

Global Focus on Knowledge Lecture Series
“Energy and the Earth”
2007 Winter Semester



Toru Iwami

Faculty of Economics, the University of Tokyo



2. As a World Economical Issue

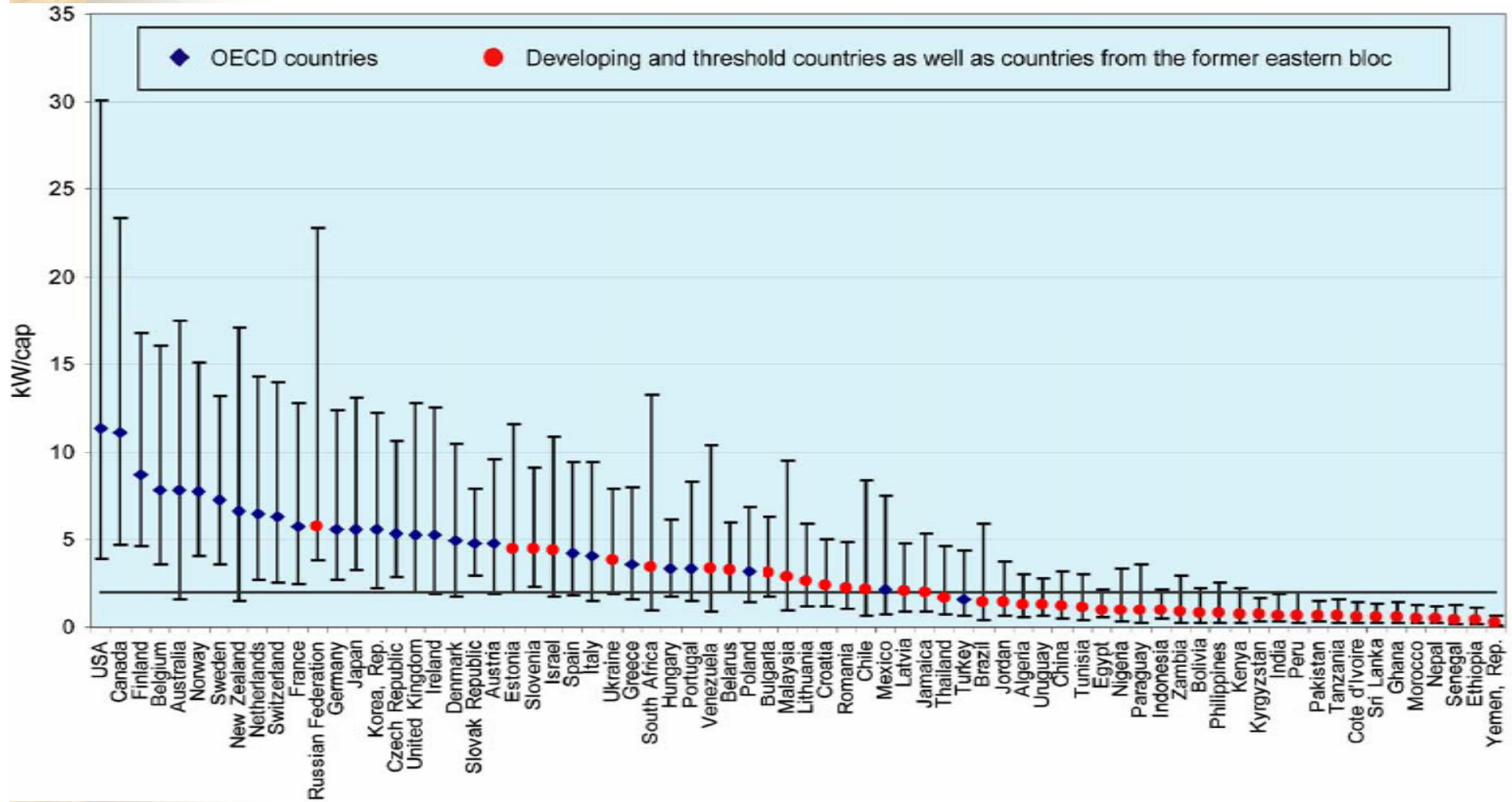
- Demand-and-supply balance of energy
 - geographically uneven distribution of fossil fuel (coal, natural gas)
- Soaring price of oil
 - low interest, “extra money”
 - Consumption increase was predicted
 - Development of BRICs
 - oil money governmental fund
 - There is a huge gap between prediction and prices



North–South Issues and South–South Issues

- Resource right the New International Order (1974)
- Power to control prices oil major to OPEC
- Gaps in southern countries
 - South–South Issues
 - Poor resources country (Nigeria, Venezuela)
- Energy situations in poor countries
 - from bio–mass to commercial energy

Energy Consumption by Country (average 2 KW/capita)





Bio-fuel in India



A village in Ethiopia



Economic Growth of BRICs

self-sufficiency of primary energy(2005)

■ Brazil	89.6 %
■ Russia	180.5
■ India	78.0
■ China	95.6



Russia as Resources Power

- Attitude toward Kyoto Protocol
 - “Hot Air”: GDP ratio to 1990
2000 0.67, 2005 0.91
 - Russia wants to promote consumption of resources on the other hand.
Russia ratified the Kyoto Protocol at last (2004) and the Protocol became effective.
- Resources as diplomatic pressure to EU, Ukraine
- Is economical growth sustainable ?
income difference, uneven distribution of wealth



Brazil Counting on Bio-Fuel

- Improvement of self-sufficiency, income from export

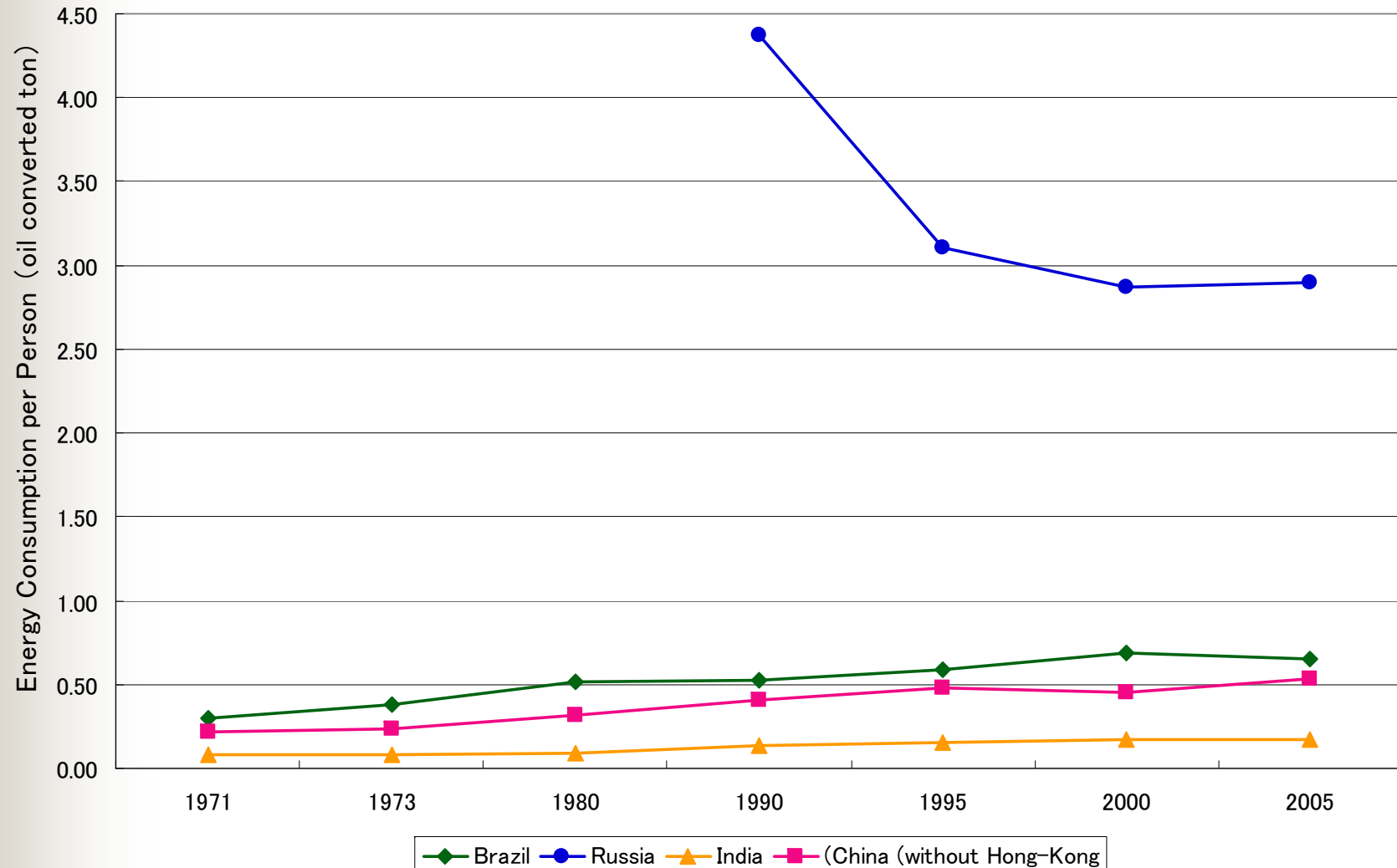
- Issues
 - Competition with food production
 - Preservation of tropical rainforest
 - Overall balance How much CO₂ can bio-fuel reduce?
 - When 10% ethanol was mixed (E10),
1.9-2.9% reduction by cars in Japan,
0.19-0.29% reduction in total.
Yasuhiko Ishida(2007), "Issues of Ethanol Fuel"



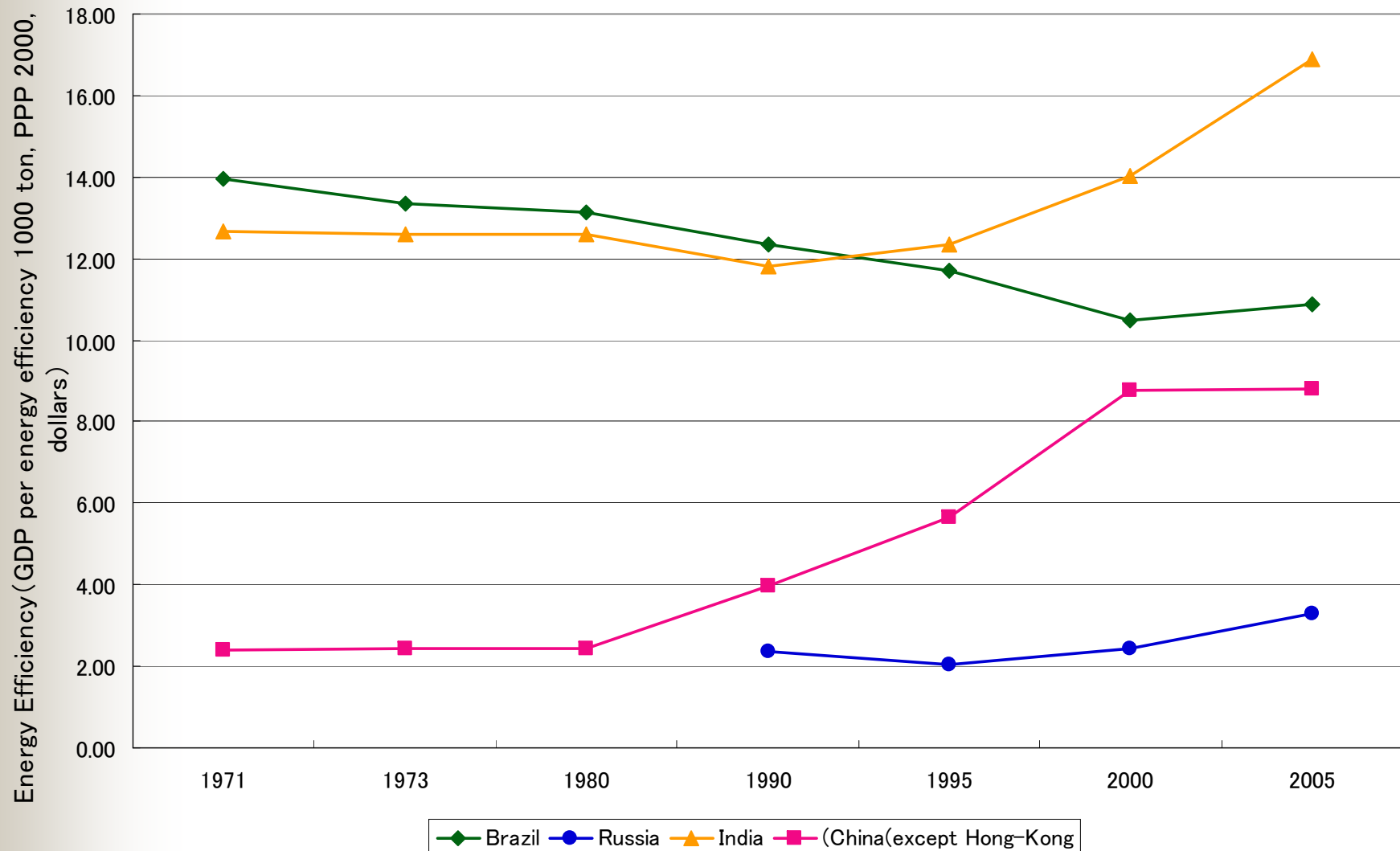
China and India Where Consumption is Rapidly Increasing

- Improvement of energy efficiency
Globalization helped this.
- Subvention to energy = social political consideration
coal consumption in China
electricity for agriculture and home in India
- Side-effects
Incentive to efficiency lowers.

Energy Consumption per Person in BRICs Countries



Energy Efficiency of BRICs





Decoupling of Economical Growth and Increase in Emissions

- Basic formula again
- Why advanced countries can increase emissions
- Common, but different type of responsibility sharing



How Can It Be Realized?

- Decrease in energy density
 - Globalization is a promoting factor.
- Decrease of emission coefficient
 - relation with atmosphere pollution
 - conversion in fossil fuels
 - use of recyclable energy
- High cost is balanced out with subvention.
 - political decision making
 - how to maintain incentive
 - abortion is difficult



Relationship with Economic Growth

- Income Level and Population
If population does not increase.
- Population growth slows down as income increases
“Ageing Asia”
Increase slows down also in developing countries.
- Can the Earth environment wait for this?
- Negative economic growth