Evaluations by parents of education reforms: Evidence from a parent survey in Japan

Oshio, Takashi
Sano, Shinpei
Ueno, Yuko
Mino, Kouichiro

Evaluations by parents of education reforms: Evidence from a parent survey in Japan

TAKASHI OSHIO[a*], SHINPEI SANO[b], YUKO UENO[c], & KOUICHIRO MINO[d]

[a, b] Graduate School of Economics, Kobe University, Kobe, Japan; [c] Organization for Economic Co-operation and Development, Paris, France; [d] Cabinet Office of the Japanese Government, Tokyo, Japan

ABSTRACT *We examine how Japanese parents evaluate the current education system and assess possible reforms, based on a nationwide parent survey. Parents who have higher educational background, occupational status, and household income, and expect higher education attainment from their children tend to be less satisfied with the current system and more in favor of school choice and voucher programs. They are also more willing to pay for additional education provided by public schools. These findings point to the possibility of student sorting caused by the different responses of parents to market-oriented reforms, even if overall efficiency in education can be improved.*

Keywords: school choice; school voucher; willingness to pay

---

*Corresponding author. Takashi Oshio, Graduate School, Kobe University, 2-1 Rokko-dai, Nada-ku, Kobe 657-8501. Email: oshio@econ.kobe-u.ac.jp.

Introduction

There has been a gradual shift in education policy in many advanced countries towards the creation of a quasi-market in education (Le Grand, 1991, and Glennester, 1991), although magnitude and pace differ from country to country. Market-oriented reforms in education are expected to raise the efficiency of public education as a whole through more intense competition among schools. However, their distributive impact is always debatable given the risk of student sorting, a point often stressed by opponents to introducing market competition in education. Indeed, responses to policy changes by students and parents are key determinants of the policy effect in general, because education is a typical service for which consumers are inputs (Rothschild and White, 1995), and also because educational outcomes are affected by peer effects (Epple and Romano, 1998).

In a country with only limited experience of introducing a quasi-market in education, however, it is almost impossible to precisely assess policy outcomes or predict the eventual results of education policy reforms. Experiences in other countries are useful but sometimes misleading, given substantial differences in institutional and socio-economic backgrounds among countries. One reasonable and realistic way to foresee the direction of the policy impact is to examine how parents evaluate the existing system and assess possible reform options. Identifying what factors affect their evaluation and assessment can also be expected to help predict their plausible responses to policy changes, because it is well known that demand for education depends greatly on the socio-economic backgrounds of parents.

This paper examines how Japanese parents evaluate the current education system and assess reforms to education policy, especially introducing school choice and voucher programs at the elementary and junior high school levels. The Japanese government has initiated a series of policy reforms in recent years towards

decentralization and deregulation with the aim of increasing competition among schools. However, it is premature to state anything clear at this point about the impact of the reforms on educational outcomes, as well as student sorting, because there are virtually no data available from official statistics.

Our empirical analysis is based on a nationwide Internet survey conducted by the Cabinet Office (CAO) of the Japanese Government, asking 2,000 parents what they think about their children's schools, teachers, and education policy reforms. Evaluations by parents of the current system and their attitude towards new ones will have some implications for policy debates about education reforms. In addition, we estimate their willingness to pay (WTP) for supplementary classes provided by public junior high schools and identify determinants.

The remainder of this paper is organized as follows. First, we present the institutional background and briefly review preceding research. Second, we explain the data and provide basic survey results. Third, we summarize the estimation results and discuss their implications. Finally, we provide some concluding remarks.

Institutional background and preceding studies

Institutional background

Compulsory education in Japan consists of two stages: elementary schools (for age 7-12) and junior high schools (for age 13-15), prior to senior high schools (age 16-18). Public elementary and junior high schools require no tuition and have no selection process at enrollment. Students previously entered schools assigned by local authorities based on their place of residence. Since around 2000, however, some municipalities have been trying to introduce school choice systems. According to a survey conducted by the CAO (2006), 14.9 percent and 15.6 percent of the education boards in municipalities reported that they had already introduced these programs for

elementary and junior high schools, respectively.

The momentum towards decentralization and deregulation has also been mounting in policy discussions within the central government. Indeed, the Council for the Promotion of Regulatory Reform in the CAO released its report on regulatory reform in 2005, in which the Council emphasized the need to enhance school quality by allowing parents to choose a child's school more freely. This report has inspired debates about school vouchers, but here is no consensus yet about adopting school vouchers.

Preceding studies

There has been extensive preceding research, both theoretical and empirical, concerning school choice and school vouchers. On the theoretical research front, Nechyba (1999)(2003) focused on income and ability sorting, taking the spillover effects of choice into account under the different school systems, while Epple and Romano (2003) showed that different public policy regimes have dramatic impacts on the nature of sorting. In general, a comprehensive understanding of school choice and student sorting needs a general equilibrium approach, as argued by Hoxby (2003a). On the other hand, Manski (1992) showed that findings from his numerical simulations do not support the view that school vouchers make poorer students better off.

There have been no concrete results on the empirical research front, either. In the U.S., based on a series of research projects she carried out, Hoxby (2003b) concluded that public schools responded to competition by becoming more productive and that cream-skimming was not a problem. In contrast, Ladd (2002) stressed that a universal voucher system would harm large numbers of disadvantaged students, given the tendency of parents to judge schools by the characteristics of their students. Also, Cullena, Jacobb, and Levitt (2005) pointed out that the benefits observed from open enrollment with public schools in Chicago were limited.

Outside the U.S., empirical studies tend to be skeptical about the benefits of school choice and vouchers. In the U.K., Bradley and Taylor (2002) found that schools with good exam results experienced a reduction in the proportion of pupils coming from poor families. Also, Adnett, Bougheas, and Davies (2002) emphasized that market-based reforms of public schooling have been associated with an increase in the diversity of school performance. Finally, Ladd and Fiske (2001) and Hsieh and Urquiola (2006) found evidence that school voucher programs led to increased sorting and wider performance gaps between schools in New Zealand and Chile, respectively.

Another important issue to be explicitly addressed in this paper is how parents evaluate and respond to education reforms. In general, Bast and Walberg (2004) showed that parents would do a better job choosing the schools for their children, and that allowing schools to compete gives parents an opportunity to discover the best schools for their children. At the same time, parents' choices and preferences are closely associated with their socio-economic backgrounds. Indeed, Sandy (1992) and Lee, Croninger, and Smith (1994) showed that lower-income or disadvantaged parents tend to favor school choice or vouchers in the U.S. More recently, Goldring and Phillips (2008) found that parent involvement rather than satisfaction with a child's schools is a good predictor for choosing a private school. Also, Reback (2008) found that mean student test scores are strong predictors of parents' demand for sending their children to a public school located outside their residential school district.

In Japan, the only empirical analysis on school choice has been attempted by Yoshida, Kogure, and Ushijima (2008). Based on data available from public junior high schools in Adachi city, Tokyo, they found mixed results. Students living in areas with a higher proportion of high-status occupations tended to select private schools or public schools with higher scores after the introduction of the school choice system, while differences in scores among public schools had been decreasing. Itoh and Oshio (2006) examined the attitudes of parents towards introducing English classes in

elementary schools and their determinants, based on a household survey and found that parents who expect more educational attainment from a child tend to welcome English classes. To our knowledge, there has been no other attempt to directly assess or predict outcomes of school choice and vouchers in Japan, mainly due to the lack of data availability.

Data and basic survey results

Data

The data source upon which our empirical analysis is based is a nationwide Internet survey conducted by the CAO from the 3rd to the 10th of October 2006. The sample consisted of 2,000 adults, which were divided into 500, 1,000, and 500 adults who had a youngest child who was a pre-school, elementary school, and junior high school student, respectively. This allocation of the samples roughly reflects school years: two or three years for kindergarten or nursery school, six years for elementary school, three years for junior high school. The CAO utilized *TrueNavi*, which was an Internet survey service provided by Nomura Research Institute (NRI). NRI had about 450,000 registered monitors in 2006, and their shares of residence roughly reflected actual shares at a prefectural level, but they were somewhat skewed towards metropolitan areas, especially Tokyo, where NRI is located and Internet services are more diffused than in other areas.

The process of sample selection is summarized as follows. First, NRI established three subpopulations which consisted of married monitors whose youngest children were pre-school, elementary school, and junior high school students, respectively from the whole population. Second, NRI randomly selected 920, 1,670, and 870 monitors from each subpopulation and e-mailed questionnaires to each selected monitor. The numbers of these selected monitors were based on targeted sample sizes (500, 1,000,

and 500) and NRI's past experience regarding response ratios for the same types of parent survey it conducted. Actually, 581, 1,036, and 511 monitors from each group sent back answers to NRI, meaning that the effective response rates were 63.2, 62.0, and 58.7 percent, respectively. Finally, NRI again randomly selected 500, 1,000, and 500 monitors from among the respondents of each group. The basic composition of the finally selected samples is summarized in the **Appendix**.

Four points should be mentioned about the potential biases of our samples, which require us to be cautious when interpreting survey and estimation results.

- 47.5 percent of the respondents live in Tokyo, probably because the NRI is located there and because Internet services are diffused more in the metropolitan area. This might make estimation results biased even after controlling for residential areas.
- 47.3 percent of the respondents answered that they live in areas where school choice systems already have been introduced. The reason is the high share of residents in Tokyo, 69.0% of whom answered that they live in areas under school choice systems.
- 60.9 percent of the total respondents graduated from universities (including two-year junior colleges) or above. This share is higher than the range between 30 and 40 percent for the whole population whose ages are the same as those of the respondents.
- Finally, as indicated by the Japan Institute for Labour Policy and Training (2005), the results of Internet surveys tend to show respondents have lower satisfaction with life, feel unfairly treated, and prefer competition to equity. If this is the case, the survey is likely to underestimate the satisfaction of parents with the current education system, and overestimate their favor of market-oriented reforms.

Taken together, the samples do not precisely represent the nationwide Japanese parents and we have to be cautious when interpreting the survey results. Nevertheless, the estimation results based on probit models are expected to roughly grasp how the

socio-economic backgrounds of parents affect their opinions about the current education system and its reforms.

Basic survey results

We start with a brief overview of the survey results regarding the attitudes of parents towards the current education system and reforms.[1] Figure 1 presents the basic survey results. The first issue to be addressed is the extent to which parents are satisfied with the current school system. The question was: "Are you satisfied with the current school system? Answer based on your assessment of the school your youngest child attends." The answer is selected from among five choices: "very satisfied," "satisfied," "neutral," "dissatisfied," and "very dissatisfied." We find that only 26.9 percent of the respondents answered "satisfied" or "very satisfied" with the current system, while 34.1 percent answered "dissatisfied" or "very dissatisfied."[2]

The second issue is the extent to which parents were satisfied with teachers. The question was: "Are you satisfied with the teachers who teach your youngest child?" Only 26.8 percent of the respondents answered "satisfied" or "very satisfied" with the teachers, whereas 29.4 percent answered "dissatisfied" or "very dissatisfied."

Regarding the attitude of respondents towards reforms to education policy, the first focus was on school choice. The answer was selected from among "agree," "somewhat agree," "neutral," "somewhat disagree," and "disagree." 72.1 percent of the respondents agreed or somewhat agreed with introducing school choice, while only 6.4 percent disagreed or somewhat disagreed with the idea.

Finally, we focus on the attitudes of parents towards school vouchers. The survey first defines the school voucher program as a program under which both public and private schools are freely chosen and government subsidies are allocated according to the number of pupils, regardless of public or private. Compared to school choice, favorable opinions of school vouchers are somewhat limited: 42.9 percent of

respondents agreed or somewhat agreed with introducing school vouchers and 44.2 percent answered neutral, while 12.9 percent disagreed or somewhat disagreed.

Probit models and estimation results

Methodology and variables

We apply probit and ordered probit models to our survey to explore what factors determine the evaluations of parents of the current school system and their attitudes towards policy reforms.

As for the evaluation of the current school system and teachers, we estimate two probit models—the first examines the determinants of satisfaction (by inputting unity if the individual is "satisfied" or "very satisfied" with them and zero otherwise) and the second examines the determinants of *dis*satisfaction (by inputting unity if the individual is "dissatisfied" or "very dissatisfied" and zero otherwise)—as well as an ordered probit model (by inputting 3 for "very satisfied" or "satisfied," 2 for "neutral," and 1 for "dissatisfied" or "very dissatisfied.")

As for the attitude towards introducing school choice and vouchers, we used a probit model, inputting unity for "agree" or "somewhat agree," as well as an ordered probit model, inputting 3 for "agree" or "somewhat agree," 2 for "neutral," and 1 for "somewhat disagree" or "disagree."

For both models, we combine the top two and bottom two categories respectively, because the share of the top or bottom category—"very satisfied" (with the current school system and teachers) or "disagree" (with school choice and vouchers)—seems too small to yield reliable estimation results. We also use three categories for the ordered probit models to make their estimation results consistent with and comparable to the probit models in terms of categorization.[3]

Our main focuses are on the following six socio-economic features of the

respondents and their households: (1) whether the respondent graduated from university or above or not; (2) income level (in terms of the logarithm of household income per capita); (3) whether the respondent owns his/her own house or not; (4) whether the respondent's household head has a managerial occupation or not; (5) whether the respondent's household head has a specialist job or not; and, (6) whether the respondent expects his/her child to graduate from university or above or not.

To precisely assess the impacts of these variables, we control for the gender (female=1) and age of the respondent, the number of children, the features of the youngest child—the gender (female=1); attending private school (=1) or not, and attending elementary school or junior high school (as pre-school as a reference). We also control for whether living in the area where a school choice system has been introduced and include eleven dummies for residential areas. The descriptive statistics are summarized in Table 1.

Estimation results

Tables 2 and 3 report the estimation results concerning the evaluations by parents of the current school system and teachers, respectively. We find that respondents who graduated from university or above tended to be less satisfied with the school system, a result that is also observed from the ordered probit model (Table 2). In addition, those who or whose spouses have a managerial job and who expect higher educational attainment from their children tend to be more dissatisfied with the current system. As for the teachers, we find that those who expect higher educational attainment from their children tend to be more dissatisfied with them, a result also confirmed by the ordered probit model (Table 3). We also notice that those who have chosen private schools tend to be more satisfied with the school and teachers. This is a reasonable result, but it should be noted that even after controlling for their actual school choices, the educational backgrounds of parents, their occupations, and expected educational

attainment of their children significantly affect their evaluations of their school system and teachers.

Tables 4 and 5 show the estimation results for the attitudes of parents towards two education reform options, that is, school choice and voucher programs. Regarding school choice, the probit model shows that respondents who have higher educational background and household income tend to be more in favor of it (Table 4). And those who or whose spouses have a managerial occupation tended to welcome it more than others. The ordered probit model shows almost the same results, but it additionally reveals that those who expected higher educational attainment from their children tended to be in favor of the program.[4] And, the parents with a higher occupational status were more inclined to accept it. We also find that respondents who live in an area where the school choice system has already been introduced positively evaluated it, but it should be noted that even after controlling for it, the characteristics of parents affect their attitudes towards the school choice system. Finally, we find that female respondents are less in favor of school vouchers.

Turning to school vouchers, those who expect higher educational attainment from their children were more willing to accept them, judging from both probit and ordered probit models (Table 5). In addition, the probit model shows that those with higher household incomes tended to be in favor of school vouchers. Higher educational background also tended to make the parents more inclined to accept them, although not significantly. Also, those whose children go to private school reasonably welcome school vouchers, because they expect pecuniary benefits from introducing them. Some of these findings contrast with those in the U.S., where lower-income or disadvantageous parents—whose children are more likely to go to lower-quality schools—favor vouchers (Sandy, 1992; Lee et al., 1994).

Taken together, we confirm that parents with 1) higher educational background, 2) higher occupational status, 3) higher household income, and 4) higher expectations of

higher educational attainments of their children, tended to be more dissatisfied (or less satisfied) with the current education system and to be more in favor of introducing market-oriented programs such as school choice and vouchers. These results point to the different responses of parents to education reforms, which are expected at least to lead partially to student sorting based on socio-economic status of parents.

Willingness to pay for additional education

A related issue of interest is how parents evaluate additional education provided by public schools. Our survey examines how parents would respond if this kind of additional service were to be generally available. The question is: "Suppose that your child's school has introduced supplementary classes to prepare for entrance examinations of high schools. Your child is not required to take these classes, and you have to pay tuition fees if he/she takes them. What is the maximum amount you are willing to pay per month?" The answer is selected from among: "I will not have my child take them (0 yen)," "Less than 1,000 yen," "1,000-3,000 yen," "3,000-5,000 yen," "5,000-10,000 yen," "10,000-30,000 yen," "30,000-50,000 yen," "50,000 yen or more."[4] Figure 2 illustrates the distribution of the reported WTP; the mode is 1,000-3,000 yen and the mean is about 4,300 yen (including "zero" answers) or 5,700 yen (excluding them).

We investigate what factors determine the parents' WTP for this additional service by applying the Tobit model, because the WTP is clearly censored; nearly one fourth of parents answer no participation (zero yen) as can be seen in Figure 3. Table 6 summarizes the Tobit estimates, using the same set of explanatory variables in Tables 2-5. This table also reports the OLS estimates to provide the reader with a sense of the extent to which the results are sensitive to the choice of estimation technique.

From this table, we note the following three findings. First and most importantly, those who have higher household income and higher expectations of higher

educational attainments for their children are willing to pay more for additional classes. Parents who have almost the same features as those who are in favor of market-oriented reforms are more willing to pay for additional education provided by public schools than other parents. In addition, female respondents tend to be less willing to pay for additional education.

Second, the coefficient of the dummy for parents whose youngest child attends elementary school or junior high school is not significant, while those whose youngest child attends private schools tend to answer significantly higher WTP. The latter finding is easy to understand intuitively, but the former is not. It is reasonable to expect that WTP differs for parents whose children are closer to college age than for parents whose children may not have even started formal schooling. However, our estimation results find no differences among these parents.

Third, the OLS model does not significantly change the pattern of the significance of the coefficients, except for the dummy for parents with higher expectations of higher educational attainments for their children, which becomes insignificant. However, the OLS model reduces the value of each coefficient in absolute terms compared to the Tobit model, indicating the biases of the OLS estimates, which assume that WTP are not censored.

It is often argued that WTP surveys tend to overstate actual WTP. Indeed, there is strong empirical evidence suggesting that the contingent valuation method may often overstate real economic value (Harrison and Rutström, 2008). Parents might indicate a high WTP in the belief that such a response may increase the likelihood that additional education will be available. Also, respondents are not likely to consider scheduling, transportation, and other issues that may prevent a supportive parent from actually utilizing the programs. We cannot rule out such biases in our estimates, but we believe that they are not serious for two reasons. First, the survey was conducted by the CAO, which is not directly related to national education policy in Japan. Second, the survey

asked the respondents to report the WTP by stating: “Suppose that your child’s school has introduced supplementary classes,” which implies that children would just stay in the same school after regular classes and that parents do not need to consider additional costs such as transportation.

Concluding remarks

Based on a nationwide Internet survey conducted by the Cabinet Office of the Japanese Government, we examined how Japanese parents evaluate the current education system and assess possible reforms in education policy. Key findings are summarized as follows: (1) a large portion of Japanese parents are not satisfied with the current school system and teachers; (2) a large portion of parents are also in favor of the school choice system and, to a lesser extent, school vouchers; (3) parents who have higher educational background, higher occupational status, higher household income, and expect higher education attainment from their children tend to be less satisfied (more dissatisfied) with the current school system and teachers, and to be more in favor of school choice and voucher programs; and, (4) such parents are also more willing to pay for additional education provided by public schools.

These findings, even if dependent on limited samples and not free from the biases of an Internet survey, have some implications for education reform. First, serious dissatisfaction with the current education system underlines the need for substantial reforms to education policy. A substantial portion of parents welcome the introduction of a quasi-market in public education, because it is expected to give parents more freedom to choose the child’s school and enhance school quality as a whole through intensified competition. In addition, the survey results of WTP for supplementary classes imply that policy reform, even if it requires parents to bear additional costs, can enhance the economic benefits of parents.

Second and more importantly, the responses of parents to policy changes will not be uniform, which is likely to lead to student sorting. This possibility is underlined by our estimation results, which show that the evaluations by parents of the current education system and their assessments of potential reforms, as well as their WTP for additional education, depend on their socio-economic backgrounds. The distributive impact thus should be the focal point of education reform.

Footnotes

1. Respondents whose youngest children were pre-school were asked to evaluate based on information available from mass media and other informal sources.
2. To get a sense of the extent to which participants in the CAO Internet survey are less satisfied with the educational system than are other persons, it is useful to compare the responses to those of a different non-Internet survey. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) conducted a nationwide survey of parents' attitudes toward education in 2005. This non-Internet survey covered 6,742 adults who had students attending 15 elementary schools and 10 junior high schools. The question sheets were distributed and collected by schools. The response rate was 68.5 percent, which is somewhat higher than the CAO survey.

   The MEXT survey asked parents about their general assessments of their child's schools, and answers were chosen from among the following four choices: "very satisfied," "somewhat satisfied," "not so satisfied," and "not satisfied at all." This roughly corresponds to the question about the parents' evaluations of the current school system in the CAO survey, although the latter includes "neutral" between satisfaction and dissatisfaction. The MEXT survey results were: "very

satisfied"=5.5 percent, "somewhat satisfied"=64.5 percent, "not so satisfied"=24.9 percent, and "not satisfied at all"=2.6 percent.

Although the question and choice categories were not exactly the same in the two surveys, the CAO respondents seem to have been less satisfied with the school system. The share of the most positive evaluation category was 1.9 percent in the CAO survey ("very satisfied") compared to 5.5 percent in the MEXT survey ("very satisfied"), while the share of the most negative evaluation was 7.3 percent ("very dissatisfied") and 2.6 percent ("not satisfied at all"), respectively.

3. We additionally estimate the ordered models with the original five categories for evaluating the current school system and teachers, as well as the attitude towards introducing school choice and vouchers, and find no significant difference from the results in Tables 2-5 (see below).
4. Based on Euro/Yen exchange rates, 148.45, as of September, 2006 (when the survey was conducted), the band of each option is approximately equivalent to "0 euro," "Less than 7 euro," "7-20 euro," "20-34 euro," "34-67 euro," "67-202 euro," "202-337 euro," and "337 euro or more," respectively.

References

Adnett, N., S. Bougheas, and P. Davies, 2002. Market-based reforms of public schooling: some unpleasant dynamics, *Economics of Education Review* 21(4): 323-330.

Bast, J.L. and H.J. Walberg. 2004. Can parents choose the best schools for their children? *Economics of Education Review* 23 (4): 431-440.

Cabinet Office. 2006. *The Survey on School Choice* (in Japanese).

Council for the Promotion of Regulatory Reform. 2005. *The Second Report* (in

Japanese).

Cullena, J. B., B. A. Jacobb, and S. D. Levitt. 2005. The impact of school choice on student outcomes: an analysis of the Chicago Public Schools. *Journal of Public Economics* 89 (5-6): 729-760.

Epple, D. and R. Romano. 1998. Competition between private and public schools, vouchers, and peer-group effects, *American Economic Review* 88 (1): 33-62.

_____ and _____ 2003. Neighborhood schools, choice, and the distribution of educational benefits. In *The Economics of School Choice*, ed. C.M. Hoxby, 227-286. Chicago: University of Chicago Press.

Glennester, H. 1991. Quasi-markets for education? *Economic Journal* 101(408): 1268-1276.

Goldring, E. B. and K. J. R. Phillips. 2008, Parent preferences and parent choices: the public-private decision about school choice. *Journal of Education Policy* 23(3): 209-230.

Harrison, G.W. and E.E. Rutström, 2008. Experimental Evidence on the existence of hypothetical bias in value elicitation methods. In *Handbook of Results in Experimental Economics*, eds. C. Plott and V.L. Smith. New York: Elsevier Science.

Hoxby, C. M. 2003a. Introduction in *The Economics of School Choice*, ed. C.M. Hoxby, 1-22. Chicago: University of Chicago Press.

_____. 2003b. School choice and school competition: Evidence from the United States, *Swedish Economic Policy Review* 10 (3): 9-65.

Hsieh, C. and M. Urquiola. 2006. The effects of generalized school choice on achievement and stratification: Evidence from Chile's voucher program. *Journal of Public Economics* 90 (8-9): 1477– 1503.

Itoh Y. and T. Oshio. 2006. Regulatory reforms in education from the consumers' viewpoint. *JCER Economic Report* 53: 174-193 (in Japanese).

Ladd, H.F. and E.B. Fiske. 2001. The uneven playing field of school choice: Evidence from New Zealand, *Journal of Policy Analysis and Management* 20(1): 43-63.

Ladd, H., 2002. School vouchers: a critical view. *Journal of Economic Perspectives* 16 (4): 3-24.

Le Grand, J. 1991. Quasi-markets and social policy, *Economic Journal* 101(408): 1256-1267.

Lee, V. E., R. G. Croninger, and J. B. Smith. 1994. Parental choice of schools and social stratification. *Educational Evaluation and Policy Analysis* 16 (4): 434-457.

Manski, C. F. 1992. Educational choice (vouchers) and social mobility. *Economics of Education Review* 11(4), 351-369.

Nechyba, T. 1999. School finance induced migration patterns: the impact of private school vouchers, *Journal of Public Economic Theory* 1(1): 5-50.

_____. 2003. Introducing school choice into multi-district public school systems. In *The Economics of School Choice*, ed. C.M. Hoxby, 145-194. Chicago: University of Chicago Press.

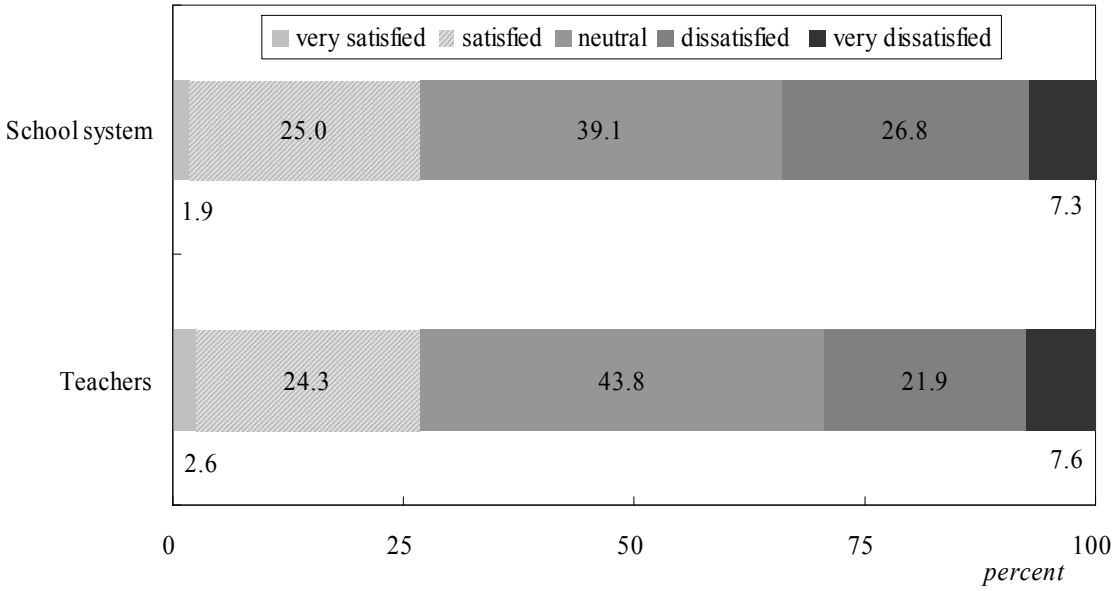
Reback, R. 2008, Demand (and supply) in an inter-district public school choice program. *Economics of Education Review* 27 (4): 402-416.

Rothschild, M. and L. J. White. 1995. The analytics of the pricing of higher education and other services in which the customers are inputs, *Journal of Political Economy* 103(3): 573-586.

Sandy, J. 1992. Evaluating the public support for educational vouchers: A case study. *Economics of Education Review* 11(3): 249-256.

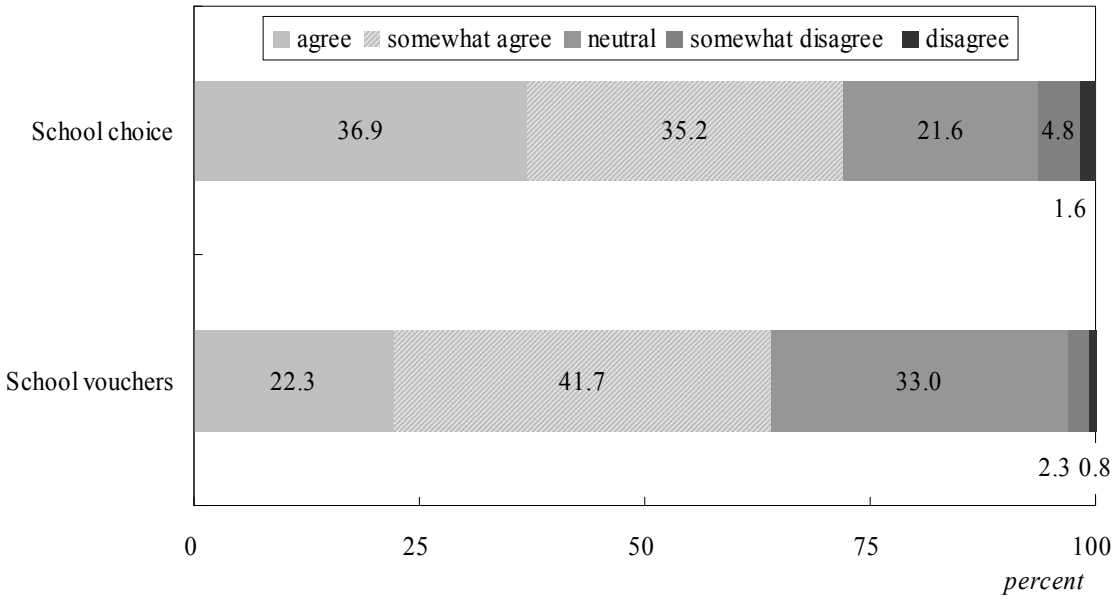
Yoshida, A., K. Kogure, and K. Ushijima. 2008. School Choice and Student Sorting: Evidence from Adachi City in Japan. *Japanese Economic Review*, forthcoming.

Figure 1: Evaluations by parents of the current education system



Note: Authors' calculation based on the survey by the Cabinet Office.

Figure 2: Attitudes of parents towards policy reforms



Note: Authors' calculation based on the survey by the Cabinet Office.

Table 1. Descriptive statistics

Variables	Mean	S.D.
Respondent:		
Graduated from university or above	0.45	
Log (household income per capita)	193.92	104.08
Own house	0.68	
Managerial occupation	0.19	
Specialist occupation	0.31	
Expecting the child to graduate from university or above	0.58	
Gender (female=1)	0.53	
Age	40.69	6.16
Number of children	1.85	0.75
Youngest child:		
Gender (female=1)	0.49	
Going to private school	0.06	
Going to elementary school	0.50	
Going to junior high school	0.25	
School choice already introduced	0.47	
WTP for supplementary classes (per month, yen)	4,347	7,102

Table 2. Evaluations by parents of the current school system

	Probit[a]		Ordered probit[b]
	Satisfied or very satisfied=1	Dissatisfied or very dissatisfied=1	
Respondent:			
Graduated from university or above	-0.04 *	0.039	-0.116 *
	(-1.70)	(1.53)	(-1.95)
Log (household income per capita)	-0.007	0.000	-0.012
	(-0.31)	(0.02)	(-0.20)
Own house	0.004	0.005	-0.006
	(0.19)	(0.20)	(-0.10)
Managerial occupation	-0.017	0.058 *	-0.116
	(-0.59)	(1.87)	(-1.59)
Specialist occupation	0.020	0.006	0.022
	(0.84)	(0.25)	(0.38)
Expecting the child to graduate	0.009	0.050 **	-0.059
from university or above	(0.43)	(2.15)	(-1.06)
Gender (female=1)	-0.002	0.021	-0.037
	(-0.08)	(0.83)	(-0.63)
Age	0.001	0.002	-0.002
	(0.47)	(0.80)	(-0.36)
Number of children	0.009	-0.009	0.024
	(0.61)	(-0.56)	(0.63)
Youngest child:			
Gender (female=1)	0.018	-0.013	0.042
	(0.88)	(-0.58)	(0.82)
Going to private school	0.377 ***	-0.201	0.910 ***
	(7.75)	(-4.44)	(7.67)
Going to elementary school	0.183 ***	-0.108 ***	0.399 ***
	(5.99)	(-3.52)	(5.41)
Going to junior high school	0.134 ***	-0.101 **	0.306 ***
	(3.19)	(-2.56)	(3.15)
School choice already introduced	0.006	0.029	-0.032
	(0.26)	(1.17)	(-0.54)
cut off point 1			−0.482
			(−1.20)
cut off point 2			0.587
			(1.46)
Log Likelihood	-1064.02	-1221.30	-2061.55
Observations	1958	1958	1958

Notes: (1) a: the marginal effect is calculated by the sample mean. b: "very satisfied" or "satisfied"=3, "neutral"=2, and "dissatisfied" or "very dissatisfied"=1.

(2) Figures in the parentheses are z values.

(3) *, **, and *** are significant at 10%, 5%, and 1%, respectively.

(4) The coefficients on residential area dummies are omitted to save pace.

Table 3. Evaluations by parents of teachers

	Probit[a]		Ordered probit[b]
	Satisfied or very satisfied=1	Dissatisfied or very dissatisfied=1	
Respondent:			
Graduated from university or above	-0.020 *	0.012	-0.044 *
	(-0.85)	(0.51)	(-0.74)
Log (household income per capita)	-0.031	0.008	-0.064
	(-1.29)	(0.32)	(-1.07)
Own house	0.005	-0.000	0.001
	(0.21)	(-0.01)	(0.02)
Managerial occupation	0.002	0.035	-0.049
	(0.06)	(1.19)	(-0.67)
Specialist occupation	-0.014	-0.004	-0.011
	(-0.59)	(-0.16)	(0.18)
Expecting the child to graduate	-0.015	0.053 **	-0.095 *
from university or above	(-0.68)	(2.38)	(-1.73)
Gender (female=1)	0.031	-0.046 **	0.122 **
	(1.34)	(-1.96)	(2.11)
Age	0.000	0.000	-0.000
	(0.08)	(0.00)	(-0.08)
Number of children	0.000	-0.003	-0.002
	(0.03)	(-0.18)	(-0.04)
Youngest child:			
Gender (female=1)	0.011	-0.036 *	0.069
	(0.54)	(-1.72)	(1.34)
Going to private school	0.365 ***	-0.209 ***	0.935 ***
	(7.50)	(-5.25)	(8.00)
Going to elementary school	0.223 ***	0.042	0.251 ***
	(7.34)	(1.38)	(3.45)
Going to junior high school	0.089 **	0.139 ***	-0.113 ***
	(2.13)	(3.39) **	(-1.17)
School choice already introduced	0.042 *	0.040 *	-0.001
	(1.81)	(1.68)	(-0.02)
cut off point 1			−0.805
			(−2.00)
cut off point 2			0.401
			(1.00)
Log Likelihood	-1058.62	-1142.44	-2042.81
Observations	1958	1958	1958

Note: See Note on Table 2.

Table 4. Attitudes of parents towards school choice

	Probit[a]	
	Agree or Somewhat agree=1	Ordered probit[b]
Respondent:		
Graduated from university or above	0.049 **	0.068
	(2.07)	(0.97)
Log (household income per capita)	0.047 **	0.148 **
	(2.00)	(2.15)
Own house	-0.035	-0.073
	(-1.55)	(-1.09)
Managerial occupation	0.055 *	0.174 **
	(1.92)	(1.99)
Specialist occupation	-0.006	-0.035
	(-0.25)	(-0.51)
Expecting the child to graduate	0.033	0.112 *
from university or above	(1.50)	(1.76)
Gender (female=1)	0.018	0.057
	(0.76)	(0.85)
Age	0.001	0.004
	(0.51)	(0.50)
Number of children	-0.020	-0.057
	(-1.32)	(-1.32)
Youngest child:		
Gender (female=1)	-0.015	-0.053
	(-0.75)	(-0.88)
Going to private school	0.029	0.195
	(0.65)	(1.43)
Going to elementary school	-0.038	-0.109
	(-1.30)	(-1.26)
Going to junior high school	-0.053	-0.203 *
	(-1.34)	(-1.79)
School choice already introduced	0.083 ***	0.212 ***
	(3.53)	(3.10)
cut off point 1		−0.572
		(−1.23)
cut off point 2		0.411
		(0.89)
Log Likelihood	-1103.33	-1392.73
Observations	1958	1958

Notes: (1) a: the marginal effect is calculated by the sample mean. b: "agree" or "somewhat agree" =3, "neutral"=2, and "disagree" or "somewhat disagree"=1.

(2) Figures in the parentheses are z values.

(3) *, **, and *** are significant at 10%, 5%, and 1%, respectively.

(4) The coefficients on residential area dummies are omitted to save pace.

Table 5. Attitudes of parents towards school vouchers

	Probit	
	Agree or Somewhat agree=1	Ordered probit[b]
Respondent:		
Graduated from university or above	0.040	0.002
	(1.51)	(0.03)
Log (household income per capita)	0.045 *	0.071
	(1.67)	(1.17)
Own house	0.028	0.072
	(1.09)	(1.24)
Managerial occupation	0.003	0.031
	(0.09)	(0.42)
Specialist occupation	-0.025	-0.104 *
	(-0.94)	(-1.72)
Expecting the child to graduate	0.118 ***	0.225 ***
from university or above	(4.79)	(4.02)
Gender (female=1)	-0.086 ***	-0.199 ***
	(-3.32)	(-3.37)
Age	-0.004	-0.009
	(-1.39)	(-1.42)
Number of children	-0.003	-0.049
	(-0.19)	(-1.29)
Youngest child:		
Gender (female=1)	0.006	0.026
	(0.25)	(0.50)
Going to private school	0.116 **	0.303 **
	(2.31)	(2.56)
Going to elementary school	-0.025	-0.077
	(-0.76)	(-1.03)
Going to junior high school	-0.008	-0.003
	(-0.19)	(-0.03)
School choice already introduced	-0.012	-0.101 *
	(-0.45)	(-1.69)
cut off point 1		−1.133
		(−2.77)
cut off point 2		0.219
		(0.54)
Log Likelihood	-1291.95	-1886.50
Observations	1958	1958

Note: See Note on Table 4.

Figure 3.Willingness to pay for supplementary classes

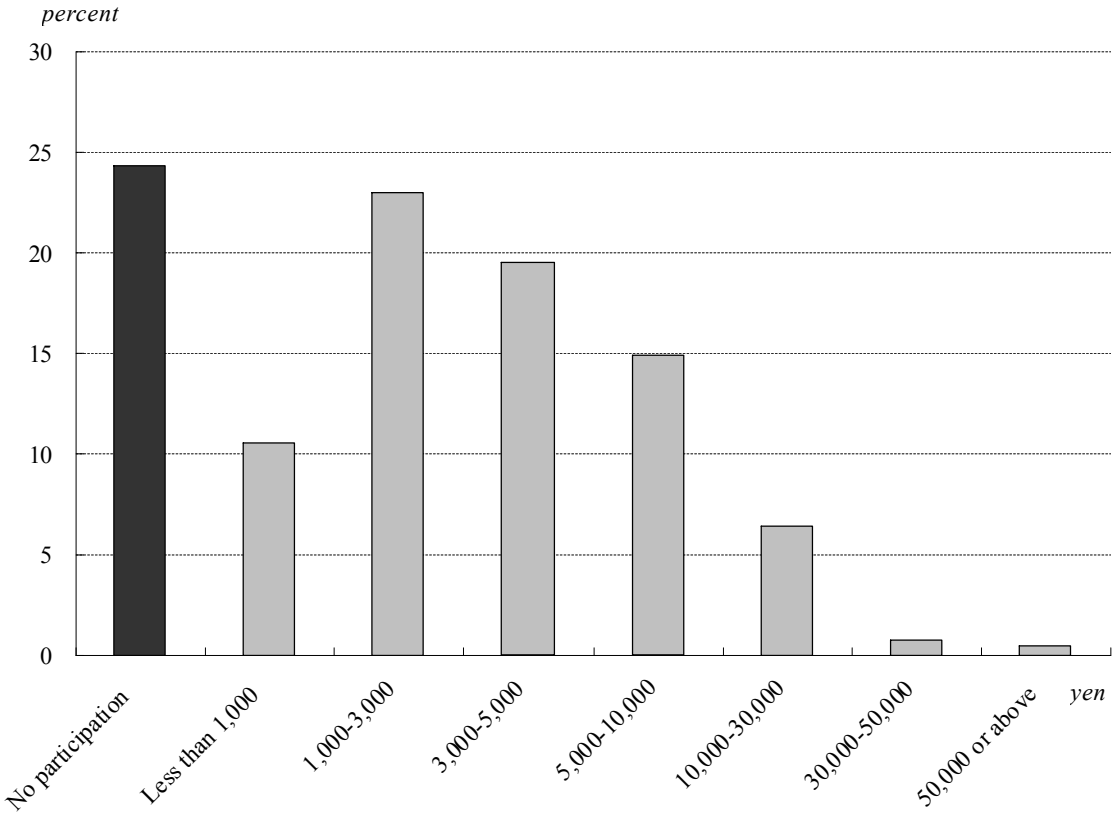


Table 6. Willingness to pay for supplementary classes

WTP	Tobit	OLS
Respondent:		
Graduated from university or above	401.8	392.5
	(0.91)	(1.13)
Log (household income per capita)	3687 ***	2958 ***
	(8.20)	(6.20)
Own house	223.5	13.83
	(0.52)	(0.04)
Managerial occupation	173.7	85.8
	(0.32)	(0.18)
Specialist occupation	-599.5	-315.6
	(-1.35)	(-0.88)
Expecting the child to graduate	1152 ***	388.9
from university or above	(-2.79)	(1.14)
Gender (female=1)	-1023 **	-919.8 ***
	(-2.35)	(-2.73)
Age	22.42	18.57
	(0.50)	(0.48)
Number of children	134.3	95.61
	(0.48)	(0.45)
Youngest child:		
Gender (female=1)	-6.563	14.56
	(-0.02)	(-0.05)
Going to private school	5409 ***	5112 ***
	(6.65)	(4.45)
Going to elementary school	-383.1	-326.5
	(0.70)	(-0.87)
Going to junior high school	661.8	277.7
	(0.91)	(0.45)
School choice already introduced	-492.0	-279.2
	(-1.13)	(-0.83)
Constant	-18838 ***	-12572 ***
	(-6.17)	(-4.30)
sigma	8043 ***	
	(52.78)	
Log Likelihood	-15825	-
R-Squared	-	0.122
Observations	1958	1958
Censored observations	474	
Uncensored observations	1484	

Notes: (1) Figures in the parentheses are *t* values.

(2) *, **, and *** are significant at 10%, 5%, and 1%, respectively.

(3) The coefficients on residential area dummies are omitted to save space.

Appendix: The composition of the samples

Gender	Number	Share (%)
Male	938	46.9
Female	1062	53.1
Total	2000	100.0

Youngest child	Number	Share (%)
Pre-school	500	25.0
Elementary school	1000	50.0
Junior high school	500	25.0
Total	2000	100.0

Age	Number	Share (%)
20-24	13	0.7
25-29	75	3.8
30-34	248	12.4
35-39	494	24.7
40-44	619	31.0
44-49	424	21.2
50-54	106	5.3
55-59	20	1.0
60-	1	0.1
Total	2000	100.0

Residential area	Number	Share (%)
Hokkaido	38	1.9
Tohoku	39	2.0
Kita-Kanto	83	4.2
Tokyo	949	47.5
Minami-Kanto	383	19.2
Koshin'etsu	24	1.2
Hokuriku	15	0.8
Tokai	103	5.2
Kinki	184	9.2
Chugoku	56	2.8
Shikoku	58	2.9
Kyushu	68	3.4
Total	2000	100.0

Educational attainment	Number	Share (%)
Junior high school	32	1.6
High school	459	23.0
Vocational school	271	13.6
Junior collage	283	14.2
University	843	42.2
Graduate school	90	4.5
Others	19	1.0
Unknown		
Total	2000	100.0

Household income (annual, mil.	Number	Share (%)
Less than 2	39	2.0
2-3	64	3.2
3-4	172	8.6
4-5	236	11.8
5-7	563	28.2
7-10	589	29.5
10-15	263	13.2
15-20	44	2.2
20-	19	1.0
Unknown	11	0.6
Total	2000	100.0

Occupation	Number	Share (%)
Specialist	617	30.9
Managerial	380	19.0
Clerk	250	12.5
Sales	153	7.7
Service	190	9.5
Security	8	0.4
Agriculture and Fishery	10	0.5
Transportation	75	3.8
Factory	58	2.9
Others	259	13.0
Total	2000	100.0