ISN-33811 936-5412/42 PD-AAP-032

PROJECT EVALUATION SUMMARY (PES) – PART I

Project Control Symbol Use: 447

1. PROJECT TITLE

The Influence of Rural-Urban Migration on the Fertility of Migrants in Developing Countries (UMF)

2. PROJECT NUMBER: 936-5412

3. MISSION/AID/W OFFICE: S&T/RD/RRD

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY): 84-4

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES

A. First PRC-AG or Equivalent	B. Final Obligation Expected	C. Final Input Delivery
FY 79	FY 84	FY 84

6. ESTIMATED PROJECT FUNDING

A. Total	$ 448,000
B. U.S.	$ 448,000

7. PERIOD COVERED BY EVALUATION

From (month/yr.): October 1981

To (month/yr.): October 1983

Date of Evaluation Review: January 1984

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Pass this PES with the NSF report to Dr. Lee so that he can take appropriate actions on specific recommendations contained in sections 16, 17, 22, and 23.	UMF Project Manager and B.S. Lee	ASAP
2. Copies of the PES will be sent to S&T/POP for action on recommendations concerning the RAPID and FPDS projects. Dr. Lee will be asked to prepare recommendations for the FPDS project manager.	UMF Project Manager plus RAPID and FPDS project managers	ASAP

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☒ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Avrom Bendavid-Val, Project Officer
AID/S&T/RD/RRD

Eric Chetwynd, Jr., Division Chief
AID/S&T/RD/RRD

12. Mission/AID/W Office Director Approval

Signature

Typed Name: Jerome T. French, S&T/RD

Date: FEB 10 1984

AID 1330-15 (3-78)

B. SUMMARY

"The Influence of Rural-Urban Migration on the Fertility of Migrants in Developing Countries" was originally funded by AID in 1979 to research the dynamics of urban migrant fertility, and particularly, to address the issues of "selectivity" versus "adaptation." This study is intended to contribute to improving developing country understanding of these dynamics and enhancing their capabilities in appropriate policy development and program planning for urban population growth.

In the first phase of the project, an auto-regressive econometric model and methodology were developed for examining the relationship between rural-urban migration and fertility in developing countries. In the second phase of the project, the methodologies were applied to World Fertility Survey (WFS) data from Korea and Mexico, and will be applied to WFS data from Cameroon.

The Urban Migrant Fertility Panel in the Division of International Programs at the National Science Foundation (NSF), evaluating this study, concluded that the research project was important and of considerable interest from both a scientific and policy perspective. This research area, they felt, had been somewhat neglected in the past, and the systematic assessment of testable hypotheses had not been adequately made previously. Moreover, the employment of the auto-regressive model, they felt, was an "innovative strategy for analysis" and "provides a commendable approach for future comparative research on the topic." This is especially so due to the wealth of data presently available and forthcoming from the WFS and Contraceptive Prevalence Survey (CPS) investigations conducted during the past decade and presently being planned.

The evaluation team was enthusiastic about the issues being analyzed in light of their important policy implications. The findings which seem to support the hypothesis that urban adaptation is a predominant force in fertility determination, lends credence to the significance of socio-economic conditions on fertility behavior. Further investigation into some of the "proximate determinants" of fertility, such as marriage, breast-feeding, contraception and abortion, may be particularly relevant, as well as changing traditional practices of child spacing and other cultural variables. Although rural-urban migrants may change patterns of human settlements in a way which stress urban service systems, their overall lowered fertility may alter the picture of national population growth and projected requirements for employment, housing, and services.

14. EVALUATION METHODOLOGY

The reasons for the evaluation of this project were to provide recommendations to the contractor on improving the draft report from the Mexican study, strengthening the Cameroon study, and synthesizing results from the Korean, Mexican and Cameroon studies. This technical evaluation was scheduled within the Project Paper (pages 21-22).

The Urban Migrant Fertility Panel, which conducted the evaluation in October 1983, was composed of George C. Meyers, Chairman, Franscisco Alba, Thomas Merrick and C.M. Suchindron (their report is attached as Annex 1).

Further evaluation was conducted by AID/W staff members Eric Chetwynd, Avrom Bendavid-Val, Pamela Mandel, (S&T/RD) and Adrienne Allison (S&T/POP).

15. EXTERNAL FACTORS

During the course of the study, the principal investigator twice changed institutions, moving from Research Triangle Institute (RTI) to Louisiana State University (LSU) and to the University of Nebraska where he is now located. Although these disruptions may have delayed the research, costs have been reduced due to lower overhead costs at the University of Nebraska.

16. INPUTS

The evaluation team recommended inputs or changes to the study, both conceptually and methodologically. These are:

(a) More attention should be given to the so-called "proximate determinants" of fertility, e.g., marriage, breast-feeding, contraception and abortion. Not only are the WFS data sets especially rich in data related to these intermediate variables, but their relevance to policy, fertility control and its link to migration particularly, may be critical. Further conceptual discussion and analyses of the Mexican study vis-a-vis specific intermediate variables related to migration and subsequent reproduction, are recommended;

(b) Micro-data research findings should be related to political, social, cultural and economic changes on the macro level;

(c) Make appropriate adjustments based on the evaluation team's assessment about data quality and analyses on reporting errors in Mexico;

(d) Include women with marital disruption in the sample, treating their history as censored at the time of disruption, rather than at the time of the interview. Include also, currently married women with a previous history of marital disruption;

(e) Examine possible understatement of adaptation effect by exclusion of single adult women, as they may represent possible influence of migration on delayed marriage; and

(f) Extend analyses to other migrant and non-migrant groups in the sample. Moreover, rural and urban migrants who migrated at earlier ages should be compared with those moving as adults.

17. OUTPUTS

The project paper outlined four major outputs. These were:

(a) Development of theoretical model based on hypotheses drawn from a review of the relevant literature;

(b) Testing the model by fitting it to the 1974 Korean World Fertility Survey;

(c) Adapt the model for use in a variety of developmental settings by applying it to less complete data from different countries, with the substantive involvement of local research institutions; and

(d) Synthesize the results of these country applications into a significant scientific statement for use by development practitioners and others and as a contribution to the state-of-the-art.

Outputs a, b and c will have been achieved, with the adaptation of the model presently being applied to the data from Cameroon. It is expected that output d will follow.

The evaluation team recommended that:

(a) The Cameroon analysis follow the analytic procedures and methodology employed in the Korean and Mexican studies for the sake of comparability.

(b) Chapter 4 of the Mexican study be extensively revised, taking into consideration the censoring bias and bias created by selection of a restricted study population;

(c) Chapter 5, of the Mexican study, a discussion of models which have not been used and other econometric considerations, should be placed into an appendix;

(d) The report should be responsive to critical methodological issues discussed on pages 9-10.

(e) The models presented in Chapter 6 of the Mexico Report be deleted, as they lack sufficient elaboration and validation; and

(f) A comparative evaluation of the three case studies be done, which integrates their findings.

18. PURPOSE

"To increase understanding of the relationships between rural-to-urban migration and fertility and formulate a policy framework and guidelines to help governments understand, plan for, and guide better their growing urban populations."

The Project Paper discussed both the project's potential contribution to institution building and plans to facilitate utilization of research findings (pp. 15-16). In both the Korean and Mexican studies, collaborative working arrangements have been made, with the Korean Institute for Family Planning (KIFP) and the Korean Development Institute; and La Academia Mexicana de Investigacion de Demografia Medica, A.C., and the Family Planning Department of the Mexican Institute of Social Security, respectively. The nature of the

collaboration has included scholars from both Korea and Mexico coming to the States to work with Professor Lee on the data analysis, as well as his coordination of a seminar in each country. In Cameroon, Lee is collaborating with the Centr for Economic and Social Research (a government research agency). Plans are for a Cameroonian scholar to visit the States Spring 1984, with Lee hosting a seminar in Cameroon Summer 1984. In the evaluation conducted by NSF, it has been recommended that a comparative study be conducted at the conclusion of the Cameroon analysis, with a subsequent seminar or workshop to discuss the findings.

The Project Paper also recommended five approaches to facilitate utilization of research findings, those being:

(1) Publication of research results in reports and in newspaper and journal article formats;

(2) Seminars and workshops with invited participants from Korea, other developing countries and USAID representatives;

(3) Active participation in additional data gathering and in the analysis of results of this project by the staff of KIFP and the relevant agencies in other developing countries to which the model will be applied;

(4) Technical training sessions in quantitative research methodology for migration and fertility problems given by Dr. Lee to the staff of the relevant institutions involved; and

(5) Work with Korean policy makers in the countries selected for Stage II in understanding and integrating the research results into their actual program plans.

Professor Lee has written six articles utilizing the Korean data, in addition to the Final Report, submitted in March 1981. One of those articles appeared in a Korean journal, The Journal of Economic Development. The draft final report for Mexico has been completed, as of July 1983, with two articles currently being developed. Both the technical aspects of the research and policy issues have been discussed in these articles. A list of publications can be found in attachment 2. For Korea, one seminar with 30 participants, and two evaluation workshops in the States have been held. Both academic and government staff from Korea were represented, in addition to USAID staff. Subsequent to publication of the Final Report, each participant was sent a copy. For Mexico, a seminar for 20 participants was held in September 1983, half of whom were policymakers. The Final Report for Mexico is being published in Spanish, with 2000 copies to be made available for university and government purposes.

19. GOAL/SUBGOAL

See purpose.

20. BENEFICIARIES

Developing country governments may benefit from the research findings by being better able to formulate urban and rural development policies and programs. Urban and/or rural target groups may benefit from programs developed by and for them.

Research results have been completed in a timely fashion and shared with USAID missions and host country policymakers. Additional seminars as well as technical and policy-relevant articles are currently being planned.

21. UNPLANNED EFFECTS

As a result of some of the findings of the first two studies (Korea and Mexico), the evaluation team noted that "rural to urban migration, which is often viewed as a negative force producing highly visible social, economic and political problems created by rapid urbanization and dislocation, may be cast as a positive force as well in bringing about population change." This possible outcome would differ radically from current development discussions. In addition, other findings from the Cameroon data may present challenges to current thought in the field, as well as the potential cumulative effect of the proposed comparative study.

At the meeting held to discuss the PES, the suggestion was made that fertility and migration questions be added to the new Family Planning and Demographic Surveys (FPDS) project in S&T/POP. Professor Lee's research may pose relevant fertility and migration questions to be included to permit more widespread analysis of the type Lee has pioneered.

22. LESSONS LEARNED

The Urban Migrant Fertility Study develops innovative conceptual and methodological approaches to issues related to rural-urban migration, fertility and urbanization. Since fertility levels of rural-urban migrants differ among developing countries, responsive not only to the size of urban localities but also to complex and differing economic, social and cultural environments, the conceptual model may need to be expanded to assess both consistent as well as contradictory findings.

23. SPECIAL COMMENTS OR REMARKS

Professor Lee should be apprised of the WFS analysis currently being done at Westinghouse (Demographic Data for Development Project) and at The Futures Group (RAPID Project). In addition, he should develop a guide for applying his auto-regressive model to WFS data for other countries. As it may turn out that few WFS data sets are strong enough to support migration studies, of this nature, professor Lee's recommendations for questions related to fertility and migration should be included in the new Family Planning and Demographic Surveys (FPDS) project.

We encourage plans to revise the Korean study with the modified methodology which has been developed, given sufficient funding. We also encourage

completion of the Cameroon study and subsequent comparative analysis of the three countries. Both a workshop/seminar and a book on that comparative study would be strongly recommended.

We would hope that the policy implications of the differences in urban fertility patterns among migrants in Korea, Mexico and Cameroon be shared with policymakers in these countries. The upcoming Population Association of America (PAA) meetings, May 1984, and the UN World Conference on Population, to be held in Mexico in August 1984, would be excellent fora for such discussions.

Dr. Lee will be provided with a copy of this PES so that he can take appropriate actions on findings and recommendations.

Attachments:

1. National Science Foundation Evaluation

2. Urban Migrant Fertility Study Publications

FINAL REPORT

Urban Migrant Fertility Panel
Division of International Programs
National Science Foundation

Purpose:

The panel was charged with the task of preparing an evaluation of the Urban Migrant Fertility Study--Principal Investigator, Dr. Bun Song Lee, funded by the Agency for International Development, Office of Urban Development, Bureau for Development Support (DS/UD). The specific aims were to provide recommendations to the contractor on 1.) revising the draft report from the Mexican study, the second study completed on the project following that in Korea; 2.) conducting the third and final study in the United Republic of Cameroon (hereafter referred to as Cameroon); and 3.) issues pertaining to a synthesis of the three country studies. Various documents relating to the research project were examined by the members of the panel prior to its meetings in Washington, D.C. on October 13-14, 1983. A preliminary report of the recommendations was presented for discussion to officials of AID and the principal investigator on the afternoon of October 14 at AID offices in Rosslyn, Virginia. The Final report incorporates the subsequent written preparations of the panel's members.

Background:

A project was funded by AID in 1979 to support research on urban migrant fertility. The study had two phases: 1.) Development of a model and methodology that would be appropriate for examining the broad issue of the relationship between internal migration, especially urban to rural

movement and fertility in the developing country context; 2.) Application of these methodological strategies to microdata sets available from World Fertility Surveys (WFS) conducted in three countries. The countries that were finally selected were Korea, Mexico, and Cameroon. The completed report for Korea and the draft report for Mexico contain analyses of other relevant data sets, but the primary emphasis has been placed in the project on analysis of the WFS data conducted in 1974 in Korea and 1976 in Mexico. The Cameroon survey was completed in 1978. The final study in Cameroon also will involve analysis of the one percent sample data tape of the 1976 census. The principal investigator for the overall project is Dr. Bun Song Lee, currently Associate Professor of Economics at the University of Nebraska at Omaha. During the period of the contract he has held appointments at the Research Triangle Institute and Louisiana State University.

Overall Evaluation

The panel is in agreement that this is an important research project. The issue being examined is of considerable interest from both a scientific and a policy-relevant standpoint. The systematic study of interactions between internal migration and fertility, particularly at the microanalytic level, has been a relatively neglected area of research, in spite of the important impact that internal migration, especially rural to urban movement, has had on population redistribution in many developing countries.

Previous studies on the topic have not produced a sound body of consistent and cumulative knowledge, largely because they have failed to systematically assess testable hypotheses that embrace a range of relevant theoretical dimensions. Moreover, they have tended not to employ adequate

multivariate analytic procedures. Thus, it is not surprising such studies have often produced contradictory findings. This research project, involving systematic studies in a number of countries and employing an innovative strategy of analysis—the autoregressive model--provides a commendable approach for future comparative research on the topic. Especially important is the fact that it encourages further use of microdata files from the various surveys that have been conducted in the past decade at great cost and labor.

A major issue dealt with in these studies--selection and/or adaptation in these modes of demographic behavior—has considerable relevance for policy formulation. The importance of demographic change as adaptation, which seems to the predominant finding from the two completed studies, is germane to the idea that economic and social conditions are significant in altering population behavior. Analytically there is a similar foundation behind the so-called "demographic transition" formulation. If adaptation is a significant factor explaining fertility changes, it is within the realm of public action to act upon that variable by altering or promoting targeted economic and social conditions. Thus, rural to urban migration, which is often viewed as a negative force producing highly visible social, economic and political problems created by rapid urbanization and dislocation, may be cast as a positive force as well in bringing about population change.

In summary, we are enthusiastic about the progress that has been made in this research project and fully support continuation with the Cameroon study. Moreover, we feel that with completion of that study an opportunity also exists for a integrative program of further analysis that would exploit the comparative aspects of the project.

Recommendation No. 1: To accomplish this goal, we urge that the Cameroon analysis follow as closely as possible the analytic procedures developed in the previous studies, taking into account the recommendations for possible modifications that will be discussed in the following sections dealing with conceptual and methodological matters.

Conceptual Issues

The theoretical model underlying the analysis is heavily oriented to the "demand" side of economic approaches to migration and fertility (prices and income), and devotes relatively little attention to "supply" (or intermediate) variables. These supply variables do not seem to be adequately recognized as important mediating links between observed fertility and socio-economic changes. For example, marriage, breast-feeding, contraception, and abortion (variables noted in the proximate determinants approach as recommended by the National Academy of Sciences' Committee on Population and Demography) have not been examined extensively These variables are mentioned in the descriptive section (Chapter 4), of the Mexico report, but left out when the study gets down to its real business of linking fertility and migration. This is unfortunate for two reasons. First, the WFS data sets are particularly rich in data on intermediate fertility variables, having been designed with the particular purpose of providing research with information on socio-economic determinants, as well as intermediate variables. Second, explicit analytical attention to intermediate variables, particularly fertility control and its link to migration, could enrich the policy relevance of the analyses considerably. Since Mexico has undertaken a vigorous publicly supported family planning program, it would be of interest to know

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not only that there is a link between observed fertility and migration, but how this link operates, e.g., by increasing access to family planning, exposing women to new ideas about managing their lives, reducing the cost of fertility control, delaying marriage, providing new opportunities for women, etc. Some of these concepts get embedded in variables, such as schooling that are included in the analysis, but the WFS data provide an opportunity to be much more explicit about the links.

Recommendation No. 2: We urge that the investigator consider conceptual discussion and further analyses of the Mexican study that would specifically introduce intermediate variables as they relate to migration and subsequent reproduction.

The studies need to take into account, to a greater extent than has been done, national institutions--namely, socio-cultural factors and political directions--to fully explore the policy implications derived from its results. Institutional factors in each country have to be evaluated in order to assess which options are really available and feasible. For example, the Mexican government has pursued over the years various policies of regional development with mixed success. What are the prospects of present and future policies? The Mexican system, as every political body, has its constraints and its potentials. The 1973-1974 changes in population policy demonstrate both constraints and potentials. Is migration going to prove a more intractable phenomenon?

Recommendation No. 3: It is recommended that the microdata research findings (as in Mexico the apparent greater adaption of migrants with respect to fertility between 1962-66 and 1972-76, compared with 1967-71) be related to political, social, cultural, and economic changes on the macro-level. Attention to

the previous work of Kingsley Davis' theory of change and response, Dov Friedlander's work on migration and fertility as demographic responses in both rural and urban areas, and Joseph Potter's paper at the recent Population Association of America meetings in Pittsburgh might provide some inspiration on this matter. Alba's recent book on The Population of Mexico: Trends, Issues and Policies (1982) also can provide additional insights. We are aware that the policy implications for the Mexican study has not been extensively treated as yet, but these suggestions could lead to a more germane product.

Methological Issues

The report could be strengthened by adding discussions about the quality of data. The demographic literature contains considerable attention to problems with data, especially with fertility and mortality histories and with age data. However, errors in migration history data are seldom assessed.

Recommendation No. 4: We urge that discussion be included about data quality and analyses on reporting errors in the Mexican report.

There is little justification found in the Mexican report and, for that matter in the Korean report, of factors relating to the selection of the study population. In Korea, the study is restricted to currently married wives aged 20-49, married only once, and having had at least one birth. However, in Mexico, the study is restricted to women who are currently married or are living with a male companion. This includes women who were married more than once, as well as childless women. Both of these selection procedures have serious implications in interpreting the

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results. Inclusion of women with marital disruption, as has been done for Mexico, without proper adjustment for this factor can lead to misleading results for the children ever-born variable in the autoregressive scheme.

Recommendation No. 5: As most of the autoregressive models do not include a variable relating to the husband, we recommend that one can include women with marital disruption in the sample, and treat their history as censored at the point of disruption, rather than at the time of the interview. The history of the currently married women with a previous instance of marital disruption also should be treated similarly.

The question of censoring imposed by the WFS samples also arise at several other points. One concern is the truncation of the sample with respect to single migrants who remained single and are not in these samples, which are limited to married women, as opposed to those who migrated as single but then married and are included. Since one important (intermediate variable) effect of migration on fertility could be by way of delayed marriage, it would be useful to check this in a data set that does not exclude single adult women. We suspect that the censoring may be leading to an understatement of the adaptation effect, and this conclusion would be strengthened if this matter could be verified.

Recommendation No. 6: We urge that this issue be examined using other data, such as from a sample of the census.

The fact that the data are censored (i.e., only incomplete histories) and the fact that migration, fertility and nuptiality are dynamic cumulative processes is often overlooked in interpreting many of the tables

given in Chapter 4 of the Mexican report. The following examples are given as illustrations.

Table 4.18: The meaning of the "proportion of children-dead" variable in the table depends on the age group considered. It also depends on the age pattern of fertility and mortality. For the age group 15-19, it approximates the probability of dying at a very early age; for those who are 20-24 a cumulative probability of dying at even later ages, etc. This can be expected to increase as age increases. Thus, the increasing death rate by age cohort may not have anything to do with what is said about the table (page 93 and 94) in the report. The comparison of death rates across migration groups within an age group also is not valid, because the observed difference can arise from the differences in age patterns of fertility rather than actual differences in mortality.

Table 4.2 and Page 72: By looking at the ratio of number of divorced women to the number currently married, one cannot reach the conclusion that Mexican marriages are quite stable. Already 4 percent of the marriages of women 20-24 have been disrupted by divorce, and as the cohort ages this proportion is more likely to increase. Also, the total disruption includes both widowhood and divorce, and a substantial portion of the marriages ended in widowhood during their reproductive period. Finally, one should remember that some of the currently married women in the table are women who were previously married.

Table 4.11 and Page 83: Since history is truncated, women in the age group 15-19 have not had enough time to move. As age increases one should expect more and more to move. What this means is that in the truncated data one should expect (everything else equal) an increase in the percentage of stayers in both rural and urban areas with age. Thus,

the discussion of the table on Page 83 is not appropriate. Also, one should be careful in making note of "significance of the difference" without making any formal statistical tests (the phrase "significance" is repeated many places in Chapter 4).

Table 4.14: Again the presence of censoring bias makes interpretation difficult. Part of the difference could be due to dropping women who are widowed or divorced (also a factor in the Korean sample).

Table 4.21: The restriction of the study population to currently married women certainly gives a very biased picture in this table. For example, a person who has made a move and has not yet married is excluded. Depending on the time available for these people to marry, the proportion marrying within 5 years can go up or down. Also, this table mixes all age groups, some of whom got into the study because they were married at the time of the survey.

Recommendation No. 7: Chapter 4 of the Mexican report should be extensively revised taking into consideration the censoring bias as well as the bias created by the selection of a restricted study population.

Chapter 5 in the Mexican report contains a discussion of a number of models that have no further use in the assessment of fertility adaptation.

Recommendation No. 8: The discussion of the models that have not been used and other econometric considerations should be placed into an appendix.

The choice of both dependent as well as independent variables are given relatively little attention in Chapter 5. For example, the following questions arise. The reported number of children are known to be

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seriously underestimated by older women. Assigning children to each five year period could aggravate this problem. The author has recognized that regressing "the proportion dead" variable could result in spurious results. However, it is not clear why this variable has been included in the model. (See Ann Williams, 1977; "Measuring the Impact of Child Mortality on Fertility: A Methodological Note," Demography, 1977, for further reference on this point.) Demographers have previously reported that the age polynomial models do not give a satisfactory fit to the number of children ever born. Perhaps age (A) and age squared terms (A^2) may not be quite enough. An examination of residuals might indicate some unusual patterns at the extreme ages. The use of S and S^2 (non-linear effect) schooling terms is not justified well. Previous studies have indicated that S and S^2 may be highly correlated, resulting in multicollinearity. Perhaps the non-significance of S and S^2 terms in some of the models (age 292) may be the result of this collinearity. There is not enough information provided to evaluate whether the parameter estimates of the combined model (5.5) take into consideration the nature of the data (i.e., censoring of the data). A special concern is that the models may have mixed structural zeros and observed zeros in the data in obtaining the coefficient estimates. If so, the results are very biased. What are the implications of not having main effects terms (or including only interaction terms) of the socio-economic terms in model 5.6? Are all ($^{y}t-^{y}t-1$) treated as independent observations? If so, what are the implications? Finally, it may be noted that the main model (5.5) used in the Mexican study differs from that employed in the Korean study. What implications might this have for comparisons?

Recommendation No. 9: The report should be responsive to these types of methodological issues either in the text or in an appendix.

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A need exists to analyze specific subgroups to determine whether there are significant changes in regression coefficients. At a minimum, it would be useful to check if this is true for women who migrated as children (nearly half of rural-urban migrants) and those who migrated as adults, since a variable such as schooling is likely to mean something different for those who got their education in the city after coming as children, as compared to those who were educated in rural areas and came to the city as adults. Standard econometric techniques (Chow test and other checks for specification error) could be used to test for this. Similar tests would be useful for subgroups suggested by others (rural-rural and other migrant groups, urban non-migrants, single vs. married adult migrants, etc.). We suspect that the migration-fertility interaction may be more complex than the adaptation model is suggesting. We are concerned that this analysis, complicated as it already is, may still be brushing over some of that complexity.

> Recommendation No. 10: We suggest that further analyses using the basic model be extended to other migrant and non-migrant groups in the sample. In addition, rural to urban migrants who migrated at earlier ages should be compared with those moving as adults.

The models presented in Chapter 6 of the Mexican report need further validation. Although the conditional likelihood approach is promising, a number of other aspects of the model needs further evaluation. The choice of spline functions (the degree of the polynomial and knot points) seems to be rather arbitrary. The results seem to be highly dependent upon this choice. Treating the dependence of outcomes of period t and

period t_y as a problem of "omitted variable" and ignoring them under the pretext of no differential effect between migrants and non-migrants cannot be justified. In equation (6.18) assuming $P_{it} = .5$ may be incorrect, most of the studies of fecundability (which is approximately P_{it}) show that P_{it} is often less than 0.20. The specification of the variables DLPFC and DCFRT1 in (6.15) may be erroneous because of the presence of structural zeros. The solution may be to combine the variables DC2 and DCFRT1 into a single class of categorical variables with several levels. The assumption of extending the adaptation effect beyond the estimated period of 16 is not justifiable.

Recommendation No. 11: We recommend that Chapter 6 be removed from the report. The modelling approaches are not without interest, but they clearly require further elaboration and validation.

Final Report:

The project objectives, which will be largely realized with the analysis of the Cameroon study, provides an excellent opportunity for comparative cross-national analysis. A major requirement for such a comparative effort lies in the evaluation of comparable hypotheses, similar sample populations, equivalent methodologies and attention to similar topics. It is important, therefore, that the Cameroon study follow the general outline of the previous studies, although we recognize that contractual arrangements may well vary somewhat. In addition to the requirements for systematic methodological treatment, a comparative analysis necessarily calls attention to how the case study findings for countries located in different regions of the world, with different cultural situations, and at varying

stages of economic, social and demographic development may be assessed. Clearly, it would be inappropriate to believe that the complex linkages between migratory behavior and fertility are universal processes unaffected by differing cultural and social structural contexts. Thus, it may be necessary to create a over-achieving conceptual framework that will enable both consistent and perhaps contradictory findings to be assessed.

For example, the two studies that have been completed seem to show that fertility levels of rural-urban migrants are more responsive to the size of urban localities in Korea than in Mexico. Is this related to the stage of urbanization for each country, different patterns of urban and rural life, the types of migrants (for exmaple, predominant differences by sex in the two countries), or different policy interventions?

The analyses use control groups—rural non-migrants and urban non-migrants—to estimate adaptation effects. But rural and urban conditions evolve differently within and among countries. Cohorts and period groups take care of this evolution in comparative terms. But to approach evolution and development in different settings, specific substantive content needs also to be associated to the different cohorts and period groups. For example, social-family networks seem to play an important role in Mexican migratory flows, but the significance of this phenomenon changes in time. The selectivity of migrants changes also with the maturation of the flows. Modern marginal urban sectors and groups seems to be a relatively new socio-economic feature of many rapidly developing cities.

There are many other relevant instances where the "tempo" is a very important element to be considered. The research's subject matter is migration and fertility (decline). The Mexican report, nevertheless, does

not take into account the fact that up until 1970 the question that intrigued most people that were following Mexico's development was a different one. Mexico represented a large country exhibiting major and sustained increases in urbanization, etc., but whose fertility had remained constant. This phenomenon suggests the difficulty involved in shifting from the general, abstract level (where hypotheses are formulated) to the specific level (where policy recommendations and implications are made). Nonetheless, we consider this type of evaluation to be an important challenge that will emerge as the results of the three studies are revealed.

Recommendation No. 12: We strongly support the continuation of the research project to a final phase in which comparative evaluation of the results of the three case studies is addressed. This may require some additional types of analyses (extending even on the Korean data) to provide results that can appropriately be compared. As a means of pursuing a comparative research undertaking, it will probably be desirable to convene a meeting or sets of meeting of persons skilled in comparative studies, as well as in the conditions of the countries that have been included in the research. Finally, we recommend that a final report be prepared that integrates the case study materials.

Panel

Francisco Alba
Thomas Merrick
C. M. Suchindron
George C. Myers, Chairman

Urban Migrant Fertility Study Publications

Korea

Lee, Bun Song, Stephen C. Farber, A.M.M. Jamal and Michael V.E. Rulison, "The Influence of Rural-Urban Migration on the Fertility of Migrants in Developing Countries: Analysis of Korean Data", Final Report, March 1981.

Lee, Bun Song, and Adrienne M. McElwain, "Additional Evidence on Adjusted Measures of Cumulative Fertility: Age, Biological Factors, and Socio-Economic Determinants of Fertility," October 1981, (submitted to Demography).

Lee, Bun Song, and Stephen C. Farber, "Fertility Adaptation by Rural-Urban Migrants in Developing Countries: The Case of Korea," (Presented at the 1982 Annual Meeting of PAA, April 1982) Submitted to Population Studies, March 1984.

Lee, Bun Song, and T. Paul Schultz, "Specification Biases in Estimating the Influence of Child Mortality on Fertility" (forthcoming in Journal of Economic Development).

Lee, Bun Song, and Stephen C. Farber, "The Influence of Rapid Rural-Urban Migration on Korean National Fertility Levels," Journal of Development Economics.

Lee, Bun Song, and Yiu-Kwan Fan, "Risk Behaviors: Sex Differential Patterns of Migration Among Rural-Born Koreans," Peasant Studies, Summer 1983, Vol. X, No. 4.

McElwain, Adrienne and Bun Song Lee, "An Empirical Investigation of Female Labor Force Participation, Wages, Fertility and Age at Marriage in Korea," March 1982, (submitted to Journal of Development Economics).

Mexico

Lee, Bun Song, E. Edlefsen, Gordon V. Karels, and Felipè Garcia, "The Influence of Rural-Urban Migration on the Fertility of Migrants in Developing Countries: Analysis of Mexican Data," (Draft Final Report).