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ABSTRACTS for PARALLEL SESSIONS 1-3-1 and 1-3-2

METHODOLOGY

CHAIRPERSONS: *GianCarlo Tosato and Junichi Fujino*

Assessing Equity Effects of Climate Change Policy through the American Consumer Expenditure Survey: New Results on Housing and Transportation

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Climate change policies raise crucial equity issues at the world level, between industrialized (and belonging to Annex B) and developing countries, which represents a serious hurdle in defining a cooperative framework for a concerted mitigation policy. But not less serious –and much less addressed- is the domestic equity issue. There are obvious reasons to expect that the cost –before any compensation mechanism or an associated redistributive policy- will vary significantly according to categories of households, in particular to income classes. Indeed, it is well known that the share of energy consumption –either for residential use or in private transportation- is decreasing with income, so that low income groups would bear a relatively higher burden.

A preliminary analysis has been conducted on the basis of the American consumer expenditure survey (CEX) for which a span of 20 years –from 1984 to 2003- is now available, and a database pairing this survey with the Consumer Price Index, and was presented at the NCCR CLIMATE 2005 Seminar held in Interlaken. Welfare costs can then be compared according to income classes, the size of the family, the generation (age of the representative agent) and the region of residence.

New and more detailed results are presented here, namely concerning Private Transportation, by taking into account all categories of outlays, and Housing with alternative specifications of the demand function (with or without additive separability). Differences with previous estimations are analyzed and commented.

Keywords: climate change, welfare cost, equity, demand function, Engel curve, Slutsky matrix, separability, additive separability

New concept: Technical Progress in consumption

JEL classification: C8, C31, D1, D58, D6

How Clean is CDM?

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The Clean Development Mechanism (CDM) is advocated to improve on the efficiency of a climate policy. Allowing donor countries to import CDM credits, can substantially lower their costs of abatement. The CDM credits lead to financial transfers to hosting countries, which will lower the carbon-intensity of production in host countries. Moreover, the CDM credits will be sold at the marginal price of abatement lying above the average price of abatement. Therefore hosting countries will gain from selling credits. But as these countries do not have a national ceiling, the gains might provoke new energy-intensive production that offsets the ex-ante decline of carbon emissions. This argument especially holds in cases in which the gains are targeted to lower electricity prices in host countries. Also, new energy-intensive activities may be further boosted due to local fossil energy markets. This paper shows that in the post-Kyoto era, if there are no restrictions on CDM, projects could be sold at 20 €/t CO₂, or higher. In energy exporting host countries this could lead to more than 60 percent leakage effect of the intended emission reduction. CDM will promote development and lowers the costs of abatement in donor countries, but also provokes dirty production offsetting its supposedly environmental clean-up, thus undermining the overall effectiveness of the instrument.

Keywords:

Clean Development Mechanism; Economics; Carbon Leakage; Efficiency, Climate Change Policies

Analysis of the Energy Access Improvement and its Socio-economic Impacts in Rural Areas of Developing Countries

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In this study, we have developed an energy-economic model of rural areas in India to analyze optimal energy system for alleviating energy poverty, and evaluate socioeconomic effects of the energy access improvement in terms of health hazard. Relying on traditional biomass, households in the areas are consuming fuelwood in manner of unsustainable way, and are harmed by hazardous pollutants. As a result of the analysis, it is revealed that, considering opportunity cost of collecting fuelwood, LPG is widely adopted by the households and the exposure to the pollutants is largely alleviated to the same level to Japanese environmental criteria.

Keywords:

Energy poverty, Energy access, RSPM exposure, rural area, developing country

Study on Long-term Energy Strategy in Northeast Asia for CO₂ Mitigation with an Econometric Model

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This paper presents a consistent energy demand-supply projection in Northeast Asia, focusing on China, developed by an integrated econometric model, and analyzes regional CO₂ mitigation strategy, such as IGCC, nuclear and energy conservation, to 2030 in a consistent way. Vigorous economic growth, soaring electricity demand and progressive motorization are going to expand the primary energy demand particularly in China, eventually positioning China as an important player in terms of regional CO₂ emissions increase. It is, against this background, becoming increasingly important for CO₂ emissions issue to be addressed as one where all Northeast Asian countries have a common stake and can elaborately commit themselves.

Keywords:

China, Northeast Asia, CO₂ emissions, integrated econometric model, primary energy demand, power generation, motorization

An E3 Econometric analysis of CDM and Technology Transfer between Japan and China

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China is trying to attain the trade-off targets of economic development and global environment improvement, though it is not obliged under the Kyoto Protocol. Japan has already built an energy efficient society and the compliance of the Kyoto Protocol only with domestic efforts seems difficult. So, the usage of Kyoto mechanism is attractive to Japan. Developing an economy-energy-environment (E3) econometric model of China and Japan, both linked, we analyze the effect of CDM and technology transfer between China and Japan for next 30 years. Some scenario analyses are constructed on Kyoto protocol, especially the possible CDM projects, considering after Kyoto.

Keyword:

E3 econometric model, China and Japan, CDM, technology transfer
