Track A:
NTA Orientation and Getting Started

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The Tenth Meeting of Working Group on Macroeconomic Aspects of Intergenerational Transfer
Beijing, China

Monday, November 10, 2014
Outline

1 Preliminaries
2 NTA motivation and goals
3 NTA features and organization
4 Data and basic methods
5 Steps to complete NTA
6 Extensions to “basic” NTA
7 Lab exercise
1 Preliminaries

• Workshop objectives
  – Understand NTA project and estimates
  – Get started on macro controls and age profiles

• Introductions
  – Who are you?
  – What are your NTA objectives?
  – Tell us about your data, what you have, what you need to find:
    • Population counts
    • National accounts
    • Household surveys and administrative records
1 Preliminaries

• Does everyone have access to the NTA wiki? ([www.ntacounts.org](http://www.ntacounts.org))

• Resources to learn:
  more on the NTA wiki
  – NTA “course”
  – Link to NTA manual
  – Link to 2012 comparative volume
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7 Lab exercise
2 NTA Motivation and Goals

• Measuring the generational economy
  – How we produce, consume, share, and save resources by age
  – Research network of teams in more than 40 countries

• Motivating questions
  – How do changes in population age structure affect economies and economic growth?
  – How does economic life vary by age?
  – How does the intergenerational economic system affect the economy and prospects for growth?
NTA Example – Economic lifecycle

United States, 2011

- **Per Capita Flow by Age, US$ (1000s)**
- **Age**
- **Labor Income**
- **Consumption**
- **Old-age lifecycle deficit**
- **Young-age lifecycle deficit**
- **Working-age lifecycle surplus**
NTA Example – Reallocations

- Public Transfers
- Asset-based Reallocations
- Private Transfers
Example of change over time (US total consumption)

In units of average labor income, ages 30-49
2 NTA Motivation and Goals

• What do we learn from NTA?
  – Are our support systems sustainable?
  – Does the generational economy affect economic growth?
  – Changing age patterns?

• Example: Demographic dividends
  – First DD: Age structures favorable to production
  – Second DD: Age structures favorable to capital
    • Fertility decline associated with greater HK investment per child
    • Older populations concentrated in ages with more assets that can be invested to increase the K/L ratio
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3 NTA features and organization

• What is an age profile?
  – A schedule of age-specific average flow amounts
  – Based on flow measure or proxy indicator from:
    • A household survey
    • A government report
    • Other NTA age profiles
    • NTA assumptions
  – Smoothed over age
  – Adjusted up or down so that aggregate flow matches an aggregate estimate from national accounts
3 NTA features and organization

• NTA age profiles disaggregate national accounts by age
  – Now focused on flow account; will eventually include asset revaluation and wealth accounts

• NTA is generally consistent with the System of National Accounts (SNA) except:
  – SNA tracks by sector (corporate, gov’t, household) but NTA is always from the individual perspective
    • Government, corporate, and household flows imputed to the individuals who “own” those institutions
  – SNA does not include intra-household transfers, that is an innovation of NTA
  – Some changes in SNA aggregates
The Flow Account Identity

- **Inflows**
  - Labor Income
  - Asset Income
  - Transfer Inflows

- **Outflows**
  - Consumption
  - Saving
  - Transfer Outflows

\[
Y^l(a) + Y^a(a) + \tau^+(a) = C(a) + S(a) + \tau^-(a)
\]

\[
C(a) - Y^l(a) = Y^a(a) - S(a) + \tau^+(a) - \tau^-(a)
\]

- Lifecycle Deficit
- Asset-based Reallocations
- Net Transfers
- Age Reallocations
3 NTA features and organization

- Reallocations are classified by economic form and mediating institution:

<table>
<thead>
<tr>
<th>A Classification of NTA Reallocations.</th>
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<tbody>
<tr>
<td></td>
<td>Asset-based Age Reallocations</td>
<td>Credit</td>
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<tr>
<td></td>
<td>Capital and Other Non-Financial Assets</td>
<td></td>
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<tr>
<td>Public</td>
<td>Public infrastructure</td>
<td>Public debt</td>
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<td></td>
<td>Public land and sub-soil minerals</td>
<td>Student loans</td>
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<td>Money</td>
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<td>Private</td>
<td>Housing</td>
<td>Consumer credit</td>
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<td>Consumer durables</td>
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<td>Factories, Farms</td>
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<td></td>
<td>Private land and sub-soil minerals</td>
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<tr>
<td></td>
<td>Inventories</td>
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</tr>
</tbody>
</table>

Source: Mason, Lee et al. (forthcoming); adapted from Lee (1994).
3 NTA features and organization

- Asset-based reallocations allow for inter-temporal exchange
  - Save now, spend later
  - Go into debt and spend now, repay later
  - Invest now, spend flow of returns in future

- Transfers involve no explicit quid pro quo
  - May involve implicit obligation, e.g., transfers between children and parents
  - Transfers must balance (inflows = outflows), but may also include net transfers to or from Rest-of-World
Organization of accounts

Life Cycle Deficit (LCD) = Reallocations (R)

Life Cycle Deficit (LCD) = Transfers (T) + Asset-Based Reallocations (RA)

Consumption - Labor Income = Transfers (T) + Asset Income (YA) - Net Saving (S)

Private (CF) - Public (CG) - Labor Earnings (YLE) = Self-Emp Income (YLS)

Private (TF) - Public (TG) + Private (YAF) - Public (YAG) = Private (TF)

Private (CF) - Public (CG) - Labor Earnings (YLE) = Self-Emp Income (YLS)

Private (TF) - Public (TG) + Private (YAF) - Public (YAG) = Private (TF)

Health (CFH) - Health (CGH) = IntraHH (TFW) - Health (TGH)

Health (CFH) - Health (CGH) = IntraHH (TFW) - Health (TGH)

Edu (CFE) - Edu (CGE) = InterHH (TFB) - Edu (TGE)

Edu (CFE) - Edu (CGE) = InterHH (TFB) - Edu (TGE)

Other (CFX) - Other (CGX) = Other In-Kind (TGXI)

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Transfers have inflows and outflows.

Also collect a full set of tax profiles.
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4 Data and basic methods

• Data: Population, national accounts, household surveys, administrative data

1. Population estimates:
   - Single year of age to 90+
   - Evaluated for quality
   - Can use UN World Population Prospects if problems with national estimates
   - Significant non-household population?
4 Data and basic methods

2. National accounts data (in SNA format):
   - List of main SNA tables given in the manual, need tables by sector
   - Which government agencies produce your accounts? How do they publish the results? What is available in international databases?
   - Will probably also need:
     – Government expenditure records
     – Entries for your country in the International Monetary Fund’s Government Finance Statistics (GFS) publications
4 Data and basic methods

3. Household surveys
   - Income and expenditure surveys give direct measures or indicators of relative age patterns
   - May need to supplement with specialized surveys (older people, institutionalized population)

4. Administrative data
   - Government reports on public program participation by age
   - May give monetary flows
   - May only have participation indicators
4 Data and basic methods

• Necessary features of household surveys and administrative records:
  – Nationally representative
  – Designated household head/householder
  – Sufficient sample size
  – Household roster by age, sex, work/school status
  – Includes necessary indicators:
    • Income by source (including work, government benefits, gifts, interest and dividend income, etc.)
    • Expenditure by type (amounts paid for consumption, taxes, gifts, etc.)
How to calculate an age profile

1. Calculate the macro control from national accounts
2. Identify a measure or proxy indicator for the flow:
   1. From household survey:
      - Use individual-level data if available
      - Otherwise allocate household amount to individuals in the household
   2. From administrative records
   3. On a priori grounds (i.e. assumed or calculated from other age profiles)
3. Calculate single-year age group averages: May have to adjust for any missing populations (i.e. persons not represented in survey or administrative records)
4. Smooth: Evaluate to ensure that no real variation has been eliminated
5. Adjust to controls: Evaluate adjustment factor to test the validity of the age shape
4 Data and basic methods

• Smoothing:
  • Reduces noise from sampling
  • Smooth lowest-level components only
  • Beware of eliminating “real” features of the age pattern
    – Peaks/valleys, elbows, zeros
  • False negative values should be replaced with zeros
  • Details and examples in manual appendix
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5 Steps to complete NTA

Gather Data
- Identify available surveys, administrative records, national accounts, and population data
- Choose base year in which all necessary data are available
- Obtain data permissions and copies of datasets
- Evaluate data quality, coverage, usability

Lifecycle Accounts
- Calculate macro controls for components of consumption and labor income (some teams prefer to calculate all macro controls at this stage)
- Estimate age patterns from administrative and survey data
- Smooth, adjust to controls, and evaluate
5 Steps to complete NTA

Public Age Realloc.
- Calculate macro controls for public reallocations (taxes, transfers, asset income, and saving)
- Estimate age shapes for these variables from administrative and survey data
- Smooth, adjust to controls, and evaluate

Private Age Realloc.
- Calculate macro controls for private reallocations (transfers, asset income, and saving)
- Estimate age shapes for inter-household transfers, asset income, and saving from survey data
- Smooth, adjust to controls, and evaluate
- Estimate components of intra-household transfers from already estimated profiles and sharing algorithm
- Smooth, adjust to modified controls, and evaluate
- Estimate private saving as the balancing item
5 Steps to complete NTA

• Review and evaluate all estimates
  – See manual for list of checks
• Document estimates on the wiki
• Upload data and documentation in the wiki database
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• Further disaggregate NTA age profiles by other characteristics:
  – Socioeconomic status
  – Gender
  – Geography (region, urban-rural, etc.)

• National Time Transfer Accounts

• Wealth accounts

• Bequests

• Policy-relevant analyses and indicators
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• Read country profile questionnaire
  – Any questions you do not understand? Ask!
  – Any items you do not know?
  – Any data you may not be able to get?

• Work through simplified example of calculating a few age profiles
  – You can use the provided example data, or try to use your own and modify the code as necessary
  – Macro controls are given, you will learn more about how to calculate them for your country this afternoon