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Income Tax Evasion

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Income Tax Evasion

James Alm, Roy Bahl, and Matthew Murray

Jamaica's 1986 personal income tax reform moved the nation well along toward tax simplification, a more uniform and fair treatment of taxpayers, removal of disincentives to increased work effort and to work effort allocation across sectors and a more level playing field for investment. The major elements of the reform are a flat rate income tax, a higher income exemption level, and the elimination of all tax credits and most nontaxable perquisites. While the impact of the reform on revenues and on the burden of various types of taxpayers has been carefully analyzed,[1] much less has been done in terms of studying the impact on those who do not pay—those who evade the income tax by either underreporting or not filing. This paper presents estimates of the amount, structure and determinants of evasion by Jamaica's hard-to-tax sector, the self-employed.

It should be emphasized at the outset that Jamaica's problems with income tax evasion are not solved by the flat tax. While the new system lessens the rewards for evasion and through simplification makes compliance and monitoring easier, it will not automatically draw the self-employed into the tax net. Why would a person who is successful at evading tax at a 57 1/2 percent marginal rate voluntarily come forward to pay because the rate has been dropped to 33 1/3 percent? The structural reform must be accompanied by a vigorous program of administrative improvements. This is all the more reason to conduct a careful analysis of the amount and structure of income tax evasion. How much additional tax revenue could be captured in an effective program of enforcement, and what income groups, occupations, etc., should be targeted for increased coverage, examination and audit?

The next section of this chapter summarizes the results of analyses of the national income accounts and the taxpaying characteristics of a random sample of six professional occupations. Both approaches are meant to infer the total amount of self-employed income tax evasion. The methodology used in drawing and analyzing a much larger and more representative sample of self-employed individuals is discussed in the following section. Then we turn in the next three sections to the heart of this work: an analysis of filing rates and of the characteristics of self-employed filers, an analysis of the revenue loss that results from those who do not file, and an analysis of audit/examination reports to estimate and explain the degree of underreporting by self-employed filers. The final section of the paper is concerned with how tax policy and tax ad-

Based in part on Roy Bahl and Matthew N. Murray, "Income Tax Evasion in Jamaica," Jamaica Tax Structure Examination Project Staff Paper No. 31, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, November 1986).

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[1] James Alm and Roy Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," Jamaica Tax Structure Examination Project Staff Paper No. 15, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, December 1984 [Revised March 1985]); Michael Wasylenko, "The Distribution of Tax Burden in Jamaica: Pre-1985 Reform," Jamaica Tax Structure Examination Project Staff Paper No. 30, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, August 1986); Revenue Board, "Comprehensive Tax Reform" (Kingston: Government of Jamaica, 1985); Tax Reform Committee, "Report of the Tax Reform (Successor) Committee" (Kingston: unpublished, August 31, 1985).

ministration might be altered to draw the self-employed into the tax net.

Estimated Evasion by the Self-Employed: Previous Estimates[2]

The design work on the income tax reform recognized the existence of widespread evasion, but did not consider the possibility of the increased revenue that would result from drawing evaders into the tax net. The thinking was first to adjust the tax structure so as to reduce the incentives for evasion. Then, the self-employed would be gradually captured by an improved income tax administration that would come with the simplified system, more training of tax administration personnel, and eventual computerization. But what is the potential revenue take from evaders, i.e., what is the revenue benefit from improved administration? Tax policy analysts in developed and developing countries will attest to the fact that making such an estimate is no easy job.

The major form of evasion by the self-employed in Jamaica is nonfiling. As we shall see below, the evidence suggests that the great majority of self-employed may not even be known to the Jamaican income tax authorities. This suggests the difficulties with estimating the revenue loss due to evasion; because the self-employed do not file, we do not know who they are, how many of them there are, or what their taxpaying capacities are. Fortunately there are some available data, and some information gathered by the Project, that allow us to do a reasonable job of estimating the amounts of evasion. The answer we get is that the amounts are quite substantial.

A "Gap Analysis"

One way of assessing the revenue implications of tax evasion is to compare the income estimates found in the national income accounts with our estimates of the amount of income that is actually taxed. After making some obvious adjustments for nontaxable income, the resulting gap is a rough approximation of "potentially" taxable income. From these data we may deduce the revenue losses associated with the underreporting and nonreporting of (legal source) taxable income.

An historical analysis using this gap approach indicates the very great potential magnitude of evasion. A first step in the analysis is to make a straightforward use of national income statistics. Compensation of employees in 1980 reported in the national income accounts was J$2,418.4 million, whereas statutory income for all taxpayers according to our sample was J$1,343 million, i.e., the tax base is equivalent to 55 percent of employee compensation. Granted that part of this difference is untaxed allowances (an estimated J$192 million in allowances in 1980) and part is the earnings of workers with incomes below the income tax floor, there remains a substantial untaxed residual. If only one-half of the untaxed compensation base should truly fall within the tax base (J$575 million), and if this were taxed at the average rate for all taxpayers presently in the system (17 percent), we estimate "lost revenues" due to evasion at J$98 million in 1980. This would be equivalent to over 50 percent of the actual amount payable. A similar analysis for 1983 indicates a loss of J$149 million, or 39 percent. While these rough computations are only orders of magnitude, they suggest that the revenue cost of nonfiling is significant.

On the basis of some conservative estimates, it is possible to update these estimates to 1985. The *Statistical Abstract of Jamaica, 1985* indicates that "compensation of employees" amounted to J$4,906.9 million in 1985. Under these same projection assumptions, the Project sample indicates a baseline taxable income of J$2,959.2 million in 1985. This is equivalent to 60.3 percent of (projected) employee compensa-

[2] This material is discussed in detail in Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax."

tion from the national income accounts. If it is assumed that one-half of untaxed compensation is a legitimate component of the tax base (with the remainder attributable to nontaxable allowances and income below the tax floor), unreported income in 1985 is J$973 million. Using a conservative estimate of 15 percent for the average tax rate, the implied revenue loss is J$146 million or about 26 percent of 1984/85 collections.

Another version of gap analysis makes use of historical trends in collections, and attributes the slower growth rate of collections from the self-employed vis-a-vis those in the Pay-As-You-Earn (PAYE) sector to tax evasion. On the basis of the data presented in Table 3-3 in Chapter 3, the average annual growth rate in collections for PAYE workers and the self-employed can be ascertained. Between fiscal years 1969/70 and 1984/85, PAYE sector collections increased at an average annual rate of 22.3 percent while collections for individuals (the self-employed) grew at an average annual rate of 14.8 percent. If it is assumed that in the absence of evasion, collections from self-employed individuals would have grown at a rate commensurate with the growth rate of collections for the PAYE sector, 1984/85 revenues for the self-employed would have been J$122.4 million. This suggests a revenue loss from the self-employed of J$77.7 million for 1984/85, or an amount equivalent to 14.2 percent of total income tax revenues. In some ways, this is a very conservative estimate. It really attempts to ask only how much revenue would the system generate if it were administered with the same efficiency as it was in 1969/70.[3] Again, however, the estimated loss due to evasion is substantial.

A "Professional Sample"[4]

To better understand patterns of evasion, the Project designed the following experiment. We gathered a list of more than 2,000 names from professional registries (accountants, architects, attorneys, veterinarians, physicians, and optometrists) and from the yellow pages of the telephone directory. From this list, a random sample of 572 names (28 percent) was drawn and a search of Income Tax Department records for information of these names was undertaken. The ultimate objective was to determine who pays income taxes and who does not, and by recording the declared taxes of the former group, to get some idea of underreporting.

The first task was to determine the taxpayer identification number of each individual in this sample who filed an income tax return or had been assigned a PAYE number. The results, reported in Table 5-1, are surprising:

- No tax reference number was found for 30 percent of the sample.
- Another 26 percent of the sample apparently had no returns filed for any year between 1980 and 1983.

The second step was to determine whether any of these individuals were on a master listing of PAYE taxpayers (by firm), referred to as the P-35 PAYE list.[5] The procedure used was first to identify firms from the yellow pages (for example, accounting firms, physicians, etc.), and from the place-of-work addresses that some of the sample employees listed. Each employer's P-35 list was then checked for the names of any of the employees in question. The results, again, are interesting:

- Of the 156 firms identified by this procedure, 43 (29 percent) did not have a file with a reference number.
- Of the 113 files with a reference number, only 78 (60 percent) could be found.
- Returns were located for 53 individuals from the P-35 list who did not show a reference number in our earlier search.

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[3] A factor that might make this assumption less conservative is the effects on taxable income of the substantial out-migration of professionals from Jamaica during the 1970s.

[4] See Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," pp. 157-165.

[5] The P-35 form lists for an employer the compensation and tax withholding for each of its employees.

TABLE 5-1
RESULTS FROM THE PROFESSIONAL SAMPLE:
1980-1983 PERIOD

Profession	Number in Population	Number in Sample	Number Who Paid Income Tax between 1980-1983	Number with No Reference Number	Others[a]
Accountants	384	176	45	59	72
Architects	75	25	5	6	14
Attorneys	373	100	22	29	49
Medical Doctors	1,146	225	43	67	115
Optometrists	9	9	4	2	3
Veterinarians	37	37	10	12	15
Total	2,024	572	129	175	268

[a] Either there were no returns in the files for the 1980-1983 period, the file was missing and there was no chargeout card, or the file was simply lost, for a total of 268 cases.

SOURCE: Computed from JTSEP sample of professionals. George Whitehouse, "Taxpayer Records for Professionals and the Self-Employed," Memo No. JT33/84; and Ruth Prier, "Trip Report," Memo No. T84-23. This is an updated version of a table originally reported in James Alm and Roy Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," Jamaica Tax Structure Examination Project Staff Paper No. 15, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, December 1984 [Revised March 1985]).

The overall result of this analysis, combining our study of individual files and P-35 forms, may be summarized as follows:

- Of 2,024 professionals listed in registries, our sample suggests that only 22 percent are within the income tax net.[6]
- About 31 percent of these professionals have no income tax reference number.

These results and a heroic assumption permit us to make a very rough estimate of the magnitude of evasion by the self-employed. We impute the filing rate and the taxpaying characteristics of the 134 professionals in this sample to all of the self-employed. This distribution of taxpayer characteristics across income classes for these 134 professionals is shown in Table 5-2. The results show a heavy distribution in the higher income brackets and an average income (J$27,303) which is well above the Jamaican average.[7] The average tax rate is 43.9 percent among those filers, as compared with an overall rate of 17.2 percent. It is this distribution that we use to impute tax liabilities to our (estimated) population of 27,034 nonfiler, self-employed taxpayers. Though we will continue with this analysis, we recognize the debatable assumption that a professional in our sample is a "representative" self-employed individual in Jamaica.

One can see at the outset that the results are going to be astounding. Our average nonfiler had a tax liability nearly four times greater than the average filer; and over 70 percent of nonfilers were in the 57 1/2 percent marginal rate bracket whereas only 17 percent of filers paid the top marginal rate in 1980 (22 percent in 1983).

[6] DeGraw also reports that no more than 10 percent of the self-employed actually file. See Sandra L. DeGraw, "Current Administrative Procedures of the Income Tax Department of Jamaica and Some Recommended Changes," Jamaica Tax Structure Examination Project Staff Paper No. 4, Metropolitan Studies Program, The Maxwell School (Syracuse, NY: Syracuse University, February 1984).

[7] The "Jamaican averages" reported here are all taken from Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," and refer to results from the 1983 sample.

TABLE 5-2

TAXPAYER CHARACTERISTICS OF 134 PROFESSIONALS WITH NONNEGATIVE STATUTORY INCOME WHO FILED INCOME TAX RETURNS BETWEEN 1980 AND 1983: 1983 RATE STRUCTURE

(in Jamaican dollars)

Statutory Income Class	Number	Percent Distribution	Mean				
			Statutory Income	Taxes Payable	Credits	Tax Rate	Tax Rate without Credits
Under J$2,000	13	9.7	J$ 223	J$ 0	J$1,087	0	.300
2,001 - 4,000	1	0.8	3,186	170	786	.053	.300
4,001 - 6,000	2	1.5	4,298	261	1,028	.061	.300
6,001 - 8,000	7	5.2	6,830	947	1,138	.137	.302
8,001 - 10,000	5	3.7	9,161	2,157	808	.235	.323
10,001 - 12,000	6	4.5	11,126	2,562	1,244	.230	.342
12,001 - 14,000	4	3.0	13,188	3,640	1,154	.276	.363
14,001 - 16,000	7	5.2	14,686	4,054	1,541	.276	.381
16,001 - 18,000	7	5.2	16,641	5,202	1,517	.312	.404
18,001 - 20,000	5	3.7	18,939	6,840	1,200	.361	.424
20,001 - 25,000	22	16.4	22,603	8,794	1,353	.388	.448
25,001 - 30,000	15	11.2	27,418	11,492	1,424	.419	.471
30,001 - 50,000	28	20.9	38,137	17,494	1,585	.456	.499
Over J$50,000	12	9.0	95,033	50,206	1,587	.513	.535
Total	134	100.0	J$27,303	J$11,979	J$1,366	.439	.489

SOURCE: Computed from JTSEP sample of tax returns of professionals. See George Whitehouse, "Taxpayer Records for Professionals and the Self-Employed," Memo No. JT33/84; and Ruth Prier, "Trip Report," Memo No. T84-23. This is an updated version of a table originally reported in Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax."

The following is the procedure used to estimate the total revenue loss attributed to nonfilers.

- First, we assume that this practice is restricted to the self-employed.
- Second, we will follow the results of our random sample and assume that 78 percent of all self-employed taxpayers do not file returns. This leads to the conclusion that there were 27,034 self-employed who did not file a return in 1980 (approximately four times the 7,625 estimated to have filed).
- Third, we impute the characteristics of the 134 professionals shown in Table 5-2 to these 27,034 individuals who did not file.
- Finally, we add these nonfilers, with these characteristics, to the 7,625 self-employed who did file.

The results of this procedure imply a substantial revenue loss in 1983. The tax burden effects are described in Table 5-3 for the estimated self-employed population of 34,659. Column (2) shows the average rates paid by those who file. Column (3) shows the average tax paid on what we estimate to be the total amount of self-employed income in each income class. Column (4) shows the average rate if all estimated self-employed income were assessed and taxed. In summary, these results show that taxes averaged only 3.7 percent of estimated self-employment income in 1983, well below the 42.5 percent it should have been.

Conclusions: The Revenue Cost of Evasion

The above evidence is not based on the large random samples that we would prefer, but it does help us gain some idea of the magnitude of the total amount of evasion of the Jamaican income tax. A "gap" analysis based on the Project samples

TABLE 5-3
REVENUE LOSS AND TAX BURDEN IMPLICATIONS OF NONFILING BY SELF-EMPLOYED TAXPAYERS

	Effective Tax Rates for 1983: 1984 Statutory Rates		
		Self-Employed Filers and Nonfilers	
Statutory Income Class (1)	Self-Employed Filers (2)	Nonfilers Not Taxed (3)	Nonfilers Taxed (4)
Under J$2,000	---	---	---
2,001 - 4,000	---	---	---
4,001 - 6,000	.006	.004	.013
6,001 - 8,000	.117	.049	.113
8,001 - 10,000	.188	.071	.215
10,001 - 12,000	.232	.066	.228
12,001 - 14,000	.275	.083	.278
14,001 - 16,000	.307	.038	.284
16,001 - 18,000	.339	.052	.327
18,001 - 20,000	.364	.089	.363
20,001 - 25,000	.387	.024	.385
25,001 - 30,000	.426	.034	.418
30,001 - 50,000	.461	.030	.456
Over J$50,000	.522	.035	.512
Total	.335	.037	.425

SOURCE: Computed from JTSEP sample of professionals. See George Whitehouse, "Taxpayer Records for Professionals and the Self-Employed," Memo No. JT33/84; and Ruth Prier, "Trip Report," Memo No. T84-23; from JTSEP sample of personal income tax returns for 1980 and 1983. This is an updated version of a table originally reported in Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax."

and the national income accounts suggests that about 30 percent of individual income tax revenue is lost to a combination of nonfiling and underreporting. The analysis from the professional sample indicates that the effective tax rate on income generated in the self-employed sector is less than one-tenth what it should have been according to the income tax law.

These are significant losses and suggest that evasion by the self-employed is a major reason for the narrowness of the income tax base. Before we can conclude that an aggressive program to capture evaders is the highest priority, however, we must compare losses from self-employed evasion with those from PAYE evasion and legal avoidance. To do this, we developed a profile of total "taxable" income, by income class, broken down by four categories: (a) fully taxed, (b) "overtime" income, which we see as largely PAYE evasion, (c) self-employed evasion, i.e., income either underreported or not reported by the self-employed, and (d) legal avoidance in the form of allowances. These components, reported in Table 5-4, explain the gap between "comprehensive" income (column 6) and fully taxed income (column 2).[8]

In general, the results suggest considerable scope for broadening the tax base: about one-third of taxable income is outside the present net. About two-thirds of that income which escapes taxation is earned by the self-employed. Not surprisingly, the higher a taxpayer's income is, the more easily he escapes taxation. For example, note that in the higher income classes, less than 15 percent of income is fully taxed, whereas in the lower brackets two-thirds or more is fully taxed. So at once we have a tentative answer to two questions we have posed. Bringing self-employed evaders into the tax net would very significantly broaden the base, and this would have progressive effects on the distribution of tax burdens across income classes.

We may also ask how much tax revenue is foregone because of these exclusions. The answer is given in Table 5-5 where true tax liability is computed for each component of income. The results show that the Jamaican income tax, under its previous structure, produced only 44 percent of its revenue potential, i.e., full taxation of all reported and unreported income would increase revenues by an amount equivalent to about 80 percent of the amount now being collected. This is a finding of major importance. If evasion could be eliminated, the Government of Jamaica would have room for a further, substantial reduction in the average rate of income taxation.

An Extended Sample: Methodology[9]

The data and analysis presented above indicate that the extent of evasion by the self-employed is quite substantial. But it is far from convincing evidence. It is based on a 20 percent random sample of self-employed professionals; and physicians, lawyers, etc., are probably not representative of all self-employed in Jamaica either in terms of taxpaying habits or average income earned. This is a legitimate concern and, though it does not cause us to back away from the argument that self-employment evasion is a substantial erosion of the income tax base, it does cause us to extend the sample to several other more representative occupations and to refine the sampling methodology.

Drawing the Sample

The first step in the sampling procedure was to identify those self-employed categories or occupations which would be analyzed. Nine categories were chosen, largely on a basis of intuition about what was important in the Jamaican economy and on a basis of whether some information might be available to estimate the size of the population of each group. The next step was to identify a "master population list" for each occupation, e.g., how many service stations are there in Jamaica? For this purpose, we drew on several different sources of data from outside

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[8] For a further discussion of these estimates, see Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax."

[9] See Bahl and Murray, "Income Tax Evasion in Jamaica," for a discussion of this methodology in greater detail.

TABLE 5-4
TAXABLE AND NONTAXABLE INCOME BY INCOME CLASS: 1983
(in thousands of Jamaican dollars)[a]

Statutory Income Class (1)	Fully Taxed (2)	Taxed at Overtime Rate (3)	Not Reported or Underreported (4)	Allowances (5)	Total (6)	Fully Taxed as a Percent of Total (7)
Under J$2,000	J$ 28,023.0	J$ 0.0	J$ 586.3	J$ 1,341	J$ 29,950	93.6
2,001 - 4,000	136,653.1	0.0	698.0	6,923	144,274	94.7
4,001 - 6,000	293,202.4	0.0	2,921.1	17,100	313,224	93.6
6,001 - 8,000	337,386.1	1,650.6	8,204.2	25,100	372,341	90.6
8,001 - 10,000	323,852.0	9,042.5	9,221.8	30,116	372,233	87.0
10,001 - 12,000	297,063.6	10,869.8	13,503.3	32,182	353,619	84.0
12,001 - 14,000	193,234.4	14,114.3	10,889.2	27,452	245,690	78.6
14,001 - 16,000	110,572.0	8,929.3	30,577.5	19,896	169,975	65.1
16,001 - 18,000	79,753.5	9,890.2	17,484.1	18,051	125,179	63.7
18,001 - 20,000	77,889.1	6,122.7	16,143.2	17,370	117,525	66.3
20,001 - 25,000	92,581.3	11,422.2	108,712.3	26,526	239,241	38.4
25,001 - 30,000	42,522.1	3,631.1	83,894.3	9,266	139,314	30.5
30,001 - 50,000	35,713.9	9,596.4	200,227.4	9,056	253,594	14.1
Over J$50,000	35,900.9	11,430.8	225,817.5	8,210	280,359	12.9
Total	J$2,084,347.4	J$96,699.8	J$728,880.2	J$246,590	J$3,156,518	66.0
Percent	66.0	3.1	23.1	7.8	100.0	

[a]Except Statutory Income Class which is expressed in Jamaican dollars.

SOURCE: Computed from Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," Tables 21, 28, 46, 62 and 71.

TABLE 5-5

REVENUE POTENTIAL FROM TAXED AND NONTAXED INCOME BY INCOME CLASS: 1983

(amounts in thousands of Jamaican dollars)[a]

Statutory Income Class (1)	Taxes Payable on Statutory Income (2)	Full Taxation of Overtime[b] (3)	Full Taxation of Underreported and Unreported Income[b] (4)	Full Taxation of Allowances[b] (5)	Total (6)	Taxes Payable on Fully Taxed Income as a Percent of Total (7)
Under J$2,000	J$ 2,083.5	J$ ---	J$ 0.0	J$ 402	J$ 2,485.5	83.8
2,001 - 4,000	8,745.4	---	43.1	2,077	10,865.5	80.1
4,001 - 6,000	27,835.9	---	300.2	5,130	33,266.1	83.7
6,001 - 8,000	40,964.3	660.2	1,083.0	9,099	51,806.5	79.1
8,001 - 10,000	48,220.2	3,593.1	2,167.8	12,246	66,227.1	72.8
10,001 - 12,000	54,915.1	4,659.5	3,118.2	14,626	77,318.8	71.0
12,001 - 14,000	42,912.0	6,420.3	3,129.2	13,931	66,392.5	64.6
14,001 - 16,000	29,222.3	4,475.4	8,831.1	10,962	53,490.8	54.6
16,001 - 18,000	23,122.5	5,200.5	5,826.3	10,004	44,153.3	52.4
18,001 - 20,000	25,770.8	3,441.9	6,026.3	9,919	45,158.0	57.1
20,001 - 25,000	32,629.4	6,173.5	42,118.1	14,859	95,780.0	34.1
25,001 - 30,000	17,639.3	1,962.1	35,193.5	5,202	54,794.9	32.2
30,001 - 50,000	15,666.4	5,244.3	91,932.8	4,359	117,202.5	13.4
Over J$50,000	18,453.9	6,384.0	119,102.7	3,957	147,897.6	12.5
Total	J$388,181.0	J$48,214.8	J$318,872.3	J$116,775	J$866,839.1	44.8

[a]Except Statutory Income Class which is expressed in Jamaican dollars.

[b]Estimated by incrementally adding to statutory income and taxing at regular rates. We added each component to statutory income, assuming all other components to be zero, and re-estimated tax liability. The difference between this liability and that shown in column (2) is the tax "loss" we attribute to each component.

SOURCE: Computed from Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," Tables 21, 28, 46, 62 and 71.

the income tax records, including telephone directories, trade association directories, and so on. We refer to these sources (shown in Table 5-6) as "third party information."

A problem arose in that the third party information often gave us only the name of the business. But individual income tax returns are filed under individual names and not under trade names, hence it was necessary to match each trade name with the proprietor's name. To identify the owner of the business, it was necessary to examine the files at the Registrar of Companies. If the individual's name and a trade name could not be matched, the trade name was forwarded to Inland Revenue who in turn passed the inquiry to one of the 27 collectorates. A Field Officer then personally visited the establishment in question to ascertain the proprietor's name.

An additional problem relates to the three-year time frame of the sample and the nature of the third party sources utilized. It is quite possible that some firms in operation in 1983 were not in operation in 1985, and vice versa. In the empirical analysis we used firm data only for years when businesses were in operation. For this reason, our sample size varied slightly from year to year.

Once the master population lists were completed—by exhausting what we believe to be all third party sources—it was necessary to determine sample sizes and draw the random samples. The decision was made to collect a 40 percent sample for each occupational category.[10] All population lists were entered into a microcomputer and, with the aid of a random number generator, the 40 percent samples were drawn. In those occupational categories where the associated population was less than 100, the sample size was increased. Specifically, if the population size was between 40 and 99, a sample of size 40 was drawn. If the category had fewer than 40 individuals, all were sampled.

Recording and Verifying the Data

The next step in the process was to use the master lists in the Income Tax Department to identify individual taxpayer reference numbers. The listings used were the most up-to-date available and provided both taxpayer name and reference number. The full search procedure is described in Table 5-7. Generally, the methodology entailed determining the extent to which the list of "potential" taxpayers could be matched with reference numbers and files in the Income Tax Department.

Methodological Issues

The objective in this analysis was to get as firm an estimate as possible of the rate of nonfiling and of the revenue cost of both nonfiling and nonreporting. We classified the self-employed, according to filing status, into one of the following seven groups:

1. A return was located and relevant data were recorded.
2. No taxpayer reference number could be located on Income Tax Department listings.
3. A reference number was found but neither a file nor a charge-out card could be located.
4. A taxpayer file was found but no return was present for the year in question.
5. The file was charged out by an Income Tax Department staff member, but could not be located.
6. Two taxpayers had the same taxpayer reference number.
7. The taxpayer was not liable for a return for the year in question.

Can one argue that all except category 1 are nonfilers? Certainly category 2 could properly be classified as nonfilers, since there would appear to be no knowledge of these individuals in the Income Tax Department. Categories 3, 5, 6, and 7 could be classified as "filers," but there is no indication that they have paid income tax. The same is true of category 4, though it seems reasonable to assume that at some point in the past these taxpayers have filed a return. We assumed that those in category 1 were self-employed filers and that the remainder were nonfilers. Note that this procedure may lead to a downward bias in underestimating the filing rate.

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[10] The sampling procedure is described in Appendix A of Bahl and Murray, "Income Tax Evasion in Jamaica."

TABLE 5-6
OCCUPATIONS CHOSEN FOR ANALYSIS AND SOURCES OF INFORMATION USED IN COMPILING A MASTER POPULATION LIST

Category	Third Party Sources
Service Stations	Listings provided by Esso, Texaco and Shell Kingston and island wide telephone directories[a] Directory of Industry and Commerce Small Business Association of Jamaica
Customs Brokers	Kingston and island wide telephone directories[a] Directory of Industry and Commerce National Export Week Supplement (an advertisement listing brokers dated 6-15-85)
Auto Repairs	Kingston and island wide telephone directories[a] Directory of Industry and Commerce Small Business Association of Jamaica
Auto Parts	Kingston and island wide telephone directories[a] Directory of Industry and Commerce Small Business Association of Jamaica
Hair Care[b]	Kingston and island wide telephone directories[a] Directory of Industry and Commerce Small Business Association of Jamaica Ministry of Health[c]
Real Estate[d]	Kingston and island wide telephone directories[a] Directory of Industry and Commerce Small Business Association of Jamaica
Contractors	Kingston and island wide telephone directories[a] The Master Builder, Vol. 24, No. 1, 1985[e] Directory of Industry and Commerce
Transports[f]	Kingston and island wide telephone directories Office of Licensing Authority[a] Directory of Industry and Commerce
Beverages and Spirits[g]	Kingston and island wide telephone directories Licenses (Inland Revenue)

[a] This outdated source (1983-1984) provided relatively little information.

[b] Includes barbers and beauticians.

[c] The Ministry of Health proved to be a valuable source in that barbers and beauticians must be licensed, beauty shops must be inspected, and permits must be issued.

[d] This category includes developers.

[e] This is the journal of the Incorporated Masterbuilders Association of Jamaica.

[f] Includes bus drivers, taxi drivers, etc.

[g] Includes eating establishments which sell alcoholic beverages.

TABLE 5-7
SELF-EMPLOYED SURVEY: PROCEDURES USED TO SEARCH FOR RETURNS AND REFERENCE NUMBERS

Step No. 1: Locating the Reference Number

A.	Search for individual business reference number.
B.	If a reference number is located, arrange the numbers in numerical order and request the taxpayer files from the file room.
C.	Extract the necessary data from returns and record on the coding sheets.
D.	If no reference number is located for an individual, proceed to the PAYE room and search for a PAYE reference number.
E.	If a PAYE number is located, request the file from the file room and follow the procedure in C.
F.	If no reference number is located, record this information on the coding sheets.

Step No. 2: P-35 Search

A.	Check the employer P-35 number files for all taxpayers in sample.
B.	Extract the P-35 number if one is found in P-35 files.
C.	If a P-35 number is located, fill in this number on the coding sheet. If no number is found, show this information on the coding sheet.

Sample Profile

It is difficult to determine whether the sample drawn is somehow representative of the population of the self-employed, since we have no good way of determining economic and social characteristics of the self-employed. We can, however, report on certain characteristics of the sample.

A profile of the pooled, three-year sample data is given in Table 5-8 by occupation class, sex, and marital status.[11] Among the most obvious characteristics are that the sample is heavily weighted in the transportation and beverage occupations, and that approximately three-fourths of the sample is male. It may be useful to note that the female participation rate varied substantially across these sectors, from approximately 43 percent of the sample in beverage and spirits and 79 percent in hair care, to less than 1 percent for contractors. Of those for whom marital status was reported, 96 percent were married.

Statistical Results from the Extended Sample: Filers

These data allow us to develop estimates of filing rates by income class and occupation and a profile of some economic and social characteristics of those who file. Such estimates provide a basis for the analysis of the revenue cost of evasion presented in the next section.

Filing Rates

The first step in the analysis of tax evasion by the self-employed is to determine the rate of filing, or the percentage of those liable for tax who actually filed a return. Estimated filing (and nonfiling) rates are given in Tables 5-9 and 5-10. The pooled results for 1982, 1983 and 1984 are presented in Table 5-9 and individual year results in Table 5-10. The proper interpretation of the pooled and annual tables is important.

Consider the pooled results. Columns (2) and (3) of Table 5-9 show the master population list

[11] The data to be presented in this chapter are mostly the pooled 1982-1984 results. Individual year results for all tables are reported in Bahl and Murray, "Income Tax Evasion in Jamaica."

TABLE 5-8
PROFILE OF SELF-EMPLOYED INDIVIDUALS IN THE SAMPLE:
POOLED RESULTS, 1982-1984

Occupational Category	Sample Size	Sex[a]		Marital Status[a]		P35 Employer Return[b]		
		Male	Female	Married	Other[c]	Reference Number	File Found	Audited[d]
Service Stations	252	216	36	51	3	48	48	0
Customs Broker	147	126	21	21	0	3	0	0
Auto Repair	318	301	14	34	3	15	15	11
Auto Parts	158	125	27	12	5	8	8	6
Hair Care	919	187	722	90	0	3	3	12
Real Estate	79	73	6	13	0	3	3	3
Contractors	132	119	1	6	2	0	0	3
Transports	5,857	5,345	469	962	13	4	2	311
Beverage and Spirits	4,474	2,404	1,944	119	27	0	0	136
Total	12,336	8,896	3,240	1,308	53	84	79	482

[a]Many taxpayers fail to report sex and marital status when filing a tax return.

[b]Not all employers need file a P-35 return.

[c]The "other" category includes those who have been divorced, separated or widowed or who are single.

[d]Includes those who were both subjected to audit or examination and had a change in tax liability.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations.

TABLE 5-9
INCOME TAX FILING STATUS BY OCCUPATION FOR THE SELF-EMPLOYED: POOLED SAMPLE, 1982-1984

Occupational Category (1)	Population[a] (2)	Sample[a] Size (3)	Filing Status 1[b] Number (4)	Filing Status 1[b] Percent (5)	Filing Status 2[b] Number (6)	Filing Status 2[b] Percent (7)	Filing Status 3[b] Number (8)	Filing Status 3[b] Percent (9)
Service Stations	630	252	14	5.6	126	50.0	9	3.6
Customs Broker	366	147	4	2.7	96	65.3	9	6.1
Auto Repair	888	318	31	9.7	226	71.1	6	1.9
Auto Parts	402	158	13	8.2	111	70.3	0	0.0
Hair Care	2,280	919	53	5.8	622	67.7	21	2.3
Real Estate	105	79	8	10.1	57	72.2	0	0.0
Contractors	297	132	7	5.3	93	70.5	3	2.3
Transports	13,485	5,857	781	13.3	2,965	50.6	224	3.8
Beverage and Spirits	11,385	4,474	430	9.6	3,123	69.8	64	1.4
Total	29,838	12,336	1,341	10.9	7,419	60.1	336	2.7

TABLE 5-9 (CONT.)

	Filing Status 4[b]		Filing Status 5[b]		Filing Status 6[b]		Filing Status 7[b]	
	Number (10)	Percent (11)	Number (12)	Percent (13)	Number (14)	Percent (15)	Number (16)	Percent (17)
Service Stations	49	19.4	54	21.4	0	0.0	0	0.0
Customs Broker	29	19.7	9	6.1	0	0.0	0	0.0
Auto Repair	48	15.1	3	0.9	0	0.0	4	1.3
Auto Parts	28	17.7	3	1.9	3	1.9	0	0.0
Hair Care	182	19.8	24	2.6	0	0.0	17	1.8
Real Estate	14	17.7	0	0.0	0	0.0	0	0.0
Contractors	20	15.2	9	6.8	0	0.0	0	0.0
Transports	1,529	26.1	348	5.9	7	0.1	3	0.1
Beverage and Spirits	625	14.0	217	4.9	15	0.3	0	0.0
Total	2,524	20.5	667	5.4	25	0.2	24	0.2

[a]The population and sample size reflect the sampling of the same individuals over the years 1982-1984.

[b]Filing status designations are as follows:

- A return was located and relevant data was recorded.
- No taxpayer reference number could be located.
- A reference number was found but neither a file or charge-out card could be located.
- A taxpayer file was found but no return was present for the year in question.
- The file was charged out but could not be located.
- Indicates two taxpayers with the same taxpayer reference number.
- Taxpayer not liable for a return for the year in question.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations.

TABLE 5-10
PERCENT OF INCOME TAX FILERS[a] BY OCCUPATION
FOR THE SELF-EMPLOYED: 1982, 1983 AND 1984

Occupational Category	1982	1983	1984
Service Stations	11.9	3.6	1.2
Customs Broker	8.2	0.0	0.0
Auto Repair	15.1	10.4	3.8
Auto Parts	11.4	9.5	3.8
Hair Care	11.1	5.2	1.0
Real Estate	22.8	7.6	0.0
Contractors	11.4	4.5	0.0
Transports	21.5	12.5	6.0
Beverage and Spirits	14.2	10.9	3.8
Total	17.3	10.8	4.5

[a] Filing Status 1, i.e., a return was located and relevant data were recorded.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations.

and the sample size. For example, 210 service stations were in the population for each of three years, and 84 of these were sampled in *each* year. Therefore, the total population for the pooled three-year analysis is 3x210 or 630 "service station tax years," and there is a sample size of 3x84 or 252 "tax years." The remaining columns in Table 5-9 describe the filing status of these service station owners, where "status" is one of the seven categories described above and in the notes to the table. For example, for the pooled sample of service stations, only 14 tax returns were filed out of a possible 252 tax years. This amounts to 5.6 percent of the total sample size.

The bottom row of each panel in Table 5-9 presents the overall results for the pooled sample. We were able to determine from the master population list a potential of 29,838 tax returns from these nine occupations for the three-year period, and we sampled 12,336 (41 percent). Less than 11 percent of this number (1,341) filed a return. For about 60 percent of the sample, there was no reference number, which indicates that the Income Tax Department had no information on file about these taxpayers. For another 20 percent, there was a reference number but no return had been filed during this three-year period. There is not a great deal of variation across occupation classes. In fact, the percent who file returns ranges from a high of 13.3 percent in the case of transport operators to less than 3 percent in the case of customs brokers (Table 5-9). In general, then, the results of this analysis reinforce those found in the study of the professional sample reported above: the extent of evasion by the self-employed is quite widespread. In fact, only about one in ten of the Jamaican self-employed appears to file a return.

One might question these results because of the lag thought to exist in the filing of income tax returns. It could be argued that the low percentage of filers reported in the pooled sample really reflects no more than a delay in sending in 1984 returns. The results shown in Table 5-10 are somewhat consistent with the argument that there is a lag. That is, over 17 percent of the total sample filed for 1982, about 11 percent for 1983, and less than 5 percent for 1984. Even the best of interpretations of these results, however, for example using the 1982 results as indicative, suggest that less than one in five of the self-employed files a return.

Perhaps the most important finding here is that the percent of those without a reference number remains in the 60 percent range whether we consider the pooled sample, individual years, or individual sectors. Around two-thirds of the self-employed in these nine occupation classes identified with third party information do not have a taxpayer reference number. Thus, they are not even known to the Income Tax Department.

Characteristics of Filers

Consider now the characteristics of those self-employed who did file returns. There are four pieces of information that we might use: occupation or industry class, sex, income level, and taxpaying characteristics (as derived from tax credit information). Our intention is to study these characteristics in hopes of identifying those factors that make individuals more or less likely to file a return.

Sex and Occupation. The distribution of income tax filers by sex and occupation is described in the far right column of Table 5-11. The filing rate for males exceeds that for females (12.1 percent versus 8.5 percent). This disparity holds for the pooled sample, and it holds for each individual year. Filing rates by sex, however, do vary widely across occupations. In the case of hair care, where females dominate the number in the sample, the filing rate is only 6 percent. In the case of real estate, auto repair, and auto parts, the female filing rate is much higher and is higher than the male filing rate.

Are persons working in some occupations more likely to declare their income than persons working in other occupations? Filing rates for both sexes combined and by occupation are shown in Table 5-9 (filing status 1). The results suggest that a person working in the beverage and spirits, transport, real estate and auto repair and parts sectors is most likely to file a return—though even here the filing rates are around 1 in 10. For other occupations the rates are 1 in 20.

Income Level and Tax Status. The data in Table 5-11 define the tax and income status of those self-employed who do file returns. In fact, even the extended sample is subject to wide variations across income classes. The average levels of statutory income are highest in the case of auto parts and contractors—at levels comparable to professionals—but these occupations show filing rates below the 10 percent average (Table 5-9). The average tax rates which apply to each of these occupations vary widely, as one might expect given that the average income levels vary widely. The data in Table 5-12, organized by statutory income class, show that the average filing rate is in the 10 percent range for the pooled sample and about 17 percent for 1982. As may be seen from the pooled results in Table 5-12, the filing rates appear to be U-shaped across income classes. That is, they are high for income levels below J$8,000, drop to a relatively low ratio in the middle income ranges, and rise again to over 13 percent in the top bracket. However, as argued above, this result may describe lags in income tax filing and a truer picture might be gained by examining 1982 data alone. These results do not show the U-shaped pattern, and indicate a relatively constant filing rate, between 15 and 20 percent across all income tax brackets.

The results for the pooled sample also give some information about the representativeness of the professional sample discussed above (Table 5-2). The average self-employed nonfiler has an average income level of J$7,953 as compared with J$27,303 for the professional sample and J$7,530 for all Jamaican income taxpayers in 1983. The difference between the extended sample and the professional sample is better seen by comparing average income tax payable. Because professionals were so much more heavily concentrated in the top rate bracket, the average tax payable was nearly J$12,000 versus about J$2,000 for the extended sample (average rates of 44 percent and 25 percent, respectively). It seems clear that there are major differences between professionals and other self-employed, and that inferences about self-employed evasion drawn solely on a basis of professionals are inappropriate.

Revenue Loss from Self-Employed Evasion

The income tax policy question to be answered here has less to do with the proportion of the self-employed who do not file returns than with the revenue loss implied. To make such an estimate, we must inflate these sample data to reflect the values for a population; that is, we must use these sample data derived from the nine occupations to infer the total amount of tax evaded by all self-employed. The profile of the sample suggests that this assumption is reasonable. A second important assumption involves attributing the economic characteristics of filers to nonfilers. We have no justification other than expediency—we can observe the char-

TABLE 5-11
TAX STATUS OF THE SELF-EMPLOYED WHO FILE TAX RETURNS: POOLED SAMPLE, 1982-1984
(amounts in Jamaican dollars)

Occupational Category	Sample Size		Average Statutory Income	Credit Usage			Average Taxes Payable	Average Tax Rate	Percent of Population Who Filed	
	Total	Percent		Total	Dependent[a]	Savings[b]			Male	Female
Service Station	14	1.0	J$12,887	J$ 15,130	J$ 2,240	J$ 2,570	J$4,143	.322	6.0	2.8
Customs Broker	4	0.3	9,656	6,328	1,020	1,440	2,314	.240	3.2	0.0
Auto Repair	31	2.3	8,205	31,463	4,180	3,567	2,224	.271	13.4	28.6
Auto Parts	13	1.0	21,516	11,776	2,460	720	9,030	.420	4.8	25.9
Hair Care	53	4.0	4,761	48,783	4,460	4,341	725	.152	5.3	6.0
Real Estate	8	0.6	11,279	5,664	100	0	3,920	.348	9.6	16.7
Contractor	7	0.5	17,691	8,740	2,200	1,800	6,781	.383	5.9	0.0
Transport	781	58.2	8,308	755,622	113,466	43,157	2,067	.249	13.5	12.6
Beverage and Spirits	430	32.1	6,877	382,897	39,160	17,779	1,679	.244	11.1	8.2
Total[c]	1,341	100.0	J$ 7,953	J$1,266,403	J$169,286	J$75,374	J$2,019	.254	12.1	8.5

[a]Consists of wife allowance, children allowance, female relative and dependent relative allowances.

[b]Consists of life insurance relief, capital growth investments and subscription for shares.

[c]Some totals do not add due to rounding.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-84.

TABLE 5-12
INCOME TAX FILING RATES FOR SELF-EMPLOYED INDIVIDUALS, BY INCOME CLASS: POOLED SAMPLE AND 1982 RESULTS

Statutory Income Class	Filers	Nonfilers	Total	Pooled Sample (1982-1984)	Filing Rate (1982)
Under J$2,000	240	2,428	2,668	9.0	16.0
2,001 - 4,000	732	5,258	5,990	12.2	16.4
4,001 - 6,000	762	4,732	5,494	13.9	18.3
6,001 - 8,000	464	3,048	3,512	13.2	17.9
8,001 - 10,000	226	2,366	2,592	8.7	17.3
10,001 - 12,000	287	2,989	3,276	8.8	15.9
12,001 - 14,000	145	1,831	1,976	7.3	18.9
14,001 - 16,000	111	1,288	1,399	7.9	14.9
16,001 - 18,000	76	794	870	8.7	15.7
18,001 - 20,000	40	402	442	9.0	16.7
20,001 - 25,000	40	479	519	7.7	21.9
25,001 - 30,000	33	525	558	5.9	16.7
30,001 - 50,000	31	292	323	9.6	14.3
Over J$50,000	29	190	219	13.2	16.5
Total	3,216	26,622	29,838	10.8	17.2

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-84.

acteristics of filers but have no basis for observing the characteristics of nonfilers.

Methodology

The first step in this analysis is to determine the size of the total population of self-employed filers plus nonfilers. The Income Tax Department does not have an estimate. However, the Project[12] estimated the total number of self-employed filers as follows:

Year	Filers
1982	7,625
1983	8,158
1984	8,158

The question now is how to infer the total number of self-employed nonfilers from the sample data for nine occupations. Essentially, we "blow up" the sample by a multiplier or weight where the weight is the ratio of the number of filers in the population to the percent of filers within the sample. This procedure assumes that the self-employed population has the same percent of filers and nonfilers as does the sample. As an example, consider the case for 1982:

- Population of self-employed filers = 7,625
- Sampled filers = 713
- Total sample size = 4,113
- Percent of sample that filed = 713/4,113 = .1734
- Estimated population of self-employed = 7,625/.1734 = 43,985
- Weight = 43,985/4,113 = 10.694

Each observation in the sample is then weighted by 10.694 to obtain an estimate for declared income, etc., for the 7,625 self-employed filers. In effect, the assumption is that every filer in the sample has 9.694 "look-alikes" in the population.

The second step is to determine the characteristics of the estimated 43,985 - 7,625 or 36,360 self-employed nonfilers. The undeclared values for income and taxes for the population of self-employed nonfilers were obtained by estimating the total amount of taxes and income for the entire population (assuming everyone is a filer) and then subtracting the estimated amounts for filers. The weight used to obtain taxes and income for the total population of the self-employed is found by

[12] Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax."

dividing the population of the self-employed by the number of filers in the sample. As an example, consider the case for 1982:

– Population of self-employed	= 43,985
– Number of sampled filers	= 713
– Weight = 43,985/713	= 61.69

Every observation's taxes and income are then multiplied by this weight to obtain an estimate of income and taxes for the estimated population of 43,985 self-employed filers and nonfilers, assuming that all persons file. The information on the 7,625 filers is then subtracted to get a picture of the 36,360 nonfilers.

Results

The results of this analysis are presented in Table 5-13. Since the 1983 and 1984 results are more likely to include the effects of late filing, we present results here based on the 1982 sample.[13] A first finding is that the estimated total number of self-employed is not greatly different from that estimated from analysis of the professional sample. At least in the case of 1982, both estimates suggest about 37,000 nonfilers (see Table 5-13). Of course, the estimated population of self-employed derived from the extended sample is much greater in 1983 and 1984 but this is due in some part to lags in filing income tax returns. The wide variation in this estimate for individual years is a matter of concern, but on the other hand we take some comfort in the fact that the 1982 data give an estimate so close to that from our earlier random sample of all self-employed.

These data indicate a substantial revenue cost of noncompliance. For 1982, the total amount of income taxes paid by the self-employed sector is estimated to be about 17 percent of their total revenue potential. The revenue loss implied here is substantial. Total income tax collections from the self-employed in 1984 were about J$40 million, therefore estimated evasion from the self-employed was equivalent to about 85 percent of PAYE collections for the pooled sample period, and 82 percent based on the 1982 estimates. The 82 percent figure translates into an estimated revenue loss of about J$107 million for 1985/86.

The implications of these findings for the distributions of tax burdens are startling, as may be seen from the last two columns in Table 5-13. Both of these columns show the effective tax rate across income brackets. The first column shows average tax rates on declared income under the present system; the second column shows how these rates would fall if the same total revenue were collected but taxes were expressed[14] (or taxed plus evaded) income. As may be seen from the first column, the average tax rate on declared income rises very rapidly into the 40 percent range, and averages 20.2 percent. In a no-evasion world, with the same level of collections the average tax rate on total income of the self-employed is seven times lower, or only 3.5 percent. Quite clearly, there is a great unfairness in the system. What we may conclude from this analysis is that, in theory, the elimination of income tax evasion would increase revenue yield and markedly improve the horizontal and vertical equity of the income tax.

Revenue Loss under the Flat Tax

All the estimates above have been made on the basis of the tax system prior to reform. This is appropriate since the data are drawn from the 1982-1984 period. We might also simulate the revenue loss under the flat tax that took effect in early 1986. The revenue loss to evasion will not be the same under the old system and the reformed system. On the one hand, the reformed system exempts the first J$8,580 and therefore eliminates many low income Jamaicans from the tax roll. This changes the status of the affected lower income self-employed from "evaders" to "exempt," and probably moves us closer to a good estimate of the number of evaders who can be captured by a better administration. The remaining higher income group is a more suitable target population for audit control.

Another point should not be overlooked: not only is the number of self-employed evaders lower under the flat tax, but the estimated tax

[13] A complete presentation for all years is in Bahl and Murray, "Income Tax Evasion in Jamaica."

TABLE 5-13

ESTIMATED FILING STATUS, DECLARED AND UNDECLARED INCOME AND TAXES FOR ALL SELF-EMPLOYED: 1982[a]

(amounts in Jamaican dollars)

Statutory Income Class	Filers	Nonfilers	Declared Income		Undeclared Income		Total Income	
			Amount	Percent	Amount	Percent	Amount	Percent
Under J$2,000	705	3,360	J$ 536,065	1.0	J$ 2,556,272	1.0	J$ 3,092,337	1.0
2,001 - 4,000	2,092	9,976	6,689,827	13.0	31,900,996	13.0	38,590,823	13.0
4,001 - 6,000	2,367	11,288	11,655,006	22.7	55,577,870	22.7	67,232,876	22.7
6,001 - 8,000	1,222	5,828	8,598,515	16.8	41,002,734	16.8	49,601,249	16.8
8,001 - 10,000	451	2,153	4,091,549	8.0	19,510,892	8.0	23,602,440	8.0
10,001 - 12,000	330	1,575	3,622,708	7.1	17,275,187	7.1	20,897,895	7.1
12,001 - 14,000	143	683	1,844,177	3.6	8,794,114	3.6	10,638,291	3.6
14,001 - 16,000	143	683	2,164,225	4.2	10,320,288	4.2	12,484,513	4.2
16,001 - 18,000	132	630	2,270,151	4.4	10,825,402	4.4	13,095,553	4.4
18,001 - 20,000	66	315	1,276,842	2.5	6,088,727	2.5	7,365,568	2.5
20,001 - 25,000	33	158	716,162	1.4	3,415,076	1.4	4,131,238	1.4
25,001 - 30,000	55	263	1,549,205	3.0	7,387,514	3.0	8,936,720	3.0
30,001 - 50,000	44	210	1,710,508	3.3	8,156,701	3.3	9,867,209	3.3
Over J$50,000	66	315	4,592,612	8.9	21,900,256	8.9	26,492,868	8.9
Total[d]	7,850	37,435	J$51,317,552	100.0	J$244,712,028	100.0	J$296,029,580	100.0

TABLE 5-13 (CONT.)

Statutory Income Class	Declared Taxes		Undeclared Taxes		Total Taxes		Tax Rates	
	Amount	Percent	Amount	Percent	Amount	Percent	ATR_1[b]	ATR_2[c]
Under J$2,000	J$ 3,743	0.0	J$ 17,851	0.0	J$ 21,595	0.0	.007	.001
2,001 - 4,000	227,966	2.2	1,087,077	2.2	1,315,043	2.2	.034	.006
4,001 - 6,000	841,621	8.1	4,013,338	8.1	4,854,958	8.1	.072	.013
6,001 - 8,000	1,262,948	12.2	6,022,475	12.2	7,285,423	12.2	.147	.025
8,001 - 10,000	869,542	8.4	4,146,486	8.4	5,016,028	8.4	.213	.037
10,001 - 12,000	870,787	8.4	4,152,419	8.4	5,023,205	8.4	.240	.042
12,001 - 14,000	503,926	4.9	2,403,015	4.9	2,906,941	4.9	.273	.047
14,001 - 16,000	664,290	6.4	3,167,723	6.4	3,832,013	6.4	.307	.053
16,001 - 18,000	734,667	7.1	3,503,323	7.1	4,237,990	7.1	.324	.056
18,001 - 20,000	509,288	4.9	2,428,584	4.9	2,937,872	4.9	.399	.069
20,001 - 25,000	289,987	2.8	1,382,827	2.8	1,672,814	2.8	.405	.070
25,001 - 30,000	678,097	6.5	3,233,562	6.5	3,911,659	6.5	.438	.076
30,001 - 50,000	824,555	7.9	3,931,958	7.9	4,756,513	7.9	.482	.084
Over J$50,000	2,098,932	20.2	10,008,931	20.2	12,107,863	20.2	.457	.079
Total[d]	J$10,380,350	100.0	J$49,499,567	100.0	J$59,879,917	100.0	.202	.035

[a]See the text for a discussion of the procedure used to arrive at these estimates.

[b]Calculated as the ratio of declared taxes to declared income.

[c]Calculated as the ratio of declared taxes to total income.

[d]Some totals do not add due to rounding.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-84.

liability of those who do not file will be lower because the highest marginal rate is now 33 1/3 percent. To illustrate this point, consider the case of a self-employed individual who earns J$40,000 and does not file an income tax return. Prior to reform he would have been evading an amount of tax determined by a graduated rate schedule that would have assessed all taxable income above J$14,000 at a rate of 57 1/2 percent, less whatever credits to which he would have been entitled. Under the flat tax his top marginal rate is 33 1/3 and his "loss" in tax credits would be offset against the J$8,580 exemption under the new system. In such cases, it is likely that an individual, if he chose to evade, would be escaping less under the new system than under the old system.

To make an estimate of the evasion cost under the flat tax, we replicate the analysis in Table 5-13, except we apply the new rate and base structure. There are at least two reasons to expect a downward bias in these estimates. Work effort response is not taken into account and no change in administrative procedures is assumed. Yet one would hope that a reduced marginal tax rate would stimulate business activity and increase the size of the taxable base and that the tax administration job would be easier.

Revenue Loss for All Self-Employed

The results described in Table 5-14 show the revenue cost of evasion if we infer from the extended sample to all self-employed. For 1982—and under the flat tax—the revenue loss is estimated at 83 percent of potential tax yield from the self-employed. This amount, J$18 million, is equivalent to less than 10 percent of PAYE collections. Projecting with these 1982 results, this result translates into a revenue loss of about J$40 million in 1985/1986. This gives us a very conservative estimate of the potential annual revenue gain from an effective enforcement program that goes after the self-employed.

Comparing these results to those obtained in Table 5-13, we may study the implications of the flat tax for the estimated total revenue cost of evasion. For the reasons suggested above, the evasion costs drop. The potential revenue loss based on 1982 data (for the pooled sample, for the three-year period) was J$107 million under the old system but is only J$40 million under the flat tax. What do these numbers mean? They tell us by how much the "penalty" for tax compliance is lowered under the flat rate tax system. For example, under the old system, self-employed evaders would have paid J$10.4 million if they complied fully but under the flat tax they would only pay J$3.7 million and would keep the remaining J$6.7 million. A combination of this lower cost to taxpayers and improved enforcement should be effective in drawing the self-employed more fully into the tax net.

Audit Activity and Self-Employed Evasion: Underreporting

The analysis so far has focused almost exclusively on tax evasion in the form of the nonfiling of a tax return. We now extend this analysis to the consideration of the other important form of evasion—the underreporting of income (taxes) by those self-employed who do file a tax return. The analysis below is based on the results from a sample of audited returns, and uses econometric techniques to study the determinants of underreporting, i.e., to see what factors influence an individual's propensity to underreport greater or lesser amounts of income and taxes.

Data

In the process of collecting data for the extended sample, it was discovered that many of those sampled had been subjected to an audit or an examination which had led to a change in tax liability. Since the extended sample is itself random, the subset of those who were audited or examined—the audit sample—may be considered a random sample of audited and examined taxpayers. As such, this subset can provide a basis for the examination of factors which may influence underreporting, and inferences can be drawn to the population of self-employed filers to estimate the economy-wide effects of underreporting.

Perhaps the most significant shortcoming of this audit sample is that only the taxpayer's reported tax return information and the post-audit (or post-examination) tax liability were recorded

TABLE 5-14
ESTIMATED FILING STATUS, DECLARED AND UNDECLARED INCOME AND TAXES FOR ALL SELF-EMPLOYED: REFORMED SYSTEM, 1982[a]
(amounts in Jamaican dollars)

Statutory Income Class	Filers	Nonfilers	Declared Income		Undeclared Income		Total Income	
			Amount	Percent	Amount	Percent	Amount	Percent
Under J$2,000	705	3,360	J$ 536,065	1.0	J$ 2,556,272	1.0	J$ 3,092,337	1.0
2,001 - 4,000	2,092	9,976	6,689,827	13.0	31,900,996	13.0	38,590,823	13.0
4,001 - 6,000	2,367	11,288	11,655,006	22.7	55,577,870	22.7	67,232,876	22.7
6,001 - 8,000	1,222	5,828	8,598,515	16.8	41,002,734	16.8	49,601,249	16.8
8,001 - 10,000	451	2,153	4,091,549	8.0	19,510,892	8.0	23,602,440	8.0
10,001 - 12,000	330	1,575	3,622,708	7.1	17,275,187	7.1	20,897,895	7.1
12,001 - 14,000	143	683	1,844,177	3.6	8,794,114	3.6	10,638,291	3.6
14,001 - 16,000	143	683	2,164,225	4.2	10,320,288	4.2	12,484,513	4.2
16,001 - 18,000	132	630	2,270,151	4.4	10,825,402	4.4	13,095,553	4.4
18,001 - 20,000	66	315	1,276,842	2.5	6,088,727	2.5	7,365,568	2.5
20,001 - 25,000	33	158	716,162	1.4	3,415,076	1.4	4,131,238	1.4
25,001 - 30,000	55	263	1,549,205	3.0	7,387,514	3.0	8,936,720	3.0
30,001 - 50,000	44	210	1,710,508	3.3	8,156,701	3.3	9,867,209	3.3
Over J$50,000	66	315	4,592,612	8.9	21,900,256	8.9	26,492,868	8.9
Total[d]	7,850	37,435	J$51,317,552	100.0	J$244,712,028	100.0	J$296,029,580	100.0

TABLE 5-14 (CONT.)

Statutory Income Class	Declared Taxes		Undeclared Taxes		Total Taxes		Average Tax Rates	
	Amount	Percent	Amount	Percent	Amount	Percent	ATR[b] 1	ATR[c] 2
Under J$2,000	J$ 0	0.0	J$ 0	0.0	J$ 0	0.0	.000	.000
2,001 - 4,000	0	0.0	0	0.0	0	0.0	.000	.000
4,001 - 6,000	0	0.0	0	0.0	0	0.0	.000	.000
6,001 - 8,000	0	0.0	0	0.0	0	0.0	.000	.000
8,001 - 10,000	77,578	2.1	369,937	2.1	447,515	2.1	.020	.000
10,001 - 12,000	260,264	7.0	1,241,092	7.0	1,501,357	7.0	.070	.020
12,001 - 14,000	203,312	5.5	969,512	5.5	1,172,825	5.5	.110	.020
14,001 - 16,000	308,928	8.3	1,473,150	8.3	1,782,078	8.3	.140	.030
16,001 - 18,000	375,058	10.1	1,788,495	10.1	2,163,553	10.1	.170	.040
18,001 - 20,000	234,312	6.3	1,117,336	6.3	1,351,648	6.3	.180	.040
20,001 - 25,000	142,810	3.8	681,003	3.8	823,814	3.8	.200	.040
25,001 - 30,000	355,366	9.5	1,694,593	9.5	2,049,959	9.5	.230	.050
30,001 - 50,000	439,770	11.8	2,970,082	11.8	2,536,853	11.8	.260	.050
Over J$50,000	1,328,516	35.7	6,335,141	35.7	7,663,657	35.7	.290	.050
Total[d]	J$3,725,916	100.0	J$17,767,341	100.0	J$21,493,257	100.0	.070	.010

[a]See the text for a discussion of the procedure used to arrive at these estimates.

[b]Calculated as the ratio of declared taxes to declared income.

[c]Calculated as the ratio of declared taxes to total income.

[d]Some totals do not add due to rounding.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-84.

when the data were collected; the "correct" values for credits, income, capital allowances and so on were not recorded. As a result, it would appear on first inspection that any analysis of the factors which influence underreporting (e.g., the marginal tax rate) would necessarily be confined to reported as opposed to correct tax return data. Yet with one crucial assumption, it is possible to derive a rich complementary set of "correct" data.

If it is assumed that an individual's tax credits are correct as reported, it is possible to impute the "correct" amount of income to the taxpayer. In other words, we impute all underreporting to an underdeclaration of income and none to an overdeclaration of credits. The "correct" amount of taxable income is imputed by solving the following equation for taxable income:

(rate structure)*(taxable income)-tax credits = correct tax liability

Since the rate structure, tax credits (assumed correct) and the correct tax liability are known, this equation can be solved in straightforward fashion for correct taxable income. A comparison of this estimate of taxable income with the amount of income actually reported provides one measure of underreporting or underreported income. The variation across taxpayers in this variable—as well as that in its analogue, underreported taxes—allows for an examination of the sensitivity of underdeclaration to income level, marginal tax rates and other factors.

Of the 482 cases which were subject to audit or examination, 42 either had a reduction or no change in reported income or reported taxes. Since it was not of interest to explain the behavior of "overpayers," these 42 observations were dropped from the regression analysis below. For the remaining 440 observations in the audit sample, 121 were applicable to 1982, 187 were applicable to 1983, and 132 to 1984.

The characteristics of those in the audit sample differ in many respects from those of the entire sample. For example, while 27 percent of the self-employed sample is female (based on those observations where gender is reported), only 15 percent of the 440 audit cases are females. Another contrast is provided by the income of the audited cases; average reported income for these audited cases is J$9,196 as opposed to J$7,953 for the entire self-employed sample. (Based on imputed, "true" income, the average for the audit cases is J$12,926.)

Estimates of Underreporting

In Table 5-15 information on the number of returns which were audited and subject to an adjustment in tax liability is presented. The results of this analysis are surprising; of the 1,341 self-employed filers in the sample for 1982-1984, 482 or nearly 36 percent were subject to audit--examination and had some form of adjustment made (including some with reductions in tax liabilities). Nearly all of this audit activity has been concentrated on the transportation and beverage and spirit occupations—447 of the 482 audits/examinations undertaken between 1982-1984. The breakdown in Table 5-15 shows how little audit attention is paid to higher income individuals.

We can learn something more about audit activity for various statutory income levels, as shown in Table 5-15: 362 of the 482 audits/-examinations during 1982-1984 (75 percent) were for individuals with income less than J$14,000. However, about half of the underdeclared income was in the top marginal tax bracket, hence the revenue gain per audit has been substantial and possibly could have been larger had a greater emphasis been placed on those earning higher levels of income. On average, the 482 audits (which include some overpayers) yielded about J$1,500 in additional taxes. Audits in the top two brackets are estimated to have yielded 5 to 10 times this amount, on average. The J$728,139 in additional revenues estimated to have been collected during 1982-1984 amounted to about 11 percent of the total tax liability of the filers in this sample. This 11 percent translates to J$4.5 million if applied to all self-employed tax revenue collections for 1985/1986.

Determinants of Underreporting

As noted above, these audit data can be used to examine the factors which influence underreporting in an effort to determine which taxpayer characteristics are indicative of underreporting. In conducting this analysis, use is made of multiple regression techniques. There are two potential

TABLE 5-15
AUDITS AND AUDIT OUTCOMES: POOLED SAMPLE, 1982-1984
(amounts in Jamaican dollars)

Statutory Income Class	Sample		Audited[a]		Underdeclared Statutory Income[b]			Underdeclared Taxes[b]		
	Total	Percent	Total	Percent	Total[c]	Percent	As Percent of Declared Income	Total[c]	Percent	As Percent of Declared Taxes
Under J$2,000	99	7.4	0	0.0	J$ 0	0.0	0.0	J$ 0	0.0	0.0
2,001 - 4,000	300	22.4	9	1.9	-28,515	-1.8	-3.0	-14,192	-1.9	-42.4
4,001 - 6,000	320	23.9	39	8.1	29,696	1.9	1.9	6,390	0.9	5.2
6,001 - 8,000	194	14.5	98	20.3	141,976	8.9	10.4	45,638	6.3	21.0
8,001 - 10,000	94	7.0	71	14.7	137,300	8.6	16.3	53,273	7.3	27.9
10,001 - 12,000	121	9.0	95	19.7	278,364	17.5	21.1	94,409	13.0	26.8
12,001 - 14,000	61	4.5	50	10.4	170,428	10.7	21.6	77,839	10.7	32.8
14,001 - 16,000	47	3.5	41	8.5	162,082	10.2	22.9	84,583	11.6	35.8
16,001 - 18,000	32	2.4	23	4.8	125,335	7.9	22.6	55,100	7.6	28.1
18,001 - 20,000	17	1.3	11	2.3	53,194	3.3	16.1	30,717	4.2	24.0
20,001 - 25,000	17	1.3	16	3.3	106,358	6.7	27.8	57,758	7.9	36.1
25,001 - 30,000	14	1.0	10	2.1	76,250	4.8	19.2	41,248	5.7	23.5
30,001 - 50,000	13	1.0	12	2.5	163,011	10.3	32.6	99,446	13.7	41.3
Over J$50,000	12	0.9	7	1.5	173,106	10.9	20.4	95,930	13.2	23.0
Total[d]	1,341	100.0	482	100.0	J$1,588,585	100.0	14.9	J$728,139	100.0	26.9

[a]Includes those subject to audit or examination.

[b]See text for an explanation of the methodology.

[c]For some of those audited, there was a reduction in both statutory income and thus taxes. For this table, the amount of income and taxes overstated is J$76,250 and J$40,592 respectively.

[d]Some totals do not add due to rounding.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-84.

measures of underreporting that can be used. The first is underreported income—the difference between the income the taxpayer actually reported on the tax return and the income deemed to be correct by the revenue authorities. The second measure is underreported taxes—the difference between the taxpayer's reported liability and the post-audit (or post-examination) liability.

Two important hypotheses readily suggest themselves for testing. The first is that people who face higher marginal tax rates will, *ceteris paribus* evade more because the rewards for successful evasion are greater. The second is that people with higher levels of income, *ceteris paribus*, will evade more since evasion income is a "normal" good. It is also possible that those earning greater levels of income have a greater ability to evade, i.e., income may be an indicator of opportunities to evade as well as willingness to evade.

In estimating these regression equations, it is necessary to control for different taxpayer characteristics and other factors. Since the audits cover the three-year period 1982-1984, it is important to control for "year," i.e., for different audit/examination processes across years. Dummy variables (zero-one regressors) are included for 1982 and 1984 with the omitted or base year being 1983. Thus, a positive coefficient on the 1984 dummy variable would indicate that 1984 was characterized by greater levels of underreporting than the base year, 1983. One's occupation would also appear to be an important control, i.e., to control for differential opportunities to evade as well as for different probabilities of audit or examination. Since there are few audits/examinations in some occupational categories, the occupational controls are entered as follows: first, the base category is the beverage and spirit sector; the first dummy variable relates to those in the transport sector, and the final dummy variable relates to all other sectors in which there are audited returns.

Three other control variables are included in the regression analysis. Family size is entered as a dummy variable with families with more than two members as the omitted category. This variable is constructed from tax credit information on the wife allowance, the children allowance, the female relative allowance, the dependent relative allowance and the personal allowance. *A priori* reasoning suggests that larger families would tend to evade more because the marginal utility of a dollar of income would be greater. On the other hand, to the extent that the taxpayer is a household head, there may be more to lose from being caught. The net effect of family size is thus ambiguous. The second of these three controls is a dummy variable for gender. The base category in this context is "female." Based on information from other countries, a greater evasion rate for males than for females is hypothesized.[14] The final explanatory variable is a control for total tax credits used. Total credits are entered in the regression as a quadratic term to control for potential nonlinearities in the response of evasion to variations in credits.

The model to be estimated can be summarized as follows:

$$U = \beta_0 + \beta_1 GY + \beta_2 MTR + \Sigma \beta_i C_i \qquad (1)$$

where

U= the logarithm of underreported income (taxes);
GY= taxable income;
MTR= marginal tax rate on taxable income; and
C_i= control variables as defined above.

As implied by this specification, both underreported income and underreported taxes are used as the dependent variables in this analysis. The method of estimation is ordinary least squares.

The estimation results for the model are reported in Table 5-16. Approximately 50 percent of all variation in underreported taxes can be explained. In general, the signs of the coefficient estimates are consistent with the hypotheses put forth above and most are statistically significant. The coefficients of the marginal tax rate and gross

[14] Karyl Kinsey, "Survey Data on Tax Compliance: A Compendium and Review," American Bar Association, Taxpayer Compliance Working Paper 84-1, 1984.

TABLE 5-16
ORDINARY LEAST SQUARES REGRESSION RESULTS:
THE DETERMINANTS OF UNDERREPORTING

	Independent Variable	
Dependent Variable	Underreported Taxes	Underreported Income
Constant	5.801***	7.081***
	(10.3)	(14.2)
Taxable Income	4.7×10^{-5}***	2.9×10^{-5}***
	(5.4)	(3.7)
Marginal Tax Rate	3.641***	2.052***
	(5.7)	(3.6)
Total Credits	-1.0×10^{-3} I	-3.3×10^{-4}
	(1.7)	(.62)
Total Credits Squared	2.6×10^{-7}	2.1×10^{-7}
	(1.5)	(1.4)
Dummy for 1982	- .227***	- .168***
	(2.8)	(2.4)
Dummy for 1984	.050	.035
	(0.63)	(0.5)
Transport Dummy	.241***	.182***
	(3.2)	(2.7)
Other Occupations Dummy	.188	.227*
	(1.4)	(1.9)
Family Size	- .209	- .306
	(0.917)	(1.5)
Male	- .016	.077
	(0.16)	(0.9)
$\bar{R}^2$	.50	.31

t-ratios are reported in parentheses.
* indicates significant at the .10 level
** significant at the .05 level.
*** significant at the .01 level.

income variables are positive and significant. People who have higher incomes and pay more taxes on their marginal dollar of income evade more taxes. The negative sign on the dummy variable for 1982 indicates significantly lower levels of underreporting than in 1983. The transport sector and other sectors subject to audit or examination tend to underreport more than does the beverage and spirit sector. Finally, total credit usage is associated with lower levels of underreporting. None of the other variables is statistically significant at the .10 level.

This analysis can be used to simulate the impact of the income tax reform on underreporting. The new tax system contains three basic elements: the marginal tax rate is reduced to 33 1/3 percent; taxable income will be reduced for all taxpayers by the amount of the exemption, J$8,580; and all credits are abolished. The impact of these changes can be simulated using the regression model presented above. Since the underreported tax specification of the model exhibited a superior overall fit, this model will be used to predict the behavioral response to the

reform. This simulation methodology can best be summarized as follows. Taking the total differential of equation (1) with respect to the policy parameters which will change due to the reform yields:

$$dU = \beta_1 \partial GY + \beta_2 \partial MTR + \beta_3 \partial TC + 2\beta_4 \partial TC \quad (2)$$

where the β_i represent the coefficient estimates as reported in Table 5-16; TC represents total credits.

The results of this exercise are reported in Table 5-17, which contains projections for all the self-employed. The observed reductions in underreporting are due not only to the behavioral responses simulated but also to of the exemption of those earning less than J$8,580. The simulation results suggest that evasion would have dropped by an estimated J$13 million for all self-employed. This result implies that under the new system losses attributable to underreporting are equivalent to about 17 percent of the taxes paid by self-employed individuals.

Clearly the reform has the desirable effect of reducing the adverse revenue effects of tax evasion. However, the revenue consequences of underreporting remain significant.

Total Evasion Costs: Results from the Extended Sample

We may now combine these results for nonfiling and underreporting and estimate the total revenue cost of evasion by self-employed individuals. In addition, the results from the extended sample, as reported in Tables 5-18 and 5-19, may be compared with the results shown in Tables 5-4 and 5-5 above which report the results from the professional sample. The data in column (4) of Table 5-18 estimate the amount of income not declared and underreported in 1983 to be about J$693 million. This amount is only 5 percent lower than the J$729 million estimated from

TABLE 5-17
PRE-REFORM AND POST-REFORM UNDERREPORTING BY STATUTORY INCOME CLASS FOR ALL SELF-EMPLOYED: POOLED SAMPLE, 1982-1984
(amounts in Jamaican dollars)

Statutory Income Class	Before Reform: Number of Underpayers[a]	Before Reform: Underdeclared Taxes[b]	After Reform: Number of Underpayers[c]	After Reform: Underdeclared Taxes
Under J$2,000	0	J$ 0	0	J$ 0
2,001 - 4,000	44	7,685	0	0
4,001 - 6,000	515	216,151	0	0
6,001 - 8,000	1,311	736,585	0	0
8,001 - 10,000	1,536	1,272,898	756	59,421
10,001 - 12,000	2,707	3,128,915	2,707	902,332
12,001 - 14,000	1,450	2,269,013	1,450	1,275,280
14,001 - 16,000	1,323	2,695,739	1,323	1,157,646
16,001 - 18,000	603	1,567,375	603	594,719
18,001 - 20,000	281	863,778	281	352,071
20,001 - 25,000	455	1,568,790	455	662,621
25,001 - 30,000	240	995,797	240	488,603
30,001 - 50,000	285	2,585,908	285	949,885
Over J$50,000	106	1,522,866	106	433,995
Total	10,856	J$19,431,500	8,206	J$6,876,571

[a] Includes those subject to audit or examination.

[b] All avoided taxes are weighted to represent entire self-employed population.

[c] Reductions in the number of underpayers are due to an increase in personal allowance to J$8,580.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-1984.

the professional sample. Both the extended sample and the professional sample estimate that for the entire PAYE and self-employed income tax base, fully taxed income accounts for no more than two-thirds of total income.

The results presented in Tables 5-5 and 5-19 translate this one-third reduction in fully taxable income to a revenue loss. Analysis of data from the extended sample indicates a 1983 revenue loss due to evasion of J$211 million (column 4 of Table 5-19), as compared to an estimate of J$319 from the professional sample (Table 5-5). The lower estimate obtained from the extended sample results because professionals are more concentrated in the upper marginal tax rate brackets. Even so, the extended sample leads us to the conclusion that the tax potential in 1983 was about twice the amount actually collected on fully taxed income.

The conclusion from this analysis is that the use of the professional sample probably led to an overestimate of evasion for all self-employed. The extended sample, because it does not include professionals, probably gives something of an underestimate. These two estimates, however, do allow us to place the bounds of the revenue loss due to evasion by the self-employed at roughly between J$200 million and J$300 million in 1983. Inflating these bounds by the rate of growth in personal income tax revenues, the 1986 range for the revenue cost of self-employed evasion would have been J$300 million to J$500 million if the old system had been retained.[15]

What about the new system? As noted above, the reformed, flat tax system will give a lower revenue cost of evasion. This is because the basic income exemption level is lifted to J$8,580 and all income is taxed at 33 1/3 percent. As described above, we estimated evasion costs under the flat tax by applying the new structure to the reported and unreported income amounts described in Table 5-16. In Table 5-20 we report evasion amounts under the flat tax and can now estimate that 62 percent of potential taxes are collected. If we assume that all allowances are fully taxed, this proportion increases to 80 percent. The conclusion that as much as 20 to 40 cents of every dollar of potential taxes is outside the tax net suggests the very great returns to be had from an effective program of income tax enforcement. This estimate of 20 to 40 percent is less than the one-half estimated under the old income tax system, but is perhaps a better estimate of the amount of unpaid taxes that can be reached by an improved administration.

[15] We would caution once more that we may have overestimated nonfiling by including some late filers in this category.

TABLE 5-18

TAXABLE AND NONTAXABLE INCOME BY INCOME CLASS USING THE EXTENDED SAMPLE OF SELF-EMPLOYED EVADERS: 1983
(amounts in thousands of Jamaican dollars)[a]

Statutory Income Class (1)	Fully Taxed (2)	Taxed at Overtime Rate (3)	Not Reported or Underreported[b] (4)	Allowances (5)	Total (6)	Fully Taxed as a Percent of Total (7)
Under J$2,000	J$ 28,023.0	J$ 0.0	J$ 2,585.3	J$ 1,341	J$ 31,949.3	87.7
2,001 - 4,000	136,653.1	0.0	42,393.6	6,923	185,969.7	73.5
4,001 - 6,000	293,202.4	0.0	72,519.5	17,100	382,821.9	76.6
6,001 - 8,000	337,386.1	1,650.6	90,406.6	25,100	454,543.3	74.2
8,001 - 10,000	323,852.0	9,042.5	54,403.4	30,116	417,413.9	77.6
10,001 - 12,000	297,063.6	10,869.8	101,384.4	32,182	441,499.8	67.3
12,001 - 14,000	193,234.4	14,114.3	62,404.1	27,452	297,204.8	65.0
14,001 - 16,000	110,572.0	8,929.2	30,277.9	19,896	169,675.1	65.2
16,001 - 18,000	79,753.5	9,890.2	31,675.6	18,051	139,370.3	57.2
18,001 - 20,000	77,889.1	6,122.7	24,499.4	17,370	125,881.2	61.9
20,001 - 25,000	92,581.3	11,422.2	31,157.3	26,526	161,686.8	57.3
25,001 - 30,000	42,522.1	3,631.1	26,246.2	9,266	81,665.4	52.1
30,001 - 50,000	35,713.9	9,596.4	40,379.0	8,056	93,745.3	38.1
Over J$50,000	35,900.0	11,430.8	82,637.8	7,210	137,179.5	26.2
Total	J$2,084,347.4	J$96,699.8	J$692,970.1	J$246,590	J$3,120,606.3	66.8
Percent	66.0	3.1	22.2	7.8	100.0	

[a]Except Statutory Income class which is expressed in Jamaican dollars.

[b]Based on results from the 1983 sample.

SOURCE: Computed from JTSEP sample of self-employed and Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," Table 71.

TABLE 5-19
REVENUE POTENTIAL FROM TAXED AND NONTAXED INCOME BY INCOME CLASS USING THE EXTENDED SAMPLE OF SELF-EMPLOYED EVADERS: 1983
(amounts in thousands of Jamaican dollars)[a]

Statutory Income Class (1)	Taxes Payable on Statutory Income (2)	Full Taxation of Overtime (3)	Full Taxation of Underreported and Unreported Income[b,c] (4)	Full Taxation of Allowances[b] (5)	Total (6)	Taxes Payable on Fully Taxed Income as a Percent of Total (7)
Under J$2,000	J$ 2,083.5	J$ ---	J$ 0.0	J$ 402	J$ 2,484.5	83.8
2,001 - 4,000	8,745.4	---	74.3	2,077	10,896.7	80.3
4,001 - 6,000	27,835.9	---	6,567.1	5,130	39,533.0	70.4
6,001 - 8,000	40,964.3	660.2	17,463.3	9,099	68,186.8	60.1
8,001 - 10,000	48,220.2	3,593.1	13,896.1	12,246	77,955.4	61.9
10,001 - 12,000	54,915.1	4,659.5	29,848.6	14,626	104,049.2	52.8
12,001 - 14,000	42,912.0	6,420.3	20,518.1	13,931	83,781.4	51.2
14,001 - 16,000	29,222.3	4,474.4	10,591.5	10,962	55,251.2	52.9
16,001 - 18,000	23,122.5	5,200.5	12,651.4	10,004	50,978.4	45.4
18,001 - 20,000	25,770.8	3,441.9	10,119.7	9,919	49,251.4	52.3
20,001 - 25,000	32,629.3	6,173.5	13,751.7	14,859	67,413.6	48.4
25,001 - 30,000	17,639.3	1,962.1	11,995.9	5,202	36,799.3	47.9
30,001 - 50,000	15,666.4	5,244.3	19,828.2	4,359	45,097.9	34.7
Over J$50,000	18,453.9	6,384.0	43,799.1	3,957	72,594.0	25.4
Total	J$388,181.0	J$48,214.8	J$211,105.0	J$116,775	J$764,273.8	50.8

[a]Except Statutory Income Class which is expressed in Jamaican dollars.

[b]Estimated by incrementally adding to statutory income and taxing at regular rates. We added each component to statutory income, assuming all other components to be zero and reestimated tax liability. The difference between this liability and that shown in column (2) is the tax "loss" we attribute to each component.

[c]Based on results from the 1983 sample.

SOURCE: Computed from JTSEP extended sample of self-employed and Alm and Bahl, "An Evaluation of the Structure of the Jamaican Personal Income Tax," Table 71.

TABLE 5-20
REVENUE LOSSES DUE TO NONFILING AND UNDERREPORTING BY THE SELF-EMPLOYED UNDER THE REFORMED SYSTEM: 1983 DATA
(amounts in Jamaican dollars)

Statutory Income Class	Undeclared Taxes[a]	Underdeclared Taxes[b]	Total
Under J$2,000	J$ 0	J$ 0	J$ 0
2,001 - 4,000	0	0	0
4,001 - 6,000	0	0	0
6,001 - 8,000	0	0	0
8,001 - 10,000	505,296	15,664	520,960
10,001 - 12,000	5,863,283	290,519	6,153,802
12,001 - 14,000	5,454,080	317,181	5,771,261
14,001 - 16,000	3,211,630	102,312	3,313,942
16,001 - 18,000	4,390,709	133,469	4,524,178
18,001 - 20,000	3,794,043	87,155	3,881,198
20,001 - 25,000	4,927,531	139,532	5,067,063
25,001 - 30,000	4,965,900	159,910	5,125,810
30,001 - 50,000	7,574,739	150,091	7,724,830
Over J$50,000	18,863,689	271,148	19,134,837
Total	J$59,550,899	J$1,666,980	J$61,217,879

[a] From Tables 5-14 and 5-15.

[b] Calculated as the difference between taxes on reported income and taxes on post-audit "true" income using the reform rate structure.

SOURCE: Computed from JTSEP random sample of self-employed tax returns from nine occupations for years 1982-84.