Workshop on Regional Economic Cooperation Database and Modeling

Computable General Equilibrium (CGE) Model Training

Training Syllabus

Objective:

Given the complexities of today's economy, sophisticated research methods are needed to improve visibility for public and private sector decision makers. The state-of-the-art tool for evidence-based economic policy research is the Calibrated or Computable General Equilibrium (CGE) model. This methodology has been applied in hundreds of studies for fiscal, sectoral, trade, and employment analysis around the world because it can trace structural adjustments across the economy, revealing linkage effects through market interactions and behavioral responses. Such linkages are an essential determinant of policy outcomes, where cumulative indirect effects of policies often outweigh direct effects.

This approach also improves political sustainability because, while economic policy may be made from the top down, the political consequences of economic activity are ultimately felt from the bottom up. Stakeholders must be identifiable and their interests assessed so beneficiaries can be recruited to support policies and the adjustment needs of others can be anticipated. General equilibrium models, supported by detailed data, are designed to elucidate linkages and improve visibility for policy makers. GE models capture detailed links between behavior, incentives, and policies reveal how patterns of demand, supply, and resource use change in response to external shocks and policy changes. For these reasons, simulation models for assessing policies and economic planning decisions before they are taken.

This course offers an introduction to the theory and practice of Regional and National Economic Assessment using Computable General Equilibrium (CGE) models. The course will combine theoretical and empirical material with the latest data and software resources, training participants to assess economy wide impacts and communicate their findings to effectively support evidence-based policy dialog. Upon completion of the course, participants will have state-of-the-art decision tools to assess the economic impacts of policy and external events across the CAREC economies.

The global network of GTAP is CGE based, linking these structural models across more than 100 economies, and simulations for policy impact and forecasting can be conducted by accessing GTAP network according to research needs (model size, extent of policy impact, etc.).

The Global Trade Analysis Program (GTAP) has linked over 100 countries across a CGE based analysis network, supporting economic analysis by several thousand public and private researchers. Multilateral institutions (ADB, WB, IMF, FAO, etc.) and national governments in particular have sponsored hundreds of CGE based assessments, including work on Central Asian trade, energy, and infrastructure investment.

Application of CGE models in CAREC context is straightforward: it can be used for policy impact analysis and forecasting domestically, and regionally, or linking to global markets. Examples include corridor-level economic impact analysis such as studies conducted on part of the Kazakhstan Europe-West China road corridor and the Pakistani North-South corridor. The seminal ADB paper on Asia's infrastructure investment needs employed CGE models as tool for evaluating potential economic benefits of investing $8 trillion in infrastructure across Asia during 2010-2020. The most recent example of employing CGE model tool is to evaluate potential impact of the Trans-Pacific Trade and Economic Pact (TPP), the agreement of which was reached only in October 2015.

Workshop Format

These objectives will be achieved through a combination of morning lectures outlining the underlying theory, and afternoon hands-on workshops providing opportunities to process data, carry out analyses, and present results in a supervised environment.

Workshop Materials and Prerequisites:

Because of the nature and technical contents, the Workshop requires that participants are familiar with economics and statistics, and prior experience with Microsoft Excel and basic computer programming are recommended.

Participants must each bring an individual MS Office equipped laptop (PC or Mac) to all sessions. All course content will be electronic and made available at no direct cost on the internet. Content will be hosted on a course website which will remain online after the course is finished to serve as a future reference. Participants will be given internet access during class. Other computer software and data will be made available electronically during the course

Timing and Place of the Workshop

The 3-day Workshop will be held during 2-4 December 2015 at CAREC Institute Headquarters in Urumqi, PRC.

Draft Annotated Program of the Workshop

Day 1: Overview [Wednesday December 2nd]

Introduction to data resources and the economics of climate risk assessment.

15:30 – *Introductions*

15:45-16:30 – *Lecture 1: Introduction to General Equilibrium Policy Modeling*

16:30-16:45 – *Coffee Break*

16:45-18:00 – *Lecture 2: Social Accounting and Multiplier Analysis*

18:00 - *End of Day 1*

Day 2: Methodologies [Thursday December 3rd]

9:00 – 10:30 – *Workshop 1: Social Accounting and Multiplier Analysis*

10:30 – 10:45 – *Coffee Break*

10:45 – 12:00 – *Workshop 1, continued*

12:00 – 14:00 - *Lunch*

14:00 – 15:30 - *Lecture 3: Simple CGE Models*

15:30 – 15:45 – *Coffee Break*

15:45 – 17:00 - *Workshop 2: Simple Applied CGE Models*

17:00 - *End of Day 2*

Day 3: Applications [Friday December 4th]

9:00 – 10:30 - *Lecture 4: Research Grade CGE Models*

10:30 – 10:45 – *Coffee Break*

10:45 – 12:30 – *Workshop 3: Introduction to GAMS I*

12:00 – 14:00 - *Lunch*

14:00 – 15:30 - *Workshop 4: Introduction to GAMS II*

15:30 – 15:45 – *Coffee Break*

15:45 – 17:00 - *Lecture 5: Regional CGE Modeling*

17:00 – *End of training*