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FROM: Stephen Haykin, AFR/DP/PAR *SHH*

SUBJECT: Cornell University Workshop on Macroeconomic Adjustment

On June 30 through July 2, I attended a workshop hosted by the Cornell Nutrition Surveillance Program (CNSP) on methods for analyzing the effects of macroeconomic adjustment programs.

Title: Analytical Methods for Estimating Short-term Nutritional and Poverty Effects of Macroeconomic Adjustment Policies in Developing Countries.

Purpose: The purpose of the workshop was to assist CNSP in identifying suitable methods for the analysis of nutrition and poverty issues in light of macroeconomic adjustment programs. Under the leadership of Per Pinstrup-Anderson, CNSP is being revitalized and is in the process of identifying its niche in research and analysis regarding the "human face" of structural adjustment.

Participation: Academicians and development professionals from both developed and developing countries.

#### Summary of Discussions

Methods of Analysis: Macroeconomic adjustment policies were broadly taken to include both stabilization and structural adjustment programs. These programs affect people through prices, incomes and government expenditures on services. The focus of the workshop was on methods for analyzing the impacts of policy changes on nutrition and poverty, however, most of the methods discussed may be adapted to a broader range of questions involving income and welfare. The methods presented and the ensuing discussions are summarized in the next several paragraphs.

1. Computable General Equilibrium (CGE) models: Much of the discussion during the workshop centered on CGEs as an appropriate method for studying macroeconomic policies and their effects. At the risk of oversimplification, CGEs may be described as complex models in which economies are represented as an interconnected set of factor input and product markets which adjust to achieve balance between supply and demand.

o Advantages:

- Key linkages among markets for labor, capital, physical inputs and intermediate and final products may be elaborated, permitting indirect effects of policy changes to be traced.
- CGEs bridge many of the gaps between macro- and micro-economics.

- CGEs may be augmented by detailed models to examine issues of particular interest while still capturing larger, macroeconomic relationships.
- In particular, CGEs are well suited to the study of the impacts of policy changes on variously defined income groups.
- o Disadvantages:
  - CGEs are hungry for data and analysts' time. Thus, they are costly.
  - CGEs model the effects of policy changes on the incomes of socio-economic groups, but do not explain within group differences. CGEs alone cannot explain the relationships of macroeconomic changes to changes in health, nutrition or education status, etc.
  - Because of their complexity and the length of time involved in estimating them, it is difficult to assimilate CGEs into the policy-making process.
  - CGEs still have significant theoretical limitations. For instance, results are often biased by the specification of the model and CGEs do not do well in explaining inflation.

2. Multi-sectoral macroeconomic models: The appropriateness of non-CGE, macroeconomic models was acknowledged at the workshop, but they received little discussion (see also item 4, below).

3. Household Economic Models: Extensive work has been done during the last several years under the rubric of New Household Economics. The importance of household level or "micro-micro" research was discussed at length during the workshop.

Household level models may be used to analyze the responses of households to changing economic conditions. They permit study of intra-group differences, and they may be used to analyze the relationships between household incomes and other measures of welfare. They also may be used to examine within-household distribution of benefits and losses.

Many workshop participants agreed that household models, when used in conjunction with macroeconomic models, particularly CGEs, are powerful tools for tracing the effects of policy changes through household incomes to household consumption and nutrition status, etc.

On the other hand, household level models also face data constraints. They rely on household survey data which are not always readily available in developing countries.

4. Partial Equilibrium and Sectoral models: Despite the lure of macroeconomic models (1 and 2 above), many participants agreed that there are large contributions to be made by smaller economic models of specific markets or sectors. A paper on the agricultural sector (Hazel) and another on labor markets (Terrell) were presented. These papers demonstrated the

usefulness of limiting analyses of policy effects. Nevertheless, they were vulnerable to the criticism that they cannot explain inter-sectoral linkages adequately. The critical importance of including interactions through prices also was noted.

5. Simulations: In order to avoid or minimize the estimation of complex econometric models, simulations based on reasonable assumptions about key economic relationships may be used to demonstrate the likely effects of alternative economic policies. One speaker (Sarris) used a relatively simple CGE to compare likely effects of stabilization and structural adjustment policies. Another (Braverman), advocates the use of small multi-sectoral models to simulate and compare policy effects.

6. Dynamics of Poverty Approach: Rather than tracing the effects of macroeconomic policies on various socio-economic groups "from the top, down," a "bottom, up" perspective was suggested. Since one focus of the workshop was on poverty, it was suggested that the characteristics of the poor and the dynamics of poverty serve as a starting point for research. If the economic behavior of the poor, particularly the chronically poor, could be better understood, the most relevant macroeconomic variables might be identified and used to explain the effects of policy reforms on the poor.

7. Descriptive Statistics: Many of the gaps in knowledge about incomes and welfare may be filled by the use and comparison of basic data. A few tools for descriptive analysis were highlighted:

a. Social Accounting Matrices (SAMs): SAMs are literally an accounting approach, tracking, at whatever level of aggregation is chosen, flows of outlays and receipts throughout an economy. Building on input-output tables, SAMs include flows to and from socio-economic groups. CGEs are essentially models explaining changes in SAMs over time.

b. Socio-economic data analysis: The value of basic socio-economic data collection and analysis is demonstrated by the World Bank's Living Standards Measurement Surveys (LSMS). One paper (Glewwe) demonstrated the application of LSMS in the Ivory Coast.

c. Summary Statistics: Powerful descriptive statistics are available. One paper (Bigman) compared summary statistics describing the incidence of poverty in the presence of rapid inflation in Israel.

8. Qualitative Assessments: Regardless of the analytical tools being used, ultimately analysts are attempting to tell the story of what has, might have, or is likely to happen. Generally, it was agreed that qualitative assessments of the effects of policy changes are useful contributions, particularly in the early

stages of analysis macroeconomic changes. It was noted that often the economic distortions addressed by adjustment programs are so severe that some of the effects of policy changes are highly visible.

Use of Analytical Methodologies: As the discussion of analytical methods proceeded, a number of cross-cutting practical issues arose.

1. Objectives of Analysis:

-- CNSP focuses on the effects of macroeconomic adjustment on nutrition and poverty. Clearly, there are other relevant analytical objectives including financial and macroeconomic performance and other socio-economic aspects such as child mortality, life expectancy, health and education status, consumption behavior and wealth.

-- A distinction was made between absolute poverty measures and measures of relative income distribution. CNSP is most concerned with absolute poverty, yet equitable income distribution is also an important concern.

-- Among the populations to be studied are the poor and those who become poor as a result of policy changes.

2. Logical Issues:

-- The tendency to mistake correlation of phenomena for causality was pointed out.

-- Most participants agreed that, although comparisons of before and after situations are useful and interesting, counterfactual, "what if," comparisons are more relevant for policy analysis, even though they are more speculative, by nature.

-- Methods must be consistent with analytical objectives with respect to the time horizons being examined. The focus of the workshop was on short-term, up to 1 to 3 year, effects. Often the specifications of economic models are better suited to analysis of longer-term issues.

-- There is not a one-to-one correspondence between health status and nutrition status.

3. Disaggregation for Analysis:

-- Income groups may be distinguished by income level; functionally, by economic attributes, e.g. landless rural laborer, skilled urban laborer, etc.; or by other, social criteria, e.g., female headed households, tribal criteria, etc.

-- There was some discussion as to whether the distinction between formal and informal sectors of developing economies is useful. Although no consensus emerged, it was suggested that the difference between the formal and informal sectors relates to the reach of legal and institutional restrictions.

-- It was widely agreed that economic models should be as small as is necessary for the analytical task chosen. In the case of macroeconomic models, ten or fewer sectors are usually sufficient. Since agriculture and trade are typically important in developing economies, it was suggested that most models to

analyze macroeconomic policy changes should contain the following elements:

- a) separate treatment of rural versus urban households;
- b) an explicit agro-processing sector;
- c) separate treatment of markets for tradeable and non-tradeable goods-- preferably with urban and rural sub-categories; and,
- d) disaggregation of agricultural demand--separate treatment for food crops, industrial crops and livestock products.

#### 4. Research Issues:

-- Many participants agreed that among the topics to be pursued through further research at the sectoral level, the performance of labor markets and the effects of public finance reforms are important.

-- With limited resources for policy analysis, economic modelling often crowds out basic data collection. The result is that lack of basic data constrains modelling opportunities. Thus data collection and research activities must be kept in balance.

-- For CNSP the overriding issue is setting research priorities and identifying research activities. Among the options CNSP is considering are: a) commissioning a series of country assessments each to be conducted by a national of the country being studied and an expatriate expert; b) conducting comprehensive macro-to-household level studies; c) coordinating with OECD to add household level components to macro-level studies currently on the drawing boards.

#### Empirical Issues:

1. Stabilization Effects: Short-run effects of adjustment programs are of critical importance to the extent that the health and nutrition status of poor populations are highly vulnerable in the short-run. It was suggested that stabilization programs tend to cause stronger short-run contractionary effects on aggregate demand than would be expected on the basis of macroeconomic models. This suggests both a strong tendency for stabilization programs to overshoot in expenditure reduction, as well as difficulties in designing of economic models to track short-run, dynamic adjustment effects.

2. Structure Matters: Developing economics are heterogeneous. Thus, it is difficult to make cross-cutting comparisons of the effects of policy changes. Actual socio-economic effects are, in large measure, functions of the structure of the economy and characteristics of the population.

3. Intersectoral Multipliers: The paper on agricultural sector research (Hazel) cites evidence that output and income growth in agriculture generate strong demand for non-agricultural goods. One study in Asia showed that for every one dollar increase in agricultural sector incomes, non-agricultural expenditures increased by 80 cents.

4. **Income and Nutrition Linkages:** There was a lack of consensus on the strength of the link between incomes and nutrition status. One paper (Behrman) argued that whereas food expenditures respond strongly to changes in income, nutritional status, for instance calorie intake is much less responsive. This implies substitution of lower priced nutrients as a response to declining income and suggests a certain capacity of the poor to withstand economic shocks. The opposing view was that nutrition is very responsive to income changes. Nevertheless, it was suggested that, on balance, household income is the most important variable in explaining differences in nutrition status.

5. **Effects of Public Spending Cuts:** The strength of the relationship between reductions in government spending and the quality and availability of social services, such as health care, was discussed. In several countries it is likely that a retargeting of social expenditures is offsetting adverse effects of spending cuts.

**Policy Issue:** One important issue for policy-makers came to the fore: To the extent that it is desirable to reduce the adverse impacts of macroeconomic adjustment policies on incomes and welfare, is it better to modify macroeconomic policy prescriptions or to introduce specific interventions to offset the adverse side-effects? It was argued that a limited number of macroeconomic policy instruments may not be able to serve multiple policy objectives. Therefore, it may be necessary to target traditional interventions, such as food subsidies, to affected groups. Yet, it was also argued that the effects of macroeconomic reforms may overwhelm the capacity for providing relief.

#### Comments

**Significance:** This workshop is significant for A.I.D. because it confirms that there are reservoirs both of analytical methods and of expertise which here-to-fore has not been tapped by the Agency for analyzing the effects of policy reform programs.

Like A.I.D., CNSP and other institutions are in the early stages of defining and implementing programs to evaluate the socio-economic effects of adjustment programs. Although there is beginning to be a substantial literature on the impacts of macroeconomic adjustment programs, more work has been done on IMF-type stabilization programs than on structural adjustment packages. This tendency is reflected in the forthcoming UNICEF volume, Adjustment With A Human Face: Protecting the Vulnerable and Promoting Growth.

Agency Needs:

1. A.I.D.'s interest in the effects of macroeconomic adjustment goes beyond the topics of nutrition and poverty selected by CNSP.
2. The demand for information about the effects of policy reform programs comes both from inside and outside of A.I.D. Information needs are both short- and long- term. The roles for information include the following:
  - a. to explain and justify adjustment programs in the short-run;
  - b. to meet on-going program evaluation needs and requirements;
  - c. to demonstrate, through empirical research, the effects of adjustment programs;
  - d. to improve design and implementation of U.S. assistance.

Recommendations:

1. That the Africa Bureau conduct and support basic research and data collection using some of the methodological approaches suggested above, specifically:
  - partial equilibrium and sectoral models,
  - household economics approaches, and
  - descriptive statistical analysis.In addition, it is recommended that the Bureau give further consideration to the utility of simulation and "dynamics of poverty" approaches described above.
2. That the Bureau identify and make use of existing and relevant micro-level data to expedite and reduce the costs of its research efforts.
3. That the Bureau establish stronger links with those institutions and individuals outside of A.I.D. with technical expertise. It is further recommended:
  - a. that the Bureau explore the merits of and opportunities for direct support, for data collection and research activities specifically related to Bureau research and information priorities:
    - to academic and research institutions, such as Cornell's CNSP, University of Pennsylvania, University of Pittsburg, Michigan State University, and IFPRI;
    - to African institutions, where appropriate; and,
    - to World Bank research units.
  - b. that the Bureau strengthen ties with certain other institutions, in order to encourage their work in this area and increase its access to their reports; institutions such as the Overseas Development Institute, OECD, UNICEF, UNDP, FAO and ILO are cases in point. Even though it may not be appropriate to direct new funding to these institutions, there may be scope for greater cooperation on these issues.

c. that the Bureau actively monitor the publications and reports of others working in this field, to capitalize on findings of relevance to program management and external relations (in this regard, annual literature surveys beginning at the end of FY88 are one option to be considered).

4. That the Bureau also consider pursuing studies of issues relating to policy reform program design, implementation, and host government adoption.

5. That, to the extent possible and appropriate, the Bureau integrate into its normal reporting and evaluation activities a concern for the impacts of policy reforms; specifically by:

a. building basic data collection and impact assessment into PAADS and other relevant program documents;

b. increasing internal knowledge and understanding of policy reform impacts through dissemination of reports (and possibly, seminars or training).

Further Information: For further information and copies of papers from the Cornell workshop, please contact me. I may be reached in AFR/PD/EA, Room 2450 NS; 647-8286. Or, I may be contacted indirectly through AFR/DP/PAR, Room 3909 NS; 647-2995.

Attachments:

1. Schematic Overview
2. Public Finance Diagram
3. Representative Social Accounting Matrix
4. Workshop Participants
5. List of Papers

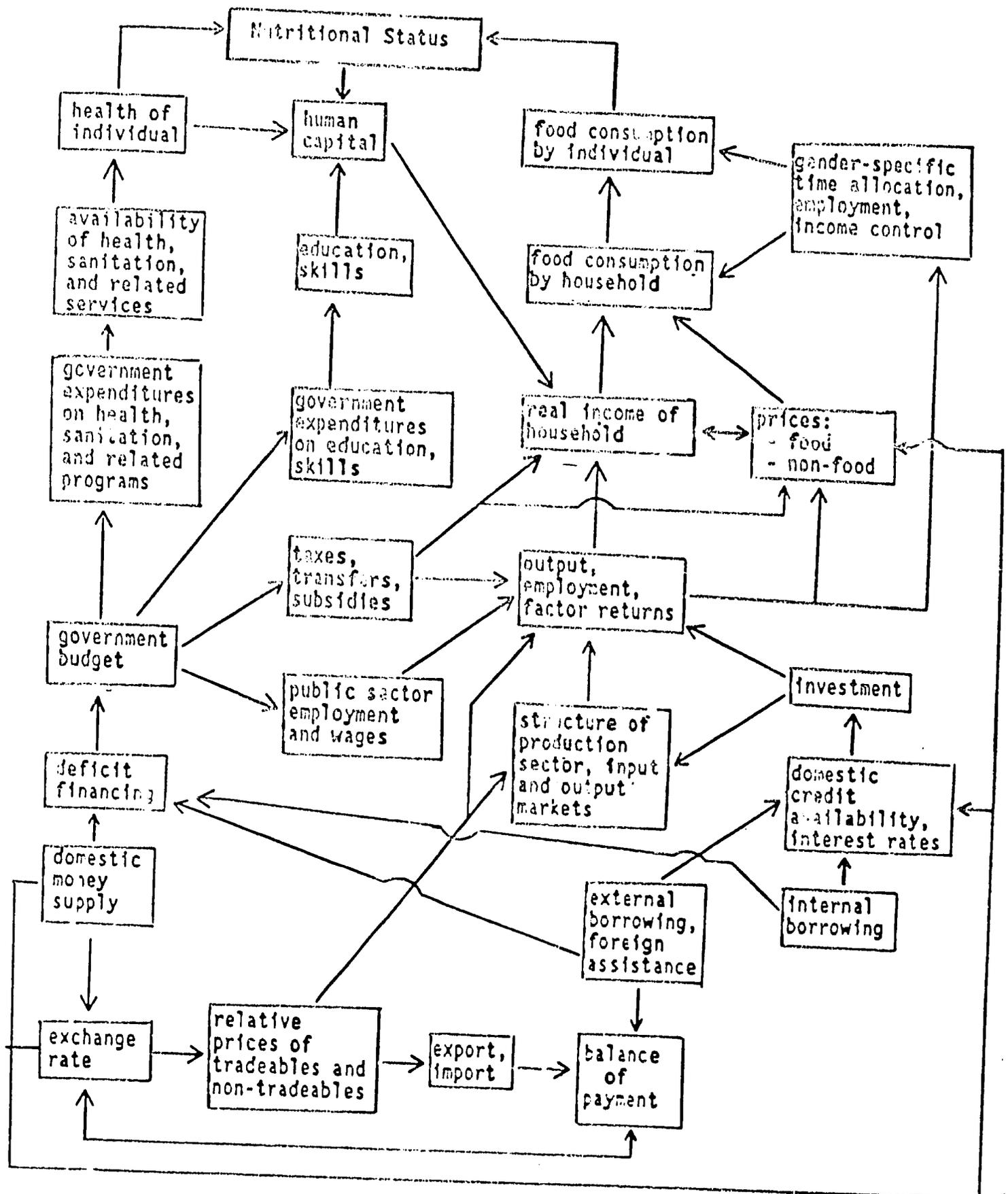
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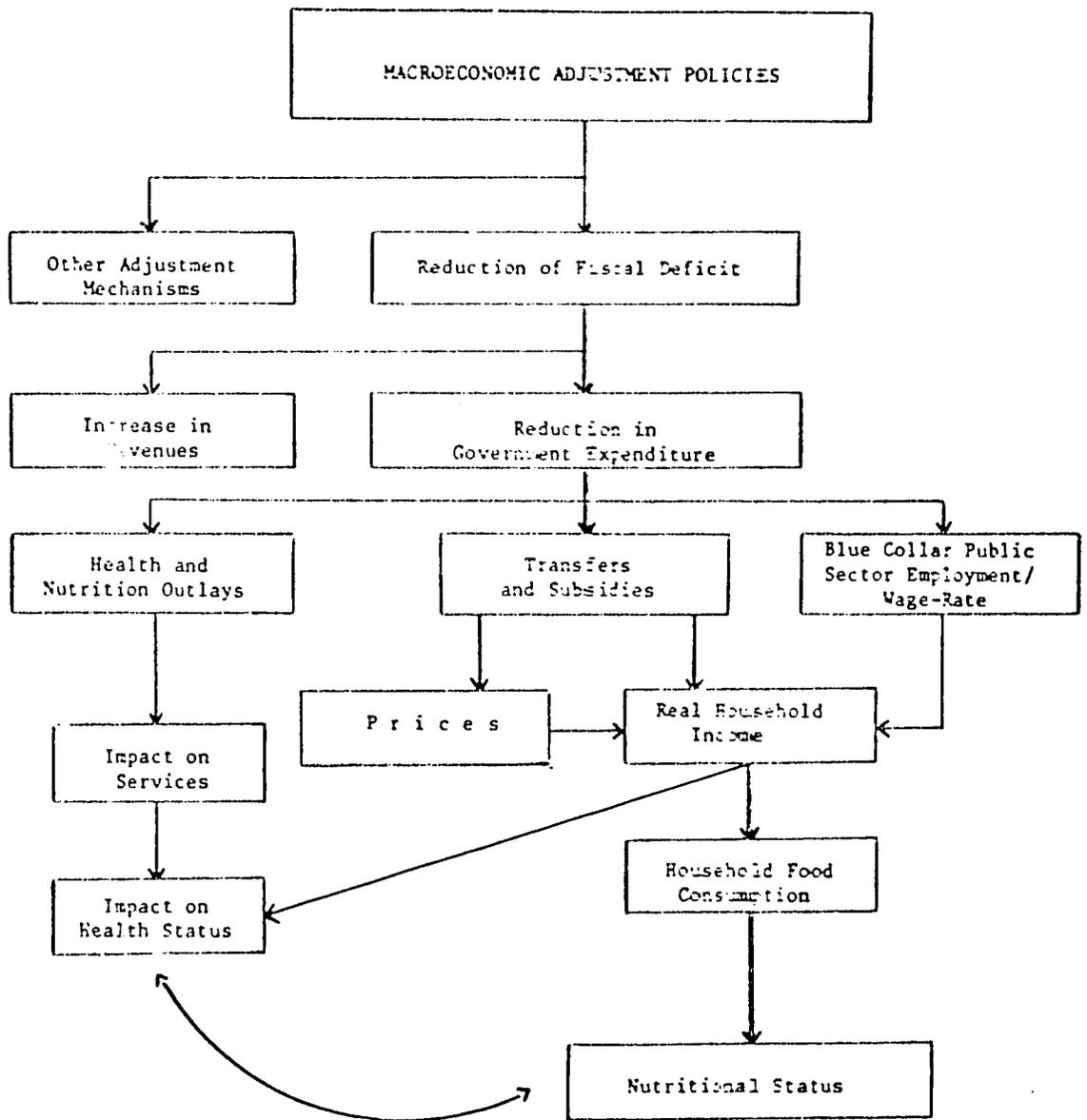
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Schematic overview of principal relationships between human nutrition and variables influenced by economic crises and macro-economic adjustment policies





A Representative Social Accounting Matrix

		Expenditures								
		1	2	3	4	5	6	7	8	9
Receipts	:	Activities	Commodities	Factors	Enterprises	Households	Government	Capital account	Rest of world	Total
1	Activities		domestic sales				export subsidies		exports	total sales
2	Commodities	intermediate demand				household consumption	government consumption	investment		total demand
3	Factors	factor payments								value added
4	Enterprises			gross profits			transfers			enterprise income
5	Households			wages	distributed profits		transfers		foreign remittances	household income
6	Government	indirect taxes	tariffs	factor taxes	corporate taxes	direct taxes				government receipts
7	Capital acct.				retained earnings	household savings	government savings		net capital inflow	total saving
8	Rest of world		imports							imports
9	Total	total payments	total absorption	total income	enterprise expenditure	household expenditure	government expenditure	total investment	foreign exchange	

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List of Papers

1. The Anatomy of Changes in Poverty and Income Inequality under Rapid Inflation: Israel 1979-1984 (David Bigman).\*
2. A Methodology for Analyzing the Effects of Stabilization and Structural Adjustment Policies on Labor Markets of Developing Countries (Katherine Terrell).\*
3. The Impact of Macroeconomic Adjustment Policies on Real Incomes of the Poor Brought About By Changes in the Agricultural Sector (Alexander Sarris).\*
4. Agricultural Growth Linkages and the Alleviation of Rural Poverty: Importance and Implications for Agricultural and Macro Models (Peter Havel).\*
5. Distributional Implications of Government Tax and Expenditure Policies: Issues, Problems and Methodology (Thanos Catsambas).\*
6. Macroeconomic Adjustment, Government Expenditure on Health and Other Social Programs and the Poor in Latin America and the Caribbean (Neville Beharie).\*
7. Macroeconomic Adjustment, Household Food Consumption and Nutritional Intakes and Health Status (Jere Behrman and Elizabeth M. King).\*
8. Structural Adjustment and the Poor: Weathering the Period of Transition (Paul Glewwe and Dennis de Tray).\*
9. Use of Computable General Equilibrium Models to Assess the Impact of Structural Adjustment Policies on Poverty and Nutrition (Erik Thorbecke and David Berrian).\*
10. Utilization of Multi-Market Models in Assessing the Impact of Policy Reforms on the Poor (Avishay Braverman)
11. Multisectoral Models of Developing Countries: A Survey (Sherman Robinson).\*
12. Marshall Lectures: Varieties of Stabilization Experience (Lance Taylor).\*
13. Adjustment and Income Distribution: Some Methodological Issues (Tony Addison and Lionel Demery).\*
14. Impact of Stabilization and Structural Adjustment Measures and Reforms on Agriculture and Equity (Erik Thorbecke).\*
15. Fund-Supported Programs, Fiscal Policy and Income Distribution, IMF Occasional Paper 46 (IMF).\*
16. Adjusting to Recession: Will the Poor Recover? ODI Briefing Paper (Overseas Development Institute).\*