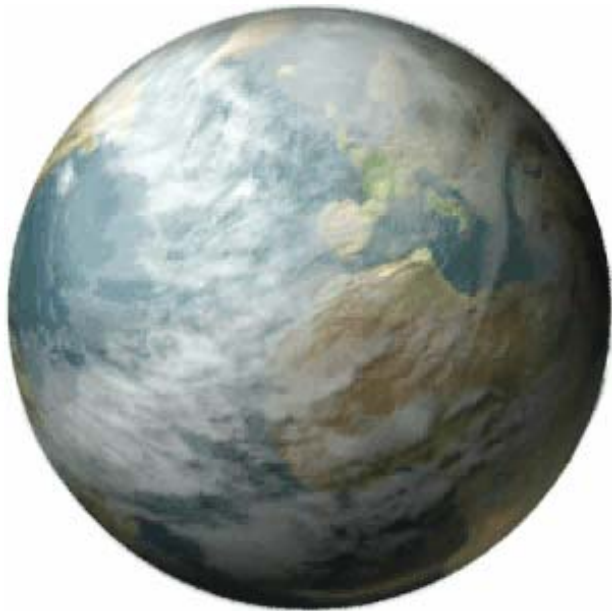# Micro and Macro Integration for Economic Policy Analysis

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Lecture III

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Objectives

- Implement a combined database and CGE modeling facility that can identify the local effects of national level policies.

- Establish a national facility as a vertical ingegration integrating platform for provincial data and model development

Motivation
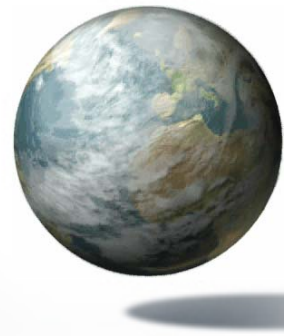
- National and even provincial data are generally used at the sectoral and representative household level.

- These high levels of aggregation obscure important tradeoffs and make it difficult to anticipate adjustment costs.

- We want to take better advantage of available micro data, in a consistent framework, to elucidate detailed effects of policies.

# Macro and Micro Data Resouces

- Macro data are already available and being refined as part of this project

- Micro data in China are less readily available and have yet to be effectively integrated

- Extensive household data have been sampled, but their quality is highly uneven

- The state of enterprise data is even more uncertain

Macro and Micro Modeling
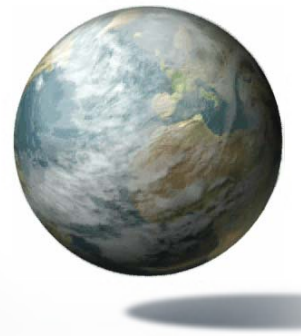
- Macro modeling is quite advanced now, and extending from the national to the provincial level, with DRC standards establishing leadership

- Micro modeling is in its infancy, and there is no standard for this

Four Main Styles of Micro-Macro CGE Model
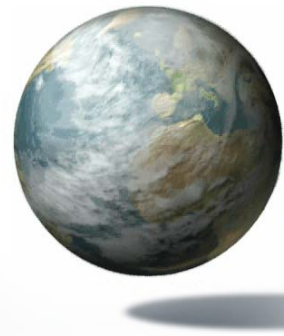
1. Parallel models – micro and macro models linked by iterative consistency

2. "Local" CGEs – Village and community level models with consistent national accounts.

3. Multi-market Models – DeJanvry and Sadoulet

4. Integrated Models – A new type of model based on optimal disaggregation strategy.

What Approach Works for China?

Each approach has its strengths and weaknesses.

1. Parallel models maintain the most detail, but are generally criticized for inconsistency.

2. Local models are interesting applications, but unlikely to lead be extended to national mosaics any time soon.

3. Multi-market models have been confined to rural sector applications, where household production is important.

4. Integrated models unify micro and macro interactions within a single specification, but are more aggregated than parallel models. This, however, is my recommendation.

An Integrated Micro-Macro CGE
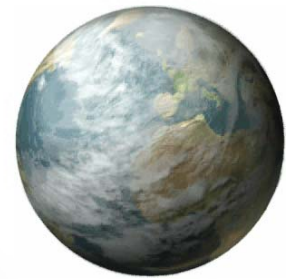
Integrated models are calibrated to extremely detailed "super" SAMs, constructed by combining household and enterprise survey data with other traditional SAM data like IO tables, NIPA, accounts, trade statistics, etc.

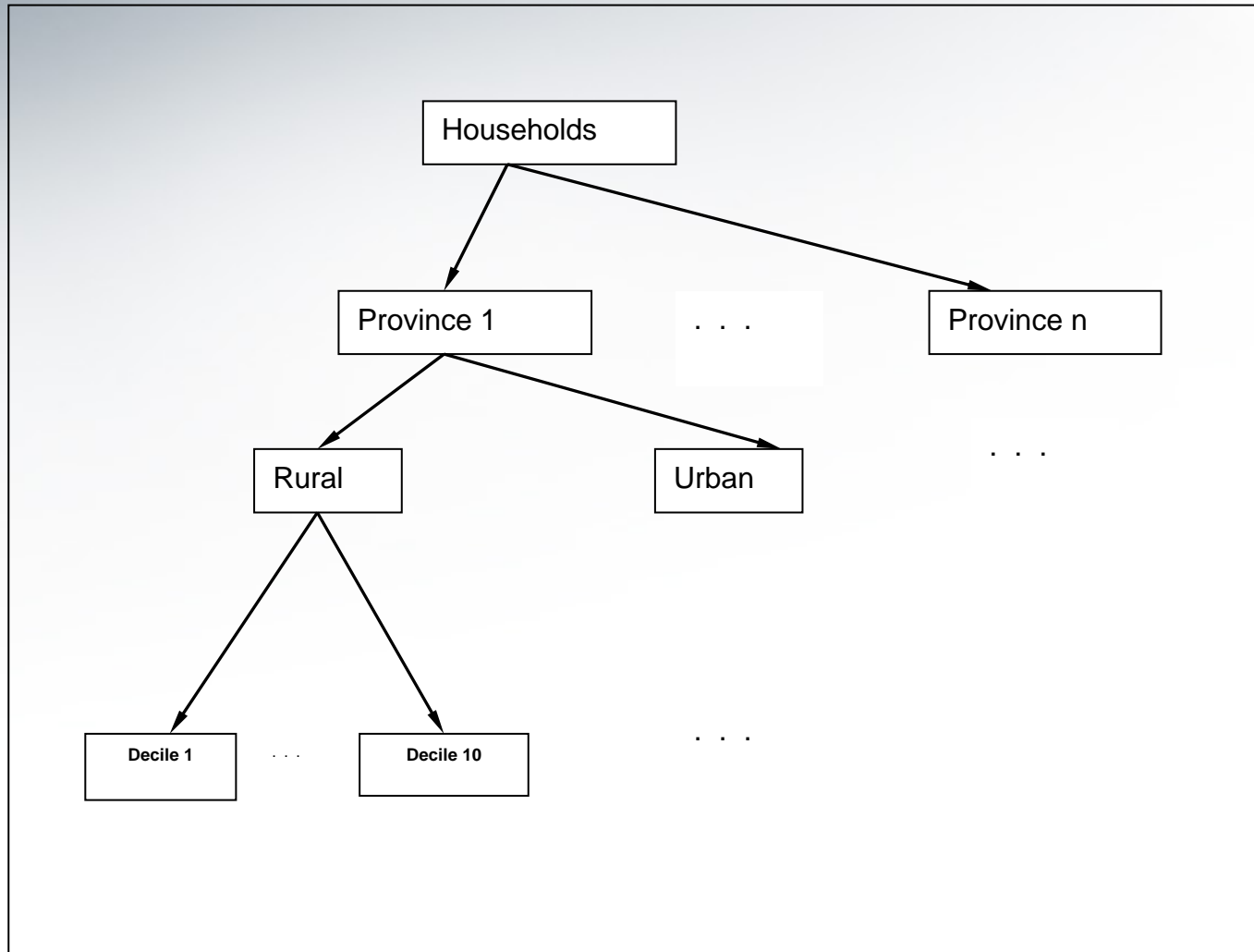Households are more aggregated than parallel models, but much more detailed than traditional national models.
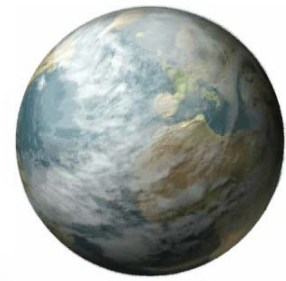
Locational detail is maintained explicitly.

In the case of Vietnam, for example, the SAM details 600 household accounts, rural and urban quintiles for 30 provinces. Each household has its own consumption functions, asset portfolios, and (for agriculture), production systems.

Sample Household Disaggregation

Roland-Holst

Checklist for Primary Super SAM Data Components

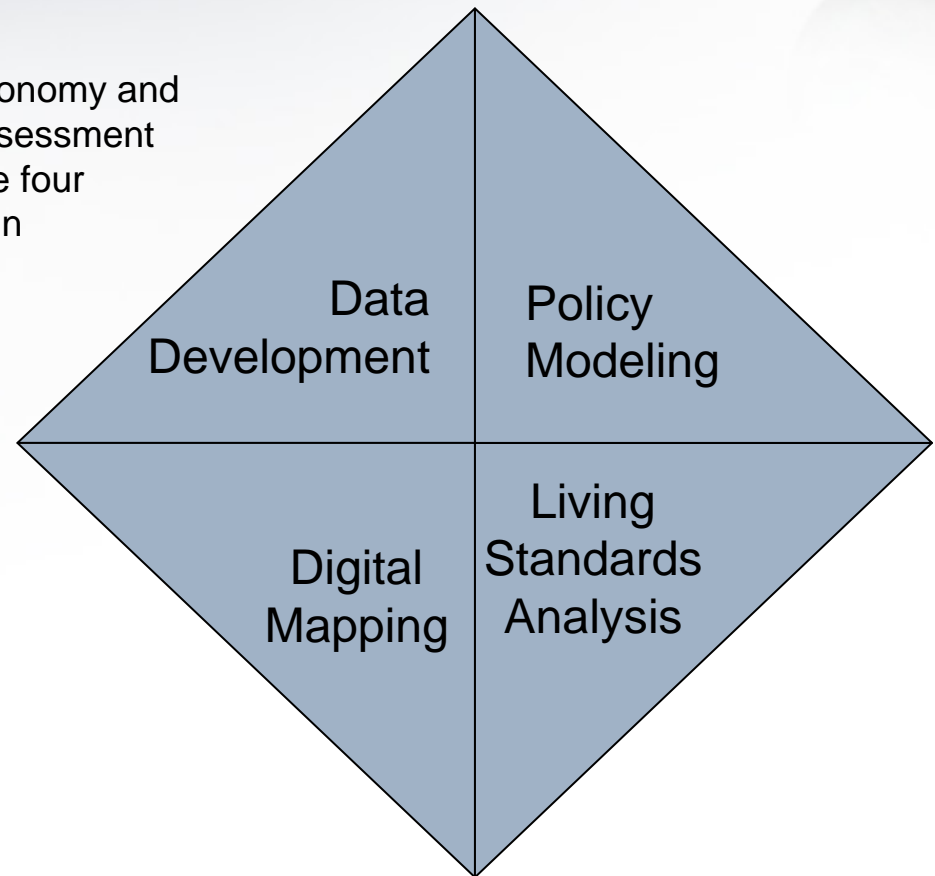|	Accounts	Description	Sources
1	Industry	Input-output tables: use and make tables are needed to capture differences in tax and margin incidence	SNA, ISIC, NAICS classified industry accounts. Maintained by most national statistical bureaus
2	Gross Output and Value Added	Sectoral statistics, which may differ from the industry accounts if a later year SAM is desired and the Input-output tables need to be updated Value added should be disaggegated by labor and capital at a minimum, and may include depreciation.	Generally maintained annually as part of NIPA.
3	Trade	Import and Export flows by commodity, including separate account for trade taxes/subsidies and margins	This data is generally maintained by trade ministries, and may or may not include bilateral partner (origin and destination) disaggregation. Alternatively, partner disaggregation from the UN COMTRADE database or possibly GTAP. This is unlikely, however, to be consistent with official government data and we need the latter as a control for the overall domestic accounts
4	Final Demand	Includes private and public consumption and investment outlays by commodity category, inventory changes may also be included.	These are generally maintained annually at some level of aggregation on an annual basis. Apart from years that input-output tables are created, they may require disaggregation to match the industry accounts for a later year.

Checklist 2

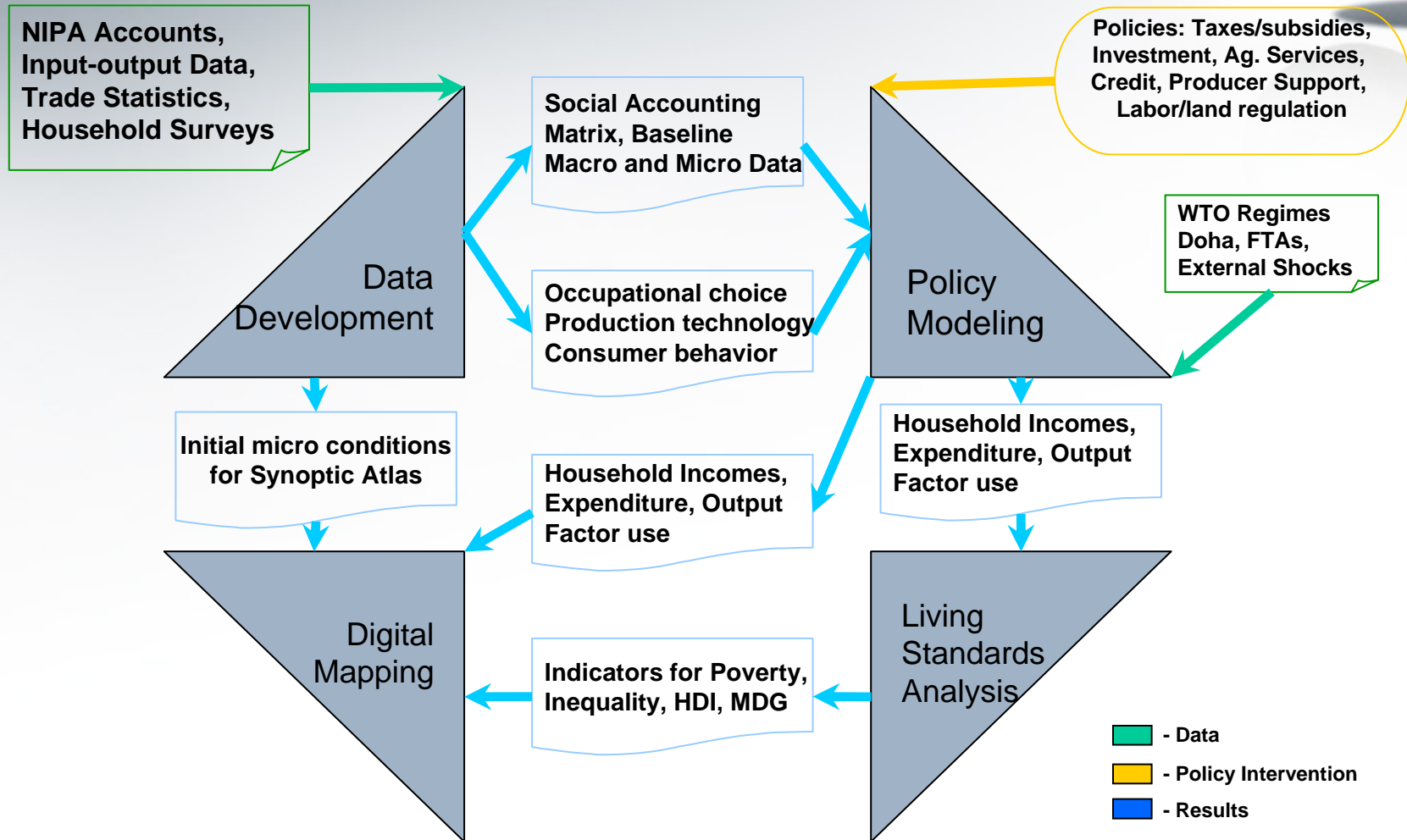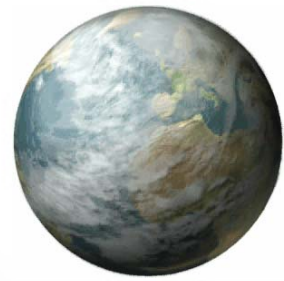|	Accounts	Description	Sources
5	National Income and Product Accounts	These correspond to all the macroeconomic aggregates for the reference year, according to UN SNA standards. These supply the basic data to the MacroSAM and act as macro control totals and accounting entries in MicroSAM, including in particular the lower right quadrant of inter-institutional transfers.	NIPA accounts are generally maintained annually at the national level.
6	Employment	This is not strictly needed for the SAM, but provides an important consistency check for value added disaggregation and in any case is required to implement the CGE model.	Employment statistics are generally maintained by human resource ministries. Sectoral detail needs to conform to industry/commodity aggregation, occupational detail to the household survey extract.
7	Capital Stock	As with employment, only needed for indirect use with the SAM, but necessary for modeling. This may be available by type of capital (i.e. public, private domestic, private foreign). Factor/profit taxes are also desirable.	This may be available from statistical bureaus, the industry ministry or the central bank.
8	Household Data	Household data are the main difference between SAM and Input-Output accounts, and they significantly increase the policy relevance of incidence analysis because they capture detailed effects on final consumers and incomes of demographic groups. This data are best derived from very detailed, nationally representative LSMS household survey data.	Generally, we want to define a suitable sub-sample stratification of the household surveys with the dual objectives of parsimony and policy relevance. This must take account of three components: relative income status, functional income determinants, and location. We at least require a rural/urban distinction. While it is not necessary to maintain the whole LSMS sample for direct analysis, it should be available for ex post imputation, mapping extensions, etc.

Overview of Methodology

To capture linkages cross the economy and from the top down, a four-fold assessment framework is used. Each of these four components is being developed in prototype form.

Data Development

Policy Modeling

Digital Mapping

Living Standards Analysis

Detailed Methodology

NIPA Accounts, Input-output Data, Trade Statistics, Household Surveys

Data Development

Social Accounting Matrix, Baseline Macro and Micro Data

Occupational choice Production technology Consumer behavior

Initial micro conditions for Synoptic Atlas

Policies: Taxes/subsidies, Investment, Ag. Services, Credit, Producer Support, Labor/land regulation

Policy Modeling

WTO Regimes Doha, FTAs, External Shocks

Household Incomes, Expenditure, Output Factor use

Digital Mapping

Household Incomes, Expenditure, Output Factor use

Indicators for Poverty, Inequality, HDI, MDG

Living Standards Analysis

- Data
- Policy Intervention
- Results

Prototype Model

We are currently assembling a prototype model with a macro, data, input-output accounts, and household survey data for Sichuan province.

We have also obtained micro data for

1. Beijing
2. Jiangsu
3. Henan