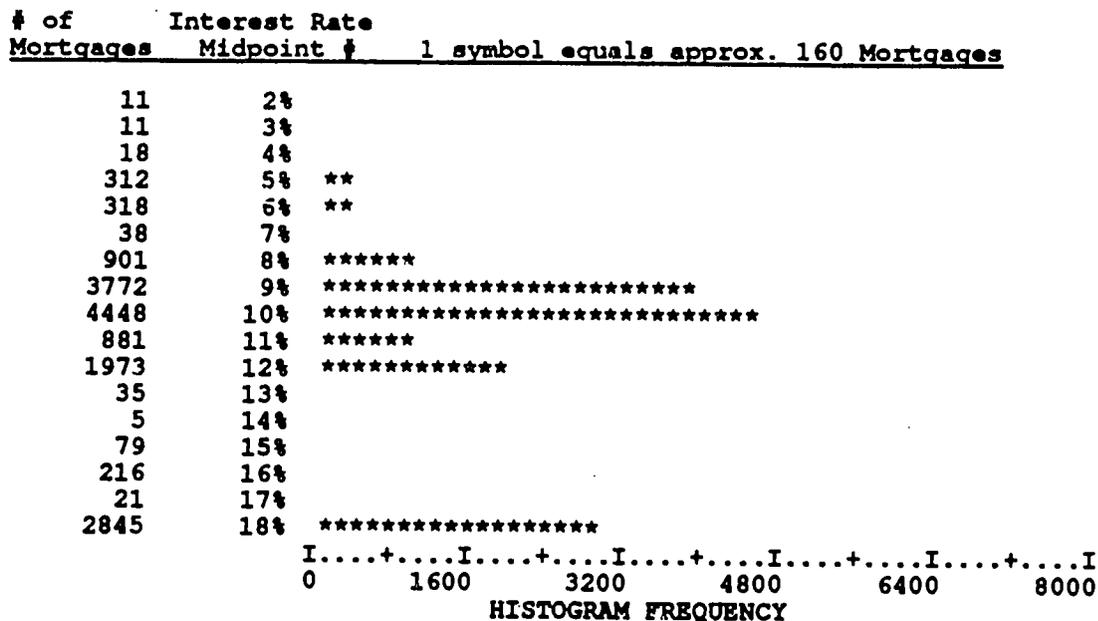
note that the data displayed in this and the other histograms in this report are plotted around a midpoint of a category of values, which extends half way toward the next midpoint listed. The cases listed in the category with a midpoint of 0, therefore, range up to J\$10.

Interestingly, a time profile of CHFC mortgages shows that the average mortgage value (in 1988 dollars) has declined over time. This downward trend in loan size is probably attributable to the fact that CHFC is increasingly servicing MOC(H) loans, and therefore a smaller proportion of its loans is from sources such as JMB and CDC, which are aimed at the middle income market.

Interest Rate Structure

Table 14 portrays the extreme diversity of mortgage interest rates within CHFC's portfolio. Rates range from less than 3 percent on some loans in the MOC(H) Old Portfolio to 18 percent, which in 1988 was above the building society rate and primarily associated with loans made by JMB. Most of CHFC's mortgages have interest rates that are round numbers, like 10 or 12 percent. However, some interest rates fall between the round numbers, primarily on the 3,541 MOC(H) Old Portfolio loans which have interest charges that are in monetary units, rather than in percentages. At 11.3 percent, the (unweighted) mean mortgage interest rate is significantly higher than at NHT, where the comparable figure is 8.7 percent.

Table 14
Distribution of Interest Rates on CHFC Loans, 1988



Descriptive Statistics for Interest Rates:

Mean	11.3	Median	10.0	Mode	10.0
Std dev	3.5	Minimum	2.0	Maximum	18.0
Valid cases	15884	Missing cases	0	All Cases plotted	

Note that the data displayed in this and the other histograms in this report are plotted around a midpoint of a category of values, which extends half way toward the next midpoint listed. The cases listed in the category with a midpoint of 2, however, range from 2% to 2.5%, as those mortgages with less than 2% interest were removed from the data set before analysis.

Distribution of Loans by Finance Source and Housing Scheme

Because of the diversity in CHFC's mortgage portfolio, it is useful to disaggregate the portfolio by source of financing and by housing scheme. Table 15 groups CHFC mortgages by development project. It shows the wide range of original loan sizes, even after adjustment to current dollars. The two schemes with the lowest average loan values, Schemes 18 and 25, are for Squatter Upgrading projects.

ASSESSMENT OF THE INCOME GROUPS SERVICED BY CHFC

As noted in the introduction to this chapter, CHFC does not maintain computer records on the income levels of borrowers. However, the minimum income standards for participating in the various housing schemes it finances are known.

For most of its lending, CHFC applies both a maximum mortgage payment income ratio and a maximum ratio of loan value to annual income. Mortgage payments generally cannot exceed 25 percent of regular income. Income requirements also are set so that the ratio of total loan value to income is in the range of 3.3 to 3.5:1. For example, as of August 1989, CHFC was allocating loans for two-bedroom homes in Eltham Phase 2 (Spanish Town) costing \$111,000 to households with minimum annual incomes of \$32,000. This is a maximum value/income ratio of 3.5:1. To qualify for three-bedroom homes costing \$133,870 in the same scheme, households needed a minimum of \$41,000 in annual income. The ratio in this case was 3.3:1. To reduce the income required for Eltham scheme loans to this level, CHFC has used a Graduated Payment Mortgage. Before the use of GPMs, minimum income requirements were set more conservatively, so that households could afford monthly payments in the first years of a mortgage. The maximum ratio of loan value to income generally was about 3.0 to 1. On the current basis for determining eligibility, more than half of CHFC's mortgage loans would have been available to households earning \$16,000 or less.

As is illustrated by Eltham Phase 2, however, houses financed by CHFC often are allocated to households with higher than the minimum qualifying income level.

In the case of Eltham Phase 2, construction and mortgage financing have been provided by the Commonwealth Development Corporation of the United Kingdom (CDC). CDC maintains some distance from Jamaica's housing system, opting to review proposed uses of funds by CHFC, applying the criteria of financial soundness, development potential, and social orientation. It is notable, however, that despite CDC's commitment to social needs, it applies no quantitative income ceilings on the use of mortgage funds. This is unlike the median income ceiling applied to funds from USAID, another major source of housing financing resources for CHFC. Without income ceilings, and in the context of massive housing need across income levels, the criterion of financial soundness looms large in the applicant selection process. Like the situation at NHT, higher income applicants for CHFC loans look economically stronger on paper and during the interview, and therefore are more likely to receive mortgages.

Table 15

Loan Characteristics by Housing Scheme and Mortgage Scheme

Variable	Value	Label #	Number of Mortgages	Mean Year of Loan	Mean Loan Value (J\$1988)
FOR ENTIRE POPULATION			15884	78.8	47868
MORTSRCE	1	CDC	515	71.5	86270
SCHEMENO	4	DUHANEY PARK	17	65.4	60567
SCHEMENO	5	DUHANEY PARK EXTSN	125	66.9	52921
SCHEMENO	6	HUGHENDEN	77	68.4	122782
SCHEMENO	8	SPRINGFIELD	11	70.3	81527
SCHEMENO	9	EDGEWATER	7	71.4	123095
SCHEMENO	11	BRIDGEPORT I	227	74.2	91683
SCHEMENO	12	BRIDGEPORT II	51	77.8	93328
MORTSRCE	2	JMB	6092	77.7	62507
SCHEMENO	13	SECONDARY MARKETS	68	78.8	73559
SCHEMENO	14	S.G., P.M.P., H,O	144	83.7	27828
SCHEMENO	15	FAIRY HILL (PORTLAND	79	81.2	42740
SCHEMENO	16	BLUE CASTLE	42	82.0	76260
SCHEMENO	20	WSTPRT (PRT) C.H.,W.	171	85.8	12366
SCHEMENO	60	BAY FARM VLAS (W.KIN	130	84.6	32156
SCHEMENO	61	PASSAGE FORT (PRTMRE	742	75.6	79200
SCHEMENO	62	WATERFORD (PORTMORE)	3187	76.9	53377
SCHEMENO	63	BRAETON (PORTMORE)	736	76.9	84843
SCHEMENO	64	COOREVILLE GDNS (PRT	550	79.2	76857
SCHEMENO	65	GARVEYMEADE (PRTMRE)	243	77.9	104184
MORTSRCE	3	MOC(H) NEW PORTFOLIO	5365	84.6	31622
SCHEMENO	1	MONEAGUE	22	85.2	41513
SCHEMENO	2	MARKLAND CLOSE	2	87.0	44577
SCHEMENO	17	SEAVIEW GDNS (KING)	2125	83.5	32277
SCHEMENO	18	VARIOUS LOCATIONS	862	84.8	8797
SCHEMENO	19	CATHERINE HALL	791	83.3	35620
SCHEMENO	21	VARIOUS LOCATIONS	167	86.1	58346
SCHEMENO	22	VARIOUS LOCATIONS	257	86.5	50684
SCHEMENO	23	VARIOUS LOCATIONS	370	86.4	58166
SCHEMENO	24	VARIOUS LOCATIONS	304	87.2	53426
SCHEMENO	25	VARIOUS LOCATIONS	465	87.1	8104
MORTSRCE	4	MOC(H) OLD PORTFOLIO	3541	73.9	38489
SCHEMENO	30	KINGSTON ST ANDREW	741	70.3	47192
SCHEMENO	31	KINGSTON ST ANDREW	363	72.6	35620
SCHEMENO	32	PORTLAND ST THOMAS	190	72.5	33619
SCHEMENO	33	ST MARY	182	74.2	37211
SCHEMENO	34	ST CATHERINE	323	72.4	38738
SCHEMENO	35	CLARENDON	339	76.7	44921
SCHEMENO	36	TRELAWNY/ST ANN	479	76.7	34172
SCHEMENO	37	ST ELIZ/MANCHESTER	374	74.8	37008
SCHEMENO	38	ST JAMES	402	76.1	31760
SCHEMENO	39	WESTMORE/HANOVER	148	75.7	30483
MORTSRCE	5	JNMA/PORTWORKERS	371	71.6	78617
SCHEMENO	50	INDEP.CITY I	63	70.0	94464
SCHEMENO	51	INDEP.CITY I	184	69.8	77413
SCHEMENO	52	INDEP.CITY II	80	73.0	68515
SCHEMENO	53	BRIDGEPORT II	44	79.0	79329

The preference toward higher income households is amplified by the role of the developer. Eltham Phase 2 was built by West Indies Home Contractors (WIHC). WIHC also advertised the scheme and did the initial screening of applicants before turning over a list of approved applicants to CHFC. WIHC itself selects applicants by income level and savings. Savings are given greater consideration for applicants with less-regular income, particularly the self-employed (e.g., higglers). As with developers generally, WIHC wants a fast turnaround of their invested funds, and this encourages preference for the economically strongest applicants, whose loan applications will be approved most swiftly. In this period of loan development CHFC keeps a low profile. It accepts nearly all of the applicants recommended to it by WIHC. CHFC is motivated primarily by the desire to ensure loan repayment. In a special survey of income levels, about 20 percent of the applicants for homes in Eltham Phase 2 were found to earn more than \$50,000 per annum, despite minimum requirements of \$32,000 for a two-bedroom unit.

INTEREST-RATE SUBSIDIES

In view of the wide range of interest rates charged on CHFC mortgages, it is to be expected that there will also be a wide range of interest-rate subsidies, measured with respect to private market residential mortgage rates. Table 16 confirms this expectation. It shows the annual dollar subsidy in 1988 (i.e., the difference in interest paid as a result of the actual interest rate charged on remaining loan value and the amount that would be paid at 16 percent interest, the market rate prevailing in 1988).

The annual subsidy values range from -\$1,077 to +\$6,820. The negative values are for CHFC's 18 percent loans, which in 1988 were above private market rates. Added together, the interest subsidies on all CHFC mortgages amounted to more than \$9 million per year. The median value per mortgagor, however, was only \$368. (The negative subsidy shown for 1981 results from the fact that most of the "market-rate" loans were issued in that year. The interest on these loans was frozen at 18%, which by 1988 was actually above the market level.)

Table 16

Distribution of Annual Interest Subsidies for CHFC Mortgages
(in J\$ 1988)

# of Mortgages	Midpoint of an Interest Subsidy Category J\$	
4	-2000.00	
10	-800.00	
86	-600.00	*
791	-400.00	*****
1910	-200.00	*****
2412	.00	*****
2370	200.00	*****
682	400.00	*****
3302	600.00	*****
138	800.00	**
239	1000.00	***
2738	1200.00	*****
64	1400.00	*
74	1600.00	*
32	1800.00	
2	2000.00	
14	2200.00	
27	2400.00	
30	2600.00	
117	2800.00	*
129	3000.00	**
161	3200.00	**
63	3400.00	*
103	3600.00	*
147	3800.00	**
144	4000.00	**
21	4200.00	
2	4400.00	
0	4600.00	
0	4800.00	
2	5000.00	
11	5200.00	
2	5400.00	
0	5600.00	
0	5800.00	
1	6000.00	
2	6200.00	
20	6400.00	
11	6600.00	
2	6800.00	
0	7000.00	

All Mortgages plotted.

I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I

0 800 1600 2400 3200

4000

HISTOGRAM FREQUENCY

Descriptive Statistics for Annual Interest Subsidies of NHT Mortgages:

Mean	593	Median	368	Mode	1169
Std dev	925	Minimum	-1077	Maximum	6820
Sum	9407528	Valid cases	15862	Missing cases	22
All Cases Plotted					

Despite the fact that CHFC's average loan size (in 1988 dollars) has been declining recently, the average interest rate subsidy has been climbing rapidly (see Table 17). This results from the emphasis on less expensive, but more highly subsidized MOC(H) programs.

Table 17

<u>Loan Year</u>	<u>Mean Interest-Rate Subsidy of Mortgages Issued in Year (J\$ 1988)</u>	<u>Number of Mortgages</u>
1979	68	493
1980	22	373
1981	- 268	123
1982	486	233
1983	1,030	2,143
1984	1,034	1,022
1985	887	606
1986	1,628	1,139
1987	1,767	797
1988 (9 months)	1,718	316

Interest Subsidies by Housing Scheme

The most pronounced variations in interest rate subsidies are found by housing scheme (see Table 18). Most of the financing sources in CHFC's portfolio have not given large interest subsidies. For example, the annual subsidy is less than \$250 per mortgage for loans allocated by CDC and JMB, and for loans in the MOC(H) Old Portfolio. These loans have been made on essentially the same terms as open-market loans. The MOC(H) New Portfolio, however, stands out as having much higher interest subsidies, with some schemes averaging more than \$2,500 per year. Closer examination of the MOC(H) New Portfolio reveals that the majority of loans involve rather modest subsidies, but that there is a clustering of relatively high-cost homes which enjoy deep subsidies.

An analysis of the loans in the MOC(H) Old Portfolio shows that interest subsidies are totally unrelated to loan size. However, in the MOC(H) New Portfolio, there is an extremely strong correlation (+.88) between total interest subsidy and loan size. Although we lack data on household income, it is virtually certain that the larger loans were made to higher income households, and that therefore the interest rate subsidies in the MOC(H) New Portfolio also are positively related to household income level.

Table 18

Interest Subsidies per CHFC Scheme and Source of Finance

Variable	Value	Label	Mean Subsidy	Number of Mortgages
FOR ENTIRE POPULATION				
			593	15862
MORTSRCE	1	CDC	-87	508
SCHEMENO	4	DUHANEY PARK	14	16
SCHEMENO	5	DUHANEY PARK EXTSN	16	119
SCHEMENO	6	HUGHENDEN	58	77
SCHEMENO	8	SPRINGFIELD	119	11
SCHEMENO	9	EDGEWATER	363	7
SCHEMENO	11	BRIDGEPORT I	-173	227
SCHEMENO	12	BRIDGEPORT II	-304	51
MORTSRCE	2	JMB	234	6090
SCHEMENO	13	SECONDARY MARKETS	-127	68
SCHEMENO	14	S.G., P.M.P., H, O	-252	144
SCHEMENO	15	FAIRY HILL (PORTLAND)	-18	79
SCHEMENO	16	BLUE CASTLE	-635	42
SCHEMENO	20	WSTPRT (PRT) C.H., W.	360	170
SCHEMENO	60	BAY FARM VLAS (W.KIN)	1362	130
SCHEMENO	61	PASSAGE FORT (PRTMRE)	-155	742
SCHEMENO	62	WATERFORD (PORTMORE)	580	3186
SCHEMENO	63	BRAETON (PORTMORE)	-216	736
SCHEMENO	64	COOREVILLE GDNS (PRT)	-408	550
SCHEMENO	65	GARVEYMEADE (PRTMRE)	-368	243
MORTSRCE	3	MOC(H) NEW PORTFOLIO	1394	5363
SCHEMENO	1	MONELAGUE	2676	22
SCHEMENO	2	MARKLAND CLOSE	-845	2
SCHEMENO	17	SEAVIEW GDNS (KING)	1151	2125
SCHEMENO	18	VARIOUS LOCATIONS	296	861
SCHEMENO	19	CATHERINE HALL	1228	791
SCHEMENO	21	VARIOUS LOCATIONS	3174	167
SCHEMENO	22	VARIOUS LOCATIONS	2911	257
SCHEMENO	23	VARIOUS LOCATIONS	3494	370
SCHEMENO	24	VARIOUS LOCATIONS	3049	304
SCHEMENO	25	VARIOUS LOCATIONS	533	464
MORTSRCE	4	MOC(H) OLD PORTFOLIO	130	3530
SCHEMENO	30	KINGSTON ST ANDREW	111	740
SCHEMENO	31	KINGSTON ST ANDREW	106	360
SCHEMENO	32	PORTLAND ST THOMAS	91	190
SCHEMENO	33	ST MARY	122	181
SCHEMENO	34	ST CATHERINE	80	321
SCHEMENO	35	CLARENDON	121	336
SCHEMENO	36	TRELAWNY/ST ANN	230	479
SCHEMENO	37	ST ELIZ/MANCHESTER	143	373
SCHEMENO	38	ST JAMES	125	402
SCHEMENO	39	WESTMORE/HANOVER	126	148
MORTSRCE	5	JNMA/PORTWORKERS	251	371
SCHEMENO	50	INDEP.CITY I	97	63
SCHEMENO	51	INDEP.CITY I	76	184
SCHEMENO	52	INDEP.CITY II	190	80
SCHEMENO	53	BRIDGEPORT II	1315	44

TOTAL CASES - 15884 MISSING CASES - 22 OR .1 PCT

ARREARS AND ARREARS SUBSIDIES

CHFC generally has a better arrears record than NHT, largely because of its more aggressive collections posture. CHFC's official foreclosure policy is most clear in cases where it holds mortgage title directly. Unlike NHT, CHFC requires all mortgagors on its own loans to have legal title to their property and registered mortgages. CHFC can take action on a property when payments fall three months or more past due (this is half the time period allowed by NHT's foreclosure policy). In practice, CHFC takes action toward repossession and resale once arrears reach nine months. At that point, CHFC conducts an inquiry to ensure that arrears have not been the result of serious circumstances in the family causing financial hardship beyond what CHFC considers to be the mortgagor's control. Households in default but with what CHFC judges to be personal burden are allowed to reschedule their debt. If default has not been caused by personal burden, NHT attempts to sell the property by public auction. After the property is sold through auction, CHFC will move to evict the previous mortgagor in default to open the unit for the new mortgagor.

For the other mortgages in CHFC's portfolio, where it acts as servicer for mortgages owned by other institutions, the foreclosure policies and practices are generally more complicated and less strict. In MOC(H)'s New Portfolio, only a portion of the properties are titled, a requirement for foreclosure. Even when properties are titled and at least nine months in arrears, CHFC needs to add an additional step to the procedure by making a recommendation to MOC(H) on plans for foreclosure. MOC(H) then may conduct its own investigation of the reasons for high arrears, and decide whether to support CHFC in its foreclosure action.

All of the properties which CHFC services in MOC(H)'s Old Portfolio, and some of the properties in the New Portfolio, are without titles. CHFC's only option then is to sue to recover its losses and take possession. A lawsuit would involve a slow and tedious process which in practice is not pursued by CHFC. Instead, CHFC attempts to reach out to the mortgagor and persuade her/him to begin to repay on a monthly basis.

As result of these procedures, CHFC recovers some of its arrears. Unlike NHT, CHFC does have a standard and computer-generated late payment penalty. CHFC collects perhaps one-third of what it is owed in payment arrears through late payment charges.

Distribution of Arrears

A glance at Table 19 immediately reveals the unusual nature of CHFC's arrears distribution. The median number of monthly payments in arrears is only 1.0 (contrast the NHT median of 11.5, despite the fact that CHFC loans on average are four years older). More than three-fifths of CHFC's mortgages are two months or less in arrears, the usual test for collections adequacy. (At NHT the corresponding rate is only 14 percent.) Yet the *mean* number of monthly payments in arrears at CHFC is 8.1. CHFC has a number of loans that are

hopelessly behind schedule. There are 806 mortgages more than 51 months in arrears, where arrearages were too large to plot in Table 19 because of a concentration of problem loans.

Table 19

Distribution of CHFC Mortgages by the Number of Months in Arrears

# of Mortgages	Payments in Arrears	Midpoint J\$	One symbol equals approx. 160 Mortgages
5618	0		*****
4025	2		*****
1624	4		*****
833	6		*****
436	8		***
548	10		***
230	12		*
116	14		*
139	16		*
130	18		*
112	20		*
99	22		*
97	24		*
116	26		*
152	28		*
130	30		*
82	32		*
65	34		
76	36		
79	38		
53	40		
51	42		
51	44		
54	46		
79	48		
83	50		*

806 mortgages with between 51 and 214 payments in arrears not plotted

I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I.....+.....I
0 1600 3200 4800 6400 8000

HISTOGRAM FREQUENCY

Descriptive Statistics for Payments in Arrears at CHFC:

Mean	8.1	Median	1.0	Mode	.0
Std dev	15.4	Minimum	.0	Maximum	214.0
Sum	129086.0	Valid cases	15884	Missing cases	0
15078 Cases Plotted		806 cases beyond plotting range			

Table 20 pinpoints the arrears problem by housing scheme, type of property, financing source, and status of title. It shows that arrears are overwhelmingly concentrated in the MOC(H) Old Portfolio, plus a small number of other schemes.

Table 20

Characteristics of Mortgages Serviced by CHFC

(note: abbreviations are explained at the bottom of the table)

SCHEME Name/Location	Units	<u>MTHS IN ARREARS</u> <u>Mean</u>	FINANCE SOURCE	loan* purpose	Regstrd Prop Title?
<u>CHFC OWNS TITLE:</u>					
01 Moneague	22	1.4	MOCH/HG11	2bSFD	NYR
02 Markland Close	2	.5			Yes
04 Duhaney Park	4	11.5	CDC	2bSFD	Yes
05 Duhaney Park Extn	50	13.6	CDC	2bSFD	Yes
06 Hughenden	43	.9	CDC	3bSFD	Yes
08 Springfield	10	.4	CDC	2bSFD	Yes
09 Edgewater	7	.4	CDC	3bSFD	Yes
11 Bridgeport I	216	1.1	CDC	2bSFD	Yes
12 Bridgeport II	49	2.1	CDC	3bSFD	Yes
13 Secondary Markets (various locations)	62	1.5	JMB	2&3bSFD	Yes
14 S.G., P.M.P., H.O	138	1.7	JMB		Yes
15 Fairy Hill (Portland)	78	2.6	JMB	2b1	Yes
16 Blue Castle	41	1.5	JMB	2bT	Yes
20 Watprt (Prt) C.H., W.G	171	3.4	JMB	2bC	Yes
<u>MOCH NEW PORTFOLIO:</u>					
17 Seaview Gdns (King)	2106	4.7	MOCH	SAH	No
18 Various Locations	846	21.7	MOCH/HG10	S.U.	some
19 Catherine Hall	784	2.1	MOCH/WB	S/S SAH	some
21 Various Locations	164	1.4	MOCH	lots?	50%
22 Various Locations	257	2.3	MOCH	H/S lots	50%
23 Various Locations	370	2.0	MOCH/HG11	2b H/S SAH	50%
24 Various Locations	302	2.3	MOCH/HG12	SAH/lots?	50%
25 Various Locations	425	3.2	MOCH/ HG11, 12	S.U.	50%
<u>MOCH OLD PORTFOLIO:</u>					
30 Kingston St Andrew	733	39.6	MOCH		T.P.
31 Kingston St Andrew	350	25.0	MOCH		T.P.
32 Portland St Thomas	185	22.1	MOCH		T.P.
33 St Mary	174	24.6	MOCH		T.P.
34 St Catherine	283	18.5	MOCH		T.P.
35 Clarendon	323	25.0	MOCH		T.P.
36 Trelawny/St Ann	470	14.8	MOCH		T.P.
37 St Eliz/Manchester	348	19.4	MOCH		T.P.
38 St James	386	24.4	MOCH		T.P.
39 Westmore/Hanover	141	21.4	MOCH		T.P.
<u>TITLES OWNED BY OTHER INSTITUTIONS:</u>					
50 Indep.City I	63	.8	JNMA	2&3bSFD	Yes
51 Indep.City I	134	.9	JNMA	2&3bSFD	Yes
52 Indep.City II	66	.7	JNMA	2bSFD	Yes
53 Bridgeport II	42	2.3	PORTWKRS	3bSFD	Yes
60 Bay Farm Vlas (W.King)	128	12.0	JMB	2bT	Yes
<u>CHFC OWNS TITLES:</u>					
61 Passage Fort (Prtmre)	650	1.2	JMB	2bSFD	Yes
62 Waterford (Portmore)	2946	1.0	JMB	2bT	Yes
63 Braeton (Portmore)	646	1.7	JMB	2b1	Yes
64 Cooreville Gdns (Prt)	510	2.5	JMB	2&3bT	Yes
65 Garveymeade (Prtmre)	234	1.7	JMB	2&3bT	Yes

Table 20 (cont.)

Characteristics of Mortgages Serviced by CHFC

CHFC data as of September, 1988
NHT data as of May, 1988

KEY TO ABBREVIATIONS:

HG - Housing Guaranty Program, USAID
NYR - Titles Not Yet Registered at MOCH
S.G., P, M.P., H, O - Stadium Gardens, Pitfour, Mansfield Park, Hague
(Trelawny), Orchard (Hanover)
PORTWKRS - Portworkers Shipping Association
WB - World Bank
Wstpirt (Prt) C.H., W.G - Westport (Portmore); West Green (St. James) - these 2
are unrelated and should be analyzed separately; latter
should have higher arrears

*loan purpose - that is, the principal type of shelter financed in the
scheme; the abbreviations mean:

H/S - Housing Scheme
L - sold as lots
SAH - Start-A-Homes
S/S - Sites & Services
S.U. - Squatter Upgrade Programs
T.P. - tenant purchase loan agreement; includes various types
of housing units (discussed below under MOCH Old Portfolio)
2bC - 2 bedroom Clusters
2bT - 2 bedroom townhouses (2 floors)
2b1 - 2 bedroom single-level homes
2bSFD - 2 bedroom single family dwelling
3bSFD - 3 bedroom single family dwelling

Note: Table excludes CHFC mortgages which could not be classified .

The extreme variation in arrears rates makes it possible to examine more closely the factors that explain arrearage. Squatter Upgrading programs often are considered high-risk activities with a high probability of nonpayment, because of the frequent lack of land title, low income of residents, and "informal" nature of settlements. Yet the two Squatter Upgrading programs in Table 20 (Schemes 18 and 25) have drastically different repayment records. In Scheme 18 the average property is 21.9 months in arrears. In Scheme 25 the average property is 3.2 months in arrears. What explains the difference?

Scheme 18 was developed in the late 1970s under the PNP administration, during which time a leasehold arrangement applied to this and other public sector property. With leaseholds, the government charged only enough long-term rent to cover expenses on the property.

Under the JLP in 1982, a new policy with respect to property tenure was instituted to encourage "the principle of home ownership as a means of providing security, stability and economic power to the family unit and creating a basis for the development of strong, motivated communities." (Golding 1982, p. 37) More specifically, the leasehold arrangement was replaced by one of freehold ownership. This change in property status increased shelter payments in the squatter upgrade considerably, and therefore upset, and created an additional financial obligation for, the occupants.

Despite its efforts to treat high arrears in Scheme 18, CHFC feels that control is in the hands of MOC(H) and that CHFC has no sanctions that it can use to encourage payment. In retrospect, the freehold policy answered to the desire of many Jamaicans for homeownership, but inability or unwillingness to increase payments to pay for freehold ownership in Scheme 18 has made it a grave arrears problem.

In contrast, Scheme 25 did not experience a change in property status, having been settled in 1987-88 without initial, lower leasehold payments. However, the young age of the squatter upgrades in this scheme is also part of the reason for its relatively low arrears, as there has not yet been time enough for the mortgages to fall far into arrears. Arrears experience here needs to be closely monitored to determine the risks associated with loans for Squatter Upgrading.

MOC(H) Old Portfolio (Schemes 30-39)

Of the housing loans serviced by CHFC, the MOC(H)'s Old Portfolio is by far the most problematic group. These loans generally were made before 1982, although in some of the parishes (e.g., Clarendon) a few units were added since 1982. High arrears in the Old Portfolio are related primarily to two factors: age and sales arrangement. As is the case for NHT (Klak 1989), loans serviced by CHFC suffer from a tendency to slip further into arrears over time.

More important to repayment, however, are the procedures and rules used in establishing the contractual arrangement with the mortgagor. The MOC(H)'s Old Portfolio predominantly contains loans that were made under tenant-purchase agreements. Only after completing payment on the property will the occupant receive a mortgage. The absence of a mortgage contract during the payment period means that, in situations of payment default, the MOC(H) has no direct legal owner to evict. To obtain eviction power, MOC(H) would need to take the defaulting occupant to court. This legal procedure was not specified to the mortgagor at the time of initiation, and therefore does not carry the weight that it could. As of August 1989, CHFC was working to obtain the legal power through MOC(H) to be able to take eviction action against mortgagors in default.

Those in the Jamaican government with experience with this type of account believe that the lack of direct eviction power greatly reduces the mortgagee's leverage in the loan agreement, thereby reducing the mortgagor's incentive to make monthly payments. This problem of arrears owing to lack of mortgage agreement illustrates that the presence or

absence of splinter property title is not the only critical variable determining mortgagee leverage.

More broadly, CHFC finds the MOC(H) Old Portfolio frustrating in that there is a great social distance between CHFC as the mortgage servicing agency and the mortgage holders. There are several dimensions to this. The mortgages were created by MOC(H) and turned over to CHFC for servicing; thus the latter has lacked direct contact with the households. One result is that there is a widespread problem of incorrect mailing addresses for the beneficiaries. Many demand letters that are sent to mortgagors in arrears are returned unreceived to CHFC.

Another problem is the pervasiveness of the situation where beneficiaries of housing in the Old Portfolio do not live in the unit. Subsidies are going to people who are renting the units out, usually at a significant profit. There is considerable sentiment that subsidized housing units that are rented out by the beneficiary should be converted to an open market interest rate.

Bay Farm Villas (Scheme 60)

The location of a scheme is an important aspect of whether or not mortgage loans will be repaid. As well as any, Bay Farm Villas illustrates the effect of "neighborhood" on arrears. Some of these units have been "captured" by persons attempting to live in them without cost. Further, the social volatility makes it difficult to identify new residents to move in if the mortgagor refuses to pay. Despite these problems, CHFC has worked to improve the repayment rates, and feels that they are better than a few years ago. CHFC is working with the local M.P. to identify captured units and to occupy the units fully with mortgagors.

The Special Case of 18 Percent Mortgages

One justification offered for deep interest-rate subsidies is that mortgagors simply cannot afford to buy housing at market rates of interest, and will default on payments if charged the full market rate. CHFC's 18 percent mortgages provide an opportunity to test this hypothesis.

There are some 2,800 mortgages (18 percent of all mortgages) in CHFC's portfolio with interest rates above 16 percent. Almost all of these involve loans at 18 percent interest. At the time of allocation, these were variable interest rate mortgages, made mostly through the JMB. Interest rates fluctuated with market rates, which in turn are set in relation to rates at the Bank of Jamaica. Several years ago, the interest rate on these loans climbed to 18 percent when the rate through the building societies was at 20-21 percent. Later, despite reductions in the building society rates, the Minister of Finance made the decision to maintain the rate at 18 percent, which through most of 1987-89 was above the building society rate. The reasoning behind this was at least in part associated with the need to repay the foreign loans which originally financed the mortgages. Devaluation of the Jamaican dollar increased the cost of the foreign housing funds.

It can be seen from Table 21 that the 18 percent mortgages have very low arrears (mean: 1.6 months). This suggests that high interest rates by themselves are not a major factor producing arrears, and that, if anything, the approximation to market terms makes mortgagors take the debt obligation more seriously. It should be pointed out, however, that these mortgages are only of moderate size. The experience therefore may not provide a fair basis for judging what would happen if the CHFC borrowing population at large was charged interest rates closer to the market level.

Table 21

Number of Months that Mortgages with 18 Percent Interest
Are in Arrears, by CHFC Scheme and Financial Source

Variable	Value	Label	Mean	Std Dev	Cases
FOR ENTIRE POPULATION			1.6	2.5	2866
<u>MORTSRCE</u>	<u>1</u>	<u>CDC</u>	<u>1.2</u>	<u>1.6</u>	<u>278</u>
SCHEMENO	11	BRIDGEPORT I	1.0	1.5	227
SCHEMENO	12	BRIDGEPORT II	2.0	2.0	51
<u>MORTSRCE</u>	<u>2</u>	<u>JMB</u>	<u>1.6</u>	<u>2.6</u>	<u>2586</u>
SCHEMENO	13	SECONDARY MARKETS *	1.4	1.7	62
SCHEMENO	14	S.G., P, M.P., H, O	1.6	3.2	144
SCHEMENO	15	FAIRY HILL (PORTLAND	2.5	3.5	56
SCHEMENO	16	BLUE CASTLE	1.5	1.8	42
SCHEMENO	20	WSTPRT (PRT) C.H., W.	2.0	1.7	11
SCHEMENO	61	PASSAGE FORT (PRTMRE	1.1	1.6	740
SCHEMENO	62	WATERFORD (PORTMRE)	.0	.0	2
SCHEMENO	63	BRAETON (PORTMRE)	1.5	2.4	736
SCHEMENO	64	COOREVILLE GDNS (PRT	2.3	3.5	550
SCHEMENO	65	GARVEYMEADE (PRTMRE)	1.6	2.2	243
<u>MORTSRCE</u>	<u>3</u>	<u>MOC(H) NEW FORTFOLIO</u>	<u>.5</u>	<u>.7</u>	<u>2</u>
SCHEMENO	2	MARKLAND CLOSE	.5	.7	2

*Mean interest rate in this scheme is 17.7%.

Arrears Costs and Arrears Subsidies

On average, monthly payment arrears at CHFC accumulate over time at about one-fourth the rate they do at NHT, or about 0.6 month per year of loan age. This implies an annual cost from non-collection of less than \$70 per mortgage, or about \$1.2 million annually.

Coincidentally, a measure of interest earnings foregone on cumulative arrears yields a very similar estimate of annual costs. CHFC has total cumulative arrears of approximately \$8.0 million, which invested at 16 percent, the 1988 private-market residential mortgage rate, would yield \$1.2 - \$1.3 million of income annually.

It is fair to conclude that CHFC's arrears management generally is in good shape, but that there is a concentration of problems in the MOC(H) Old Portfolio, which it is now extremely difficult to address. CHFC's experience also suggests that the collections rate on NHT mortgages, at least for new loans, could be significantly improved through better collection procedures.

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