

Orbeta, Aniceto C.

**Working Paper**

## A Review of Research on Population-Related Issues: 1980-2002

PIDS Discussion Paper Series, No. 2002-17

**Provided in Cooperation with:**

Philippine Institute for Development Studies (PIDS), Philippines

*Suggested Citation:* Orbeta, Aniceto C. (2002) : A Review of Research on Population-Related Issues: 1980-2002, PIDS Discussion Paper Series, No. 2002-17, Philippine Institute for Development Studies (PIDS), Makati City

This Version is available at:

<https://hdl.handle.net/10419/127788>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



Philippine Institute for Development Studies  
*Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas*

## A Review of Research on Population-Related Issues: 1980-2002

*Aniceto C. Orbeta Jr.*

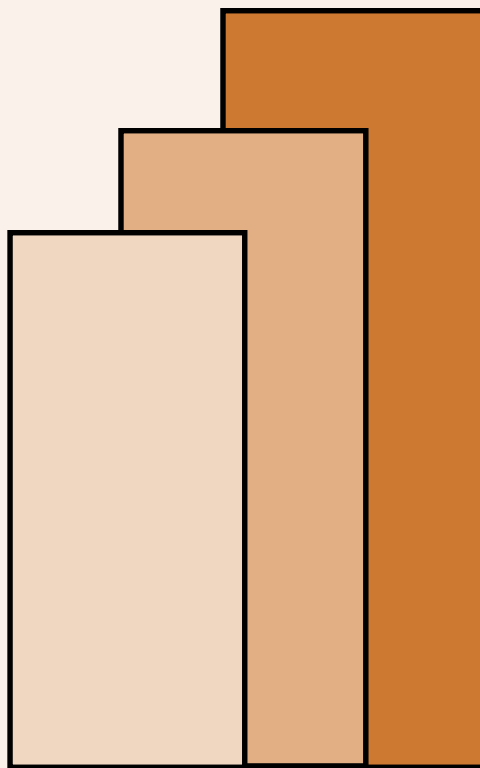
**DISCUSSION PAPER SERIES NO. 2002-17**

*Service through policy research*

The *PIDS Discussion Paper Series* constitutes studies that are preliminary and subject to further revisions. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements. The studies under the *Series* are unedited and unreviewed.

The views and opinions expressed are those of the author(s) and do not necessarily reflect those of the Institute.

Not for quotation without permission from the author(s) and the Institute.



December 2002

For comments, suggestions or further inquiries please contact:

**The Research Information Staff**, Philippine Institute for Development Studies

3rd Floor, NEDA sa Makati Building, 106 Amorsolo Street, Legaspi Village, Makati City, Philippines

Tel Nos: 8924059 and 8935705; Fax No: 8939589; E-mail: [publications@pidsnet.pids.gov.ph](mailto:publications@pidsnet.pids.gov.ph)

Or visit our website at <http://www.pids.gov.ph>

# **A Review of Research on Population-Related Issues: 1980-2002**

Aniceto C. Orbeta, Jr.  
Philippine Institute for Development Studies

December 2002

## **Abstract**

This paper summarizes the research on population-related issues done between 1980-2002. The review organized the research into the following areas: (a) demographic processes (fertility, mortality, migration, gender in demographic process); (b) program-related research; (c) population and environment; (d) population and poverty. Finally, for each of these topics, future research issues are identified.

Keywords: fertility, mortality, migration, gender, population program-related research, population and environment, population and poverty, population

Prepared for the “Policy Evaluation Research on the Philippine Population Management Program (PPMP)” jointly undertaken by the Population Commission (POPCOM) and the Philippine Institute for Development Studies (PIDS)

## Table of Contents

A. Introduction	1
B. Aggregate Population Levels: Trends	1
C. Demographic Processes	2
1. Fertility	2
1.1 Trends	2
1.2 Determinants	3
1.3 Consequences	6
1.4 Impact of Public Policy	10
2. Mortality	11
2.1 Trends	11
2.2 Determinants	12
2.3 Consequences	15
2.4 Impact of Public Policy	15
3. Migration	17
3.1 Internal Migration	17
3.2 External Migration	20
4. Gender in Demographic Processes	22
D. Program-related Research	23
1. Trends in Program Performance	23
2. Program Components	24
2.1 Family Planning/Reproductive Health	24
2.2. POPDEV	30
3. Program Management and Financing	30
3.1 Devolution and the Population Program	30
3.2 On the Role of Non-Government Organizations	32
E. Population, Resources and Environment Linkages	32
1. Linkages	32
2. Role of Public Policies	33
F. Population, Poverty and Income Distribution	33
1. Linkages	33
2. Role of Public Policies	35
H. Research Agenda	35
1. Demographic Processes	35
1.1 Fertility	35
1.2 Mortality	36
1.3 Internal Migration	36
1.4 External Migration	37
1.5 Gender in Demographic Processes	37
2. Program-related Research	37
3. Population, Resources and Environment Linkages	38
4. Population, Poverty and Income Distribution	38
I. Literature Cited	39

## A Review of Research on Population-Related Issues: 1980-2002

Aniceto C. Orbeta, Jr.<sup>1</sup>  
Philippine Institute for Development Studies  
April 2002

### A. Introduction

This review is one of the background studies undertaken for the project “Policy Evaluation Research on the Philippine Population Management Program (PPMP)” jointly undertaken by the Population Commission (POPCOM) and the Philippine Institute for Development Studies (PIDS). One of the objectives of the project during its first phase is the preparation a comprehensive inventory of completed, ongoing and planned policies, programs and research on population issues. This particular study will review the research on population issues and formulate a research program. The period covered is from 1980 up to the present. Two other papers are being prepared in connection with this review: the review of population policy, and the review of population programs.

The selection of the themes covered in the review was dictated by the major issues that have been identified in the current population program. It starts with a discussion of the trends in the aggregate level. This is followed by the discussion of the demographic processes of fertility, mortality and migration and gender in the demographic process. A discussion of program-related research follows. This is then followed by a discussion on two broad themes of the linkages between population, resources and environment and population, poverty and income distribution. Each of the sections of the report is organized into four subsections, namely: trends, determinants, consequences and impact of public policy. The final section presents a research agenda.

It should be mentioned that a review of studies up to about 1980 on many areas in this review is given in Herrin (1981). Thus, this paper essentially updates that review.

### B. Aggregate Population Levels: Trends

*Population size and growth.* The Philippine population has almost quadrupled in 52 years (from 19.2 million in 1948 to 76.5 million in 2000). The growth rate was about 3 percent in the 1960s slowing down to 2.3 percent in the 1990s (**Table 1**). This growth rate is still very high compared to the country’s ASEAN neighbors. Thailand and Indonesia, for

---

<sup>1</sup> Senior Research Fellow, PIDS. Correspondence: [aorbeta@pids.gov.ph](mailto:aorbeta@pids.gov.ph). Research assistance by Jeanette Matro and Fatima del Prado are gratefully acknowledged. This paper benefited from the comments by the members of the Project Steering Committee, participants to the Technical Workshop on “Policy Evaluation Research of the Philippine Population Management Program,” 3 April 2002, Carlos P. Romulo Hall, NEDA sa Makati Building, particularly Dr. J. Cabigon, and the POPCOM Secretariat and NEDA Secretariat. All errors, however, remain the sole responsibility of the author. Opinions expressed here are solely of the author and not of the institution he is affiliated with.

instance, have reduced their growth rates to 1.4 and 1.6, respectively, in the 1990s. As a consequence, in comparison to Thailand that almost had the same population size in 1965, the country now has about 14 million more people around year 2000.

## C. Demographic Processes

### 1. Fertility

#### 1.1 Trends

Data show what appears to be a fairly rapid decline in fertility in the 1970s. This has been stalled in the 1980s and 1990s and lately even showing signs of a slight increase. Total fertility rate (TFR) declined from about 6 at the beginning of the 1960s to 3.6 by the middle of 1990s. This trend in fertility reduction is slow by East and even Southeast Asian standards (**Table 2**). Starting with about the same TFRs at the start of 1960s Thailand and Indonesia have reduced their TFR to 2.1 and 2.6, respectively, by the middle of 1990s. This means a longer catch-up time to fertility levels already achieved by the ASEAN neighbors.

It has been noted that the period of rapid decline have roughly coincided with the introduction and rigorous implementation of the government-sponsored family planning program (Herrin 1990). In the 1980s, however, the government wavered in its resolve regarding fertility reduction and was satisfied with a broad population policy statement that does not have strong and explicit fertility reduction objective<sup>2</sup>. With a wavering resolve on fertility reduction, contraceptive prevalence has not increased as planned, in fact it is virtually stagnant or even showing some indications of a decline. The importance of contraceptive prevalence in fertility reduction can also be gleaned from a comparison of Asian countries. Countries that have successfully reduced their fertility rates such as Thailand, Indonesia, and Vietnam have higher contraceptive prevalence rates (**Table 3**).

It is common knowledge that there is a persistent substantial variation in fertility across regions and socioeconomic conditions with rural, less educated females exhibiting higher fertility compared to their urban and more educated counterparts (**Table 4**).

While national estimates are readily available, establishing sub-national estimates is difficult given the problems with the vital registration system. Herrin (1981) noted, however, that compared to mortality data, fertility data fare better. The National Demographic Surveys (NDS) are only representative at the regional level. Sub-national estimates at lower levels have to resort to indirect methods. Various demographic surveys show the large variation in fertility outcomes across the regions (**Table 4**). More developed regions, like the NCR, consistently show lower fertility than national estimates. Palmore et al. (1994), used three indirect methods to estimate the sub-national fertility rates at the provincial levels using the 1970, 1980 and 1990 censuses. The exercise revealed the following: (1) that fertility declined in every region and every province between 1965-1970 and 1985-1990 although some areas (e.g., Central Mindanao) showed fertility increases in the interim, i.e., between 1960-1970 and 1975-

---

<sup>2</sup> Herrin (2002) discusses in the detail how government has wavered in the aspect of population policy.

1980; (2) Central Luzon and Cagayan Valley exhibited the highest declines in fertility of more than 30% over the two decades, the lowest declines were around 10%; (3) there were very large disparities in TFRs even at the latest period considered (1985-1990) ranging from over 5 in Bicol and Eastern Visayas to under three in the NCR; provincial disparity was even greater from a TFR close to 6 to under 3.

Cross tabulations analyses have continuously shown differentials in fertility by socioeconomic characteristics of location and socioeconomic background of parents. However, given the complex interactions of fertility change and its determinants, cross tabulation analysis is known to be insufficient to establish causation.

## *1.2 Determinants*

Determinants of fertility change ranges from individual, household to community characteristics. Given the complexity of the relationship several frameworks have been offered to provide some structure to the determinants. Two of these frameworks stand out. One is the proximate determinants framework that started with the seminal ideas presented in Davis and Blake (1956)<sup>3</sup> and reformulated into its current form in Bongaarts (1978). This framework argues that the impacts of a host of underlying social, economic and cultural factors are mediated by a select set of proximate determinants. The commonly identified proximate determinants can be grouped into marital status, contraception, and post-partum behavior<sup>4</sup>. The other famous framework maybe called, the “supply-demand” or Easterlin<sup>5</sup> model (Easterlin and Crimmins 1985). This framework builds on the proximate determinant framework by pointing out that deliberate fertility control, which is among the proximate determinants, is a product of the interaction of supply and demand of children and the cost of fertility regulation. The determinants of demand for children include income, price (cost of) having children and tastes for children. The determinants of supply of children include natural fertility and changes in child survival. The cost of fertility regulation includes measure of access to fertility control methods and supplies. It should be noted that the foregoing theorizing glossed over the time dimension of fertility decision, i.e., it considers cumulative fertility as a single-period decision. This is the focus of the strand of literature known as dynamics of fertility choice. A recent survey of this literature is given in Arroyo and Zhang (1997). This literature considers fertility decisions over the life-cycle in a dynamic programming model. Finally, there is still another strand of literature that considers fertility changes not at the individual or household sense but at the aggregate level (Barro and Becker 1988, 1989).

---

<sup>3</sup> Davis and Blake (1958) used the term “intermediate” variables.

<sup>4</sup> Stover (1998), using studies employing this framework during the past 20 years, proposed modifications to the proximate determinants variables, namely: (1) the use of sexual activity rather than marriage to indicate exposure to pregnancy; (2) a revision of the sterility index to measure infecundity from all causes; (3) a revised index of contraception that accounts for the fact that users of sterilization may become infecund before age 49; and (4) a revised definition and estimate of total fecundity.

<sup>5</sup> This is also sometimes known as Easterlin Synthesis Framework. Even if we call this work Easterlin model, this was built on the so-called “economic framework” of fertility with seminal ideas coming from Becker (e.g., Becker 1960, Becker and Lewis 1973) and Schutz (e.g., Schutz 1976).

The review of determinants is organized based on the synthesis framework.

### 1.2.1 Socioeconomic Determinants

*Household.* Education and labor force participation of parents, particularly the mother, and income are the most common household determinants of fertility. Herrin (1981) already mentioned the threshold hypothesis for both education and household income. Encarnacion (1973, 1975) and Encarnacion and Canlas (1977) found a threshold relationship between fertility, income and education with a positive relationship below the threshold and negative relationship above it.

Studies show that education of parents (particularly the mother) and household income are consistently strong determinants of fertility (e.g. Cabigon 1985). The other determinants that have less clear effects include the labor force participation of women and mortality of children. However, it has been pointed out by recent research that it is increasingly rare to find very strong relationships between fertility and education even if it continues to show that education improves women's ability to make reproductive choices (Martin 1995). It has been also pointed out that the strong relationship is found only in the lower end of the education range.

In a multivariate hazards analysis of births following deaths of a child using the 1993 NDS, mother education and employment were found to be significant negative determinants while religion and sex of the index child were not found to be significant (Cabigon et al. 1994).

Simultaneity of the decision between fertility and labor force participation of women is a well-known problem that has troubled estimations of the determinants of fertility. To deal with this problem, the use of simultaneous equations had been proposed (e.g., McCabe and Rosenzweig 1976, Gregory, et al. 1972).

Another method used in the analysis of fertility determinants is multi-level analysis. This hierarchically categorizes variables into community and household/individual determinants. Hirschman and Guest (1990<sup>6</sup>), using 1970 and 1980 census data from four Southeast Asian countries – namely – Indonesia, Peninsular Malaysia, Philippines and Thailand, is one of such studies. Household level characteristics include husband's occupation, education and migration. Estimation results for the Philippines showed that education and migrant status show significant negative impacts.

*Community.* Availability of services, including family planning, cultural norms and practices are the main community determinants. Often, urbanity or level of development indicators is used as an indicator of the availability of services. We defer the discussion of the impact of services to the “impact of public policy” subsection.

---

<sup>6</sup> The Philippine component of the study was done by L. Engracia and V. Miralao and the result reported in Engracia and Miralao (1989).



The community characteristics in the Hirschman and Guest (1990) study include provincial level data on women's status (% of women 15-34 working in non-agricultural occupations, % of women 15-34 with post primary education), the roles of children (% of children 10-14 not in the labor force, % of children 7-15 enrolled in school), infant mortality and marriage pattern (% of single women aged 15-24). Estimation results for the Philippines show that women's status variables are significant negative determinants of fertility, child role variables when significant have positive impacts, infant mortality variable is not significant while marriage variable is significantly negative determinant.

In a multivariate analysis of birth subsequent to deaths of a child using the 1993 NDS, showed that place of residence is not as significant determinant (Cabigon et al., 1994).

### 1.2.2 Proximate Determinants

*Marriage pattern.* Early studies attribute some of the fertility declines to changes in nuptiality patterns (Smith 1975, Fleiger 1975, de Guzman 1994). Decomposition analysis following the proximate determinants framework (e.g. Casterline et al., 1988) doubted if there is any role of this factor in fertility changes since it has not been changing even as fertility continue to decline. **Table 5** shows the updated data that continues to support this position. It has been pointed out that marriage pattern is hardly moving in recent years (Cabigon, 2002). The challenge to this position was given in (Go et al., 1994) which argued that marriage patterns have important roles in determining regional variations in fertility using the 1993 NDS.

*Post-partum behavior.* The common indicator for post-partum behavior is the practice of breastfeeding. Again like, nuptiality, this factor had been attributed a considerable weight as a determinant of actual fertility in earlier studies. Current studies no longer support the earlier results (Casterline et al., 1988). Breastfeeding practices have been stagnant for a while or even showing signs of a decline while fertility continues to go down (**Table 5**). Multivariate analysis, however, showed the importance of breastfeeding on subsequent birth after death of a child although this is not as strong as the physiological effect, i.e. shortening of infecundable period (Cabigon et al., 1994). Go et al. (1994), using the 1993 NDS argued that infecundity plays a large role in explaining the variation in regional fertility.

*Contraception.* The level of contraception continues to be a strong determinant of fertility. Casterline et al. (1988) using cross tabulation analysis concluded that the primary determinant of the decline in fertility in the Philippines is contraception. An updated version of the table he used (**Table 5**) continues to support his claim but with slight modification to emphasize the greater role of modern methods. Even if the rise in overall contraceptive prevalence appears to have been stalled or even declining, there is a continuing rise in the proportion using modern methods (Zablan 1998). A challenge to this view was given in Go et al. (1994). Using the 1993 NDS, the study showed that contraceptive prevalence, even after converting to synthetic cohort measures, were not found to be correlated with regional total fertility rates.

*Demand for children/desired family size.* The closest analogue of the demand for children is the desired family size in surveys. As argued, for instance in Pritchett (1994), the reason actual fertility is high is because the desired fertility is high. The three primary determinants of this, as mentioned earlier, are household income, prices of children, and tastes for children.

Boulier and Mankiw (1986) estimated a model closely following the Easterlin model using data from the Philippines and United States. For the Philippines the data used is women with completed or nearly completed fertility (45-59 years old) in the 1973 NDS. The demand for surviving children was estimated using both OLS for an unconstrained model and maximum likelihood methods for the model with biological constraints. The determinants included unemployment rate of women in the province where the woman resides, wife's education, natural logarithm of the husband's permanent income, and whether the husband is employed in agriculture, and a measure of anticipated child survival rate. Both estimation procedures yielded similar significant determinants, namely, wife education and anticipated child survival rate although the positive sign for the education variable was unexpected.

In a multivariate hazard analysis of subsequent births after death of a child using the 1993 NDS, whether the index child is wanted or not was found to be a significant determinant (Cabigon et al., 1994). If the index child was wanted, the likelihood of bearing another child was very high.

*Supply of children/natural fertility.* Boulier and Makiw (1986) estimated supply of children using the Coale and Trussel natural fertility schedule. They estimated this to be 7.98 while the demand for children was estimated to be 3.12.

*Cost of fertility regulation.* The Boulier and Mankiw (1986) study yielded a positive association between fertility regulation and the education of the mother and the excess supply of children. The husband's employment in agriculture was not found to be a significant determinant.

For impact of availability of services (a proxy for cost) on contraception, please refer to the section on program-related research.

### *1.3 Consequences*

Studies on the consequences for fertility outcomes are grouped into those using household-level and those using aggregate-level data.

#### 1.3.1 Household Level

*Child Survival, Health and Nutrition.* Fertility is known to be associated with the risk of infant and child mortality. A multivariate analysis using the 1978 RPFS has shown that controlling for parents' education and biological and other socioeconomic factors, child mortality is significantly associated with higher birth orders and older age of mother at

the time of birth (Martin et al., 1983). Herrin (1993) also found that the risk of fetal loss increases with higher pregnancy order and with short pregnancy intervals (less than 18 months), after controlling for socio-economic factors.

High fertility, as indicated by birth intervals, the number of young siblings or birth order was found to adversely affect the nutritional status of preschoolers. Bouis and Haddad (1990) using Bukidnon data found that longer birth spacing is positively associated with height-for-age among preschoolers, controlling for health, dietary intake and child care factors, sex of the child, and parent characteristics. In addition, the study also found that the number of household members, measured in adult equivalent units, negatively affects the household calorie intake, after controlling for food expenditure, percent of food expenditure coming from home production; characteristics of parents such as education, age and nutrition knowledge of mother; and community characteristics such as price of corn and population density of the municipality. Horton (1988) using data from Bicol, found that the negative effect of birth order is greater for height-for-age (indicating long-run nutritional status) than for weight-for-height (indicating short-run nutritional status). Garcia and Pinstrip-Andersen (1987), in a study of three Philippine provinces (Abra, Antique and South Cotabato), found that birth order negatively affects weight-for-age and weight-for-height of preschoolers, after controlling for food consumption and child care time, age and sex of child, parents characteristics and location. Horton (1986), again using data from Bicol, found that the number of older brothers and sisters have significant negative effect on child nutritional status (z-score for height-for-age – long-run measure of nutritional status) after controlling for household characteristics such as household assets; parent characteristics such as education, age of mother and father, and industry where mother is working; community characteristics such as rurality, distance to family planning center, type of main toilet facility for the community, water source and mortality rate; child characteristics such as age and sex.

Studies using the 1988 NDS (Park et al., 1992) and the 1983 NDS (Cabigon, 1991) found a positive relationship between birth interval and infant and child survival. The first-mentioned study even found that birth spacing is much more important than the number of children (proxied by birth order) as a determinant of infant and child mortality.

Montgomery et al. (1997) using data from five developing countries, including the Philippines, studied the consequences of excess fertility on health and mortality. The study found that short birth intervals, which represented imperfect fertility control, increased the risk of post-neonatal<sup>7</sup> mortality. Women in four (Philippines included) of the five countries, who reported excess fertility, also had higher infant mortality. For the Philippines, large family size (birth order 6 and above) is also positively related with neonatal and post-neonatal mortality. The study controlled for child characteristics (sex, birth order, prenatal care, tetanus vaccination), parent's characteristics (mother's and spouse's age, schooling, spouse's occupation, standard of living) and cluster characteristics (level of development, and availability of health facilities).

---

<sup>7</sup> Second month of life to age 5.

Jensen and Ahlburg (1999) examined the effects on child health and health practices of unwanted births using data from 11 countries, including the Philippines. The findings provides support to the notion that unwanted children suffer health consequences. Wanted children are from 10% to 30% less likely to be sick with acute respiratory infection (ARI) and as much as 40% for diarrhea. In addition children from larger families are also likely to receive less treatment for their illnesses than are children from smaller families. In countries where vaccination coverage is low, wanted children receive more vaccinations than unwanted children. The results for the Philippines are as follows: there is less incidence of both ARI (15%) and diarrhea (18%) for wanted children; insignificant effect of the number of children on incidence of ARI and negative impact on incidence of diarrhea (3%); insignificant effect of wantedness on receiving treatment for both ARI and diarrhea; negative impact of the number of children on receiving treatment for ARI (2%) and insignificant on receiving treatment for diarrhea; and insignificant effects of both wantedness and the number of children on the number of vaccinations. The study controlled for individual characteristics (child's sex, age), household characteristics (mother's age and education, father's education, assets owned, availability of water and toilet facilities) and cluster characteristics (areal prevalence of diseases).

*Child Education and Wage Employment.* School attendance, labor force participation and employment are known to be related to measures of fertility. Herrin (1983) using data from Misamis Oriental, found that for children 7-12 years old, family size (number of siblings) do not seem to have any impact on their school participation and schooling attainment. However, for children 13-17 years old (high school ages), the number of siblings significantly reduces school participation and increases work participation in wage employment. Birth order also affects school participation and wage employment of older children as older siblings tend to participate less in school and participate more in wage employment than their younger siblings. Bankosta and Evenson (1978), using survey data from Laguna, found that the number of children negatively affected the completion rates of both sons and daughters as well as the schooling expenditure per child after controlling for personal characteristics such as wage of the child; household characteristics such as wage, education, years of marriage and occupation of parents, full income, a home technology index, and land under cultivation. de Graff, Bilsborrow and Herrin (1993), using the 1983 Bicol Multipurpose Survey, found that the school participation of male children 7-17 years is negatively affected by high fertility (number of siblings) regardless of the sibling position of the child. For female children, the negative effect of high fertility is only obtained if the child is an older sibling. Paqueo (1985) using the 1982 Household School Matching Survey, revealed that the number of siblings negatively affects the schooling attainment (highest grade completed) of children 7-12 years old after controlling for household economic resources as well as characteristics of parents and children. Using the 1985 Labor Force Survey (July Round), Bauer and Racelis (1992) found that the presence of pre-schoolers in the household reduces the probability that older siblings (17-24 years old) will be enrolled, after controlling for the age of the youth, rural-urban resident, the education and occupation of the household head, and the education of the spouse of the head. Moreover, the presence of primary school-age children (age 7-12 years) significantly reduces the chances of

secondary and tertiary enrollment of young men (age 13-16 and 17-24 years), but not among young women.

Montgomery et al. (1997) using data from five developing countries, including the Philippines, studied the consequences of excess fertility on health, mortality and schooling. For the Philippines, the study found small negative effects on educational attainment of excess and unwanted fertility for all countries. Family size (birth order) also lowers educational attainment. The study controlled for child characteristics (sex, age), parent's characteristics (mother's and spouse's education, spouse's occupation, standard of living), cluster characteristics (level of development, availability of school facilities (distance and travel time to primary and secondary school)).

Orbeta (2000), estimated a model of the joint decision of school attendance and labor force participation of children 10-24 years old using a merged data set from the 1994 FIES, LFS (October round) and Functional Literacy Education and Mass Media Survey (FLEMMS). The study found that household size does not significantly affect the school attendance while it has significant positive effect on labor force participation. The study controlled for individual characteristics such as age, sex, education attainment, reservation wage; household characteristics such as age, sex, education of household head, income per capita, demographic composition of the household; and community characteristics such as cost of education (proxied by the average household education expenditure), unemployment rate and public expenditure by school-going population.

*Asset Accumulation.* Herrin (1993), using a Misamis Oriental survey, found that the number of young children ages 0-6 and 7-12 appear to reduce the asset accumulation of households. In a similar vein, Mason (1992) using the 1985 FIES found that (a) the rate of saving is depressed by child bearing; (b) bearing additional children does not necessarily lead to a reduction in the absolute amount of savings or in the accumulation of wealth; (c) asset per child is greater in lower fertility households than in higher fertility households.

*Time Allocation.* The number of children in the household affects the allocation of time of parent, in particular, the mother, between home tasks, market work and leisure. The clear delineation of the three is important because much is concealed by lumping into home time those spent on home tasks and leisure as is common in many studies (Tiefenthaler 1997).

It has been pointed out that while developed country literature clearly point to the negative relationship between presence of small children and female labor supply, the evidence from less-developed countries is less clear (Tiefenthaler 1997, Browning 1992).

Tiefenthaler (1997) using Cebu data and cross tabulation analysis confirmed earlier results on the negative relationship between child bearing and labor supply of mothers. However, it is pointed out that for mothers with previous children, labor market hours 14 months postnatal is the same prior to the sample birth although this is lower for first-time mothers. For fathers, birth does not significantly affect their labor market hours. In

addition, even if mothers decrease labor supply within the year after birth, fathers do not increase their market time to compensate for lost income. Birth only slightly increases father's time in childcare and only if there are no other children. It was also found that births increase the childcare and market time of older daughters (13-17 years).

Using survey data from Laguna, Quizon-King (1978) found that while the number of children does not significantly affect the market time of both mother and father, the presence of children 6 years and below increases home production time of mothers. Garcia (1990) also found the percentage of children below six years old significantly increases the time for home tasks and decreases market work time for wives while the opposite is true for husbands. Popkin (1983) found that the number of children below six years old decreases the leisure time of rural mothers; the presence of children one-year and below decreases their market production time while the presence of children 1-6 years old increase their home production time. King and Evenson (1983) found that the presence of children six years old and below increases the home time of wives. For husbands, the presence of children one year and below positively affects his home time. Market time, however, of both husband and wife, is not affected by the presence of children.

### 1.3.2 Macro/Aggregate Level

Studies on the consequences of rapid population growth rate used theoretical or empirical models. The models ranged from simple stylized models involving few equations to large multi-sectoral models. The interrelationships started with only demographic and socioeconomic variables. Later this has been expanded to include resource and environment dimensions. The modeling also started with unidirectional causation usually with population scenarios generated independently and receiving no feedback from the rest of the variables of the model. Soon fully simultaneous models were developed. Several empirical models have been developed for the country. Orbeta (1998) provides a brief review of the economic-demographic-environment modeling in the country.

Using a macro-econometric economic-demographic model estimated using Philippine data, Orbeta (1992) analyzed the impact of rapid population growth, emanating from higher fertility rates, on human capital expenditures. One of the simulations showed that while human capital expenditures rise with rapid population growth, the increase is insufficient to maintain per capita expenditure levels. This means adverse implications on education output, i.e., education quality.

### 1.4 Impact of Public Policy

Pritchett (1994) succinctly described the running debate on the impact of public policy on fertility. Two opposing views have been identified. The first view is labeled the "family planning gap"<sup>8</sup> view. This view argues that the most potent instrument to reduce fertility

---

<sup>8</sup> Feyisetan and Casterline (1999) for a recent presentation of arguments in support of the family planning gap view.

is contraception. The second is “desired children” view<sup>9</sup>. This view argues that eventually it’s the demand for children that determines actual fertility. It is further argued that even the practice of contraception is induced by this demand. Often times this view is associated with the adage “development is the best contraceptive” while the former is linked to the equally compelling statement that “contraceptives are the best contraceptive.” For the “family planning gap” view, provision of contraceptives is what will bring fertility down while the other argues that no less than broad development will bring fertility down.

As mentioned in Herrin (1981), studies on this area, except those for family planning, are virtually nonexistent. The two exceptions are: Herrin (1979) that analyzed the impact of rural infrastructure and Paqueo (1978) that studied the impact of public health and education. He, however, quickly added that the results are as yet too tentative to be able to provide firm guidance for policy or program redesign.

## **2. Mortality**

### *2.1 Trends*

Herrin (1981) highlighted the poor state of data on mortality owing to underreporting of Vital Registration Statistics and age-structure problems in Censuses. This deficiency has been addressed by the much more regular conduct of demographic surveys and censuses.

Mortality, measured either as Crude Death Rate or Infant Mortality Rate, showed rapid decline during the early post-war period because of advances in public health and rapid economic development. This decline has slowed down in the recent past as low levels of mortality or high levels of life expectancy have been achieved. This is clearly depicted by the developments in IMR (**Table 2**). With the uneven economic performance, the slow decline of the IMR in the Philippines is to be expected (de Guzman, 1998). Thailand with a consistent high economic growth rate, was able to sustain lower infant mortality rates than the Philippines through out the post-war period. South Korea, starting with a low, but not a too far below, level of IMR in 1960-65, achieved an even faster decline.

Herrin (1981) noted the large regional and provincial disparity in mortality not evident in national averages that masks these differences. Mortality differentials are also observed by education status of mothers as well as by geographic location, i.e. lower mortality rates are observed with more educated mothers and in urban compared to rural areas. Differences by residence and socioeconomic characteristics appear to have converged during the 1980-1990 period although it was pointed out that substantial differential still persists (de Guzman 1996, de Guzman 1998).

---

<sup>9</sup> It should be mentioned that Pritchett (1994) spouses the “desired children” view and the paper was written to substantiate this claim. One of his main arguments is that contraceptive cost is just too minuscule compared to the cost of raising children. He also argued that the importance of contraception is not on its effects on average fertility but on health benefits.

## 2.2 Determinants

A very popular framework that motivated modern mortality studies is given in Mosley and Chen (1984). They have identified 5 groups of proximate determinants of mortality, namely, (1) maternal factors (age, parity, birth interval), (2) environmental contamination, (3) nutrient deficiency, (4) accidents/injuries, and (5) personal illness control (preventive and curative care<sup>10</sup>). Underlying the proximate determinants is a host of socioeconomic variables that can be grouped into three categories: individual-level<sup>11</sup> (productivity (of parents for children), traditions/norms/attitudes); household-level (income/wealth); and community-level (ecological setting, political economy, health system<sup>12</sup>). The framework assumes that socioeconomic factors have to operate through one or more of these determinants to affect mortality. Costelo (1988) used the above framework to organize his review of over 30 studies on infant/child mortality and morbidity in the decade up to around 1988. This section will essentially updates that review. As this paper was being written, another review is being prepared using the same framework for presentation in a regional IUSSP conference (Cabigon, 2002). In addition, Alcantara, et al. (2000) used the same framework to analyze the determinants of infant, child and under-five mortality using the 1998 NDHS.

### 2.2.1 Socioeconomic factors

#### (i) Household-level

*Social class.* Social class as indicated by parents' occupation, household income, and housing characteristics is known to be negatively related with infant mortality (Alcantara, 1975; Williamson, 1982; Madigan, 1985; Cabigon, 1990). In fact, Cabigon (1990) found the effect of household income on neonatal mortality is bigger than the impact of mother's education. Household wealth has been found as a negative determinant of under-five mortality using the 1998 NHDS (Alcantara, et al., 2000).

*Women's role and status.* Women's role and status variables include mother's education, and maternal employment. The impact of maternal education on mortality is negative and rarely disputed in the studies. The impact of maternal employment on mortality, however, is much less clear. This is not difficult to understand since additional income from mother's employment has a negative impact on infant mortality while mother's absence may also mean deterioration in the quality of childcare or lesser breastfeeding which is positively related with infant mortality. A study using 1988 NDS found that maternal education was positively related with infant survival (Park, et al., 1993). This result is further validated using the 1998 NDHS (Alcantara, et al., 2000). Maternal education was found as the strongest determinant of early and late childhood mortality. The same study find that working mothers faces higher infant mortality risks.

---

<sup>10</sup> Owing to similarity, this will be discussed in the section called "impact of public policy".

<sup>11</sup> Most studies categorize these factors as part of the household-level variables.

<sup>12</sup> Again will be included in the "impact of public policy" section.



Guilkey and Riphann (1998) using Cebu Longitudinal Survey data, confirmed earlier results such as the importance maternal education on child mortality even after sufficient control for direct determinants have already been done. It must also be noted that besides using more direct biological determinants, this study also used a fairly complex model specification structure by jointly estimating the discrete-time mortality hazard function with reduced form equations for right-hand size endogenous variables.

## *(ii) Community*

*Residence.* The review found that for residence, while studies employing cross tabulations (Concepcion and Smith, 1977; Engracia, 1983) tend to show higher infant mortality in rural areas, multivariate studies (e.g. Martin et al., 1983) show the opposite indicating that urbanization is detrimental although higher standards of living and greater access to medical facilities in urban areas tend to dilute this effect.

Recent review done by de Guzman (1998) continue to confirm earlier results, i.e., lower probability of survival in rural compared to urban areas or in areas with lower development compared to areas with higher development status, positive relationship between the education of the mother and life expectancy at birth. Using 1998 NDHS, Alcantara, et al. (2000) also found a negative relationship between under-five mortality and urban residence.

In a study using 1988 NDS place of residence was found to be insignificant (Park, et al., 1993).

*General Economic Condition.* De Guzman (1998) pointed out the role of the not so good performance of the economy in the last two decades as contributory to the slowing down in the improvements in infant mortality.

### 2.2.2 Proximate Determinants

*Maternal factors.* Maternal factors include age, breastfeeding, parity and birth interval. Multivariate analysis using the 1978 RPFS found that higher-order births and infant born to very young mothers are more likely to die before their first birth day (Martin et al., 1983). Infant and child mortality have been found to be higher among younger and much older mothers in Cabigon (1990) but was not validated in a multivariate analysis using the 1998 NDHS (Alcantara et al., 2000).

A study using the 1983 NDS found positive impact of breastfeeding on preventing infant and child mortality after controlling for bio-demographic (previous sibling mortality, birth order and maternal age at child birth), socioeconomic (mother's education and average household income) and health-related (toilet facility, housing quality and family composition) factors (Cabigon, 1991). Support on the importance of breastfeeding as a determinant of child mortality was also found by Guilkey and Riphann (1998) using Cebu Longitudinal Survey data.

A study using 1988 NDS found that the survival of the preceding child is the most important factor in predicting the death of the subsequent child (Park, et al., 1993). It was also found that the odds of having an infant die are substantially lower when women space their children more than two years apart. In fact it was found that short birth intervals are more important than the number of children (proxied by the birth order) in predicting child survival outcomes. A similar result was obtained using the 1983 NDS and controlling for bio-demographic, socioeconomic, and health-related factors (Cabigon, 1991). The positive impact of short birth intervals on neonatal and post-neonatal mortality were also found in Montgomery et al. (1997) using the 1993 DHS. A multivariate analysis using the 1998 NDHS found while the odds is higher for infants to die with short birth interval (e.g., 9-19 months) compared to 40 months or more, this was not statistically significant (Alcantara et al., 2000). A similar result was also found for child mortality. Birth order was also not found to a significant of infant and child mortality.

Owing to the studies described above and even the results of earlier analysis of the same dataset (e.g. Cebu Study Team 1992), the importance of birth and conception intervals and parity as determinants of infant and child mortality have become received knowledge. Guilkey and Riphann (1998) using Cebu Longitudinal Survey data, however, recently casts doubt to the independent importance of these variables as determinants of infant and child mortality. They showed that once biological mechanisms such as birth weight and recent weight, recent bouts with diarrhea and respiratory illness are controlled for, birth interval and parity no longer have direct impact on mortality. These results made the authors conclude that birth interval and parity appears to be proxy variables for underlying biological mechanisms and maternal care-giving behaviors and that once these are explicitly controlled for through more direct variables, they loss their explanatory power.

*Environment variables.* For environmental variables, a positive relationship was found in earlier studies between the presence of electricity, source of drinking water, adequate toilet facilities and housing quality with infant and child survival (Martin, et al., 1983; Cabigon, 1990). In addition, de Guzman (1998) highlighted the fact that infection and parasitic diseases continue to be one of leading causes of death even as degenerative diseases are on the rise, in fact, heart diseases became the leading cause in the 1990s. A recent study, however, using the 1998 NDHS, no longer finds the source of drinking water and toilet facilities to be important determinants of infant and child mortality when health, nutrition, demographic and socioeconomic variables are controlled for (Alcantara, et al., 2000).

*Accidents.* No studies were found on accidents and injury. However, it was pointed out that this should not cause too much concern because these variables were found to be not important causes of infant and child mortality in the Philippines (Zablan, 1983).

*Nutrition.* In terms of nutrition factors, Cabigon (1990) using the the 1983 NDS, and Alcantara et al. (2000) using the 1998 NDHS found that infants and children receiving supplementation for 3-5 months in solid and liquid form faces lower risks of death.

Longer breastfeeding was also found to significantly reduce the risk of infant, child and under-five mortality. In addition, low birth weight babies were found to have higher risk of dying (Guilkey and Riphanh, 1998)

### *2.3 Consequences*

At the aggregate level, the most obvious consequence of, say, a decline in mortality given fertility is higher natural increase in population. At the household level, lower mortality rates is expected to lower fertility given a desired family size and vice versa. As has been pointed out in Herrin (1981), the fertility reaction tended been less than compensatory leading to actual family sizes that are larger than the desired one or at the aggregate level, higher natural increase.

Cabigon et al. (1994) using the 1993 NDS, life table and multivariate hazard analyses studied the impact of child death on subsequent fertility. It has been argued that, besides the effects on breastfeeding, there are actually two effects, one physiological and the other behavioral. Physiological effect arises from the shortening of the postpartum amenorrheic period implying the shortening the postpartum infecundable period. The behavioral effect, on the other hand, arises from the desire of parents to replace the lost child. Given these, it has been pointed out that death before the return of menstruation (RM) will have both effects while death after RM will only have the behavioral effects. The analyses showed that indeed mothers who experience child loss through death have a higher probability of bearing another child compared to mothers who do not have the experience. It was found that the physiological effects and breastfeeding effects was strong and consistently operates irrespective of family size. On the other hand, the behavioral effect was apparent only in small families. The physiological effect was also found to dominate both the breastfeeding and behavioral effects. Finally, these effects were strong initially but rapidly diminished through time.

Another consequence of a decline in mortality is to lengthen the life expectancy. This is expected to alter savings for old age and human capital investments. There are yet no studies known to the author on this issue using Philippine data but studies using stylized facts and numerical simulation have shown that declines in mortality leads to greater schooling (Kalemli-Ozcan et al., 2000).

Higher mortality is also known to be associated with higher morbidity. Morbidity in turn has been associated with delayed school entry, intermittent school attendance and eroded capacities to learn (e.g., Berhman, 1996; Alderma et al., 1997).

### *2.4 Impact of Public Policy*

The dearth in studies analyzing the impact of public policy on health and mortality highlighted in Herrin (1981) is now being addressed. Several studies on the importance of public policy, particularly provision of health care, in affecting mortality have been conducted more recently. One of the early studies show that proximity to a health station

(Engracia, 1983), and modern medical practitioners like birth attendants (Madigan, 1985) are associated with lower infant mortality.

Gonzales (1992) used the two rounds (1978 and 1983) of the Bicol Multipurpose Survey to estimate the impact of program variables such as the number of health professionals and clinics, for health, the number of schools, for education, and the number of family planning motivators, parents' schooling and distance to the town on child health (height-for-age, weight-for-age) and education (years of schooling). He used instrumental variable (IV) estimation techniques to take care of the possible endogeneity of some of the explanatory variables. The study pointed out that OLS estimates would have led to the conclusion that supply of health practitioners was not significant. The IV estimates, however, showed that the deployment of health professionals and to a lesser extent the presence of mostly town-based facilities have profound impact on child health. This result bolsters the hypothesis that these program inputs are endogenous that is why OLS estimates did not find these variables to be significant determinants of child health. It was also pointed out that the presence of family planning motivators has a positive, although not statistically significant, impact on weight-for-age.

Guilkey and Riphanh (1998) using Cebu Longitudinal Survey data, found that, that use of preventive and curative care were not significant determinants of child survival.

Montgomery et al. (1997) using data from five developing countries, including the Philippines, studied the consequences of excess fertility on health, mortality and schooling. For the Philippines, the study found the prenatal care reduces post-neonatal mortality while tetanus vaccination reduced both neo-natal and post-neonatal mortality to age 5. However, availability of health facilities (distance to hospital or health center or mobile clinics, number of health services at hospital/health center or mobile clinics) does not significantly affect neonatal and post-neonatal mortality to age 5.

Balweg and Pagtulon-an (1996) used Misamis Oriental cases of maternal death data to study the impact of maternal care and maternal mortality and complications. The surprising result of the study is that there is a very weak role of played by maternal care on maternal death and maternal complications. The authors explained this phenomenon by claiming that those women who seek prenatal care may have already felt some problems with her pregnancy. Women might be viewing prenatal care not as something to prevent complications but rather as a response when something goes wrong with her pregnancy.

Alcantara et al., (2000) using the 1998 NDHS found interesting and oftentimes surprising results on the impact of public services on infant and children mortality. For one, it was found that children using public taps experience greater risks of under-five mortality compared to other unsafe water sources such as spring, rivers, streams and rainwater. The authors explained this surprising result by citing the observation in Cabigon (1990) that found that factors other than the source of water may be operating. For instance, there is the common practice of boiling water from known unsafe sources or even suspected contaminated pipes. It was also found that while earlier studies, such as Martin, et al.

(1993) and Cabigon (1990), yielded result that say that the type of toilet facilities is a significant determinant of infant mortality, this variable was not found to be significant in this study. Mothers who sought prenatal and during delivery care were found to have reduced likelihood of under-five mortality. Not visiting a health facility in the past six months raises the risk of infant mortality. Post-natal care, however, was not found to be a significant determinant of child mortality at any age. Finally, mothers who received tetanus toxoid shots during pregnancy reduced the risk of infant and under-five mortality.

### ***3. Migration***

#### ***3.1 Internal Migration***

##### ***3.1.1 Trends***

Four internal migration streams have been identified (Perez 1998). In the 1960s, long-distance migration streams are predominant. This was characterized by unidirectional, frontierward or pioneering, male-dominated streams from rural to rural destinations. The primary destination was Mindanao. This has been followed in the 1960s and 1970s by a stream characterized by female-dominated, rural to urban or metropolitanward movements (Perez 1983, Engracia and Herrin 1984). The primary destination was the National Capital Region and surrounding areas. In the 1980s, the dominant stream is urban to urban from the overcrowded Metro Manila to peripheral areas of the metropolis. In the 1990s, the dominant stream is temporary circular migration between the metropolitan core and its peripheral areas (Go et al. 1998).

The urbanward migration stream picked up some more in the 1980s so that by 1990 the level of urbanization is nearly 50 percent which is highest in Southeast Asia and next only to South Korea (**Table 6**). Pernia and Israel (1994) observes that in the absence of robust economic growth and structural transformation, these streams are mainly rural-urban migration on the supply side and the growing service sector in urban centers, mainly informal services sector, on the demand side. The growth in the services sector accompanying urbanization was also pointed out in Gonzales, et al. (2001).

Zafra and Ogena (1998) highlighted the probable under-enumeration of migration events generated by fixed period data on residence. They also pointed out the disproportionately large “no information” responses to migration questions in censuses. Perez (1999) laments that most migration data are not linked to community data that prevents contextual and consequence analyses of migration streams as minor importance is given to migration questions in most demographic surveys.

##### ***3.1.2 Determinants***

Theories explaining migration flows abound from the early impersonal gravity models with mass (density) and distance as the determinants; to individual socioeconomic decision models giving importance to costs and benefits as the main determinants; and to

family decision models where total family rather than individual cost and benefits are the primary considerations. Other analysts arrange determinants in terms of “push” and “pull” factors. For a recent comprehensive review of these theories see for example Galup (1997).

Studies on internal migration have been grouped in macro (interprovincial/interregional migration) and individual / household migration.

*Macro studies.* The primary determinants of migration in macro studies are the differences in socioeconomic condition and the distance between origin and destination areas.

Pernia and Israel (1994) observed that there are larger volumes of in-migration and out-migration during recovery period (1985-1990) compared to the pre-recession period (1975-1980). This highlights the common knowledge of the important role of economic opportunities in migration.

Pernia and Israel (1994) used regression analysis to explain the propensity to migrate using origin and destination variables as determinants. They used regional level data pertaining to the 1975-80 and for 1985-1990 migration flows from the 1980 and 1990 censuses. The determinants include migrant stock at the destination, average family income at destination, population density at origin, availability of tertiary schools (indicated by student-to-school ratio) at destination, a region's share of total government expenditures, and access of households in third and fourth quintile (income) group to electricity and water. In all runs, the migrant stock at the destination came out as the robust positive determinant validating the importance of networks in minimizing the cost of the migration. Income at the destination and unemployment in the origin were significant pull and push factors, respectively. Regional share of total government spending and the availability of tertiary schools at the destination and access to electricity are also positive determinants indicating the importance of infrastructure, both physical and social, in affecting migration flows. The population density at the origin has a negative sign indicating that instead of pressuring people to move out it has kept them in capturing maybe the urbanization or development effect. Regressions were also done separately for female and male migrants. Average income at the destination, share in government spending and availability of tertiary schools turned out to be significant for females but not for males while unemployment is significant for both. The authors interpret these as reflecting the trend that women migrants are urbanward while their male counterparts are ruralward.

Cabegin and Arguillas (1997) pointed to natural increase as a major cause of urbanization during the 1970-1990 period after considering the effect of reclassification.

Herrin (1981) in an earlier review identified socioeconomic pull factors (radio usage, extractive activities, manufacturing activities) as positively related to inter-provincial flows. Other factors included ethnic affiliation and the frontier status of the province that

are positively related while distance and similarity of region are negatively related to migration flows.

*Individual studies.* In individual/household studies, socioeconomic characteristics of migrants, particularly education, age and sex, and potential socioeconomic benefits and costs are among the principal determinants.

Previous studies reviewed in Herrin (1981) highlighted that economic factors dominated other reasons for leaving previous residence. On the choice of where to go, familial reasons (e.g., to accompany or join paternal or other relatives, get married, etc.) dominated job-related reasons. Herrin resolved these seemingly contradicting results by appealing to lexicographic preferences. In particular, economic (income) considerations are the major determinants in the decision to move or not. Once this income criteria is satisfied, the decision on the destination have to meet other factors with familial factors as the main consideration. In terms of personal characteristics, education, sex (male), status (single), kinship, nonagricultural residence in origin are associated with higher probabilities of migration. A set of results was the analysis of determinants by types of flows, e.g. rural-urban, rural-rural, urban-rural, urban-urban. Education was found to increase the probability of rural to urban for both sexes and decreases the probability of urban-rural migration for both sexes. Presence of kin is a significant facilitator for all types of migration flows.

Selectivity by education is still borne out by recent studies (e.g., Lanzona, 1998). In addition, this particular study added experience as another selectivity factor.

### 3.1.3 Consequences

The macroeconomic consequences of migration are usually demonstrated in the squeeze in the availability of services. Crowded housing and the rise of multi-residential buildings are the often-cited manifestation (e.g., Morada and Morada, 1997).

At the aggregate level, Gonzales, et al., (2001) pointed out that infrastructure and human development have generally kept pace with urban growth although it may not be sustainable without urban decentralization. In addition, the unauthorized housing settlements remain to be a problem of Metro Manila.

The selectivity of migration will have important implications on the development of origin areas. Lanzona (1997), for instance, using Bicol data pointed to the higher propensity of the educated and the more experienced to out-migrate. This means that development of the areas of origin may be hampered by shortage of more skilled and experienced workers.

At the individual level, the less prepared migrant either in terms of education or experience usually lands in low-pay and less secure, low occupational status jobs leading to various adjustment problems.

### 3.1.4 Impact of Public Policy

Given the determinants of migration, public policy that affects the distribution employment opportunities and services across areas will affect the flow of migration from one area to another. Studies have highlighted the uneven distribution of government expenditures (e.g. Lamberte et al., 1993).

Pernia and Israel (1994) characterized the urbanization in recent decades as paradoxical being simultaneously weak and rapid. It is weak because of exceedingly slow transformation of the economy that has been caused by decades of inward-looking, capital-intensive industrialization strategy. At the same time, given high fertility, stagnant regional economies has spurred rapid migration into cities and expanding service sectors particularly those that offer ample opportunities for informal activities.

Gonzales, E. et al., (2001) found that global influences (i.e., foreign direct investments and exports) reinforced urban primacy rather than promote urban decentralization. In addition, despite considerable resources spent on growth corridors, industrialization did not happen although they fared well human development.

The implications of the recent promotion of regional growth centers on socioeconomic and demographic of surrounding areas are examined in (Carino and Jose, 1997) using three sites as cases namely, PHIVIDEDEC Industrial Estate in Misamis Oriental, The Laguna Technopark, and the Batangas Bay Corridor. The study showed relatively more rapid growth of working age (14-64) population and relatively more males than females. These bolster the employment opportunities effect and the male-dominated jobs in industrial estates.

Another study used cities of Baguio, Angeles, Lucena, Iloilo and Davao instead of industrial estates to study the impact of growth centers (Morada and Morada, 1997). This study confirms earlier results on selectivity as migrants are mostly college graduates and also reinforced Carino and Jose (1997) on the issue of increasing male participation.

## 3.2 External Migration

### 3.2.1 Trends

While earlier streams are more of permanent migration the recent stream is dominated by temporary migration of workers (Carino, 1994). The developed countries of the Pacific Basin, namely, Australia, New Zealand, Canada and the United States are the favored destination of permanent migrants. The Middle East is the common destination of migrant workers in the 1980s and of late Asia also became a significantly popular destination (Ogena, 2000). It has been observed that permanent migrants are dominated by women while the temporary migrant workers which used to be dominated by men is now also dominated by women. In terms of age, permanent migrants are much older



while temporary migrants are younger. Both permanent and temporary migrants are more educated.

The Philippines together with Indonesia and China are the major suppliers of migrant workers in the region (Amjad, 1996).

### 3.2.2 Determinants

The motivations for international migration are similar to internal migration.

Agostinelli (1991) pointed out that international migration in the Philippines is more and more becoming demand-induced rather than supply induced. Thus, the major selectivities are determined by the socioeconomic structure of the receiving developed countries. This is shown by the increasing demand for middle-level workers which developed countries lack rather than professional/technical which they have ample supply.

The common expectation that poverty is one of the root causes of international migration seems to be not borne out by data. In fact most of the international migrants come from the middle-income groups rather than from poor households.

### 3.2.3 Consequences

Consequence of external migration for origin countries is usually not so much on the volume since this is usually small. It usually stems from the selectivity of migration since it usually involves the more able and the more educated. Thus, the external migration can cause shortage of specific skills that can hamper growth especially if this involves highly skilled personnel (e.g. Carino 1984). For example, the Philippines may be short of medical personnel, not so much nurses, but doctors because of considerable permanent migration of medical workers.

Another issue often raised specially with temporary migration is the social cost of the absence of one of the parents. The absence of one spouse has been identified as the cause of various family problems (Guerrero and Ballescás, 1994).

On the positive side, remittances of migrant workers become important source of foreign exchange. In fact for the Philippines this has reached 5% of GDP in recent years which is larger than several “real” sectors, such as mining (1%) and electricity, gas and water (3%) and forestry (0.1%). During the difficult adjustment year in the middle of the 1980s and early 1990s, the remittances helped buoy the economy. At the household level, remittances have also been the source of financing for consumer durables and entrepreneurial activities. The research results seem to point to more consumption than investment effect of these remittances (e.g. Guerrero and Ballescás, 1994; Agostinelli, 1991).

Another possible positive effect of migration is the effect on skills of returning workers if the country can make good use of them. The current record, however, seems to point to

doubtful positive outcomes. Agostinelli (1991) studying the flows between the middle of 1970s to the middle of 1980s pointed out that this side of the story has questionable outcomes. It was pointed out that the skill composition of outflows is dominated by middle-level skilled workers and not by the professional/technical category. The proportion of this latter category is in fact declining. In addition, return migration has been selective with the successful ones becoming permanent residents of the receiving country and only the less successful returning to their home country.

### 3.2.4 Impact of Public Policy

External migration is understood to be an indication of lack of employment opportunities in countries of origin. Thus, policies that prevent more rapid employment generation directly or indirectly encourage external labor migration. Many outside analysts believe that external labor migration is a key development strategy of the Philippines. That while other ASEAN countries attract investments, the Philippines sends its workers abroad (Campbell et al., 1997). Domestic analysts, however, sees this as a stop-gap measure given the uneven economic growth experienced by the country in the last two decades.

Carino (1994) pointed out the predominance of programs aimed at encouraging return migration, for example, the Balik-Scientist program and policies that allow professionals, now residing in other countries, to practice their profession in the country. The aim, of course, is to repatriate skills and earnings. The scanty evidence shows negligible skills are acquired or applied.

Carino (1984) also lamented lack of political will to implement a manpower policy that is responsive to domestic needs rather than external labor markets.

## 4. *Gender in Demographic Processes*

The concern that there may be gender differences in fertility and contraception preferences, giving preference to the needs of children, and migration preferences has motivated studies on the differences of men's and women's attitudes toward these issues. Earlier studies had focused only on women.

Concepcion (1994) reviewed studies that deal with gender differences in awareness of reproductive health risks, and the role of Filipino males in fertility decision-making. One of the study (Ventura et al., 1992) interviewed a sample of wives and husbands in one urban and one rural area in each of Bulacan, Davao, Iloilo in 1991. One of the findings of the study is that although husbands did no pose any problem initiating contraceptive practice, they relegate the responsibility of family planning to the women. Hence it was pointed out that the implication of these findings are, among others; (i) men must be encouraged to recognize their responsibilities toward the health of family and to respect their partners' concerns; (ii) motivational materials on men's role in family planning developed, and (iii) deployment of male service providers. Another study reviewed is Perez (1994) that interviewed 1200 women and 780 men in five urban barangays in

Metro Manila and eight rural barangays in Muñoz, Nueva Ecija. The study found that both men and women appreciate the risks accompanying births that are too early or too late. But men preferred shorter birth interval than women (13-25 months as against 25-36 months). The older the men, the greater was the proportion that thought that shorter birth interval was ideal for women's health. It was then pointed out that the service providers, with appropriate IEC materials, must spread the advantages of proper birth spacing not only for the health of the mother but also for the a better future of the kids.

Agreements or disagreements on contraception preferences have been found to have subtle impact on prospective contraceptive practice. While in the aggregate there appears to be similarity in fertility and contraception preferences, close scrutiny reveals some significant differences between married couples. In particular, there is disagreement on the levels of contraceptive use and over intentions to use contraceptives in the future. For instance, when couples approved of family planning in general, 81% share intentions to practice contraception in the future; but among couples who disagree over contraception, only 43% share intention about future use (Biddlecom, Casterline and Perez, 1997). Corroborating this result is Wong (2000) that interviewed husbands of respondent women in the CLHNS. The study found that when the couples agree, they tend to be more successful in controlling their fertility compared to couples where husbands belatedly agreed to use contraceptives.

Garcia (1990) has shown using multivariate analysis that mothers give greater preferences than fathers to the needs of children. In addition, it was also found that mothers have superior knowledge of preventive health practices, has greater reliance on health systems, and superior nutritional practices.

#### **D. Program-related Research**

This section deals with studies that are related to execution of program components. Population programs have been changing from the provision of a purely family planning service to a more holistic one involving reproductive health and gender.

##### ***1. Trends in Program Performance***

Data on contraceptive prevalence, method mix and sources of supply are becoming regularly available as Family Planning Surveys have been conducted annually since 1995 plus the National Demographic Surveys which have been done every five years since 1968 the last one being the 1998 round.

*Fertility.* The family planning program performance is usually measured through the ultimate indicator -- fertility or its intermediate output – contraceptive prevalence. The common measure of fertility is the total fertility rate. Total fertility rate declined from 5.7 in 1968 to 3.7 as of the last assessment in 1998 (**Table 7**). This is slow by Asian standards (**Table 2**). For instance, starting with about the same TFRs at the start of 1960 Thailand and Indonesia have reduced their TFR to 1.9 and 2.9, respectively, by the middle of 1990s.

*Contraceptive prevalence.* The contraceptive prevalence rate has not increased as expected. What is worrying is that it is even showing signs of a decline (**Table 5**). The redeeming fact is that the proportion using modern methods is steadily rising. In comparison to other countries in Asia, the country is lagging behind such countries as Thailand, Indonesia, and Vietnam (**Table 3**).

*Source of Supply.* The Family Planning Survey in 1995 reports that 78% received their supply of modern methods from the public sector. This has declined to 74% according to 2000 FPS. Alternative estimates from the 1993 NDS and 1998 NDHS put the estimate at 72% for both.

## **2. Program Components**

### *2.1 Family Planning/Reproductive Health*

*Expansion vs. Deepening.* On the provision of family planning services, there is an ongoing debate on the relative importance of the expanding access to services or deepening the quality of services available in existing delivery points. It has been argued (Bongaarts and Bruce 1995) that a better menu of services will have greater impact on contraceptive prevalence compared to extending access. This group argued that the more important reasons for nonuse are lack of knowledge, fear of side effects and familial (particularly husbands) disapproval. Ross (1995), however, pointed out that method mix and quality-of-care are only relevant after some access have been established, not before, and that the relative importance between the two are dependent on a host of country circumstances.

Escap (1991), using the 1986 CPS and the 1990 Survey of Accessibility of Contraceptives, empirically confirmed the common notion that accessibility improves contraceptive use, particularly for the pill, IUD and female sterilization. It noted that while the pill and the condom are widely available, accessibility of IUD and female sterilization varied widely while male sterilization is comparatively less accessible to rural population. The study, however, warned that expansion should not mean deterioration of service quality.

*Private Sector Participation.* One of the long-term issues in family planning program implementation is the lack of sustainable financing. For instance, World Bank (1991) reports that 57% of the program is externally funded with USAID contributing 40%, UNFPA 7% and the World Bank 6%. In the addition, the private sector participation is also low. For instance, from the Family Planning Survey in 1995, only 19% received their supply of modern methods from the private sector. This has risen to only 25% according to 2000 FPS. Alternative estimates from the 1993 NDS and 1998 NDHS put the estimate at 26 for both surveys. The Philippine Family Planning Strategy (DOH 1996) has provided three reasons why increased private sector participation is essential, namely: (i) to increase the availability and acceptability of family planning (FP) products and services to all couples in the Philippines who need and want them; (ii) to improve the

sustainability of FP services provided through the Philippine Family Planning Program (PFPP); (iii) to allow the public sector to better address equity concerns by targeting the poor and the hard to reach, while guiding those who can afford to pay to the private sector. These concerns triggered a couple of studies to help formulate a market segmentation strategy.

Among the main results of one of the studies (Alano et al. 1998) is that high and middle-income women, regardless of age, are more likely to use the private sector. It has demonstrated that shifting this group from public to private providers will decrease the burden in the public sector by more than 40%. This study used the 1993 NDS and used both cluster analysis and a logistic model on the choice between public and private sector provider. The study proposed four strategies for the FP program. First, increase the overall proportion of FP users by concentrating efforts on those non-users with an unmet need. Second, shift traditional method users to modern methods. Third, enlarge the market share of private providers in the market for modern methods by encouraging current public sector clients to use the private sector. Fourth, use IEC for young women as lack of experience and limited sources of information are the primary barriers to more effective use.

Another study (Lamberte, et al. 1999) focused on the factors influencing clients' choice of service provider, willingness to pay for FP services, and potential of different pricing strategies in increasing the market share of NGOs. The study used a survey that included interviews with the public sector and NGO FP clients in six cities. The main results of the study include; (i) NGO clients include those from higher income and expenditure groups and better education attainment compared to users of public facilities; (ii) proximity and quality are more important than price as determinant of choice of provider; (iii) Considerable proportion (63%) of public sector clients expressed willingness to pay at prices equal or even higher than prevailing NGO prices; (iv) NGO clients are more sensitive than public sector clients to the quality of facilities.

Finally, a study on the commercial side of the modern FP supplies interviewed high-level marketing officials of companies that import, distribute and market these products (Mallari et al., 1999). The study also reviewed sales performance and probed on companies' motives, behavior and vision for the Philippine market. One of the key findings of the study is that contraceptive prices in the Philippines are high compared to those prevailing in middle-income countries of Asia and Africa. Among the reasons provided is that pricing is keyed to the prices of the market leader. The respondents revealed that profit margins in contraceptives are usually lower than other products. Another notable finding is the reality that there are laws<sup>13</sup> and entities, such as the Catholic Church, that prevents them from having a more aggressive marketing strategy. Still another finding is that the contraceptives is a small proportion (less than 10%) of the

---

<sup>13</sup> For instance AO No. 65 s. 1989 prohibits advertisement of ethical products through print, radio, and television. In addition, the Pharmacy Law (RA 5921) prohibits dispensing ethical products without prescription. With the exception of condom, all common contraceptives are considered ethical products in the Philippines.

total sales of pharmaceutical companies that sells FP products which also explains the little market attention given to FP products.

Lamberte et al. (2000) is another study with a similar thrust. It used the 1993 NDS and 1998 NDHS to study determinants of contraceptive use, the choice of FP service provider, and willingness to pay. The study noted the increase in the use of contraceptives particularly modern methods. The study also confirmed the results in Alano et al. (1998) that the private sector is preferred by the higher income, more educated, older and Metro Manila clients. The study also found that as much as 90% of all users are willing to pay for services they receive at prices that could exceed what they are currently paying.

*Factors Affecting Contraceptive Practice.* Perez and Cabigon (1985) reviewed the research and data on contraceptive prevalence and effectiveness between 1968 and 1983. The research used the 1978 Republic of the Philippines Fertility Survey (RPFS), 1978 and 1980 Community Outreach Surveys (COSs), 1980 Area Fertility Survey (AFS), and 1983 National Demographic Survey (NDS). The level of development and the degree of accessibility of family planning clinics were found to be positively related with the level of contraception both in descriptive and multivariate analysis. Among the socio-economic characteristics (wife education, husband's occupation, and wife's work pattern), wife's education stood as the most important variable affecting contraceptive use. Child mortality was found to have no direct effect on contraception. Finally, the study recognized the important role of "development in its broadest sense" in enhancing contraceptive practice.

Research using more recent data sets substantially validated earlier results. Using multivariate analysis and data from the 1983-84 round of the CLHNS, women with white-collar jobs and the self-employed have been found to be more likely to practice contraception compared to those not employed. Blue-collar workers and those with piecework employment, however, do not affect contraception (Doan and Brewster, 1998). Education at the high school level or higher of both the mother and the husband was also found to be a significant positive determinant of contraception. The presence of the grandmother (alternative caregiver) reduces the likelihood of using contraception. Finally, higher parity also increases the likelihood of using contraception.

Wong (2000) found that couples tended to use contraceptives reactively, i.e., use contraceptives after they have realized that they can barely support their children.

*Unmet Needs for Family Planning.* The information on unmet needs for family planning is critical for formulating family planning strategies. It is an indicator of demand for family planning services. Perez and Palmore (1994) did a detailed study on its definition and determinants using the 1993 NDS. This is measured by the perceived gap between women's reproductive goals and their contraceptive practice. Definitional problems, however, had been pointed out. The conventional definition, as used in NSO and DHS (1994) for example, measure unmet need by using the expressed desire to space or limit future births and the current use of family planning. A woman is considered to have an unmet need if she expresses a desire to space or limit future births but is not currently

using any method of contraception. Perez and Palmore (1994) argued that this definition does not address two important dimensions of unmet need. First, is that a woman's fertility desire may not be in the best interest of her health or that her child, i.e., due to health risks. Those considered to have health risks need for family planning include: (a) women who already had more than four live births; (b) women who were under age 20 (too young); (c) women who were over age 35 (too old); and (d) women whose last birth was less than 15 months before the survey (short birth interval). Second, the method currently in use may not be meeting her need for contraception either because she is using an ineffective method or she does not know how to use the method correctly, i.e., due to poor contraceptive use risks. Women who are considered poor contraceptors include: (a) those who were trying to limit births but were using ineffective contraceptive methods; (b) those who were trying to limit births but were using natural family planning and did not know when during the menstrual cycle they were most likely to become pregnant; (c) those who were trying to space births but were using natural family planning and did not know when during the menstrual cycle they were most likely to become pregnant; and (d) those who were pregnant as a result of a contraceptive failure. It was then argued that the conventional measure underestimates the extent of unmet needs for family planning. Considering these dimensions, the unmet need for family planning in the 1993 NDS increases from 26% to 48%.

Perez and Palmore (1994) also did bivariate and multivariate analyses on unmet need and various socioeconomic and demographic variables. In terms of socioeconomic variables, conventional unmet need for limiting was found to be highest among the least educated women while conventional unmet need for spacing is similar for all levels of educational attainment. A somewhat surprising result is that the proportion of poor acceptors is similar for all education groups, in fact, somewhat higher for the more educated categories. Health risk unmet need because of short birth intervals was highest for those with high education while those due to more than 4 children are highest for the least educated. In terms of work status, women who were not currently working outside the home tended to have higher conventional unmet need than women who are working. There appears to be an inverse relationship between socioeconomic development and unmet need, particularly the conventional limiting need and those due to the use of ineffective methods such as NFP while possessing poor knowledge of occurrence of contraception in the menstrual cycle. In terms of demographic variables, conventional unmet need for limiting was highest for women aged 30-44 and lowest for younger (15-24) and older (45-49) women while conventional need for spacing was highest for women aged 15-29 and lowest at older ages. Women who married at young age have high conventional unmet need for limiting whereas women who married at age 25 or older had the highest health-risk need due to short birth intervals. As expected, women with many surviving children had a much higher conventional unmet need for limiting and health risk unmet need due to large family size than those with fewer surviving children. Women with fewer surviving children had higher conventional unmet need for spacing and a higher health-risk unmet need due to short birth intervals.

Multivariate analysis using a multinomial logit model revealed that conventional unmet need for limiting was highest and statistically significant for women aged 30-44, women

living with their partners but not legally married, women with less education, women who were not working outside the home, women who did not read newspapers, women who did not discuss the number of children wanted with their partners, women with lower coital frequency, and women in households that lacked electricity, television or a bicycle. Conventional unmet need for spacing was highest and statistically significant for women aged 15-29, women who married at later ages, women who did not work outside the home, women who did not listen to the radio, women who did not discuss the number of children wanted with their partners, women whose partners wanted more children than they had, and women living in households without a television or a bicycle. Health risk need due to large family was highest for women aged 30-39, women who did not work outside the home, women in households without electricity, women whose partners wanted more children than they had, women with lower coital frequency, and women who married at an early age. Health risk need due to short birth intervals did not predict well because of small occurrence. Poor contraceptors who were trying to limit their family size was highest among women aged 30-44, women with more education, women in households without electricity, and women whose partners had less education. Poor contraceptors who were trying to space their children was highest among women aged 15-29, women who discuss the number of children wanted with their partners, and women who married at later ages.

Some of the implications of these results are: (a) for conventional unmet need, appropriate contraceptives need to be provided and FP workers have to provide correct information on the advantages and disadvantages of the different methods; (b) for health risk unmet need, the program intervention should stress on motivation – encouraging women with four or more children to limit future births and encouraging women who recently gave birth to space their next birth; (c) for poor contraceptors, the program should stress educating couples to use more effective methods or, at least, to use NFP methods more effectively, i.e., pointing out when in the menstrual cycle women are at the greatest risk of pregnancy; (d) women in less developed regions exhibited highest unmet need for limiting due to health risk and due to NFP while unsure of the timing of conception during the menstrual cycle; (e) even if it seems unexpected, better educated women should not be assumed to possess adequate and correct knowledge of reproductive physiology; (f) house-to-house information and education campaign for women with high conventional unmet need for limiting births on the advantages and disadvantages of using more effective contraceptive methods should be done among women with little education, women who do not work outside the home, who do not read newspapers, or own a television using appropriate materials and messages for each particular group; and (g) an information drive for those who prefer NFP on its correct use particularly among those with incorrect knowledge on the occurrence of contraception during the menstrual cycle.

Pamaran and Ramos-Jimenez (2000) studied the factors associated with unmet need for family planning among young adults using the 1993 NDS and 1998 NDHS. The bivariate and multivariate analysis of the determinants of unmet need for family planning revealed that young adult women aged 15-24 have higher unmet need compared to adult women aged 25-49. Women with more children are generally more likely to have unmet



need. Women who are legally married are likely to have unmet need of limiting and no difference for spacing need compared to those in consensual unions. Relative to Muslim women, Catholics, Protestants, and women of other religious affiliations have lower unmet need. There is no significant difference in unmet need by region and by urban/rural residence. Education of the woman was also not a significant determinant. Working women were more likely to have both spacing and limiting unmet need. Women from poorest 20% have greater spacing and limiting unmet need compared to women from richest 20%. The frequency of couple communication did not have an effect on the level of unmet need. Finally, measures of service provider contact were weak predictors of unmet need.

*KAP on FP/RH.* A study was done recently to assess the knowledge, attitudes, and perceptions of key stakeholders on issues that affect family planning and reproductive health care services using rapid appraisal techniques, i.e., using in-depth, unstructured interviews of selected key informants, and focus group discussions of different types of respondents, namely, (i) married men and women and unmarried women and men between ages 18-24, (ii) service providers, (iii) program managers in public and private facilities, and (iv) local officials from cities, municipalities, and barangays (Costelo et al., 2001). Key findings of the study are:

On the knowledge level:

- a. There is no common understanding of the term reproductive health among the different stakeholders. Generally, the knowledge is related to access and utilization of reproductive health services;
- b. Men, local officials, and the youth tend to be less knowledgeable about the reproductive health concept.
- c. Young unmarried men are more likely to be aware of STI/HIV/AIDS and safe sex issues compared to unmarried women;
- d. As expected, health service providers and their women clientele display a far greater understanding and appreciation of reproductive health;
- e. Service providers' level of appreciation and knowledge of reproductive health is influenced by their attendance in reproductive health training programs while that of women is influenced by whether or not they have used health services.

Perceptions were noted to cluster into the following:

- a. The delivery of health services in private health facilities is perceived to be generally superior over that of public sector's in terms of infrastructure, equipment, supplies, and quality of care.
- b. In general, health concerns are not seen as priorities of officials in local government. This is compounded by the absence of institutionalized mechanisms to bring local health needs to the attention of local officials.
- c. Local officials are seen as sometimes interfering with routine services such that availability of health care supplies and medicines becomes dependent on patronage and political favors.
- d. Church or religious influence on family planning and childbearing decisions was perceived as having minimal impact on personal decisions.

Finally, participants' attitude converge on the following:

- a. Respondents expressed negative attitude towards the charging of fees for public health services (expressed mainly by married respondents);
- b. Health personnel (barangay health workers, nurses, midwives, and doctors) are generally welcomed and appreciated as important sources and communicators of reproductive health information;

In terms of family planning decision-making patterns, many married women report that they usually make autonomous decisions on this matter; nevertheless, they are open and receptive to the advice and recommendations of relatives and health care providers.

## *2.2. POPDEV*

The Population and Development Planning and Research (PDPR) Project funded by the UNFPA commissioned a study to assess the state of POPDEV integration in the planning process (Costello, et al., 1989). The study used a two-pronged methodology. The first component is a content analysis of pre- and post-project NEDA plans, namely 1978-1982, 1984-1987 and 1987-1992 NEDA plans. Three major dimensions were considered in the content analysis, namely: (a) the use of appropriate population and development statistics; (b) the selection of specific planning objectives which match well with a set of recommendations issued by a major U.N.-sponsored conference on population and development; and (c) an explicit recognition on the part of the plan's authors of the complex and mutually causal relationship which can exist between demographic and economic variables. The second component is an in-depth interview of national and regional-level NEDA planners associated with the project on their appraisal of the project's strength and weaknesses. The Study concluded that the project was able to improve the integration of population and development concerns in the national and regional planning processes. The post-project 1987-1992 plan had better integration of POPDEV indicators, objectives and interrelationships compared to earlier plans. Planners were also unanimous that they were able to use skill or idea learned during the course of exposure to the project.

## **3. Program Management and Financing**

### *3.1 Devolution and the Population Program*

The 1991 Local Government Code provides for the transfer of the delivery of many services, including the population and family planning services, to local government units. It is, therefore, critical to understand the implication of this shift in the locus of service provision to program performance.

POPCOM conducted an assessment of LGU capacity and commitment to implement the population program covering 147 provinces and cities (POPCOM 1993). It used a set of indicators for capability and commitment support and relied on the Regional Directors' actual observation and perceptions. During that time, substantial commitment by local

government executives was found (65% have high commitments) but more than half of the personnel (55%) manifested inadequate technical competence. The study then recommended, among others, the developing and strengthening of LGUs in the implementation of a decentralized population program.

In 1996 a similar survey was conducted by POPCOM to again assess the level of commitment and support of LGUs to the PMP (POPCOM 1996). The survey covered 77 provinces, 65 cities and 9 municipalities in the NCR. This time the study used different questionnaires for two types of respondents, namely, (i) local chief executives and (ii) planning and development coordinators, population officers and family planning coordinators. The study found higher level of awareness of population problems and more active participation in population related activities. However, these were not accompanied by increasing institutionalization as indicated by lack of permanent structures for population, insufficient fund allocation as well as lack of local legislation on population. The study then recommended continued advocacy in order to translate the high awareness into more sustainable concrete actions in several aspects, including policy, particularly, legislative level, planning, research and implementation.

A similar assessment, albeit in a limited scale, was done in PRRM (1998) through the Resource Center for Family Planning and Health local advocacy project. It did an action research on influencing expenditures population and health through local advocacy programs in 7 cities between 1996-1998. The monitoring of the legislative actions revealed the lack of support for family planning. The accompanying assessment of legislations showed that while there is considerable number of legislation in the area of human development, population and family relations has the least (Cabigon, 1988).

There is no existing study analyzing the impact of the devolution on expenditures on population-related activities. What is available is an analysis of pre and post-devolution health and family planning expenditures. Schwartz et al. (2000) examined health and family planning expenditures both at the national and local government levels before and after the devolution. The study found that there is an increase of about 60% in real aggregate health expenditures from the pre-devolution (1990) levels compared to the post devolution levels (1997). This increase is due to increases of health expenditures of local governments as national expenditures declined by 2% over the same period. In terms of allocation by type of expenditures at the aggregate level, devolution has increased the allocation for public health care. At the local level, per capita expenditures were also found to increase after the devolution with provinces leading the cities/municipalities. The study also found that local governments increased their allocation for the health sector after the devolution. Finally, local governments were found to have decreased their allocation to public health after the devolution. The study explained this seemingly surprising result to the transfer of the management of hospitals that mostly provide curative care from the DOH to the local government units.

### *3.2 On the Role of Non-Government Organizations*

Non-Government Organizations have always been an important pillar in the Philippine Population Program. To analyze their specific role in the program, Lacey and Carba (1996) interviewed all volunteer organizations in Metro Cebu in 1994. The study found the development and religious organization cannot beat the private health and family planning organizations in terms of service delivery, particularly, modern methods. They also lead in introducing innovative and alternative service-delivery models. However, it was pointed out that the strength of development organizations lie in their link with the poor that is a key target population for the program.

Given the opposition of the Catholic Church on the use of artificial contraceptive methods which has prevented the allocation of government resources for the purchase of contraceptive supplies, it has been also pointed out that non-government organizations may have “assume bigger and complimentary roles in the population program given their strategic position, extensive resources and network” (Medalla, 1999). In support of this end, it was recommended that the expanded role of the NGOs should focus on attracting better off FP clients from the public sectors as well as new users (Lamberte, et al., 1999). Finally, the Study Group on the Contraceptive Interdependence Initiative (n.d.) also recommended the increase participation of the NGOs.

## **E. Population, Resources and Environment Linkages**

### ***1. Linkages***

The concern towards better management of resources and the environment has triggered studies that focus on the relationships between population, resources and the environment. While the issue is not new, it gained primacy as resources continue to dwindle rapidly and demand rises with growing population.

Cruz (1994) identified two theoretical perspectives that underlie the relationship between population, resources, environment and development. First, is the economic-demographic concept of “optimum population” which highlights the idea that, given resources and technology, as population size goes beyond the optimum, changes in technology are triggered to achieve a new equilibrium optimum population. Second, is the idea that population pressure leads to environmental degradation. One can see the former as optimistic and the latter pessimistic as to the impact of rapid population growth on the environment.

Panayotou (1994) provides a recent review of the relationship between population growth, environment and development. He concludes that while on the surface rapid population growth is correlated with deforestation, soil erosion, destruction of local ecosystems, and general environmental degradation, a closer look will show that it is more how population behaves rather than how population grows that determines the impact of population on the environment. Even then, it should be noted that how

population behaves is affected by population size, congestion and shortages. In addition, the impact was found to be strongly mediated by the efficacy of markets and governments.

It has been pointed out that, one key relationship between population and environment is that, holding per capita income constant, demand on the resources rise in proportion to population size (Jha, Deolalikar and Pernia 1993). In addition, Environment and Natural Resources Accounting Project (ENRAP) estimates also pointed out that households are the primary generator of pollutants (Orbeta and Indab 1996), thus increases in the number of households due to population growth imply generation of more pollutants. In the same vein, Padilla (1996) pointed out that while deterioration of water quality may not be directly attributable population size or growth, it is related to activities that are directly proportional to population size or growth.

## ***2. Role of Public Policies***

The role of policies in mediating the impact of population on the environment is well documented in Philippine studies. Cruz and Francisco (1993), for instance, found that the availability of open access land is the primary determinant of upland migration. A similar result was also found in Amacher and Hyde (1996). Finally, Cruz (1994) identified past government policies that played a part in inducing population pressure on forest resources. The policies include: (1) promotion of programs that opened up forestland to migrants; (2) institution of planned resettlement schemes, (3) effects of lowland agricultural policies; and (4) ineffective population control program. It was pointed out, however, that while these policies mediated undesired migration patterns, the primary impetus to move is usually population size or growth-related.

## **F. Population, Poverty and Income Distribution<sup>14</sup>**

### ***1. Linkages***

The focus of development efforts, particularly in the recent past, is poverty alleviation. It is therefore important to understand how rapid population growth and demographic processes affect the problem of poverty and the more unequal distribution of income.

There are three main channels through which population affect poverty. These are the growth, distribution and conversion channels. The growth channel refers to the impact of demographic variables on the level or growth of attainable welfare per person, usually measured by mean income or average consumption, given the distribution of income. The distribution channel refers to the impact that alters the distribution of income given the attainable welfare per person. The conversion channel refers to the changes in actual well-being or capabilities given the attainable welfare per person.

---

<sup>14</sup> Substantially taken from Orbeta (2002).

There are limited number of studies on the growth channel using Philippine data. At the aggregate level, simulations using the Population and Development Planning Model show that higher population growth lowers GNP per capita (Orbeta, 1989; Orbeta et al. 1998). This effect is particularly pronounced when foreign capital inflows are held fixed. In addition, Orbeta (1992) showed that while rapid population growth increases human capital expenditures (aggregate expenditures on education and health), the increase is insufficient to maintain per capita levels. This implies a negative impact on education and health output. In addition, it has been shown in studies using cross-country data that demographic change affects substantially the growth in per capita income. It accounts for one third of the growth in fast growing East Asian countries and one-half for the slower growing Southeast Asian countries (Bloom and Williamson, 1998). Using updated data, Kelley and Smith (1995, 2001) and Eastwood and Lipton (1999, 2001) found similar results.

At the household level, one looks at the impact on earning assets. Herrin (1983) found that accumulation of household assets is negatively affected by the number of young children 0-6 and 7-12 years old. This corroborated an earlier result (Mason, 1992) which found that child bearing negatively affects the savings rate.

On the distribution channel, there are almost no studies using Philippine data except for de Dios et al. (1993). The study has identified high population growth as one of the reasons for poverty in the Philippines. It was argued that high population growth aggravates poverty as it disproportionately affects the poor who tends to have larger families. In addition, it has been argued that with the slow growth of employment opportunities in the face of rapid growth of the working age population, the consequent high open unemployment rate which did not spare even educated workers, and the continued flow of overseas contract workers, it is not very difficult to imagine that real wage rate are either stagnant or falling (Orbeta, 2002; Orbeta and Pernia, 1999). Thus, returns to the main asset of the poor – his labor – should be declining. This contributes to the increase in inequality documented in Reyes (2002). A review of earlier studies across countries show mixed results (Lam, 1987). Recent results, however, show that high fertility not only retards economic growth (as argued above) but also skews the distribution of income against the poor (Eastwood and Lipton (1999; 2001).

On the conversion channel, several studies using Philippine data reviewed in Section 3.1 above showed that high fertility negatively affects investments in human capital. It has been argued (e.g., Orbeta, 2002) that this is the main channel through which poverty is transmitted intergenerationally. In addition, Reyes (2002) have shown that getting out of poverty becomes harder with larger family size. Finally, it is well established here (e.g. Reyes, 2002) and abroad (e.g., Alhburg, 1996, Lipton and Ravallion, 1995) that poverty incidence is higher among large family households. The argument that the poor rationally prefer to have large family size is difficult to believe particularly in the Philippine setting. This is because data show that they have limited access to family planning and allied services, lower contraceptive prevalence rates, higher unwanted fertility and higher unmet need for family planning (Orbeta 2002).

## ***2. Role of Public Policies***

Given that poor households tend to have large family size and have lesser access to family planning and allied services, the importance of targeting family planning intervention and allied services is well-placed. In addition, besides being intrinsically meritorious, improving the access of the poor to these services would also counteract the intergenerational transmission of poverty.

It has been argued in many studies, e.g., Orbeta and Pernia (1999) and de Dios et al. (1993), Reyes (2002), that reduction in population growth in the aggregate and/or smaller family size at the household level will make poverty alleviation much more achievable compared to a situation where there is rapid population growth and larger family size.

## **H. Research Agenda**

### ***1. Demographic Processes***

#### ***1.1 Fertility***

The research on fertility should focus on understanding what is keeping Philippine fertility rates high compared to its ASEAN neighbors. Another important focus of research on fertility should be on understanding what, besides contraception, is keeping our fertility rates high. This should not be taken as shirking from the contraception issue, but on determining what will help bring down fertility rates besides the increase contraceptive prevalence and effectiveness rates.

Data on fertility trends should continue to highlight what age-cohorts, socioeconomic groups, and in what geographic areas fertility rates continue to be high. This is important for targeting fertility reduction efforts. Towards this end, it is also important that demographic surveys that are representative at lower administrative levels, e.g., municipalities, should be supported. The finer targeting of fertility reduction efforts depends on this information.

Corollary to this, there is still a dearth of studies on the distributional consequences of fertility trends even if Herrin (1981) had already identified this a priority research issue two decades ago. This involves determining which groups are most adversely affected by current fertility trends. This will shed light on the design of interventions to mitigate the adverse impacts.

The current interest on young adult fertility should continue until all issues have been dealt with and resolved.

There is virtually no study using Philippine data analyzing the determinants of the demand for children, both using the survey-based indicators of demand (desired number

of children) and economists' (e.g., Easterlin's) concept of demand. Many believe that what keeps actual fertility from coming down is high demand for children.

Analysis and comparison of demographic transition experience of ASEAN countries, particularly, Thailand, Indonesia, Vietnam and the Philippines will help clarify why the other three countries have succeeded in bringing down population growth while the Philippines did not.

Studies that demonstrate the consequences of high fertility rates both at the macro and household levels should continue to be given importance. The review revealed a considerable number of household level studies while there are limited macro-level studies. Newer studies should employ better research designs and better datasets so that objections are minimized. There is also a need to translate the household-level studies into advocacy materials to better communicate the research results to policy makers and other stakeholders.

### *1.2 Mortality*

The focus of mortality research should be in identifying pockets of high mortality by cohort, socioeconomic group and geographic areas. There also remain some glaring unresolved issues on the determinants and on the impact of public interventions.

With the improvements in mortality data, it should be a continuing concern to produce disaggregated trends in mortality (infant, child, and adult) by cause, by socioeconomic group and by geographic area. This should also include the allied dimensions of morbidity and nutrition. Like fertility, this will help in the design of appropriate intervention measures.

There are still glaring conflicts in the analysis of the impacts of public intervention measures on mortality, and morbidity. Health interventions have been found to both reduce and increase mortality and morbidity risks. Research employing better data, better designs and improved statistical techniques should be focused on resolving these conflicts.

There are still limited studies on the impact of longer life expectancy at the individual, household and aggregate levels.

### *1.3 Internal Migration*

The primary problem in migration research is the lack of regular generation of migration data that will allow contextual and consequence analysis of migration streams both at the national, community and household levels.

Migration research had been hampered by lack of data (Perez, 1999; Comments to this paper by Dr. Cabigon). Problems with the current migration data from the censuses have been pointed out. In addition, it has been pointed out that migration data should also be



accompanied by community data to allow contextual and consequence analyses of migration streams. The production of better migration data should be given sufficient emphasis if better understanding of migration flows is to be achieved.

While analysis of the impact of recent de-concentration programs, e.g. growth corridors, on migration flows are starting to be undertaken, this effort should continue as better migration data are being produced.

With the devolution of frontline services, migration flows will have heightened the impact on service provision in immigration areas. Issues on how LGUs deal with these consequences need to be documented and understood. This will cover such issues as governance, modes of delivery as well as financing of the services.

#### *1.4 External Migration*

External migration is well studied-except for some unattended issues such as return migration. The regular monitoring of flows and reasons for the flows should also be a continuing concern.

Trends in the changing flows and reasons for external migration should be continuously studied. This will enable policy makers to anticipate future movements under changing domestic and global economy conditions.

#### *1.5 Gender in Demographic Processes*

Research activities in this area should continue to monitor, understand the consequences of the lack of and finding ways of enhancing male involvement in RH/FP decisions of the households.

### **2. Program-related Research**

The main problem in program-related research is the apparent lack of coordination and synthesis of existing research activities. Given the varied dimensions of the program, it is difficult to understand research efforts in this area unless everything can be organized in a coherent structure. The best organizing structure would be the components of the current and past population program plans.

For the RH/FP component, program-related research should focus on ways of increasing contraceptive prevalence and effectiveness.

There is a need for continuing studies on the various issues around unmet need so that program interventions can be designed to better address the issue.

Further studies on approaches to market-segmentation and encouraging private sector participation need to be undertaken to support government efforts to focus its resources on the poorer segment of the clients.

For the POPDEV component, research should be focused on understanding how to consistently keep LGUs interested in considering POPDEV issues in their planning, programming, project design and implementation.

An action research on how best to improve the preparation of Population Program Plans so that it would truly embody GOP priorities in the area of population enough to bind GOP instrumentalities from national to local levels, as well as convince donors to support the stated priorities is likewise important.

Action research on how to best influence LGUs into putting more resources on population activities will be important.

### ***3. Population, Resources and Environment Linkages***

The research issues under this theme have, so far, been dictated by international thinking. There is a need to identify critical issues for the Philippines. Research have been dealing with both large issues at the cursory (framework) level as well as with very detailed issues such as relationship between population size and water quality. The primary challenge in this area is to bring together these cursory overviews and detailed studies to build a coherent story of the interaction between population, resources and environment linkages.

Understanding the nature and consequences of urban environment problems, in its various dimensions, spawned by influx of people into the cities need to be understood.

Documentation of the different models of population and resource management interactions need to be done.

### ***4. Population, Poverty and Income Distribution***

Most of the evidences used to describe the interaction between population, poverty and income distribution were from other countries. There is therefore a need to clarify these interactions in the Philippine context. Given the importance accorded to poverty alleviation by several recent administrations, it is high time for research to help clarify to policy makers the interaction between population, poverty and income distribution.

Except for very limited exceptions, Philippine research in this area has so far settled for broad attributions of the interaction of population, poverty and income distribution. There is a need to flesh out the interactions in a much more detailed and definite manner at the macro, community and household levels.

## I. Literature Cited

Agostinelli, G. (1991) "Migration-Development Interrelationships: The Case of the Philippines," CMS Occasional Papers and Documentation, Center for Migration Studies, New York.

Ahlburg, D. (1996). "Population Growth and Poverty," in Alhburg et al. (eds.) *The Impact of Population Growth on Well-Being in Developing Countries*, Springer-Verlag.

Alano, B., E. de Guzman, C. Raymundo and W. Winfrey (1998). *Family Planning Use in the Philippines: Market Segmentation Study*. The Policy Project. TFGI.

Alcantara, A. (1975) "Differential Mortality Among Population Subgroups." Research Note No. 63. Manila. University of the Philippines Population Institute.

Alcantara, A. Ma. V. Rodriguez, and J. Cabigon (2000). "Determinants of Child Mortality and Morbidity in the Philippines," *Social Science Information*, Vol. 28 No. 2, pp. 1-32.

Alderman, H., J. R. Behrman, V. Lavy, and R. Menon. 1997. "Child nutrition, child health, and school enrollment: A longitudinal analysis." *Policy Research Working Paper Series WPS1700*.

Amacher, G. and W. Hyde (1996). "Migration and the Environment: The Case of Philippine Uplands," *Journal of Philippine Development*, Vol. 23 No. 2, 425-439.

Amjad, R. (1996). "International Labor Migration and Its Implications in the APEC Region," ILO-SEAPAT.

Arroyo, C. and J. Zhang (1997). "Dynamic Microeconomic Model of Fertility Choice: A Survey," *Journal of Population Economics*. 10: 23-65.

Balweg, J. and I. Pagtolun-an (1996) "The Risk of Childbearing: A Philippine Study of Pregnancy Complications and Maternal Mortality," Paper prepared for the Seminar on Innovative Approaches to the Assessment of Reproductive Health, IUSSP and UPPI, Sept. 24-27.

Barro RJ, Becker GS (1988) A Reformulation of the Economic Theory of Fertility. *Quarterly Journal of Economics* 103:1-25

Barro RJ, Becker GS (1989) Fertility Choice in a Model of Economic Growth. *Econometrica* 57:481-501

Bauer, J. and R. Racelis (1991) "Household Composition and the Activity Status of Filipino Youth," Paper presented at the Annual Meetings of the Population Association of America, March 21-23.

Becker, G. (1960). "An Economic Analysis of Fertility." In NBER. Demographic and Economic Change in Developed Countries, 209-31. Princeton: Princeton University Press.

Becker, G. and H. G. Lewis (1973). "Interaction Between Quantity and Quality of Children," *Journal of Political Economy*, Vol. 81, pp. S279-s288.

Behrman, J. R. 1996. "Impact of health and nutrition on education," *World Bank Research Observer*, 11(1): 23-37.

Biddlecom, A., J. B. Casterline and A. Perez (1997). "Spouses' Views of Contraception in the Philippines," *International Family Planning Perspectives*, Volume 23, Issue 3, 108-115.

Bloom D.E. and Williamson J.G. (1998), "Demographic Transitions and Economic Miracles in Emerging Asia," *World Bank Economic Review*, Vol. 12, No. 3, pp. 419-55.

Bongaarts and Bruce (1995). "The Causes of Unmet Need for Contraceptive and the Social Content of Services," *Studies in Family Planning*, Vol. 26 No. 2, 57-75.

Bongaarts, J. (1978). "A Framework for Analyzing the Proximate Determinants of Fertility," *Population and Development Review*, 4:105-32.

Boulier, B. L. and N. G. Mankiw (1986). "An Econometric Investigation of Easterlin's Synthesis Framework: The Philippines and the United States," *Population Studies*, Vol. 40, pp. 473-486.

Browning, M. (1992). "Children and household economic behavior," *Journal of Economic Literature*, 30 No. 3: 1434-1475.

Cabegin, E. and M. J. Arguillas (1997) "Trends, Patterns and the Demographic Components of Urban and City Growth in the Philippines," Report submitted to the Demographic Research Development Foundation, Inc.

Cabigon, J. V. (1985). "Fertility and Contraception in the Regions," *Philippine Population Journal*, Vol. 1, No. 4.

Cabigon, J. (1990) *Philippine Mortality in Changing Times*. A thesis submitted for the degree of Doctor of Philosophy, Australian National University, Canberra, Australia.

Cabigon, J. (1991) "The Effects of Birthspacing and Breastfeeding on Childhood Mortality in the Philippines," A report submitted to the Rockefeller Foundation Under the Post-Doctoral Fellowship Award.

Cabigon, J. (1999) "Local Government Rating on Human Development in Seven Cities of the Philippines," Technical report.

Cabigon, J. (2002) "Revisiting the 'Best' Covariates of Infant and Child Mortality: the Philippines Case," Paper prepared for presentation during the Bangkok Regional Population Conference "Southeast Asia's Population in a Changing Asian Context" to be held June 10-13, 2002 in Bangkok, Thailand.

Cabigon, J. (2002). "Why is the Philippines Lagging Behind her Southeast Asian Neighbors in Fertility Decline?" Paper presented at the International Workshop on 'Fertility Decline, Below Replacement Fertility and the Family in Asia: Prospects, Consequences and Policies,' Asian MetaCentre for Population and Sustainable Development Analysis, National University of Singapore, 10-12 April 2002

Cabigon, J., C. Park and A. Kantner (1994) "Measuring the Effects of Child Death and Lactation on Subsequent Fertility in the Philippines: An Application of the Hazard Model," *Philippine Population Journal*, Vol. 10, Nos. 1-4, pp. 56-80.

Campbell, G., A. Parisotto, A. Verma and Lateff (eds.) (1997). *Regionalization and Labor Market Interdependence in East and Southeast Asia*. Macmillan Press Ltd.

Carino, B. (1994) "International Migration from the Philippines: Policy Issues and Problems," in Herrin, A. (ed.) *Population Human Resources & Development*. UP Press.

Carino, B. and M. C. Jose (1997) "Demographic and Socioeconomic Impact of Regional Growth Centers in the Philippines," Report submitted to Demographic Research and Development Foundation, Inc.

Casterline, J. L. Domingo and Z. Zablan (1988) "Trends in Fertility in the Philippines: An Integrated Analysis of Four Surveys," Project Final Report to the Population Council, New York.

Cebu Study Team, (1992). "Child health production function estimated from longitudinal data," *Journal of Development Economics*. Vol. 38, pp. 323-351.

Concepcion, M (1994) "Social Science Research on Reproductive Health in the Philippines," *Journal of Philippine Development*, Vol 21, No. 1&2, pp. 311-332.

Concepcion, M. and P. Smith (1977). "The Demographic Situation in the Philippines: An Assessment in 1977. Papers of the East-West Population Institute, No. 44. Honolulu: East-West Center.

Costelo, M. (1988) "Infant and Childhood Mortality Research in the Philippines: A Review and an Agenda," *Journal of Philippine Development*.

Costelo, M. and M. Palabrica-Costelo (1984). "Female Employment, Occupational Setting and Fertility in a Philippine City," Report to the Population Council. Cagayan de Oro City: Research Institute for Mindanao Culture, Xavier University.

- Costelo, M., V. Hermoso-Zosa, C. Raymundo, S. Rood and A. Zosa (1989). An Assessment of the POPDEV Integration in the Planning Process. Population and Development Research Project, NEDA.
- Costelo, M., V. Miralao, Ma. T. Manganar and S. Masulit (2001). "A Rapid Field Appraisal of Reproductive Health Care Needs and Available Reproductive Health Services in the Philippines," Report prepared for the USAID. Processed.
- Cruz, M. C. (1994). "Population, Environment and Development: With Applications to Philippine Forestry," in Herrin, A. (ed.) Population Human Resources & Development. UP Press.
- Cruz, W. and H. Francisco (1993). "Poverty, Population Pressure, and Deforestation in the Philippines," Paper presented at the Workshop on Economywide Policies and the Environment, World Bank.
- Davis, K. and J. Blake (1956). "Social Structure and Fertility: An Analytic Framework," Economic Development and Cultural Change, 4(3):211-35.
- De Dios and Associates (1993). Poverty, Growth and the Fiscal Crisis. PIDS and IDRC.
- De Guzman, E. (1994) "Fertility, Nuptiality and Contraceptive Practice in the Philippines" in in Herrin, A. (ed.) Population Human Resources & Development. UP Press.
- De Guzman, E. (1996). "Mortality in the Philippines: Some Perspectives," Professorial Chair Paper, Series No. 96-10, CSSP. University of the Philippines.
- De Guzman, E. (1998). "Declining Mortality Among Filipinos: The Years After PREPF," Paper presented at the National Social Science Congress IV, PSSC, Quezon City.
- DeGraff, D.; Bilsborrow, R.; Herrin, A. (1996). "Children's education in the Philippines: does high fertility matter?" Population Research and Policy Review, Vol. 15, No. 3, pp. 219-47.
- Department of Health (1996) "Philippine Family Planning Strategy; 1996-2000.
- Easterlin, R. and E. Crimmins (1985). The Fertility Revolution: A Supply-Demand Analysis. The University of Chicago Press.
- Eastwood, R. and M. Lipton (1999) "Impact of Changes in Human Fertility on Poverty," Journal of Development Studies 36(1), 1-30.
- Eastwood, R. and M. Lipton (2001) "Demographic Transition and Poverty: Effects via Economic Growth, Distribution and Conversion," in Birdsall, Kelley and Sinding (eds.)

Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World, Oxford University Press.

Engracia, L. (1983). "Infant Mortality and Health Services in Rural Philippines," Paper presented at the 6<sup>th</sup> National Population Welfare Congress, Manila, 17 November.

Engracia, L. and A. Herrin (1984). "Employment Structure of Female Migrants to the Cities in the Philippines," in Jones, G. (ed.) *Women in the Urban and Industrial Workforce: Southeast and East Asia Development Studies Center*, The Australian National University Monograph No. 33.

Engracia, L. and V. Miralao (1989). "Fertility Change in the Philippines: A Multilevel Analysis," Paper presented at the Fifth National Convention on Statistics, PICC, December 4-6, 1989.

ESCAP (1991). *Philippines: Accessibility of Contraceptives*. Asian Population Studies Series, No. 103-D.

Feyisetan, B. and J. B. Casterline (1999). "Fertility preferences and contraceptive change in developing countries." Policy Research Division Working Paper No. 130. New York: The Population Council.

Fleiger, W. (1975). "Fertility Levels and Fertility Trends," in Fleiger, W and P. Smith (eds.) *A Demographic Path to Modernity*. UPPI/UP Press, Quezon City.

Gallup, J. (1997) "Theories of Migration," Harvard Institute for International Development Discussion Paper 569.

Garcia, M. (1990). *Resource Allocation and Household Welfare: Study of the Impact of Personal Sources of Income and Food Consumption, Nutrition and Health in the Philippines*. Thesis submitted to the Institute of Social Studies, The Hague, The Netherlands.

Go, E., J. Palmore, T. Tabije, and A. Reolalas (1994). "Regional Variations in Philippine Fertility: An Exposure Analysis," *Philippine Population Journal*, Vol. 10, Nos. 1-4, pp. 28-55.

Go, E., P. M. Collado, and S. Abejo (1998). "Interprovincial Migration in the Philippines 1975-1980 and 1985-1990," Report submitted to the Comprehensive Research Program, Demographic Research and Development Foundation.

Gonzales, E. (1992). "The Impact of Government Interventions on Health, Schooling and Family Planning in the Philippines," *The Philippine Review of Economics and Business*, Vol. 29 No. 1, 10-53.

Gonzales, E., C. Ramos, G. Estrada, L. Advincula-Lopez, G. Igaya (2001). Managing Urbanization Under a Decentralized Governance Framework. Vol. 2. Demographic Research and Development Foundation, Inc. and Philippine Institute for Development Studies.

Gregory, P., J. Campbell, and B. Cheng (1972). "A Cost-Inclusive Simultaneous Equation Model of Birth Rates," *Econometrica*. Vol. 40 No.4, 681-687.

Guerrero, S. and M. R. Balleascas (1994) "Population Processes and Philippine Social Institutions: The Impact of Fertility and Migration on the Family, The Political Institutions, and the Church," in Herrin (ed.) *Population, Human Resources and Development*, UP Press, Diliman, Q.C.

Guilkey and Riphanh (1998). "The determinants of child mortality in the Philippines: estimation of a structural model," *Journal of Development Economics*. Vol. 56: 281-305.

Herrin, A. (1979) "Rural Electrification and Fertility Change in the Southern Philippines," *Population and Development Review*, Vol. 5, pp. 61-86.

Herrin, A. (1981). "Population and Development Research in the Philippines: A Survey," *Studies in Philippine Development*. Philippine Institute for Development Studies.

Herrin, A. (1990). "An Assessment of Population, Health and Education Policies in the Philippines, 1986-1988. PIDS Working Paper Series No. 90-10.

Hirschman, C. and P. Guest (1990). "Multilevel Models of Fertility Determination in Four Southeast Asian Countries: 1970 and 1980," *Demography*, Vol 27. No. 3: 369-396.

Intal, P (1994). "The State of Poverty in the Philippines: An Overview," in P. Intal and M. C. S. Bantillan (eds.) *Understanding Poverty and Inequality in the Philippines*. NEDA.

Jensen, E. and D. Ahlburg (1999) "A multicountry analysis of the impact of unwantedness and number of children on child health and preventive and curative care," *The Policy Project*, The Futures Group International, Inc.

Jha, S., A. Deolalikar and E. Pernia (1993) "Population Growth and Economic Development Revisited with Reference to Asia," *Asian Development Review* 11(2): 1-46.

Kalemli-Ozcan, S., H. Ryder and D. Weil (2000) "Mortality decline, human capital investment, and economic growth," *Journal of Development Economics*, Vol. 62, pp. 1-23.



- Kelley, A. and R. Schmidt (1995). "Aggregate Population and Economic Growth Correlations: The Rule of the Components of Demographic Change", *Demography* 32, pp. 543-55.
- Kelley, A. and R. Schmidt (2001). "Economic and Demographic Change: A Synthesis of Models, Findings and Perspectives," in Birdsall and Sinding (eds.) *Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World*, Oxford University Press.
- King, E. and R. Evenson (1983). "Time Allocation and Home Production in Philippine Rural Households," in M. Buvinic, et al. (eds.) *Women and Poverty in the Third World*, Baltimore: The Johns Hopkins University Press.
- Lacey, L. and D. Carba (1996) "The Role of Grassroots Organizations in Promoting Population programmes: The Case of Cebu, Philippines," *Asia-Pacific Population Journal*, Vol. 11, No. 3, pp.43-60
- Lam, D. (1987) "Distribution Issues in the Relationship Between Population Growth and Economic Development," in Johnson and Lee (eds.) *Population Growth and Economic Development, Issues and Evidence*. Madison: University of Wisconsin.
- Lamberte, E., R. Brooks and M. Sherman (1999). "Understanding Provider Choice of Family Planning Clients: Consumer Intercept Study," The Policy Project.
- Lamberte, M. et al. (1993). *Decentralization and Prospects for Regional Growth*, Philippine Institute for Development Studies, Makati.
- Lanzona, L. (1998) "Migration, self-selection and earnings in Philippine rural communities," *Journal of Development Economics*. Vol. 56: 27–50
- Lipton, M. and M. Ravallion (1995) "Poverty and Policy" in Behrman and Srinivasan 1995 *Handbook of Development Economics*. Vol. 3.
- Madigan, F. (1985) "Infant Mortality by Socioeconomic Variables, Philippines, 1983. Report No. 4 (Series I) for the 1983 National Demographic Survey. Cagayan de Oro City: Research Institute for Mindanao Culture, Xavier University.
- Mallari, E., M. Sherman and W. Winfrey (1999). "Commercial Contraceptive Marketing in the Philippines," The Policy Project.
- Martin, L. and J. Trussell, F. Reyes-Salvail, and N. Shah (1983). "Covariates of Child Mortality in the Philippines, Indonesia and Pakistan: An Analysis Based on Hazard Models, *Population Studies* 37:417-432.

- Martin, L. and J. Trussell, F. Reyes-Salvail, and N. Shah (1983). "Covariates of Child Mortality in the Philippines, Indonesia and Pakistan: An Analysis Based on Hazard Models, *Population Studies* 37:417-432.
- Martin, T. (1995) "Women's Education and Fertility: Results from 26 Demographic and Health Surveys," *Studies in Family Planning*, Vol. 26 Issue 4, pp. 187-202.
- McCabe and Rosenzweig (1976). "Female Labor-Force Participation, Occupational Choice, and Fertility in Developing Countries." *Journal of Development Economics*, Vol. 3 No. 2, 141-160.
- Miles-Doan, R. and K. Brewster (1998) "The Impact of Type of Employment of Pre-natal Care Services and Family Planning in Urban Cebu, The Philippines," *Studies in Family Planning*, 29 (1), pp. 69-77.
- Montgomery, Mark R., Cynthia B. Lloyd, Paul C. Hewett and Patrick Heuveline (1997) "The consequences of imperfect fertility control for children's survival, health and schooling," *Demographic and Health Surveys Analytical Reports no. 7*. Calverton, MD.: Macro International.
- Morada, H. and M. Morada (1997). "An Analysis of the Impact of Growth Centers on Manpower Distribution," Report submitted to the Comprehensive Research Program, Demographic Research and Development Foundation.
- Mosley, W.H., Chen, L.C., 1984. "An Analytical Framework for the Study of Child Survival in Developing Countries," *Population Dev. Rev.*, Supplement Vol. 10, pp. 25-45.
- Ogena, N and J. Zafra. 1998. Underestimation of Migration Statistics in the Philippines: What do we do next? Conference Papers for the 7th National Convention on Statistics, Vol. II, pp. 61-83. The Convention was held in December 2-4, 1998 at Shangri-La's EDSA Plaza Hotel in Manila, Philippines.
- Ogena, N. (2000) *International Migration, Human Resource Development and the Labor Force Structure in the Philippines*, UPPI.
- Orbeta, A. (1992). "Population Growth, Human Capital Expenditures and Economic Growth: A Macroeconometric Analysis," *The Philippine Review of Economics and Business*, Vol. 29 No. 2, 179-230.
- Orbeta, A. (1998). "Population-Development-Environment Modeling in the Philippines: A Review" *Journal of Philippine Development*, Vol. XXIII, No. 2, PIDS. Pp. 283-315
- Orbeta, A. (2000). "Macroeconomic Policy Change and the Joint Schooling and Labor Force Participation Decision of Children 10-24 Years Old," Paper prepared for the MIMAP Policy Forum, Dusit Hotel, January.

- Orbeta, A. (2002) "Population and Poverty: A Review of Links, Evidence and Implications for the Philippines," Paper prepared for the 2002 Population National Congress, INNOTECH Building, Diliman Q.C., 29 November.
- Orbeta, Aniceto C. and Ernesto M. Pernia (1999). 'Population Growth and Economic Development in the Philippines: what has been the Experience and what Must Be Done?' Discussion Paper Series No. 99-22. PIDS.
- Orbeta, E. and A. Indab (1996). "Valuation of Direct Environmental Waste Disposal Services," Technical Appendix to the Philippine Environment and Natural Resource Accounting Project (ENRAP) Phase III.
- Padilla, J. (1996). "Water Quality and Fisheries Issues Accompanying Population Growth in the Philippines," *Journal of Philippine Development*, Vol. XXIII, No. 2, PIDS.
- Pamaran, N. and P. Ramos-Jimenez (2000) "Wanted Fertility and Unmet Need for Family Planning Among Young Adults in the Philippines," *Social Science Information*, Vol. 28, No. 2, pp. 83-105.
- Panayotou, T. (1994). "Population, Environment, and Development Nexus," in Cassen and contributors. *Population and Development: Old Debates, New Conclusion*. Overseas Development Council.
- Paqueo, V. (1978) "An Analysis of the Fertility Effects of Public Programs: The Case of Education and Health," *Philippine Economic Journal*, Vol. XVIII, pp. 122-35.
- Paqueo, V. (1985). "An Econometric Analysis of Educational Attainment Among Elementary School Age Children: Preliminary Analysis," in *Transactions of the National Academy of Science and Technology, Republic of the Philippines*, Vol II. Metro Manila: The Academy, pp. 359-380.
- Park, C., J. Cabigon, J. Zafra, A. Kanter and M. Jose (1993) "The Determinants of Infant and Child Survival in the Philippines," *East-West Center Program on Population*.
- Perez, A. (1983). "Trends and Patterns in Spatial Mobility," in Concepcion, M. (ed.) *Population of the Philippines: Current Perspectives and Future Prospects*. Manila. PDR, NEDA.
- Perez, A. (1994). "An Analysis of the Age-graded Health Risks of Pregnancies from a Two-sex Survey in the Philippines," UPPI, Q.C.
- Perez, A. (1997). "The State of Migration-Sensitive Policy Formulation in the Philippines," Paper prepared for the Population Commission.
- Perez, A. (1998). "From Migration Research Policy Prescriptions to Population Distribution Policy Actions: The Philippine Experience," Paper presented at the National Social Science Congress IV, PSSC, Quezon City.

Perez, A. (1999). "The Current State of Migration Research in the Philippines: Research Perspective and Data Requirements," Paper presented in the Workshop on Migration Research in the Philippines: The Current Situation and Research Perspectives, National Center for Transportation Studies, University of the Philippines, Diliman, Q.C.

Perez, A. and J. Cabigon (1985) "Contraceptive Practice in the Philippines: A Synthesis," *Philippine Population Journal*, Vol 1. No. 1, pp. 36-57.

Perez, A. and J. Palmore (1994). "Reevaluating the Unmet Need for Family Planning in the Philippines," *Philippine Population Journal*, Vol. 10, No 1-4, pp. 1-27.

Pernia, E. and R. Israel (1994). "Spatial Development, Urbanization, and Migration Patterns in the Philippines," Paper prepared for the Integrated Population and Development Project. NEDA.

Popkin, B. (1980). "Time Allocation of the Mother and Child Nutrition." *Ecology of Food and Nutrition*, Vol. 9, pp. 1-14.

Pritchett, L. (1994). "Desired Fertility and the Impact of Population Policies," *Population and Development Review*, Vol. 20, Issue 1, pp 1-55.

PRRM (1998) "Final Narrative and Financial Report on the Strengthening Local Advocacy Work of the Resource Center for Family Planning and Health," A project funded by Population Action International.

Quizon-King, E. (1978). "Time Allocation and Home Production in Rural Philippine Household," *The Philippine Economic Journal*, Vol. 17, No. 1&2, pp. 185-202.

Ravenholt, B. (1996). "Potential for Increased Involvement of the Commercial Sector in Family Planning Service Delivery in the Philippines: Assessment and Initial Strategies," Report prepared for the Policy Project, TFGI.

Reyes, C. (2002) "The Poverty Fight: Have We Made An Impact?" PIDS 25th Anniversary Symposium Series on Perspective Papers.

Ross (1995). "The Question of Access," *Studies in Family Planning*, Vol. 26 No. 4, 241-242.

Schultz, P. (1976). "Determinants of Fertility: A Micro-Economic Model of Choice," in A. Coale (ed.) *Economic Factors in Population Growth*, 89-124. New York: Halsted Press.

Schwartz, B., R. Racelis and D. Guilkey (2000), "Decentralization and Local Government Health Expenditures in the Philippines," *MEASURE Evaluation Project*, CPC, University of North Carolina.

- Smith, P. (1975) The New Nuptiality: Recent Evidence of Delayed Marriage and a Projection to 2000," *Philippine Sociological Review* 23: 7-20.
- Smith, P. (1978) "Trends and Differentials in Nuptiality." In *Population of the Philippines*, ESCAP Monograph Series No.5. Bangkok: United Nations, 1978.
- Stover, J. (1998) "Revising the Proximate Determinants of Fertility Framework: What Have We Learned in the Past 20 Years?" *Studies in Family Planning*, Vol. 29 No. 3, 255-267.
- Study Group on the Contraceptive Interdependence Initiative (n.d.) "Synthesis Report on the Contraceptive Interdependence Initiative"
- Tiefenthaler, J. (1997). "Fertility and Family Time Allocation in the Philippines," *Population and Development Review*, Vol. 23. Issue 2, 377-397.
- Ventura, E. R., C. C. Jimenez, R. A. de la Llana, M.B. Asis and E. A. de Guzman (1992), "Family Planning Seeking Behavior," UPPI, Q.C.
- Williamson, N. (1982) "An Attempt to Reduce Infant and Child Mortality in Bohol, Philippines, *Studies in Family Planning*, Vol 13, pp. 106-117.
- Wong, E. (2000) "Women's Work, Fertility Level and Contraceptive Use: A Synthesis of Results from Bolivia, the Philippines and Zimbabwe," *Family Health International, The POLICY Project*
- World Bank (1991) "New Directions in the Philippine Family Planning Program," Report No. 9579-PH. Washington DC. World Bank.
- Zablan, Z. (1978) "Trends and Differentials in Mortality," In *Population of the Philippines*, Country Monograph Series No.5. Bangkok: United Nations, 1978.
- Zablan, Z. (1983). "Trends and Differentials in Mortality." In Concepcion (ed.) *Population of the Philippines: Current Perspectives and Future Prospects*. Pasig: National Economic and Development Authority.
- Zablan, Z. (1998) "Dimension of Philippine Population: Fertility and Family Planning A Re-examination of the PREPF Scenarios: 1975-2000." Paper presented at the National Social Science Congress IV, PSSC, Quezon City.

Table 1  
**Estimated and Projected Size, Average Annual Growth Rate and  
and Absolute Increase of Population, 1965-2025**

	Total Population (millions)			Growth Rate %			Absolute Increase (millions)	
	1965	1995	2025 *	1960-1965	1990-1995	2020-2025 *	1965-1995	1995-2025
<i>NIEs</i>								
Hongkong	3.7	6.2	8.7	3.7	1.7	0.7	2.5	2.5
Republic of Korea	28.5	45.0	52.1	2.1	1.0	0.3	16.5	7.1
Singapore	1.9	3.5	5.0	2.8	2.8	0.5	1.6	1.5
Taipei, China								
PRC	729.2	1219.3	1470.8	2.1	1.1	0.3	490.2	251.4
<i>Southeast Asia</i>								
Indonesia	106.7	197.6	272.9	2.1	1.6	0.8	91.0	75.3
Malaysia	9.5	20.0	31.3	3.1	2.3	1.1	10.5	11.3
Philippines	31.6	68.3	107.1	3.1	2.3	1.1	36.8	38.7
Thailand	31.2	58.7	77.5	3.2	1.4	0.6	27.5	18.8
Vietnam	38.1	72.8	105.5	2.5	2.0	1.0	34.7	32.6
<i>South Asia</i>								
Bangladesh	58.5	123.6	210.8	2.5	2.3	1.3	65.1	87.2
India	495.2	927.1	1351.8	2.3	1.9	0.9	431.9	424.7
Pakistan	54.8	123.6	251.0	2.3	2.4	1.9	68.9	127.3
Sri Lanka	11.0	18.0	22.5	2.5	1.2	0.4	7.0	4.5

\* Medium assumption

Source: Population Division, Department of Economic and Social Affairs, UN. World Population Prospects, The 2000 Revision.

Table 2  
Fertility and Mortality Indicators

Countries	Total Fertility Rate						Infant Mortality Rate					
	1960-65	1970-75	1980-85	1990-95	1995-00	2000-05	1960-65	1970-75	1980-85	1990-95	1995-00	2000-05
<i>NIEs</i>												
Hongkong	5.31	2.89	1.80	1.22	1.17	1.17	33	17	10	5	4	4
Rep.of Korea	5.63	4.28	2.23	1.68	1.51	1.51	70	38	23	12	8	7
Singapore	4.93	2.62	1.69	1.75	1.60	1.45	30	19	8	6	5	5
Taipei, China												
PRC	5.72	4.86	2.55	1.92	1.80	1.80	121	61	52	47	41	37
<i>Southeast Asia</i>												
Cambodia	6.29	5.54	6.40	5.40	5.25	4.77	140	181	129	91	83	73
Indonesia	5.42	5.20	4.11	3.00	2.60	2.27	166	126	89	59	48	40
Lao PDR	6.15	6.15	6.69	5.80	5.30	4.80	150	145	128	104	97	88
Malaysia	6.72	5.15	4.24	3.62	3.26	2.90	63	42	28	15	12	10
Philippines	6.85	6.00	4.95	4.14	3.64	3.24	96	80	61	43	34	29
Thailand	6.40	4.97	3.05	2.10	2.10	2.00	85	73	49	29	25	21
Vietnam	7.25	6.70	4.50	3.30	2.50	2.25	130	107	70	47	40	34
<i>South Asia</i>												
Bangladesh	7.10	6.40	5.30	4.30	3.80	3.56	178	150	122	91	79	67
India	5.81	5.43	4.48	3.70	3.32	2.97	157	132	107	79	73	65
Pakistan	6.28	6.28	6.23	5.83	5.48	5.08	161	142	123	104	95	87
Sri Lanka	5.50	4.08	3.40	2.40	2.10	2.09	65	47	36	27	23	20

Source: Population Division, Department of Economic and Social Affairs, UN. World Population Prospects, The 2000 Revision.

Table 3  
Contraceptive Prevalence Rate, any method, (%)

Countries	1970	1977	1985	1990-1995	1995-2000	1990-2000	
<i>NIEs</i>							
Hongkong	50	64	72	86	na	86	1992
Republic of Korea	32	44	70	79	81	81	1997
Singapore	45	77	74	74	na	74	1982
Taipei, China							
PRC	36	61	77	83	na	84	1997
<i>Southeast Asia</i>							
Indonesia	na	19	48	55	57	57	1997
Malaysia	7	34	51	48	na	55	1994
Philippines	8	22	44	40	46	46	1998
Thailand	na	32	65	74	72	72	1996/97
Vietnam	na	na	58	65	75	75	1997
<i>South Asia</i>							
Bangladesh	na	9	25	49	54	54	1999/00
India	12	24	35	41	48	48	1998/99
Pakistan	4	6	11	18	24	24	1996/97
Sri Lanka	8	44	62	66	na	66	1993

Source:

1990-2000: UN Contraceptive Prevalence Wall Chart 2001  
1995-2000: UNDP Human Development Report 2001  
1990-1995: UNDP Human Development Report 1998  
1985: World Bank, World Development Report 1989  
1970, 1977: World Bank, World Development Report 1979



Table 4  
**Total Fertility Rate**

	1960	1965	1970	1975	1980	1993 DHS	1998 DHS
<b>Philippines</b>	6.49	6.34	5.92	5.20	4.96	4.10	3.73
<b>Locality</b>							
Urban						3.50	3.01
Rural						4.80	4.67
<b>Region</b>							
Metro Manila	5.07	4.37	3.98	3.16	3.54	2.76	2.49
CAR*						5.05	4.79
Ilocos	6.36	5.83	5.48	4.90	5.50	4.25	3.43
Cagayan Valley	7.09	7.78	6.56	5.41	5.27	4.20	3.56
C. Luzon	6.40	6.24	5.76	4.63	4.23	3.87	3.52
S. Tagalog	6.28	6.31	5.74	5.13	4.58	3.86	3.69
Bicol	6.94	6.98	6.22	6.03	6.32	5.87	5.45
W. Visayas	6.32	5.81	5.79	5.60	5.49	4.24	4.02
C. Visayas	6.00	5.82	5.63	4.70	4.72	4.38	3.70
E. Visayas	6.87	7.40	7.68	5.81	6.23	4.86	5.91
W. Mindanao	7.94	6.93	6.67	4.99	4.76	4.46	3.90
N. Mindanao	6.86	7.68	7.40	6.09	5.45	4.81	4.75
S. Mindanao	7.35	7.34	6.93	5.66	5.34	4.23	3.67
C. Mindanao				5.44	7.78	4.81	4.22
ARMM**							4.61
CARAGA***							4.65
<b>Education</b>							
No education						4.93	5.01
Elementary						5.51	5.00
High School						3.93	3.64
College or Higher						2.82	2.90

\* Part of Cagayan Valley

\*\* Part of Central Mindanao Western Mindanao

\*\* Part of Northern and Southern Mindanao

Source: 1960-1980: Cabigon, J.V. "Fertility and Contraception in the Regions" Philippine Population Journal, Vol. 1, No. 4 (1985). Data are from 1973 & 1983 NDS and 1978 RPFS.

1993 & 1998 DHS

Table 5  
**Trends in Fertility and Its Proximate Determinants: 1968-1998**  
(unadjusted survey estimates)

	1968 NDS	1973 NDS	1978 RPFS	1983 NDS	1986 CPS	1988 NDS	1993 NDHS	1998 NDHS
Total Fertility Rate/a	5.7	6.0	5.2	5.1	4.6	4.3	4.1	3.7
Marriage:								
Singulate mean age at First marriage (females)/b	23.4	23.8	24.5	23.3	23.4	23.8	23.4	23.5
Post-partum behavior /c								
Percentage breastfed /d	88.9	84.4	83.5	83.6	85.1	87.2	87.2	88.0
Duration B-feeding (mos.)		13.3	12.0	9.4	9.9	13.2	13.7	13.7
Duration full B-feeding (mos.)		3.3		3.0	2.3			
Duration amenorrhea (mos.)			8.2	7.2	7.6	7.8	6.8	6.9
Duration non-susceptible period (mos.) /e			8.8	7.9		8.2	8.0	8.5
Contraception: Percentage using /f								
All methods	15.4	17.4	38.5	32.0	45.8	36.1	40.0	46.1
Modern methods /g	2.4	9.9	13.3	17.6	20.7	20.9	24.9	28.2
Other methods	13.0	7.5	25.2	14.4	24.1	15.2	15.1	17.9

Source:

Casterline (1991)

For 1993, Macro International and NSO (1994)

For 1998, NSO, DOH, Macro Int'l (1998)

Notes:

a/ Based on age-specific fertility rates for the five-year historical period preceding the survey, i.e. 1963-67, 1968-72, ..., 1983-1987. (1968 NDS estimates based on marital births only.). Source: 1968 NDS: Flieger and Smith (1975).

b/ Calculated from age-specific proportions never married at the survey. Proportion never married at ages 40-44 used to estimate proportion never marrying. Source: 1968 NDS: Smith et al. (1984), Table 1.1

c/ Mean durations estimated by current status methodology (prevalence/ incidence means, with births in the period 1-24 months preceding the survey providing estimates of births/month).

d/ Percentage breastfed among births in months 1-12 preceding the survey; for 1993 & 1998 percent ever breastfed, all children

e/ Non-susceptible period is the period either amenorrheic or abstaining.

f/ Currently married women, aged 15-44.

g/ Oral contraceptive, injectable, IUD and sterilization.

Table 6  
*Trends In Urbanization*

	Urban Population (as % of Total)			Urban Population Annual Growth Rate (%)		
	1970	1995	2020	1965-1970	1990-1995	2015-2020
<i>NIEs</i>						
Hongkong	87.7	100.0	100.0	1.61	1.71	0.83
Republic of Korea	40.7	78.2	89.2	6.84	2.10	0.54
Singapore	100.0	100.0	100.0	1.97	2.84	0.51
Taipe, China						
PRC	17.4	31.4	53.4	2.42	3.78	2.01
<i>Southeast Asia</i>						
Indonesia	17.1	35.6	58.4	3.93	4.63	2.13
Malaysia	33.5	53.7	68.6	4.90	3.81	1.84
Philippines	33.0	54.0	71.4	3.78	4.30	1.81
Thailand	13.3	19.3	26.7	3.60	1.99	2.68
Vietnam	18.3	22.2	34.7	4.54	3.75	3.05
<i>South Asia</i>						
Bangladesh	7.6	22.3	37.7	6.58	4.70	3.36
India	19.8	26.6	34.7	3.27	2.67	2.42
Pakistan	24.9	31.8	42.4	3.55	3.18	3.61
Sri Lanka	21.9	21.8	33.2	4.16	1.59	2.60

Source: Population Division, Department of Economic and Social Affairs, UN. World Urbanization Prospects, The 2001 Revision.

Table 7  
**Fertility and Contraceptive Prevalence: Philippines, 1968-2001**

Survey	TFR	Contraceptive		Total
		Modern	Traditional	
1968 National Demographic Survey	5.7	2.9	12.5	15.4
1973 National Demographic Survey	6.0	10.7	6.7	17.4
1978 Rep.of the Philippines Fertility Survey	5.2	17.2	21.3	38.5
1983 National Demographic Survey	5.1	18.9	13.1	32.0
1988 National Demographic Survey	4.3	21.6	14.5	36.1
1993 National Demographic Survey	4.1	24.9	15.1	40.0
1995 Family Planning Survey <sup>1</sup>		25.5	25.2	50.7
1996 Family Planning Survey <sup>1</sup>		30.2	17.9	48.1
1997 Family Planning Survey <sup>1</sup>		30.9	16.1	47.0
1998 National Demographic and Health Survey	3.7	28.2	18.3	46.5
1999 Family Planning Survey <sup>1</sup>		32.4	16.9	49.3
2000 Family Planning Survey <sup>1</sup>		32.3	14.7	47.0
2001 Family Planning Survey <sup>1</sup>		33.1*	16.4*	49.5*

Source: 2000 Family Planning Survey, Final Report

\*National Statistics Office Website

<sup>1</sup> Based on currently married women age 15-49 years.