<u>Basic Information</u>

<u>Peru Living Standards Survey (PLSS), 1990</u>

Lima, Peru

Poverty and Human Resources Division
The World Bank

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1. Overview

The Living Standards Survey methodology was developed by the World Bank to provide policy relevant data on household welfare in developing countries. The 199 0 Peru Living Standards Study (PLSS) provides data for 1,525 households in metropolitan Lima, the capital of Peru [1]. It is the second of thre e Living Standards Measurement Studies (LSMS) conducted in Peru as of 1993, and is the only one which covers Lima alone. A special feature of the data is that they provide panel observations on 727 households in Lima which were first interviewed in the 1985-86 PLSS. The 1990 PLSS da ta are available upon request from the World Bank. Procedures for obtaining the data are described in Appendix A.

This document describes the survey design and coverage for potent ial users who are unfamilar with the 1990 PLSS data. It also provides an overview of key characteristics of the survey (samplin g procedures, fieldwork) and the resulting data which will be of use to analysts working with the data . Finally, it briefly discusses recommendati ons arising from the World Bank's survey experience in Peru for future household surveys.

2. The Survey Questionnaire

2.1   Questionnaire Coverage

The survey questionnaire collects socio-economic data at the household level (expenditures and non-labor income) as well as additional information at the individual level (education, health, an d employment, including labor income). The 1990 questionnaire is a somewhat abbreviated version of the original questionnaire used in 1985-86. Some sections us ed in 1985-86 were dropped in 1990 because they were irrelevant to urban areas (agricultural production data), while others were abbreviated by deletin g questions determined to be of marginal usefulness on the basis of the 1985-86 survey experience. Unlike many LSMS surveys, neither the 1985-86 nor the 1990 surveys in Peru include an anthropometric module. In contrast to the 1985-86 PLSS, the 1990 survey did not include a community or price questionnaire [2]. Each section of the 1990 questionnaire is described briefly below (references to sub-section numbers are in parentheses):

Section 0A: Household identification number and date of interview.

Section 0B: Household member identification numbers in 1985-86 and 1990 (for panel household s only)

Section 1:   Household roster; age, sex, marital status of each household member.

Section 2:   Housing characteristics (subsection 2A); monthly rental and maintenance expenditure s (2B).

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[1] In Spanish, these surveys are referred to as the "Encuesta Sobre Medicion de Niveles de Vida" (ENNIV).

[2] Since the survey was taking place only in Lima, the average price level for the city as a whole was used i n deflating expenditure data. For sources see Appendix C.

Section 3:   Educational attainment and current school attendance of each household member (3-1) ; current educational expenditures, and occup ational training of each household member (3-2).

Section 4:   Health status and current health-related expenditures of each household member.

Section 5:   Employment status of each household member in the past 7 days and 12 months (5A) ; description of principle employment in past 7 days and most recent earnings (5B-1) ; overtime or in-kind payments related to principle employment in last 7 days (5B-2) ; secondary employme nt and earnings in past 7 days (5C-1); overtime or in-kind payments related to secondary employment (5C-2); search for additional or replacement work (5D); principle employment and earnings in past 12 months; overtime or in-kind payment s related to principle employment (5E-2); occupational history (5F); secondar y employment and earnings in past 12 months (5G-1); overtime or in-kind payments related to secondary employment (5G-2).

Section 6:   Migration; place of birth and reason for moving to Lima (if a pplicable) for each household member.

Section 7:   Description of up to 3 household business activities (7A-1); income and curren t expenditures for principle business (7A-2); inventory and capital expenditures (7B/C).

Section 8:   Household non-food consumption expenditures in past 15 days (8A); semi-durabl e expenditures in past 3 months (8B); ownership and current estimated value of durable s (8C); transfer expenditures--taxes, remittances to other households, etc.--(8D).

Section 9:   Household food consumption expenditures in the past 15 days (9A); value of home - produced food consumption in the past 15 days (9B).

Section 10:   Household sources of non-labor income (social security, rents, remittances from othe r households, etc.) value of most recent income, frequency received over past 12 months.

Section 11:   Household savings and credit, current liquidity holdings over past 12 months.

2.2   Respondents

The respondent for sections 0-3 was the head of household, identified as "the person recognized as the head by other household members". In the case of an elderly or absent head, the respondent was the person best informed and able to answer for the household head. Each household member responded to sections 4-6 for him or herself; for those under the age of 15, one of their parents or guardians responded. The respondent for sections 7-11 diff ered by section and household, selected by other household members as the individual best informed regarding the income and expenditures discussed in the relevant section.

In practice, some flexibility was needed in selecting repondents. F or example, it was often difficult to personally interview individuals who were working away from the home. In these cases, the senio r supervisor would determine whether the interviewer should go to the workplace (often not far away), or whether responses could be obtained from someone else in the household.

2.3 <u>Comments and Suggestions</u>

After the survey experience, interviewers and their senior supervisors were asked to compile a list of comments and suggestions relating to the questionnaire. The fieldwork staff expressed general satisfaction with the questionnaire organization, particularly with the flow of questions and passes from section to section.

Suggestions for future improvements to the questionnaire were as follows: (a) the print-face of the questionnaire was too small, making interviews at night (often under the light of a candle or kerosene lamp) difficult; (b) the arrows and passes signalling flows between questions and sections were not clearly marked on the questionnaire, causing high rate of errors and omissions in the first weeks of the survey; (c) some questions were not written in Spanish comprehensible to less-educated people, and as such had to be rephrased. Supervisors commented that despite all efforts, it was difficult to standardize the way in which questions were rephrased spontaneously by interviewers.

3. Sample

3.1 <u>Sample Size and Coverage</u>

The 1990 sample consists of 1,800 physical dwellings [3]. It includes 1) the 1,280 dwellings in the 1985-86 survey sample for Lima (hereafter referred to as "Old Lima"), 727 of which are panel observations; and 2) 520 dwellings representing areas of the metropolitan region settled after 1985, to account for the city's growth between the two survey years ("New Lima"). These newly settled areas were oversampled by a factor of two, to increase the precision with which the population characteristics of these areas could be assessed. Other than this oversampling factor, Old Lima and New Lima are self-weighted samples. So that the overall survey results are accurately representative of the population distribution in June, 1990, each household in the New Lima sample is given a weight of (.5). For each political district of Lima, the map shows the weighted number of households in the New Lima sample in parentheses, below the number of households in the 1985-86 sample.

3.2 <u>Sample Design</u>

For Old Lima, no new sample frame was designed in 1990. Interviewers simply returned to the same physical dwellings which were listed in the 1985-86 sample frame [4]. The sample accounts for the population growth within the geographic confines of Old Lima, by including a) any new household members; and, b) any replacement or additional households living in the selected dwelling.

A potential weakness of the sample arises from the fact that Old Lima was not reenumerated in 1990 (with the exception of 10 conglomerates, see below). Any additional dwellings constructed within these areas thus fall outside the domain of the sample. However, since most of Old Lima was already densely built in 1985, most of the population growth in Old Lima between 1985 and 1990 was probably accounted for by including in the sample additional household members and new households living in the dwellings selected in 1985-86.

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[3]The distinction between dwelling and household is made in survey work in developing countries, where more than one household sometimes reside together in one dwelling.

[4]For further information on the 1985-86 PLSS sample design, see Item E, List of Related Documents.

Two complications in sampling arose due to information which had been lost between the two survey years. First, INE kept the listings (map addresses) for the 1,280 selected households in 1985-86, but not for their alternates. Furthermore, the 1985-86 questionnaires had been destroyed, so that the address of the alternate households were unobtainable. Thus, when the originally selected household could not be found or for other reasons was not interviewed, one of the adjacent households was selected at random by the senior supervisor to replace it. Second, listings for households in 10 (out of a total of 128) conglomerates could not be located. These conglomerates were reenumerated in June, 1990, and replacement households were selected following the same sampling procedure used in 1985-86 (see List of Related Documents, item "E"), outlined below. The only drawback resulting from this loss of information and the consequent resampling of 10 conglomerates (100 dwellings) is the loss of these 100 dwellings from the panel sample. A list of the reenumerated conglomerates is provided in Item D.3 (List of Related Documents).

All of the sampling work for New Lima was undertaken by INE, and was designed as follows. Between January and June, 1989, the sample maps of the city were updated to include all newly populated areas of metropolitan Lima. These new areas were ennumerated at the same time, counting a total of 169,444 new dwellings in the city (see Attachment B). In the 1985-86 sample, one sample dwelling represented 694 in the total population. To maintain this approximate ratio, 260 dwellings from the newly populated areas had to be incorporated into the sample[5]. Following the same multi-stage sampling procedure used in 1985-86, in the first stage, a "master sample" of the was drawn by dividing the new areas into 1,700 conglomerates of approximately 100 dwellings each[6]. The secondary sample frame consisted of 26 conglomerates, selected at random. These conglomerates were reenumerated in June, 1990, just before the survey work began. The final sample included 10 dwellings (and ten alternates) drawn at random from each of the 26 conglomerates.

A final note. Since the maps for drawing up the 1990 sample were drawn in 1989, there was some question as to how much expansion had occurred in New Lima after these maps were drawn. To check this, concurrently with interviewing in New Lima the project director verified the actual dimensions of each selected conglomerate with its map, drawn one year previously. New Lima was found to contain 1.8 % more households than shown on the maps (Document (F)).

3.3   Sample Implementation

Of the 1,800 dwellings in the original sample, interviews were successfully completed in 1,485. This resulted in raw data for 1,525 households, 25 of which had incomplete expenditure data[7]. The working number of households in the complete 1990 data set is 1,500, of which 727 are panel households. Table 1 summarizes these results.

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[5]Recall that since these areas were oversampled, the actual number of households in the sample for New Lima is 520.

[6]Each household in the weighted 1990 sample represented 687 households in the total population.

[7]In this sense the 1990 PLSS differs from the 1985-86 data, which includes households for which the interviews were incomplete.

Table 3.1: Sample Response

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	Old Lima	New Lima	All
Total Number of Dwellings in Sample:	1,280	520	1,800
Dwellings Not Interviewed:	288	77	365
Occupants Refused Interview/Interview Incomplete	101	10	111
Dwelling Demolished/No Longer Private Residence	47	2	49
Informants Absent/Ill/Speak only foreign language	44	37	81
Dwelling Unoccupied	36	28	64
Total Dwellings Surveyed:	1,052	433	1,485
Total Households Surveyed:	1,087	438	1,525
Households With Complete Expenditure data	1,064	436	1,500
Households Occupied by Same Family in Both Years	727	--	727

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See: List of Related Documents, F: "Metodologia y Practica de la Operacion de Campo", Annexo 1: "Motivo de las Viviendas no Trabajadas".

4. Fieldwork

4.1 <u>Management Structure</u>

The 1990 PLSS was directed by one general manager, who oversaw both the planning and th e implementation of the survey, including questionnaire and sample design, fieldwork, and the preparation of the data for analysis. There were four senior staff members under her direction, with the followin g responsibilities:

1) Assistant Director - Assisted in liaison with government statistical office, advised on dail y management questions.

2) Fieldwork Coordinator - Planned organization of fieldwork, distributed weekly assignments, tracked progress. Also, planned and directed interviewer training program.

3) Data Entry Coordinator - Wrote the data entry program, hired data entry staff, distributed and oversaw daily assignments, returned problem questionnaires to field staff.

4) Payroll Director - Controlled daily finances; distributed salaries and payments for expense s during fieldwork.

4.2   <u>Time-frame</u>

Fieldwork for the 1990 survey was conducted relatively rapidly, over a period of 8 weeks between June 12 and July 27, 1990. Because Lima was experienceing high inflation rates (daily increases in the price level ranged between one and five percent), the quick data collection reduced the difficulties o f deflating the nominal monetary values reported over the period of the survey. Further, it was particularly important to complete the survey before the change in government July 28, after which time a sever e adjustment of macroeconomic policies was expected.

4.3   <u>Training and Field Test</u>

Training was conducted over a two-week period, followed by a two-day field test, which served both to highlight problems with the quest ionnaire and as "on the job training" for interviewers. Ideally the training would have extended over a longer period. Senior supervisors commented that during the firs t

week of actual interviews progress was slow, due to the f act that interviewers were not yet familiar enough with the questionnaire. However, the unsually short time frame in which the entire survey was planned and conducted prohibited a longer training period.

The survey was designed to be completed in a singl e visit. However, in practice the interview was often interrupted, or a certain household member was unavailable from whom information was required. As such, two or more visits were often made to the household. The aver age time to complete one interview was 2 hours, 15 minutes. The best interview ers routinely completed a single survey in 1 hour, 45 minutes.

4.4   Organization of Fieldwork

Survey work was organized as follows. There were four senior supervisors, each responsible for two brigades. Each brigade consisted of four intervi ewers and one supervisor. Each senior supervisor was responsible for the completion of work and the safety of the brigades under his or her direction [8]. Each supervisor accompanied a different interviewer each day, checking for consistency and quality, an d reviewed completed questionnaires daily for errors and/or ommissions.

The interviewers and supervisors were all female. This was deemed critical to the success of the survey in Peru (by peruvian advisors) because of 1) the reluctance of many Peruvian women to allow a male into their home if their husband is not present, and 2) the heightened fear of strangers, particularly men, entering the home d uring a time of terrorist violence. One of the four senior supervisors was male, and he was equally effective as the three females in this role.

Data entry proceded concurrently with the survey work, so that errors or omissions caught by the computer were returned to the supervisor, usually within t wo days of receipt. This increased the efficiency of fieldwork, as the brigade was in most cases still working in the vicinity of the household for whic h additional or corrected information was needed.

Each senior supervisor was responsible for completing survey work in eight sample segment s (eighty households) weekly. Survey work was conducted in one of two ways, allowing some flexibility to suit the area in which work was being undertaken:

1) Each brigade was assigned four segments per week, wh ich were distributed one per interviewer. The interviewer would interview the 10 households in the segment during each five-day week , aiming to complete 2 per day, with Saturday (and Sunday if needed) to complete interviews which had been interrupted or with individuals who were difficult to locate.
2) Each brigade was assigned four segments per week, with one segment worked daily by eac h brigade. This method was used in relatively unsafe areas, where the senior supervisor wanted to remain in close contact with each brigade. The brigade would enter the area and leave together each day. This method also allowed the relatively experienced interviewers, who would complete their work more quickly, to assist with difficult or unusual cases. They also had the incentive to do so, as the brigade would not leave until each day's assignment was complete.

After the completion of survey work, the senior supervisors concluded that the latter method was more effective. While the average number of interviews conducted per interviewer/week was 10, by the last two weeks in brigades operating under the latter system, the average was 15.

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[8]At the time of the 1990 survey, Peru, and particularly Lima, suffered from random and very violent terroris t activity.

4.5   Transport

Four vehicles were used during survey work, one assigned to each senior supervisor. The initial plan was for the vehicles to be reserved for sen ior supervisor use, so that each senior supervisor could visit each brigade (and attempt to locate each interviewer) every day. However, this system was rapidl y abandonned as it became obviously impractical and at times dangerous for interviewers to be dependent on public transport[9]. The cars were used to transport interviewers each day to and from their assignments, as well as to rove the area checking on them (especially in dangerous areas). The chauffeurs also served an unanticipated and very he lpful role in insuring the security of the interviewers, taking on responsibility for them jointly with the senior supervisor. It was often help ful for the senior supervisor to be left with one brigade under his or her direction, while the chauffeur went to check on the other.

5. Data Quality

The quality of the data collected in Peru in 1990 is generally good. The y are highly consistent, with very few errors and omissions. There are, however , several factors arising from the volatile economic and political conditions prevalent at the time, which must be taken into account when analysing the data.

5.1   Sampling Error and Under-Reporting of Expenditures

Due to the unstable political environmen t, the interviewers sometimes faced fear of and resistance to the interview on the part of the selected household. This occurred to a much greater extent among the wealthier population segm ents, where the rate of refusal was 22% (40% of originally selected households refused to be intervie wed, of which 44% were successfully replaced with other households), compared to 7% among house holds in the poor and middle class areas. The difficulty of successfully completin g interviews in wealth ier neighborhoods was complicated by the difficulty of gaining access to households, due to the tendency of such families to live in locked apartment blocks or walled houses with interco m connections to the street.

Further, wealthier households displayed a marked lack of candidness in responding to interview questions (due to fear that the government would misuse information collected on total wealth   or dollar holdings). One interviewer was explicitly told "if you insist, I will answer that question, but I will certainly not tell you the truth." Since interviewers were explicitly told to note on the questionnaires only wha t respondents said, not what they th ought they could infer, there is no way of estimating the extent to which such under-reporting occurred.

A final factor to bear in mind is the volatility of the price level bot h during the 1990 survey (weekly inflation ranged from 8.9 to 27.6% over the period, and the price level rose a total of 220%). Adjusting nominal figures to real figures, however care fully done, cannot be done as precisely as is possible at lower inflation rates. The deflation procedures are discussed in Appendix C.

5.2   Impact on Results

Tthe analyst is wise to bear in mind the potential impact of under-reporting and non-participation, both on cross-sectional work using the 1990 data alone and also in comparative work with other PLS S surveys. To the extent that the sample is less representative of the wealthiest households and under - reporting occurred, the 1990 results will underestimate the degree of inequality in the distribution o f consumption in Lima, 1990. Also, for comparative work over time, the 1990 results may underestimate

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[9]Interviewers were delayed due to transport strikes, and one interviewer narrowly missed a bullet, which shot and killed the woman next to her on the bus.

mean consumption levels for the population in that year. It is likely that the increase in political an d economic tensions caused under-reporting to be greater in the 1990 PLSS survey compared to 1985-86 . Finally, a wider margin of error is possible in the con sumption expenditure results for the 1990 survey, and therefore, in the compar ison of consumption levels in 1990 with any other survey year. This is due to the dramatic changes in the price level which were occurring as the survey was being implemented.

6. Aggregate Consumption Data

6.1   Compilation of Consumption Data

The aggregate consumption data for the 1990 Peru LSMS is compiled such that it is directl y comparable to the 1985-86 data, providing a per capita value of real monthly consumption for eac h household.

The value of household consumption includes (1) expenditures on goods and services consumed; (2) the value of food and non-food items received free of charge from employers; (3) the use value o f durable goods owned by the household but paid for in previous years; (4) the imputed rental value o f housing. Items (1) and (2) are collected explicit ly in the survey in nominal terms (Sections 5,8, and 9), and thus after deflation can be incorporated directly into the val ue of total consumption. Items (3) and (4) were derived from the reported data as explained below.

6.2   Use-Value of Durable Goods

The "use-value" of durable goods, item (3), was computed from real rates of depreciatio n (calculated from data collected in the 1985-86 survey data), and multiplying this value by the current value of the good in 1990 (from section 8). The calculation of the use value of durable goods is based o n estimated rates of depreciation (in terms of value, not j ust physical condition) of each good.   Depreciation rates based on the 1985-86 data were used [10]. The rate of depreciation was multiplied by the nominal value of each good (at the time of the interview) as reported by the household. These values were then deflated according to the da te of interview, applying the fifteen day deflator (see Appendix C) thus expressing the use value of each durable good in terms of June 1, 1990, Intis.

6.3   Rental Value of Housing

An imputed rental value is constructed for all dwe llings, whether rented or owner-occupied, by the following procedure. The estimated (self-r eported) rental value (in real June 1, 1990 Intis) is regressed on various characteristics of the dwelling, such as the number of rooms, the materials used to construct the dwelling and the location within Lima. The resulting parameter estimates were then used to estimate the rental value of all housing. Since the dependent varia ble was deflated before the regression was estimated, no further deflation was nee ded. Estimated bias resulting from sample selection was tested for and found to be insignificant.

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[10]To estimate the depreciation rate, both the real value of the good when purchased and at the time of interview is required.   The former was not collected in the June, 1990 because respondents could not remember exact prices at the time of purchase due to the rapidly changing price level. For calculation of depreciation in 1985-86 se e Glewwe, Paul. 1988. "The Distribution of Welfare in Peru in 1985-86". Living Standards Measurement Study No. 42. The World Bank.

7.   Linking the 1985-86 and 1990 LSMS data sets

    The panel data set consists of 727 households and 3335 individuals. It is linked by househol d identification numbers, and personal identification numbers. Sectio n 0B of the 1990 questionnaire provides the 1985 and 1990 personal identi fication numbers of all panel household members. Section 1 of both the 1985-86 and 1990 questionnaires was used to verify the identity of panel members according to birthdate and sex.

8.   Data Files

    All of the original data from the 1990 PLSS survey are available for public use. Data for eac h section is contained in a separate data file. These filenames all be gin with the prefix "N0" and are followed by the section number. For example, the filename "N05B1". Filetype will vary according to the file format requested.

    The World Bank also makes available a limited number of constructed data files. These wer e generated by researchers at t he World Bank for their own use, and are made available to the public on the condition that the World Bank and its staff are under no obligation to provide further services to users . These data files reflect methodological choices of the individual researchers. Some users may prefer to calculate their own versions of these constructed files, based on the original data.

    The constructed data files available for the 1990 survey data are listed below, along with the name and description of all variables they contain. Following the list of the three constructed data sets is a list of 33 format files, which document codes used in the survey.

File Name	Variable Name	Description
EXPEND	HID	Household identification number
	TOTPCX	Monthly per capita household consumption
	PCFDEXP	Monthly per capita household food consumption
	WT	Weight of .5 for "New Lima" households
	HHSIZE	Household size
DEFLATE	HID	Household identification number
	DAYI	Day of interview
	MOI	Month of interview
	DFL15	15-day deflator
	DFL4WK	Monthly deflator
	DFL3MO3	3-month deflator for expenditures where month (M) is March
	DFL3MO4	3-month deflator for expenditures where month (M) is April
	DFL3MO5	3-month deflator for expenditures where month (M) is May
	DFL3MO6	3-month deflator for expenditures where month (M) is June
	DFL3MO7	3-month deflator for expenditures where month (M) is July
	EXRATEI	Converts amounts reported in US dollars to June 1, 1990 Intis

PANEL   HHID   1985 household identification number

                      HID   1990 household identification number

                      PID85 1985 personal identification number

                      PID90 1990 personal identification number

Format Files:

PERF00A	SAS	PERF05C1	SAS	PERF07B	SAS
PERF00B	SAS	PERF05C2	SAS	PERF07C	SAS
PERF01	SAS	PERF05D	SAS	PERF08A	SAS
PERF02A	SAS	PERF05E1	SAS	PERF08B	SAS
PERF02B	SAS	PERF05E2	SAS	PERF08C	SAS
PERF031	SAS	PERF05F	SAS	PERF08D	SAS
PERF032	SAS	PERF05G1	SAS	PERF09A	SAS
PERF04	SAS	PERF05G2	SAS	PERF09B	SAS
PERF05A	SAS	PERF06	SAS	PERF10	SAS
PERF05B1	SAS	PERF07A1	SAS	PERF11A	SAS
PERF05B2	SAS	PERF07A2	SAS	PERF11B	SAS

Appendix A

How to Obtain the 1990 PLSS Data

The 1990 Peru Living Standards Survey data are the property of the World Bank. They can be obtained by writing to:

Living Standards Measurement Study (LSMS)
Poverty and Human Resources Division
Policy Research Department
The World Bank
1818 'H' St., N.W.
Washington, DC 20433
U.S.A.

The letter should include a 1-2 page description of the proposed research to be undertaken using the data. The World Bank will then make a quick check of whether similar research has been done before. If the research description is not redundant, the World Bank will release the data, and will notify the researcher to that effect. If the proposed research is similar to work the World Bank is aware has been done, the researcher will be notified so that he/she may consider whether to revise his/her plans.

There is a nominal fee associated with obtaining the data, which are available on diskette, in SAS (version 5.0) portable, STATA (version 2.1) , or ASCII files.

The Poverty and Human Resources Division of the World Bank requests copies of all reports and documents resulting from research on the data.

The researcher should further note that once received, the data cannot be passed on to a third party for any reason. Other researchers must contact the World Bank directly for access to these data. Any infringement on this policy will result in the denial of future access to World Bank data.

Appendix B

List of Counterpart Institutions and Contacts

       The 1990 PLSS was not conducted under the official auspices of either the World Bank or the Government of Peru. These somewhat unusual circumstances arose from the fact that all project lending by the World Bank to Peru was suspended between 1988-1991, due to Peru's arrears on World Bank loans. Gillette Hall, a graduate research student in economics, in affiliation with Cuanto, S.A., a private Peruvian research institute, was commissioned to conduct the 1990 PLSS survey. The World Bank, however, played a major role in the survey, providing 100% of the funding and extensive technical support to the project. The Statistical Institute of Peru (INE) provided essential materials for designing the 1990 sample, and conducted much of the sampling work. The following is a list of contacts at these counterpart institutions.

1.   Statistical Institute of Peru (INE)

      a)   Ramon de la Cruz Yupanqui, Sub-Director de Muestreo y Analysis Estadisticos (Sub-Director of Sampling and Statistical Analysis)

2.   Cuanto, S.A.
      203-B Plaza del Ovalo de San Isidro
      San Isidro
      Lima, Peru

      tel: (51-14) 224932/423421
      fax: (51-14) 425460

      Contacts:

      a)   Graciela Fernandez Baca, Director
      b)   Richard Webb, Director (currently at World Bank and Brookings Institution)
      c)   Gilberto Moncada, Managing Director (currently on leave at ILADES, Santiago, Chile)

3.   The World Bank

      Paul Glewwe, Economist
      1818 H Street, N.W.
      Washington, DC 20433
      U.S.A.

      tel: (202) 473-1234

Appendix C

Deflation Procedures

The 1990 data was deflated so that all monetary values in the consumption data are expressed in terms of thousands of constant (June 1, 1990) Intis. Three different deflation procedures were developed in order to deflate nominal values depending on the reference period associated with expenditures as reported in the questionnaire: 1) expenditures in the two weeks up to and including the date of interview; 2) expenditures in the four weeks up to and including the day of interview; (3) expenditures in the three-month period up to and including the date of interview. Each of these deflators was sensitive to the date of interview of each household. The price data used in these deflation procedures was provided by Cuanto, S.A., and may be obtained by contacting this organization directly (see List of Counterpart Institutions). Each deflation procedure is discussed individually below.

The Fifteen Day Deflator

This deflation procedure was applied to nominal monetary values reported for expenditures on food and other frequently purchased goods during the 2 weeks prior to (15 days up to and including) the interview. Daily inflation rates have only been calculated in Peru since June 30, 1990, whereas data collection began June 12, 1990. Therefore, weekly rates of inflation were used to construct a distinct deflator for each possible date of interview as follows.

Using price data reported by Cuanto, a weekly price index (P) was calculated for 10 weeks, beginning two weeks before the first interview at week 1 (the week of May 26-June 1) and ending with the final week of interviews, week 10. The inflation rate on which this index is based measures the total change in the price level from Saturday to Friday.

Weekly Price Index 1
June 1 - August 3, 1990

Week	Price Index (end of week)	Inflation Rate (%)
Week 1 (May 26-June 1, 1990)	1.00	
Week 2	1.11	11.2
Week 3	1.21	8.9
Week 4	1.33	10.1
Week 5	1.52	14.1
Week 6	1.73	14.0
Week 7	1.93	11.5
Week 8	2.17	12.4
Week 9	2.50	15.1
Week 10	3.19	27.6

The 15 day deflator was then determined for each possible interview day, by taking a weighted average of price inflation during the 15 days prior to (up to and including) the interview date. If these days are denoted as (n), then the 15 day deflator can be expressed as:

$$15 \; day \; deflator = \frac{(P_1 \times n_1) + (P_2 \times n_2) + (P_3 \times n_3)}{15}, \quad (n_1 + n_2 + n_3 = 15)$$

where (P_1) represents the price index for week 1, (n_1) represents the number of days in the fifteen day period prior to the interview which fall in week 1, and so on. Using the 15 day deflator, all monetary values are deflated to the price level prevailing on June 1, 1990.

The Monthly Deflator

This deflator was applied to monthly household expenditures such as gas and water payments. Each household reports the last monthly amount paid, and the month (M) in which the payment was made. The monthly deflator was constructed by taking the unweighted average of the price indices for all weeks in that month:

Monthly Price Index
January - July, 1990

Month (1990)	Price Index (P)	Corresponding Weekly Price Indices				
January	.26	.24	.25	.26	.28	
February	.34	.30	.33	.35	.36	.39
March	.46	.41	.45	.48	.50	
April	.62	.55	.62	.66	.68	
May	.87	.74	.82	.87	.92	1.00
June	1.29	1.11	1.21	1.33	1.52	
July	2.08	1.73	1.93	2.17	2.50	

The Three Month Deflator

This deflator standardizes monetary values corresponding to total expenditures for services and semi-durable goods purchased during the thirteen weeks up to and including the week of interview. Each respondent is asked to identify the calendar month in which the expenditure was made, or if the good was purchased several times, the month in which the bulk of the expenditure was made. This month is referred to as (M) in the discussion that follows.

The deflator was again calculated based on weekly rates of inflation. A weekly price level index (P) was constructed for the period March 10-July 27, again setting the price level during the week of May 26-June 1 to 100:

Weekly Price Index 2
March 16 - June 1, 1990

Week	Price Index (P)	Inflation Rate
Week 1 (March 10-16, 1990)	.45	
Week 2	.48	5.3
Week 3	.50	5.9
Week 4	.55	9.8
Week 5	.62	12.8
Week 6	.66	5.2
Week 7	.68	3.3
Week 8	.74	8.5
Week 9	.82	11.9
Week 10	.87	5.2
Week 11	.92	5.7
Week 12 (May 26-June 1, 1990)	1.00	9.1

(weeks 13-21 take the same values as weeks 2-10, Weekly Price Index 1, representing June 1 - August 3, 1990)

      Based on this price index, the week of interview, and the month of most intensive purchases (M), all expenditures made the three months prior to the interview were converted to June 1, 1990, Intis. The deflator is expressed as a weighted average of the price indices for each of the 13 weeks prior to and including the week of interview, assigning a total weight of .5 to the weeks falling in month (M) and a weight of .5 to the other weeks in the relevant 13 week period. Thus for a good purchased in June by a household interviewed in the week of June 9-15 (week 14), the 3 month deflator is calculated as follows:

$$3 \; month \; deflator \; = \; [\frac{P_{13} \; + \; P_{14}}{2} \; \times \; (.5)] \; + \; [\frac{\sum P_{2}...P_{12}}{11} \; \times \; (.5)],$$

where (M) is June. The subscripts indicate the week corresponding to each price index (P). Note that the thirteen weeks up to and including the week of interview are weeks 2-14. Because the good was purchased in June, weeks 13 and 14 together receive a weight of (.5) in calculating the deflator.

      The weight (.5) assigned to the price indices corresponding to the weeks in month (M) was selected rather arbitrarily, but is probably a reasonable assumption. It accounts for the fact that (M) may refer to the month in which some but not all expenditures on the item in question took place. The impact of this assumption on the results was tested and proved to be minor; changing the weights even to the extremes of 1 for month (M) and 0 for the other weeks did not significantly change the results.

Appendix D

List of Supporting Documents

The following documents can be obtained from the World Bank, Poverty and Human Resources Division, at a cost of .05 cents per page for photocopying.

A.   1990 Questionnaire: "Encuesta de Hogares Sobre Medicion de Niveles de Vida, Junio, 1990". 30 pages. (Free of Charge)

B.   1990 Interviewer Manual: "Encuesta de Niveles de Vida en Lima Metropolitana (ENNIV 1990): Manual del Encuestador". 55 pages.

C.   1990 Training Information: "ENNIV II: Plan del Curso de Capacitacion para Encuestadoras y Supervisores". 10 pages.

D.   1990 Sampling Documents: "ENNIV 1990 - Lima Metropolitana, Descripcion del Marco Muestral". 12 pages.

        1. "Relacion de Zonas, Conglomerados Seleccionados y Viviendas de Enniv I y Enniv II Segun Distritos de Lima Metropolitana que Intervinieron en Estas Encuestas".

        2. "Conglomerados Selecccionados del Marco Complementario Donde Debera Efectuarse el Registro de Viviendas".

        3. "Relacion de Segmentos Seleccionados en la ENNIV I Donde Debera Hacerse el Registro de Viviendas".

E.   1985-86 Sampling Methodology: "Encuesta National de Hogares Sobre Medicion de Niveles de Vida, 1985-86: Diseno Muestral". 26 pages.

F.   Theory and Practice of Fieldwork, 1990: "Metodologia Y Practica de la Operaction de Campo". 29 pages.

G.   Data Entry Information, 1990: "Informe del Procesamiento de la ENNIV, 1990. 14 pages.

H.   Means Tables of all variables in PLSS 1990 Data

Appendix E

Partial Summary of Published and Ongoing Research Using PLSS 90

Analysis of LSMS data sets are required to send copies of their research proposals to the World Bank LSMS in order for them to obtain data sets through the Bank (some users especially those in government and national research institutes, acquire the data directly from the national agency which owns it). Analysts are also requested to send copies of the papers and publications resulting from the analysis of LSMS data sets to the LSMS. The following list is comprised of information from these sources. Though necessarily only partial, it can be useful to researchers seeking to build on, but not reproduce, similar work.

I.	Publications

Ajuste y Economia Familiar, 1985-1990 . 1991. Instituto Cuanto. Editorial Navarrete S.A.   Lima, Peru.

	Cuanto, S.A.
	203-B Plaza del Ovalo de San Isidro
	San Isidro
	Lima, Peru
	tel: (51-14) 224932/423421
	fax: (51-14) 425460

Gill, Indermit, and Feliciano Iglesias. 1991. "Labor Markets in Peru, 1985-1990: A Report on the Nature of Unemployment and Returns to Human Capital in Formal and Informal Sector Employment". Technical Report, The World Bank (LA1CO).

Gill, Indermit. Forthcoming. "Is There Sex Discrimination in Peru? Evidence from the 1990 Lima Living Standards Survey". In Psacharopoulos, George and Zafiris Tzannatos, eds.   Female Employment and Pay in Latin America: A Regional Survey .

Glewwe, Paul, and Gillette Hall. 1992. "Poverty and Inequality during Unorthodox Adjustment". Living Standards Measurement Study Working Paper No. 86 (also available in Spanish, Working Paper No. 86S). World Bank, Washington, DC.

_____. Forthcoming. "Poverty, Inequality and Living Standards During Unorthodox Adjustment: The Case of Peru, 1985 to 1990".   Economic Development and Cultural Change .

	Iglesias, Feliciano. (Forthcoming). ESW Report on Peruvian Labor Markets . The World Bank.

II.	Research in Progress

	A.	Elizabeth Bamberger
		6108 Melvern Dr.
		Bethesda, MD 20817
		tel: (301) 530-9543

		Topic of research: Causes of relative poverty of female-headed households. (Ph.D candidate, Department of Sociology, University of Maryland)

B.   Veronica Ruiz de Castilla
        Department of Economics
        University of Texas, Austin
        Austin, TX 78712-1173

        Topic of Research: Effect of inflation on savings behavior of households, and the role of borrowing to protect consumption.

C.   Enrico Anthony Marcelli
        Department of Economics
        University of California
        Los Angeles, CA 90089
        tel: (213) 740-8335

        Topic of Research: The informal sector as a viable alternative to formal employment.

D.   David Abler
        University of Pennsylvania

        Topic of Research: Human capital, spill-over effects and returns to scale in Peruvian agriculture

E.   Indermit Gill
        University of Buffalo

        Topic of Research: Gender, occupational choice and earnings.

F.   Gustavo Yamada
        Columbia University

        Topic of Research: Self-employment and informality, a panel study of earnings and mobility in Lima, Peru.

G.   Gillette Hall
        Pembroke College
        Cambridge CB2 IRF
        England

        Topic of Research: Poverty in Peru, 1985-86 to 1990, and the role of education and inter-household transfers in protecting household welfare