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to thank the authors for providing the interesting results and also encourage further works on the issue. Identifying the causality and the underlying hypothesis will make a substantial contribution to the literature.

Comment Chang-Gyun Park

The chapter examines the relationship between demographic structure and government expenditure on compulsory public education with Japanese data. A standard theoretical model would predict that if the median voter is old enough to be without kids under compulsory public education and does not take the external effect on general productivity level into account, we would observe the positive correlation between the two variables. Several researchers had already tackled the issue and provided evidence conforming to the implication of generational competition theory. However, Japan seems to be an ideal test site to reexamine the issue because it has experienced one of the fastest demographic changes in human history.

The authors report an interesting finding. While the share of elderly population had a positive relation with per capita expenditure on public education in the 1970s and 1980s, the relation was reversed in 1990s when demographic change measured by the proportion of the elderly of sixty-five years or older was significantly accelerated. They conjecture that the result may reflect the institutional shift in the mid-1980s, which helped political pressure from demographic structure project more clearly into collective decision making on public expenditure. From 1985, Japanese central government had gradually reduced the subsidies to local governments to cover part of teachers' salary and local governments were forced to bear more fiscal burden with regard to compulsory education. One can infer that as the fiscal burden increased the decision making on compulsory education of local governments, it began to be affected by political pressure from the elderly, who are thought to be less supportive for increasing expenditure on public education. Plausible as it sounds, the authors do not offer much empirical evidence to support the conjecture. Further in-depth investigation on the issue should be done before it is accepted as a reliable explanation on the sign reversal repeatedly reported in the chapter.

We should be very careful in interpreting the true implication of estimates of the key explanatory variable, the proportion of the elderly among the entire population. Though it is not entirely clear from the chapter, it seems that the authors include both current and capital expenditure in measuring the dependent variable, per pupil expenditure on compulsory public

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education. As aging progresses, some portion of capital expenditure, such as construction of new school buildings, may decrease even in the absence of generational competition in political decision making. Considering the lumpy nature of capital expenditure, we may observe, at least in the short run, a significant decrease in per-pupil expenditure on compulsory education without lowering the quality or intensity of education and may simply reflect projected decrease in demand for compulsory education. Data permitting, it would be a useful exercise to conduct the empirical investigation for the current expenditure as well as the total expenditure.

Next, I would like to suggest a minor robust check for the key explanatory variable. The authors take the proportion of the elderly to approximate the political pressure from the older generations, who are presumed to be less supportive for public education. Considering considerably different voter turnout ratios across generations and time, one can construct a better proxy for political pressure from the elderly by combining the proportion of the elderly and turnout ratio of the corresponding group.

Finally, the main reason we pay attention to the issue is that generational competition may do harm to accumulation of human capital that is widely believed to be the crucial factor in maintaining economic growth. We can easily accept the possibility that generational competition in allocation of public resources may result in divergence from socially optimal level of human capital investment to suboptimal resource allocation. Therefore, the findings in the chapter have significant policy implications as well as theoretical substance. However, public education is just a part of human capital investment and the decreased public expenditure could be compensated by increased expenditure on private education by worrying parents. Consequently, competition among voting generations in the arena of public expenditure may not have major effects in terms of efficiency of resource allocation. We may need to examine the expenditure on education both public and private to address the issue, especially in the context of Japan, where expenditures on private education such as extracurricular activities and private tutoring constitute a significant part of the total human capital investment.