

This is an original manuscript. Citation for the Accepted Manuscript of the article published in *International Journal of Behavioral Medicine* is:

**Y. Su.** 2010: "Application of Impossibility Theorem: Pareto versus Liberty Principles in Conditional Foreign Aid," *International Journal of Behavioral Medicine*, Volume: 17, Issue 1 Supplement.

## **Application of Impossibility Theorem:**

### **Pareto versus Liberty Principles in Conditional Foreign Aid**

Yanfang Su

#### Executive Summary of Proposal

The aim of this research is to demonstrate why in global governance Pareto principle from an economic perspective and liberty principle from a political perspective are incompatible. Impossibility Theorem is applied to analyze the international relations among players with different preferences. The theoretical proposition of incompatibility is followed by the example of conditional foreign aid, with distinction of indirect liberty and direct control.

Two rival hypotheses, global Pareto condition and national liberty condition, are tested in the empirical evaluation of the foreign aid conditional on the Washington Consensus from 1989 to 1999. First, small-N design is to compare the pre-treatment and post-treatment situations in 3 representative countries, as the non-complier, partial-complier and complete-complier of the Washington Consensus. Second, large-N regressions are to estimate the effect of foreign aid on social developments measured by health outcomes: (1) foreign aid *without* controlling for the adoption level of the Washington Consensus, which reflects in liberty principle; (2) foreign aid *after* controlling for the adoption of the Washington Consensus, which reflects in Pareto principle.

Furthermore, responding to the criticism of “what causes what” in the relationship of underdevelopment and foreign aid, oil price and oil reserve are introduced as instrumental variable (IV) into the model to isolate the causation of foreign aid on social developments, especially health outcomes. Finally, the concept of overlapping consensus from John Rawls is incorporated to interpret why partial-compliers are better off than both non-compliers and complete-compliers given conditionality of foreign aid.

The strategy is to not only work within the domain of the impossibility theorem with empirical evidences but also step out to examine the assumptions that constrain the outcome through the inspiration of overlapping consensus.

<b>Potential Contribution of My Research</b>	
Nature of the Research	International Political Economy (IPE)
Theoretical Significance	Extension of ‘Sen Impossibility Theorem’ to IPE analysis
Rival Hypothesis	Global Pareto and National Liberty
Cases	Foreign Aid and the Washington Consensus
General Significance	The Role of Overlapping Consensus in Global Governance

## **Application of Impossibility Theorem:**

### **Pareto versus Liberty Principles in Conditional Foreign Aid**

Yanfang Su

#### **Introduction**

The Washington Consensus refers to a set of policies propagated by the International Monetary Fund (IMF), the World Bank (WB), and the US government in the 1980s, which was originally articulated by Williamson (2004)<sup>1</sup>. Specifically, the Washington Consensus as the pre-condition for material benefit, such as aid, loan or membership offered by the domain agents is noted as conditionality of foreign aid.<sup>2</sup> Since the term was first named in 1989, the Washington Consensus has been widely debated. In the Conference “From the Washington Consensus towards a new Global Governance” in 2004, Stiglitz emphasized the failure of the Washington Consensus. He argued that the Washington Consensus was neither a necessary condition for the successful development, nor a sufficient condition, although its policy suggestions did make some sense at the specific time for particular nations<sup>3</sup>. In this heated debate, in 2004 Dani Rodrik investigated how to improve the performance of policy reform as an expert in economic

development and sequentially he questioned in 2006 what conclusions should be generated from the Washington Consensus.<sup>4 5</sup> Is it really time to say goodbye to Washington Consensus or does the current economic order, and the particulars of the recent crisis imply renewed relevance of some of the Consensus principles?

Ironically, Stiglitz has stated that if a consensus about the development of underdeveloped countries exists, then it should be that “such consensus doesn’t exist”.<sup>6</sup> Following Stiglitz’s thinking, is “consensus” or social choice in global governance a false proposition? This may be a good starting point to find consistency between theory and the practice and to evaluate the effect of foreign aid conditional on the Washington Consensus.

### **The Puzzle: Incompatibility of "global Pareto" and "national liberty"**

The theoretical arguments surrounding the Washington Consensus inspired me to answer the more general question, namely: why in global governance Pareto principle from an economic perspective and liberty principle from a political perspective are incompatible?

Amartya Sen as a theorist of social choice theory published “The Impossibility of a Paretian Liberal” in 1970 in which he proved the incompatibility of the three conditions of the social choice.<sup>7</sup> These three conditions are defined and referred as U,P and L in the following discussion.

Condition U (unrestricted domain): Every logical individual preference is included in the domain of the collective choice rules;

Condition P (weak Pareto principle): If social members are unanimous then the decision could be made based on individual preferences;

Condition L (Minimal liberalism): Individuals at least have the minimal liberty which is permitted by the society.

As Sen stated, there is no social decision function that can simultaneously satisfy conditions U, P, and L.

Because condition P is the political philosophy basis of welfare economics and condition L concerns about minimal liberty, “the impossibility of a Paretian liberal” is a strong challenge to traditional theory that *Pareto criterion is coherent with individual liberty*.

“Sen Impossibility Theorem” is widely explored in economics and political science, such as “Managerial Dilemmas: The Political Economy of Hierarchy”<sup>8</sup> and “Incompatibility between Pareto condition and individual liberty”<sup>9</sup>. In all the sequential papers on this topic, "decision makers" are individuals, and are based on analysis of individuals and groups (sets of individuals such as organizations or communities). However, in my research proposal, nations are considered as the decision-making unit and the set of nations as the whole set. Sen Impossibility Theorem is extended to analyze nations and global governance (social choice among nations) and to explain the incompatibility of “global Pareto” and “national liberty” given the unrestricted domain.

Accordingly, the three conditions for global governance are defined as follows:

Condition U’(unrestricted domain): Nation’s preferences that are logical are included in the domain of the international collective choice rules;

Condition P' (weak Pareto principle): If nations are unanimous then the decisions could be made based on national preferences;

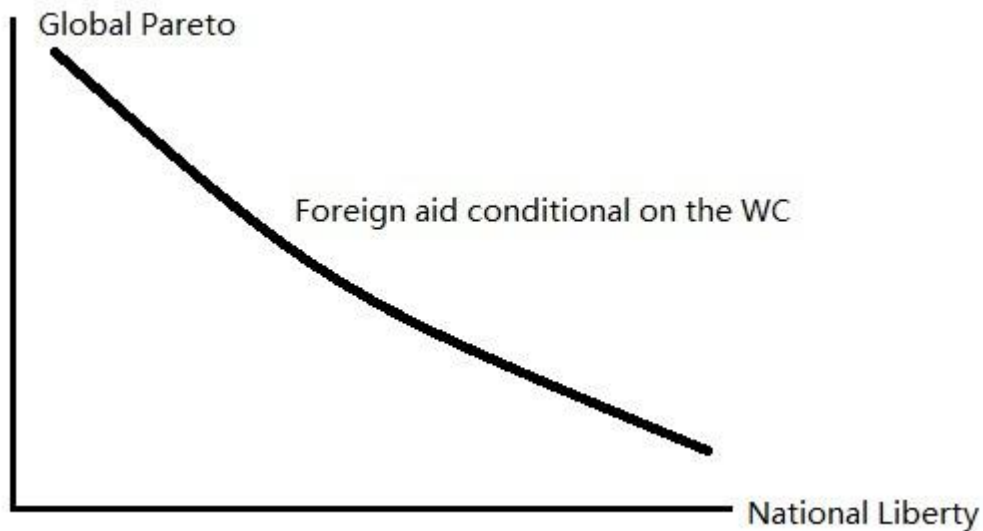
Condition L' (Minimal liberalism): Nations have the minimal liberty at least.

Condition P' and condition L' are incompatible given the unrestricted domain, which means global Pareto and national liberty are conflicting in global governance.<sup>10</sup>

### Rival Hypotheses

The abstract theory can be interpreted by the example of foreign aid and the Washington Consensus. Here, weak global Pareto is referred to the situation that the global society prefer  $x$  to  $y$  such that every decision-making unit inside the society prefers  $x$  to  $y$ . National liberty means, given nation A prefers  $x$  to  $y$  and nation B prefer  $y$  to  $z$ ,  $x$  is preferred to  $z$  in global decision to reflect minimal liberty for nations.

Graph 1: The Incompatibility of Global Pareto and National Liberty



Here are policy recommendations titled as “the Washington Consensus”(WC), the material benefit (M), the domain agents (A) and the potential compliers among developing countries(B) .<sup>11</sup> There are three possible situations:

a) B receives M after accepting the WC, assuming that the adoption of the Washington Consensus in country A is the pre-condition for material benefits offered by the IMF, WB and the US. ;

b) B receives M without accepting the WC, assuming independence between M and the WC, and;

c) No M or the WC for B.

As a representative of the developed world, A would think the best situation is that both the WC and material benefits are offered to B for better global governance. But if B refuses to comply with the WC, A prefers that there should be a certain amount of material benefits for B rather than no support for B. Therefore, the preference order of A is  $a \succ b \succ c$ . As a developing country, B would prefer material supports from A without any pre-condition. But if A insists that the adoption of the WC is the sufficient condition to gain M, B would refuse to accept the offer. Therefore, the preference order of B is  $b \succ c \succ a$ . In sum, both A and B think  $b \succ c$  and according to condition P(weak Pareto principle) the social preference is  $b \succ c$ . But there is no consensus regarding the preference of  $a$  to  $b$ ; in fact, according to Condition L, A and B are eligible to make a social choice based on liberal judgment of national interests. Since A thinks  $a \succ b$ , the social preference based on national liberty should be  $a \succ b$ ; Since B thinks  $c \succ a$ , then the social preference should be  $c \succ a$ . The social preference is  $c \succ a \succ b$ ; therefore, by the property of transitivity,  $c \succ b$ . There is a contradiction between the social preferences

derived from Condition P(weak Pareto principle) and Condition L(Liberalism) respectively. This example vividly explains the theorem testified by Sen that “there is no social decision function, satisfying all conditions U, P, and L”.

Should we discard global Pareto to pursue national liberty? Or should we challenge political values such as national liberty in global governance? After “the Impossibility of a Paretian Liberal” was published in 1970, there were several related debates. In Sen’s response to the criticism from Robert Nozick and Brian Barry, he pointed out: the critics implied liberty as actual control and ignored the importance of indirect liberty.<sup>12</sup> To be explicit, the key distinction of actual control and indirect liberty is whether the decision made by party A for party B is on the behalf of party B. Indirect liberty could be inferred from the counterfactual method. If A were B, A would make the same decision as B makes by himself. For instance, when the domain agents think that the Washington Consensus as the precondition of material benefits should be preferred to no support for the developing countries ( $a \succ c$ ), nonetheless, the developing countries refused to accept the financial support given the WC ( $c \succ a$ ), there is no indirect liberty existing in this case. However, when both A and B think that financial support is better than no support for the underdeveloped in global governance that is noted as  $b \succ c$ , then the domain agents have consensus with the recipients and indirect liberty holds. In the analysis of conditionality in foreign aid, the distinction of direct control against indirect liberty is significant to understand why Pareto condition cannot be compatible with liberty condition. The hypothesis of Pareto condition and national liberty condition, as well as indirect liberty and actual control, is going to be tested in empirical work.

## **Selection of Cases and Methodology**

The method to be applied in this research is combination of case study and regression based on panel data. In case study, I plan to conduct process-tracing for understanding the mechanism between foreign aid and the Washington Consensus. Due to the gap of evaluation of the foreign aid between the international organizations (IMF, WB) and the scholars in related fields, it is useful to build up a formal model to test the hypotheses in explaining the correlation of the acceptance of the Washington Consensus and the performance of the aided countries.

The underdeveloped nations or any nation that is in crisis usually should accept and comply with these policies in order to get assistance and aid. However, ten policies listed in the Washington Consensus were fully-adopted, partially-adopted or rejected by different countries. In small-N research, three countries are selected to represent the category of compliance of the Washington Consensus, i.e., non-compliers, partial-compliers and complete-compliers.

- Group 1 is identified by the IMF and the World Bank as strong implementers, e.g., Uganda, Central African Republic, Gambia, Malawi, Togo and Niger.
- Group 2 is identified by either the IMF or the World Bank as partial implementers, e.g., Ethiopia, Liberia, Sierra Leone, Zimbabwe, Zambia and Burkina Faso.
- Group 3 is identified by the IMF and the World Bank as non-compliers, e.g., Cuba.

In methodology, the pre-treatment and post-treatment comparisons in time series plus the peer comparisons in a cross-sectional perspective will generate the brief view of



“Difference-in-Difference” in case study. In country-level case study, I am aware of certain risks or reluctance of interested groups. That is one reason I am applying for a grant from the Independent Evaluation Group in the World Bank- to gain financial and physical support to access related stakeholders and information. In addition, I will select a large number of potential countries to be examined for a short interest probe, to ensure that eventually at least 3 cases could be explored deeply. Preliminarily, Uganda, Ethiopia and Cuba are considered for close-examination through process-tracing the adoption of the Washington Consensus. Another way to overcome further negative response is to work closely in country with local researchers and universities. The local knowledge generated from another perspective will be appreciated in evaluating the Washington Consensus with multi-dimension.

Furthermore, the cases of adoption of Washington Consensus should be illustrated under the theorized hypothesis testing of the compatibility of global Pareto and liberty condition. Large-N regressions are to estimate the effect of foreign aid on social developments measured by health outcomes: (1) foreign aid without controlling for the adoption level of the Washington Consensus, which reflects in liberty principle; (2) foreign aid after controlling for the adoption of the Washington Consensus, which reflects in Pareto principle.

The relationship of the Washington Consensus and financial crisis, such as the Mexican crisis, the East Asian crisis and the Argentine crisis, has been heated discussed; however, the causal mechanism is not easy to be established. Responding to the criticism of “what causes what” in the relationship of underdevelopment and foreign aid,

oil price and oil reserve are introduced as instrumental variable (IV) into the model to isolate the causation of foreign aid on social developments, especially health outcomes.

The methods I will use to gather information is along the lines of the mission of Independent Evaluation Group to draw lessons from the World Bank experience, and to provide an objective basis for assessing the results of the Bank's work.

### **Modeling, conceptualization and Measure**

#### Modeling

- Stage 1: using the interaction of oil price and oil reserve as the IV, i.e.,  $\log(\text{oil price}) * \text{oil reserve}$ , to predict the variation of the foreign aid.
- Stage 2:
  - Model 1: After controlling for the adoption of the Washington Consensus, what is the effect of predicted foreign aid on social development, especially health outcomes?
  - Model 2: Without controlling for the adoption of the Washington Consensus, what is the effect of predicted foreign aid on social development, especially health outcomes?

#### Conceptualization

- Social Development (Dependent Variable)
- Foreign aid (Independent Variable)
- Degree of adoption of the Washington Consensus (Independent Variable)
- National liberty (Political Controls)

- Economic Situation (Economic Controls)

#### Measure

- Social Development
  - Infant Mortality
  - Life Expectancy at Birth
- Foreign Aid
  - External Debt (% of GDP)
- Degree of adoption of Washington Consensus
  - Total Public Expenditure
  - Public Expenditure in basic health, education and infrastructure
  - Tax Rates variation
  - Interest Rates variation
  - Financial liberalization
  - A Competitive Exchange Rate
  - Trade Liberalization
  - Liberalization of Inward Foreign Direct Investment(FDI)
  - Privatization
  - Deregulation in entry of industry
  - Property Rights for the informal sector
- National liberty (Political Controls)
  - Democracy
  - Veto Players

- Membership, International Labor Organization
- Number of INGO
- Foreign Newspaper and Magazine sales
- Economic Situation (Economic Controls)
  - GDP per capita in 1989
  - Real GDP Growth in 1989
  - Real interest rates in 1989
  - Currency Crisis in 1989
  - Current Account Balance in 1989
  - The acceptance of financial aid in 1989
  - Export competition
  - Trade
  - Capital competition
  - BIT (bilateral investment treaties)
  - PTA (preferential trading agreement)
  - Government Consumption (% of GDP)

### **Feasibility of the Research Design**

The research includes three phases, briefly.

#### Phase I: Formal Modeling and Large-N Study

- Generate indicators to approximate key hypotheses
- Identify potential data to match the indicators
- Generate Dataset and interpret Descriptive statistics

- Conduct Hausman test for panel data and Two-stage-least-square(TSLS) regression
- Duration: 6 months

### Phase II: Country-level Case Study

- Get information with richness through second-hand literature review. Interview relative policy makers in the IMF, WB and the US government
- Conduct narrative research for selected countries in the Washington Consensus
- Pilot first set of recommendations to related international organizations
- Test political sensitivity of recommendations through small group meetings with high level individuals
- Duration: 6 months

### Phase III: Delivery of Research Outcomes

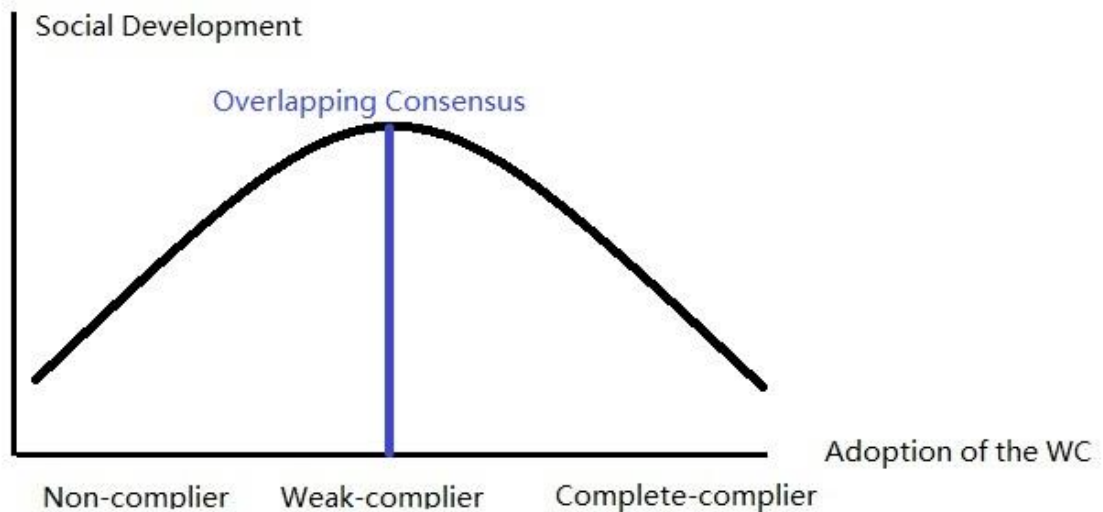
- Key theoretical findings to be published in academic journals
- Key reports of country-level case studies and large-N regression in evaluating the impact of foreign aid conditional on the Washington Consensus
- Working papers in workshops and international academic conferences

### **General Significance: Overlapping Consensus**

Last but not the least, the linkage of Sen Impossibility Theorem and political philosophy is briefly shown here. Through analysis of the ‘Sen Impossibility Theorem’, the logical difficulty between “global Pareto” and “national liberty” remain unsolved.

Rawls proposed an approach to mitigate this difficulty<sup>13</sup>, which attracts my interests in theoretical inquiry. If consensus is only required to be overlapping rather than unanimity, the restriction of “global Pareto” could be loosened. According to Rawls’s classification, consensus can be distinguished between “overlapping consensus” and “interim agreement” and the distinction in concepts enable me to think about the Washington Consensus and conditionality of foreign aid in depth. If the result from large-N study shows the relationship of adoption of the Washington Consensus and social development is with reversed-U shape, the empirical intuition is coherent with Rawls’ reflection, which means that weak-compliers are better off than both the non-compliers and the complete-compliers.

Graph 2: Estimation: Effect of Compliance of the WC on Social Development



The result of this research could be applied in other fields in global governance and program evaluations regarding the issues with externality<sup>14</sup>, such as environment, non-renewable resources, gap between the poor and the rich, nuclear weapons, and AIDS. These facts drive me into reflection: Which field is consensus/international decision needed most urgently? For instance, within the national position, it’s difficult to achieve

consensus in problems with strong externality. It is rational to evade the responsibility in environment protection because of national interest. As Rawls stated in “The Law of Peoples”, why use the conception of peoples instead of states?<sup>15</sup> In Rawls’s opinion, viewing the people with liberty and democracy to be the mainstream in society is significant to exceed national dominion. Furthermore, overlapped consensus with a core of justice and equity<sup>16</sup> does not require full unanimity. Following Rawls’s analysis, overlapping consensus can be more capable, and can include obligations to future generations, environmental protection and so on.

This research mainly aims to testify the incompatibility of global Pareto and national liberty in foreign aid conditional on the Washington Consensus; however, it is not restricted this specific empirical test but is also to address the necessity of internal consistency of global governance. Therefore, more deep theoretical inquiry especially in political philosophy, is interesting and in need.

## **Appendix1: Content of the Original List in the Washington Consensus by John Williamson**

1. Fiscal Discipline. This was in the context of a region where almost all countries had run large deficits that led to balance of payments crises and high inflation that hit mainly the poor because the rich could park their money abroad.

2. Reordering Public Expenditure Priorities. This suggested switching expenditure in a progrowth and propoor way, from things like nonmerit subsidies to basic health and education and infrastructure. It did not call for all the burden of achieving fiscal discipline to be placed on expenditure cuts; on the contrary, the intention was to be strictly neutral about the desirable size of the public sector, an issue on which even a hopeless consensus-seeker like me did not imagine that the battle had been resolved with the end of history that was being promulgated at the time.

3. Tax Reform. The aim was a tax system that would combine a broad tax base with moderate marginal tax rates.

4. Liberalizing Interest Rates. In retrospect I wish I had formulated this in a broader way as financial liberalization, stressed that views differed on how fast it should be achieved, and—especially—recognized the importance of accompanying financial liberalization with prudential supervision.

5. A Competitive Exchange Rate. I fear I indulged in wishful thinking in asserting that there was a consensus in favor of ensuring that the exchange rate would be competitive, which pretty much implies an intermediate regime; in fact Washington was already beginning to edge toward the two-corner doctrine which holds that a country must either fix firmly or else it must float “cleanly”.



6. Trade Liberalization. I acknowledged that there was a difference of view about how fast trade should be liberalized, but everyone agreed that was the appropriate direction in which to move.

7. Liberalization of Inward Foreign Direct Investment. I specifically did not include comprehensive capital account liberalization, because I did not believe that did or should command a consensus in Washington.

8. Privatization. As noted already, this was the one area in which what originated as a neoliberal idea had won broad acceptance. We have since been made very conscious that it matters a lot how privatization is done: it can be a highly corrupt process that transfers assets to a privileged elite for a fraction of their true value, but the evidence is that it brings benefits (especially in terms of improved service coverage) when done properly, and the privatized enterprise either sells into a competitive market or is properly regulated.

9. Deregulation. This focused specifically on easing barriers to entry and exit, not on abolishing regulations designed for safety or environmental reasons, or to govern prices in a non-competitive industry.

10. Property Rights. This was primarily about providing the informal sector with the ability to gain property rights at acceptable cost (inspired by Hernando de Soto's analysis).

## **Appendix 2: Data Sources**

1. Social Development: World Development Indicators (WDI) 2008, Demographic Health Survey (1988-2003)
2. Foreign aid: WDI (2008) and IMF (2008); Leblang and Satyanath (2006); Mukherjee (2007)
3. Degree of adoption of the Washington Consensus: WB and IMF (2008)
4. National liberty: World Bank's Database of Political Institutions; Beck et al (2001); Polity IV Index
5. Economic Data: WDI (2008) Penn World Tables (2008) and IMF (2008)

Reference:

---

<sup>1</sup> John Williamson, *A Short History of the Washington Consensus*. “From the Washington Consensus towards a new Global Governance,” Barcelona, September 24–25, 2004.

<sup>2</sup> Beth Simmons, Beth “*Compliance*” *Annual Review of Political Science* 1:75-93. 1998.

<sup>3</sup> Joseph E. Stiglitz, *Post Washington Consensus Consensus*. Conference “From the Washington Consensus towards a new Global Governance”, Barcelona, September 24–25, 2004.

<sup>4</sup> Dani Rodrik, *Rethinking Growth Policies in the Developing World*. Harvard University, October 2004.

<sup>5</sup> Dani Rodrik, *Goodbye Washington consensus, hello Washington confusion*, *Journal of Economic Literature*, 2006

<sup>6</sup> Joseph E. Stiglitz, *Post Washington Consensus Consensus*. Conference “From the Washington Consensus towards a new Global Governance”, Barcelona, September 24–25, 2004.

<sup>7</sup> Amartya Sen, *The impossibility of a Paretian liberal*, *Journal of Political Economy*, 1970

<sup>8</sup> Gary Miller, “*Managerial Dilemmas: The Political Economy of Hierarchy*”. The Press Syndicate of the University Cambridge, the United Kingdom, 1992

<sup>9</sup> Zhiyuan Cui, “*Incompatibility between Pareto Condition and Individual Liberty*”, in “*Institutional Innovation and the Second Thought Liberation*”, Hong Kong: Oxford University Press, Honk Kong, 1997

<sup>10</sup> In Rawls’s “*Political Liberalism*”, overlapping consensus and liberalism have no such logic difficulty, because overlapping consensus doesn’t require unanimity and loose the “Pareto condition”

<sup>11</sup> Amartya Sen, *The impossibility of a Paretian liberal*, *Journal of Political Economy*, 1970

<sup>12</sup> Zhiyuan Cui, “*Incompatibility between Pareto Condition and Individual Liberty*”, p 256

<sup>13</sup> In the context of economic globalization and regional integration, it’s very important to understand that it’s a key point to just require consensus to be partial overlapped instead of to be fully unanimous. It’s essential to the success of global cooperation.

<sup>14</sup> Hongze GE: *Consensus*, *Modern Philosophy*, Issue 2, 2000, P56

---

<sup>15</sup>Rawls, *The Law of Peoples*, Part I section II, Cambridge, MA: Harvard University Press, 1999

<sup>16</sup>Rawls, *Justice as Fairness: A Restatement*