Reflection of Long-term Fiscal Policy Through Moral Philosophy & Experimental Social Science

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Structure of Fiscal Issues

Global warming issues are often taken up as a public policy challenge that crosses multiple generations, but finance is also a policy which has long-term impact. Sustainability of debt has become an issue in many countries including Japan. First, let us clarify the structure of fiscal issues by comparing them to global warming issues. While global warming is an issue with a timeframe of 50 to 100 years, fiscal issues span a shorter time – around 50 years at maximum. Fiscal issues are both intergenerational and relevant to the current generation itself. In addition, while interests in global warming issues are clustered geographically, interests in fiscal issues vary according to the personal economic status of individuals and what stage in life they are at. Hence when thinking about fiscal issues, there is a need to consider the complexity derived from timeframe or interest clusters.

There is also an important difference in the nature of the resources in question. In the case of global warming, natural resources (in the form of greenhouse gas emission caps) are an issue, but in fiscal issues the problem is economic resources, and economic resources are made by people. According to John Locke (*Two Treatises of Government*, 1689), what people make or produce becomes that individual's property, and to this extent, if a certain economic resource was to be retained for the future generations, views such as "Why is it that I cannot use products that I have made just for myself?" will be raised. What we need to remember here is David Hume's concept of ownership, which he defines as to be established by humans in the form of *conventions* rooted, first of all, in interests (*A Treatise of Human Nature*, 1739-40). Locke's scheme of a person plowing an empty field to gain ownership of the land and crops is not necessarily appropriate for modern economy. In resolving fiscal issues, conventional arrangement of resource ownership holds significant meaning.

To begin with, how is the foundation laid out for ethics between generations? I have addressed this issue before ("Philosophical Foundation for Issues of Future Generations" by Toshiaki Hiromitsu, *Finance*, September 2015), and assume that what supports intergenerational ethics is ultimately an agreement between those within the same generation, and what supports that agreement is the reason that humans possess. *The reasonable* is contrasted with *the rational* by John Rawls (*Political Liberalism*, 1993), and people who meet *the reasonable* are those who understand that if other people honor the fair provisions of cooperation, then that principle must be honored even if circumstances may require sacrificing one's own interest. This image of humans (although Rawls himself tries to keep this as a political initiative) is analogous with Hume who sees humans as having altruism as their true nature, and in recent years with knowledge of psychology and behavioral economics. Rhetoric plays an important role in creating that agreement. Agreement is the basis for ethics, further creating a system, and with the help of the system an attempt to enforce intergenerational ethics is made. Future Design (FD) can be understood as work that attempts to systematically support our choices so that they are in line with intergenerational equity, rather than shifting to private interests, which we tend to do.

Solving Problems in Long-term Fiscal Policy Through Laboratory Research

Investigations on the function of FD have been conducted through experiments. Studies on fiscal policies using experimental methodology include those of Charles Bram Cadsby & Murray Z. Frank ("Experimental Tests of Ricardian Equivalence", *Economic Inquiry*, 29(4), 1991), but what I embarked on inspired by Tatsuyoshi Saijo ("Future Design: Bequeathing Sustainable Natural Environments and Sustainable Societies to Future Generations", SDES-2018-4, Kochi University of Technology, 2018) and others was research on determining hypothetical fiscal policies in a laboratory ("Consideration of Keys to Solving Problems in Long-term Fiscal Policy Through Laboratory Research", *International Journal of Economic Policy Studies*, 2019). Some 447 people from their late teens to their 70s were each asked to choose between deferring costs until 30 years later (Fiscal policy 1: FP1) or to share them between now and the future (Fiscal policy 2: FP2); and later, the policy to be adopted was determined through exchange of opinions in a group consisting of three people. For some groups, one member was randomly selected from the three as an imaginary future generation and was asked to participate in the opinion exchange by pretending to be someone 30 years from now.

The study mainly examined two hypotheses. One is the "silver democracy hypothesis" and it hypothesizes that elderly participants tend to choose to defer the costs. The other is the "deliberative democracy hypothesis" which hypothesizes that we come to better decisions (in the case of this experiment, to share the costs between

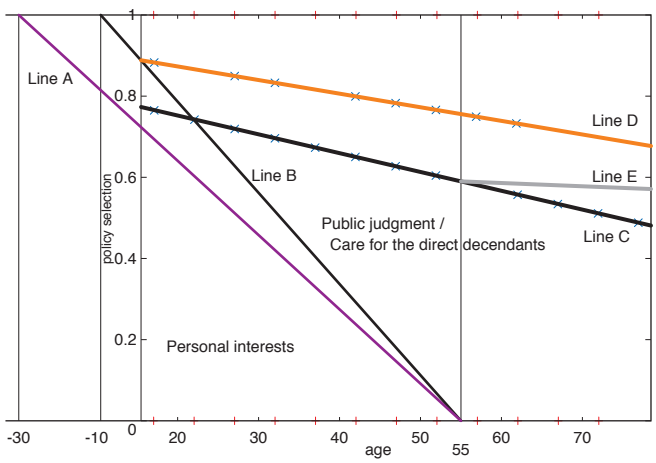
now and the future) through deliberation.

In looking at the "silver democracy hypothesis", we indeed identified that as age rises participants supporting FP2 decreased. But the speed at which it decreased was slower than when the policy was selected based on private interests *(Chart 1)*. The support for FP2 from elderly participants may have also been supported by public judgment, stepping away from private interests. It may be that with the progress of age, people near the state of *nirvana* and make universal judgments. (On the other hand, support for FP2 based on public judgment is estimated to be weaker than support based on private interests. To this extent, we should be mindful of the possibility that support for FP2 by the elderly age group is unstable.)

On the "deliberative democracy hypothesis", compared with the share in support for FP2 before the opinion exchange (71.6%), the share in support for FP2 was higher for the decision as a group after the opinion exchange (79.1%). In particular, support was higher for groups where the imaginary future generation was introduced (87.7%). At first glance it seems to support this hypothesis. But when looking at the results carefully, in the change in opinions through opinion exchange, changes that were adaptive to the masses clearly stood out *(Table)*. Participants who had selected FP1 may have been guided towards FP2 by peer pressure from the other two participants who had selected FP2 (or the imaginary future generation). In addition, it was indicated that there may be a possibility that the logic to support FP1 (optimistic thoughts regarding future economic growth, or the feeling that it is not necessary to be wary since the value of future generations are

CHART 1

Relationship between support of FP2 & age



Note:
Vertical axis shows the percentage of support for FP2, and horizontal axis is age. Judging from personal interests, support for FP2 for those aged 55 years (average remaining life of 30 years) is 0%. Assuming that support for FP2 will be 100% at ages minus 30 or minus 10 years (becoming an adult in 30 years), the rate of support between the age groups will be shown on line A or B, which connects 100% and 0%. Lines C and D show support rates for participants obtained through regression analysis (for difference in lines C and D, see Hiromitsu, 2019). The spaces between line C (D), and lines A (B) represent room for elevation of support for FP2 by public judgment or in consideration of direct descendants.
Source: Toshiaki Hiromitsu (2019), Consideration of Keys to Solving Problems in Long-term Fiscal Policy Through Laboratory Research, International Journal of Economic Policy Studies

TABLE

Opponents of those who changed their opinions through opinion exchange

	Adaptive opinion change			Others		
Composition of opponents	2,2	IFG, 2	2,2,1	2,1	IFG, 1	1,1
People who changed FP1→FP2 (39 people)	15 people	12 people	4 people	5 people	2 people	1 person
	Adaptive opinion change	Others				
Composition of opponents	1,1	1, 2	1 , IFG	1,2,2	2, IFG	2
People who changed FP2→FP1 (21 people)	7 people	6 people	3 people	2 people	2 people	1 person

Note:
** For example, "2, 1" means one supporter of FP2 and one supporter of FP1. IFG represents Imaginary Future Generation.*
*** "Adaptive opinion change" means the adaptive opinion change to the majority of the group opponents. There were 39 people who changed their opinion from FP1 to FP2 through exchange of opinions, and it can be seen that of those people, 31 (15+12+4) changed their opinion to adapt to the majority.*
Source: Toshiaki Hiromitsu (2019), Consideration of Keys to Solving Problems in Long-term Fiscal Policy Through Laboratory Research, International Journal of Economic Policy Studies

unknown) may have been more convincing than the logic which called on generational equity that supported FP2.

With this in mind, one of the future challenges is how to improve the function of deliberation. What is happening when a person changes their opinion, and how? In what instances does a person step away from their initial perspective? One route is to approach it from neuroscience. For complex issues such as fiscal policy, even if imaginary future generations were to be introduced, to merely allocate that role randomly may not be enough for it to function fully. If that is the case, what efforts should be applied as an institutional back-up that supports deliberations?

Role of Norms in Intergenerational Cooperation

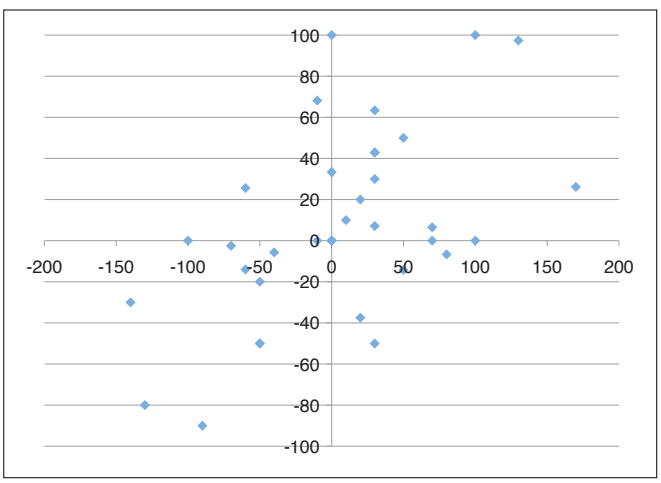
Seeking alternative or complementary methods for deliberation is also an important challenge. In my paper ("The Role of Norms in Intergenerational Cooperation – Studies Through Economic Experiments and Implications for Fiscal Policy", *RCNE Discussion Paper Series No. 6*, Hitotsubashi University, 2018), I discussed experiments conducted focusing on the role of norms in intergenerational cooperation, and searching for implications for fiscal policies.

To be more concrete, an experiment (A) where the participants donate their allotted 200 points alone was first conducted; then a second experiment (B) was conducted by splitting the participants into two groups, the first-movers and the second-movers. In B, the first action whereby the first-movers divide their allotted points into points to keep and points to donate is the same as experiment A, but in B the donations will not be donated directly but instead will be entrusted to the second-mover. Second-movers then divide the sum of points that were entrusted from the first-mover and the allotted points into points to keep and the final donation. First-movers are assumed to be equivalent to the preceding generation, and second-movers as the succeeding generation. The final points of donation through the two generations would be considered public goods as long-term survival of the community. This is understood to be the framework to consider intergenerational cooperation between adjacent generations in the supply of public goods.

The result of the experiment showed that in B, second-movers who had the impression that the donation entrusted to them from the first-movers was higher than what their norm had anticipated, raised the percentage of points going to donation. In other words, compared to individual (second-mover) donations in experiment A, second-movers who felt that the donations received from first-movers was large increased the donation (percentage in holding

CHART 2

Relationship between impression of first-mover & action of second-mover



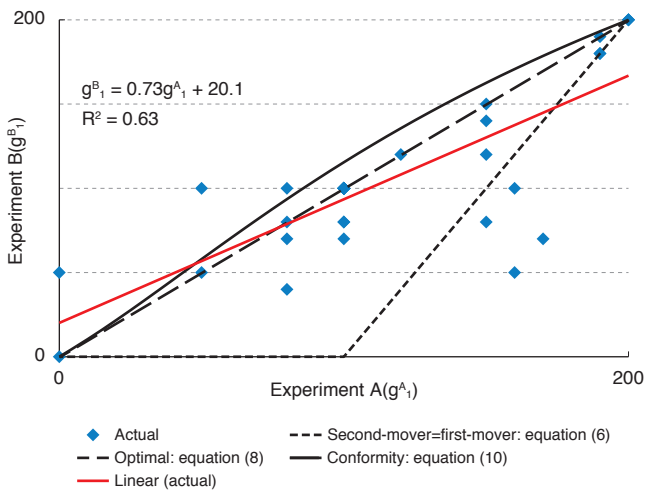
Note: Impression of first-mover in the eyes of second-mover (horizontal axis)
Change in second-mover's percentage of donation in capital (vertical axis)*
** against equivalent of 200 points*
Source: Toshiaki Hiromitsu, "The Role of Norms in Intergenerational Cooperation – Studies Through Economic Experiments and Implications for Fiscal Policy", RCNE Discussion Paper Series No. 6, Hitotsubashi University, 2018

capital) in experiment B *(Chart 2)*. (The more donations entrusted from the first-mover, the larger the capital of second-movers becomes, and hence if the income elasticity of the donation is high, second-movers might increase the percentage of donation, but that possibility is eliminated by statistical analysis.) This can be interpreted as second-movers conforming to the norm indicated by the first-movers.

Such conformity holds potential to promote intergenerational cooperation. *Chart 3* is a scatter diagram of donations from first-movers in both experiment A and B. First-movers make decisions in a circumstance where the decisions of second-movers are unavailable. In estimating the decisions of second-movers, one methodology is to assume that "second-movers hold the same utility function as myself (first-mover)". Under this estimation, solving the function assuming that first-movers maximize their own utility, "second-mover = first-mover: equation (6)" in *Chart 3* can be achieved as a solution for the first-movers' donation in experiment B. (There are certain assumptions that are laid out for the utility functions of first-movers and second-movers, and for details please refer to the original source.) Donations of the first-movers remain at zero for those that donated up to 100 points in experiment A, and later becomes an increasing function, but the donations are

CHART 3

Donations by first-mover (scatter diagram)



Source: Toshiaki Hiromitsu, "The Role of Norms in Intergenerational Cooperation – Studies Through Economic Experiments and Implications for Fiscal Policy", RCNE Discussion Paper Series No. 6, Hitotsubashi University, 2018

suppressed compared to the actual amount. On the other hand, in the case when the first-movers estimate that second-movers conform to them, donations from first-movers increase up to "conformity: equation (10)" or to "optimal: equation (8)". The final donation that emerged via the first-mover and second-mover also increased compared with when there was no conformity.

In cases such as this where conformity is anticipated, it should be noted that first-movers take actions according to the Kantian categorical imperative (philosopher Immanuel Kant's proposition of "Act only according to that maxim whereby you can, at the same time, will that it should become a universal law."). First-movers wish for cooperative activity from second-movers, and they themselves act cooperatively. It is generally said that punishment does not function between generations. Succeeding generations cannot punish the preceding generations. But in circumstances where this categorical imperative is effective, first-movers must be cooperative or otherwise receive the punishment of reduced final donations. Second-movers take the final donation hostage to ask for cooperation from first-movers. From the perspective of the first-mover, it is the same as the second-mover employing a trigger strategy. Under this strategy, the credibility of intimidation generally becomes the issue, but for second-movers in this experiment, their norms themselves have transformed, and therefore intimidation is credible. Direct reciprocity has emerged between the first-mover and the second-mover.

I would like to point out that this Kantian categorical imperative is highly practical. For example, prefectural governors in Japan who are elected directly and whose term is guaranteed hold strong authority, but it can be shown that even amongst governors there is conformity to the predecessor in terms of fiscal discipline. As long as conformity works, each governor, while not wishing to waste money, thinks that once throwing away money begins, bad habits will continue for generations, risking the long-term survival and prosperity of the prefecture, and therefore resists wasting money. Such logic can work. The same may also be valid when substituting governors with members of prefectural assemblies, staff or residents.

Moreover, when disciplining long-term fiscal policy, it may be useful to recognize that the preceding generation did well through a reinterpretation of history. To look at the same issue from inside out, even if the current critical fiscal condition – which is the result of the wild fiscal management of the preceding generation – were to be voiced, changes in norms that would promote fiscal reform may not emerge. In addition, what should be pointed out is the efficacy of teaching the "social fact that conformity to first-movers works" to increase cooperative activity. Amongst those who have public spirit, there may be some that fear being exploited by the succeeding generation and therefore hesitate to cooperate. Teaching this fact of conformity may be effective to soften this fear.

Future Challenges

This article has introduced research that has intensively applied moral philosophy and experimental social science to solve long-term fiscal issues, approaches which had thus far not been fully applied when considering fiscal policy.

How to utilize deliberation including imaginary future generations will continue to be a major focus. More in-depth research on voting systems, such as Demeny voting, and further discussions about establishing the rights of the future generation as constitutional rights can also be valuable. The issue is deeply embedded in the question of what the future would look like for people. Research on the characteristics of discount and uncertainty surrounding public policy would also be an important challenge. JS

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