



Investment and Technology Deployment: An Institutional Perspective on Climate Analysis

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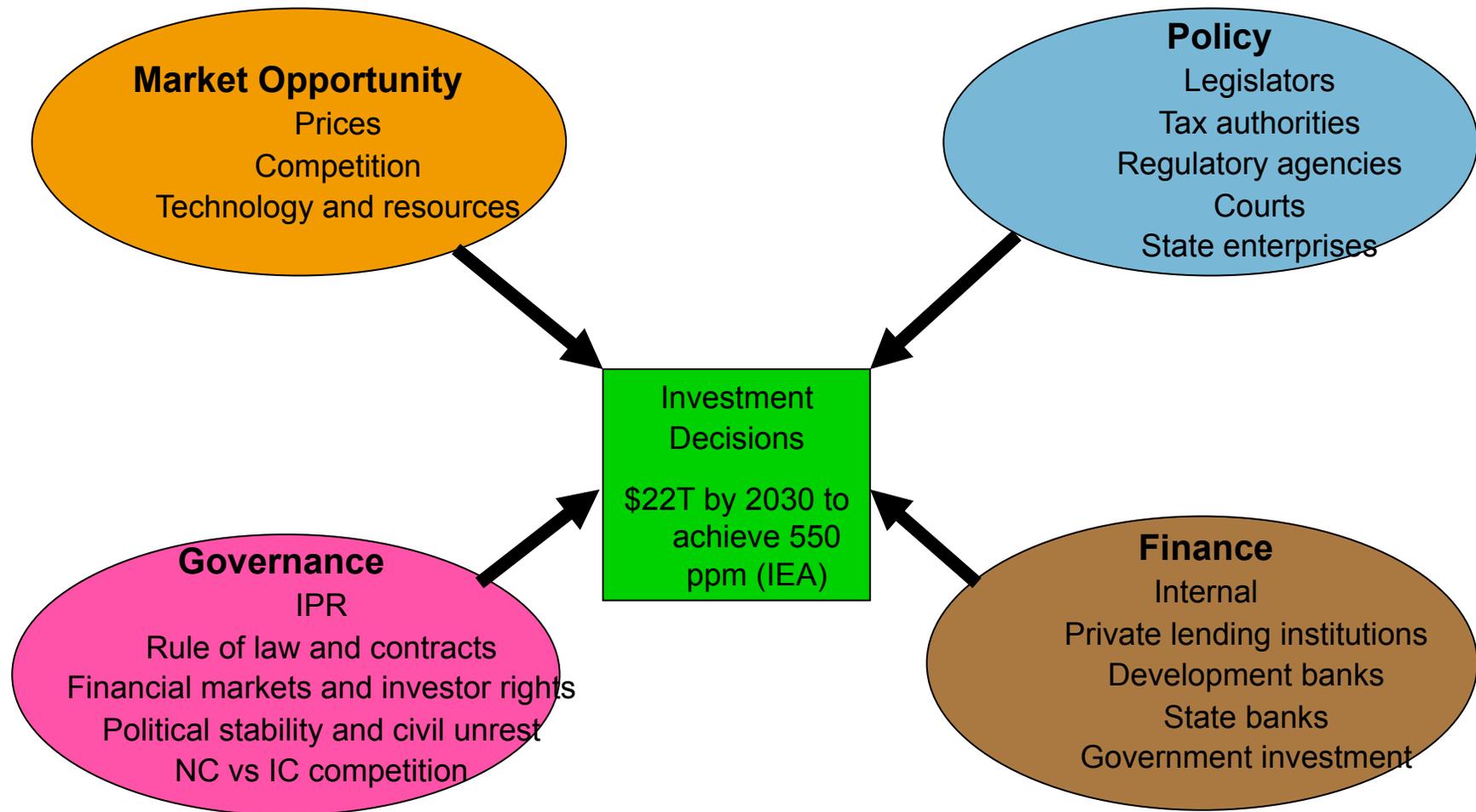
Objectives

- Introduce an institutional perspective and what it has to offer
- Present ideas on how to extend integrated assessment to include the drivers of policy choices in designing “second best” scenarios
- Offer examples of ways in which institutions affect investment and technology deployment

Outline

- Role of investment and technology in achieving climate goals
- What we mean by “institutions” and how they affect investment decisions
- Institutional constraints on global action
- Institutional influences on national policies and outcomes
 - China
 - US
 - “Bottom Billion” countries
- Implications for modeling and policy
- Recommendations for ways forward

Factors that will affect investment decisions



Actors and criteria are completely different in different countries

All the key actors have to say Yes

Institutions, Policies, and Organizations

- “Institutions” refers to the rules-of-the-game for economic and political behavior, such as constitutions, legal systems, electoral rules, laws, norms, etc.
 - “Institution” is a broad category covering informal and formal rules; it includes the rules that define enforcement of the substantive rules (e.g. *baksheesh*).
 - “Policies” are sub-class of institutions--substantive laws, rules, regulations, and government procedures
 - “Organizations” are specific entities such as the FRB, or IBM, or the Girl Scouts
- Content -- questions the institutional perspective addresses
 - What kind of climate policies will be adopted under specific trans-national or national institutions
 - How to predict effects of policies on investment and technology decisions in varied institutional settings
 - How institutions change (or fail to do so) and levers for bringing about change

Overlaps between new institutional studies and climate policy

- Global regimes: The dynamics of global institution building
 - What are the conditions for effective regimes in GHG control and geoengineering?
 - Leading scholars include Drezner, Gruber, Keohane, Krasner
- The requirements for long-term economic success and sustainable development
 - What institutional changes are needed for rapid growth and will they happen?
 - Leading scholars include Bates, North, Wallis, Weingast, Redding, and Witt
- The institutional drivers for innovation and technology diffusion
 - How to manage trade-offs between incentives for innovation and broad diffusion in climate related technologies?
 - Leading scholars include: Mokyr, Nelson, Rosenberg
- Open access resource problems
 - Can REDD really reduce emissions, where, and by what means?
 - Leading scholars include Alston, Libecap, and Ostrom
- The domestic institutions of the great powers
 - How will the incentives of US and Chinese governing institutions affect the prospects for cost effective GHG controls & adaptation?
 - Arnold, Cox, Nathan, Pei, Shirk, Weingast, etc.

Use key recent studies by these scholars to develop **hypotheses** about future climate policy and investment direction in China and US

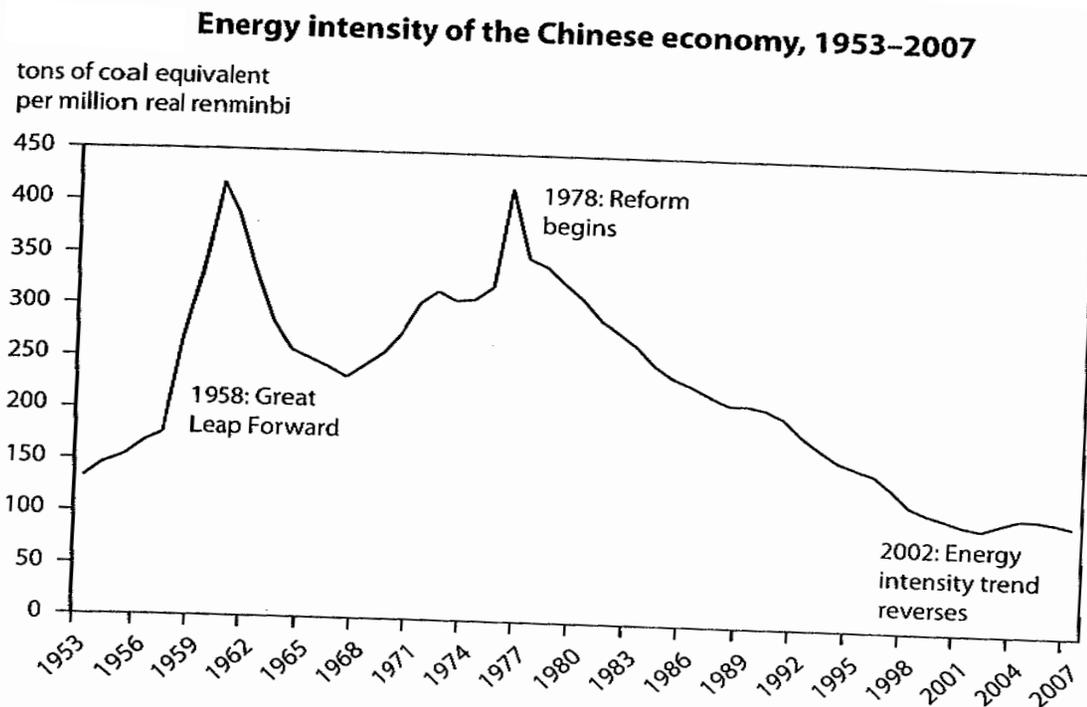
Institutional obstacles to global agreements

- Net benefits are distributed asymmetrically (WITCH results from FEEM)
 - Countries with most emissions tend to suffer the least damages
 - Differing national interests and priorities beyond climate
 - Side payments required for global optimum to be an improvement from status quo for every participant
 - Instability of agreement – no coalition finds cooperation better than free riding
- Major powers build global regimes – but to serve ***their own*** interests
 - Hegemony is the traditional solution for free riding
 - But most powerful have no national interest in compelling cooperation on climate
- Mosaic world is only possibility for stable cooperation on climate

Emission trends in China

Driven by industrial energy use (Rosen and Hauser)

- Once for all improvement from institutional reform
- Technology improvement in power, national champion industries
- Rapid growth of heavy industry driven by local governments
- Net effect is flat energy intensity as structural change offsets technology



Source: CEIC data from National Bureau of Statistics of China, *China Statistical Yearbook*, various years.

The central role of institutions: heavy industry and technology diffusion in China

- Business-government relations drive growth of heavy industry
 - Unfunded mandates on local governments created demand for maximum local growth
 - Local officials gain career rewards and personal wealth from industrial growth
 - Weak institutions for third party contract enforcement spur “clan/regional” autarchy
 - Local governments intermediate low interest loans and protect local markets
 - Exchange rate manipulation shelters firms from consequences of over-capacity
 - Result is uneconomic bias toward investment in capital-intensive heavy industry
- Changing emissions trends requires
 - Changes in local business/government relations
 - Reforms in state-bank lending and incentives for local government officials
 - Change in unfunded mandates and tax regime – *is carbon tax conflict or opportunity?*
- Implications for future policies and emissions growth
 - Resistance from powerful factions to sufficient change
 - Unwillingness of central government to enforce policies that threaten local interests
 - Continued reform may not be a winning strategy in the struggle for political power
 - *Low-carbon industry (Beijing) vs heavy industry (local)*

Political economy of U.S. climate policy

- Legislative process filters proposals
 - Electoral cycle leads to very high political discount rate
 - Voters misperceive economic burden of taxes vs. regulations or subsidies
 - Re-election hinges on serving constituency interests
 - Influence of leadership has declined as the incumbency advantage grew
 - Independence of incumbents ensures that narrow interests carry disproportionate weight
 - Agenda crowding discourages deliberation and encourages log-rolling
- Climate change is especially difficult to deal with
 - Uncertain long term benefits and near term costs require more special interest favors
 - Zero-sum game on distribution of rents and conflict over substantive provisions (e.g. pro and con nuclear) even among *supporters* of action
- Result:
 - Legislation dominated by earmarks, regulatory measures, technology subsidies, mandates, and place-based R&D
 - **The deadlock Adele describes is not unique to 2010 but endemic in US political process**

Implications for investment in the U.S.

- Large scale investments and new technology depend on
 - Explicit energy and climate policy
 - Future regulatory and administrative decisions at many levels
 - Litigation costs and court decisions
- Future investment in energy technology affected by:
 - The technology pork barrel
 - Policy uncertainty and increased costs to cover risk
 - Policy induced technology lock-in
- Scenarios for U.S. policy development might consider:
 - Future of nuclear, tight gas and CCS are driven more by policy/institutions than by technology and reserves
 - De facto coal moratorium due to litigation and regulatory proceedings
 - Patchwork of specific technology subsidies and standards
- Studies that consider these scenarios find considerably higher costs, for the same emission reduction, than with ideal cap and trade

Institutions and institutional change

- Global institutional prerequisites of effective GHG control
 - An effective regime requires a hegemon or a small coalition able to deter free riding
 - The distribution of global power and revealed national preference does not exhibit this pattern
- National institutional prerequisites for market based GHG controls
 - Market based GHG controls demand competitive markets, the rule of law, and effective central government
 - These conditions do not obtain in most of the world.
 - Transformations do occur, but they are rare and typically require ~50 years
- Policy, like technology, is path dependent
 - If institutions that block market based climate policies could be changed easily, they would have been changed already
 - Interests that become powerful then defend the rules that benefit them
 - Fundamental change is rare and can easily disrupt society and unleash violence

Possible global scenario storylines that emerge

- Great power preferences become strong enough to make them willing to enforce greenhouse gas controls -- or they do not, or they do so only four decades hence.
- China and India go all the way to open order and growth continues -- or growth stalls, or one makes it and the other doesn't
- Anti-materialism stalls technological change in the West (a la Mokyr)
- The Bottom Billion solve the violence control problem and adaptation is greatly facilitated -- or they do not
- The developed countries build the institutions needed to rationally manage climate change response budgets (a la Lomborg) or they fail to do so

Neither Beijing nor POTUS have sufficient authority to achieve Copenhagen Pledges

Implications for modeling and a way forward

- “Institutions matter“ for scenarios, policy choices and investment
- The immense diversity policy designs at the global level, within the OECD, and in the developing world will be difficult to fit into existing IAMs
- Need for new analytical narratives, case studies, and modeling innovations to address how institutions change and drive the choice of policies
- Propose process of idea exchange to talk about parallel methods
 - Workshop oriented
 - Bring in scholars who study
 - Long term processes of economic growth
 - Institutional and societal prerequisites of sustained technological progress and material well-being
 - Political economy of development in Africa, Latin America, and Asia
 - Unique characteristics of business systems in China and other rapidly growing economies
 - Congressional politics in the U.S.
 - Discuss the issues, challenges, and objectives of long term climate analysis
 - Create feasible scenarios (“stylized facts”) for policies and growth in different regions
 - Develop hypotheses for
 - How institutions influence policy choices and outcomes in different regions
 - How institutional change can come about
 - Coalition formation and opportunities for global cooperative action

*“What passes for optimism is most often the
effect of an intellectual error.”*
(Raymond Aron)