Should I stay or should I go? Public provision of a private good with an exit option.

Neil Buckley\textsuperscript{a}, Katherine Cuff\textsuperscript{b}, Jeremiah Hurley\textsuperscript{b,c}, Stuart Mestelman\textsuperscript{b}, Stephanie Thomas\textsuperscript{b}, and David Cameron\textsuperscript{b,c}

\textsuperscript{a}Department of Economics, York University, 4700 Keele Street, Toronto, ON, Canada, M3J 1P3
\textsuperscript{b}Department of Economics, McMaster University, 1280 Main Street West, Hamilton, ON, Canada, L8S 4M4
\textsuperscript{c}Centre for Health Economics and Policy Analysis, McMaster University, 1280 Main Street West, Hamilton, ON, Canada, L8S 4K1

7 March 2014
Abstract

In this paper, we adapt the standard political economy models of mixed financing of private goods to allow for an exit option in which individuals can choose to neither consume nor finance the publicly provided private good. Using a controlled laboratory experiment, we empirically investigate the predictions of this model when all individuals are allow to exit (universal-exit) and when only individuals with an income at or above a threshold income level are allowed to exit (conditional-exit). Even though the incentives for high-income individuals to exit are identical under both exit schemes, high-income individuals are less likely to exit when the exit option is universal. Sensitivity treatments suggests that a number of factors may be at play in explaining this result, including learning effects and a type of endowment effect, but that other-regarding preferences do not appear to be an important factor.

Key Words: publicly provided private good, mixed financing, voting experiment

JEL: H42, H44, C91, D7
1 Introduction

Mixed systems of public and private finance are widespread for private goods as diverse as education, health care and garbage collection. For this reason, the political determination of mixed systems of finance have been subject to considerable theoretical analysis and are the subject of an increasing amount of empirical investigation (e.g., Cohen-Zada and Justman 2003; Bearse et al. 2013). The standard theoretical political economy models (e.g., Stiglitz 1974; Epple and Romano 1996a, 1996b; Gouveia 1997; Glomm and Ravikumar 1998) focus on two types of private options within the mixed financing system. In one case, often called “top-up,” individuals consume the public amount and can choose to top this up with additional private purchases (e.g., purchase private, after-school tutoring); in the second, often called “opt-out,” individuals who wish to purchase more than the publicly provided amount of the good can opt-out of consuming the publicly provided good and purchase the good privately (e.g., attend private school rather than the local public school). In both models, individuals must continue to finance the public provision of the good regardless of their top-up or opt-out decisions. Neither model allows individuals to opt-out of both financing and consumption of the public provision. While less common than top-up or opt-out, we do observe examples of such an option, such as health care systems in some European countries (e.g., Austria, Belgium and Germany), where individuals with incomes above a defined threshold can choose to exit from both financing and consuming publicly financed health care.

In this paper, we adapt the standard political economy models of mixed financing of private goods to allow for an exit option and empirically investigate the predictions of the model with a universal-exit option and with a conditional-exit option. The former provides a baseline environment and stress-tests the public-finance-only model of publicly provided private goods and the second provides a test of an option comparable to the conditional-exit option that characterizes settings such as the German health care system. In the standard top-up and opt-out models, uniform public provision of a private good is financed with a proportional income tax. Individuals first vote on the proportional tax rate, which establishes the level of public provision of the good, and then decide whether and how much of the good to purchase privately in addition to, or in place of, the public provision. Allowing
for a universal-exit option will result in a complete unraveling of the public system as all 
individuals, save the lowest income individual will have incentive to exit. If the exit option 
is constrained to only high-income individuals, then those with high incomes exit and conse-
quently the per capita level of public provision will be below what is provided in the absence 
of an exit option.

We use controlled laboratory experiments to test these theoretical predictions regarding 
equilibria under exit options. The experiments include three financing configurations: public-
finance-only, mixed financing with exit and mixed financing with exit permitted only for 
high-income individuals. The experiment uses a combination of within-subject and between-
subject designs. All subjects experience a baseline treatment of ten periods of a public-
only financing system, followed by ten periods in one of the two mixed systems with exit 
(universal-exit and conditional-exit). Comparison of the baseline public-finance-only scheme 
and the two private-public financing schemes relies on within-subject variation, while the 
comparison of the different mixed financing schemes relies on between-subject variation.

Any ordering/persistence effect is addressed by reversing the ordering of the public-only and 
mixed financing (with exit) treatment pairings so that half the subjects experience the mixed 
financing system first-, followed by the public-finance-only treatment. In each decision period 
of all treatments individuals are assigned an exogenous income. In the public-only treatment 
individuals must choose their preferred proportional income tax rate. In the exit treatments 
individuals who are permitted to exit must choose whether or not they will exit. If they 
choose to exit, they then have to choose the amount of the private good they will consume.
If they choose not to exit, then they and the individuals who did not have the choice to 
exit (in the case of conditional-exit) must choose their preferred proportional income tax 
rates. The proportional tax rate used to finance the public provision of the private good 
is determined by the median tax rate of the preferred rates submitted by the ‘voters’ in a 
laboratory session, which captures the outcome of majority-rule voting.

The experimental results reveal some noteworthy differences in behaviour under the two 
different exit options. First, we find the exit behaviour of high-income individuals and the 
tax rates selected in the conditional-exit treatment are both consistent with the theoretical 
predictions. When the exit option is universal, high-income individuals are less likely to
exit and consequently, more people contribute to the public provision of the private good than is predicted by theory. Even though the incentives for high-income individuals to exit are identical under both the universal and income-conditional schemes, high-income individuals are less likely to exit when the exit option is universal. Making exit conditional on high-income appears to give the high-income individuals “permission” to exit. Our initial attempts to identify the source of differences in behaviour by high-income individuals under the two schemes suggest that a number of factors may be at play, including learning effects and a type of endowment effect, but that other-regarding preferences do not appear to be an important factor.

In the next section, we outline our political economy theoretical framework. In Section 3, we describe the laboratory implementation of the theoretical framework and present our experimental results in Section 4. We then discuss subjects’ observed exit behaviour and present results on some sensitivity treatments in Section 5. Finally, we conclude in Section 6.

2 Theoretical Framework

We adopt a simple discrete version of the majority-rule voting models of tax-financed public provision of a private good commonly used in literature (see e.g., Glomm et al. 2011). There are \( N \) individuals or households who differ in their fixed income (or endowment of a numeraire consumption good) denoted by \( y \). The mean income in the population is \( \bar{y} \). The median income in the population, \( y_m \), is assumed to be less than the mean. Households have preferences over consumption of a numeraire good, given by \( c \), and of a specific private good \( E \) which may be publicly provided or purchased privately. To obtain closed-form solutions, we assume household preferences can be represented by the following utility function:

\[
U(c, E) = ac^\eta + bE^\eta
\]  

\(^1\)For illustrative purposes, one could think of this private good as education, but the model can apply to any number of publicly provided private goods, such as garbage collection and health care. In the case of education, we can think about a household as comprising a parent and a child.
where \(a, b > 0\) and \(\eta \in (0, 1)\). The private good \(E\) is produced using the numeraire good. Following the literature, it takes one unit of the numeraire good to produce one unit of the private good and this is independent of whether the good is publicly or privately financed.\(^2\)

With private finance only, the household maximizes (1) subject to the following budget constraint\(^3\)

\[
c + e = y
\]

where \(e\) denotes the amount of the private good purchased privately. This problem yields the household’s optimal demand for the private good

\[
h(y) = \frac{y}{\phi + 1}
\]

where \(\phi = (a/b)^{1-\eta} > 0\) and \(h'(y) > 0\). With private finance only, households’ purchases of the private good will be increasing in income. Next we characterize the outcome in each of the three treatments we consider: public finance only, mixed financing with a universal-exit option and mixed financing with a conditional-exit option.

### 2.1 Public Finance Only

Consider a public-only system in which the provision of the private good is financed solely through a proportional income tax, whose rate is denoted by \(t\). This proportional tax rate is determined by majority-rule. The government provides a uniform amount of the private good, denoted by \(g\), to each household. The government’s budget constraint is

\[
t\bar{y} = g.
\]

Using the government’s budget constraint (4), the household’s budget constraint can be written as

\[
c = y - (y/\bar{y})g
\]

\(^2\)Following Glomm et al. (2011), one could interpret \(E\) as the quality of the private good being consumed. The production function for the quality of the good is linear in expenditure on the good regardless of which sector finances the good, i.e., publicly-financed or privately-financed.

\(^3\)The household’s problem is well-behaved.
where $T(y) = y/\bar{y}$ is the household’s relative tax price for the private good. Public provision of the good effectively redistributes resources from households with incomes above the mean to households with incomes below the mean.

Substituting the household’s budget constraint (5) with $E = g$ into (1), yields the household’s induced utility function over the public provision of the private good

$$V(g) \equiv \max_{g \geq 0} a(y - T(y)g)^\eta + bg^\eta$$

which is strictly concave in $g$. Therefore, each household has a unique preferred level of public provision, denoted by $g(y)$, and a unique preferred tax rate, denoted by $t(y)$, which are both strictly decreasing in household income. It follows directly from the median voter theorem that the equilibrium outcome under majority rule will be given by the preferred tax rate of the median income household

$$t(y_m) = \frac{1}{\phi T(y_m)^{1/\eta} + 1}.$$  \hspace{1cm} (7)

The amount of public provision in equilibrium will be

$$g(y_m) = \frac{y_m}{\phi T(y_m)^{1/\eta} + T(y_m)}.$$  \hspace{1cm} (8)

**Theoretical Prediction 1** In a public-only financing system, preferred tax rates are strictly decreasing in income and the equilibrium outcome with majority-rule will be determined by the preferred tax rate of the median-income household.

In a public-only financing system, all households receive the same amount of the private good, whereas in a private-only financing system households with different incomes optimally purchase different amounts of the private good. Consider the mean-income household, which faces the same price for the private good under both forms of financing. The household’s budget constraint is the same regardless of the type of financing and, consequently, it prefers the same amount of the private good under both systems. Households with incomes greater than the mean, on the other hand, prefer a lesser amount of the private good when the good is financed publicly than when the good is financed privately because these households face
a higher price in a public-only system than in a private-only system. The converse is true for households with an income below the mean, who face a lower price for the private good in a public-only system and therefore prefer a greater amount of the private good in a public-only system than in a private-only system.

Now consider what happens to the equilibrium size of the public system when households can choose to exit the public system by not paying taxes to finance the publicly provided private good and purchasing the private good privately. We consider two cases: First, when households can choose to exit regardless of income and second when households can choose to exit only if income is above a certain threshold.

2.2 Mixed Financing: Universal-Exit Option

Consider the case when any household, regardless of income, can choose to opt-out of both financing and consuming the publicly provided private good. A household who exits the public system has their full income available to them and chooses how much of the private good to purchase privately. The timing of this treatment is as follows:

1. Households decide whether they will or will not exit the public system. Households who choose not to exit the public system vote on the level of public provision, i.e., vote on the proportional income tax to be applied to all those households who remain in the public system. The voting outcome is determined by majority rule.

2. Households who exit choose how much private good to purchase privately.

We make two assumptions about the timing of decision-making. First, only households who have chosen to remain in the public system are allowed to vote for the public tax rate, since households who exit do not pay the tax and will be indifferent across all possible tax rates given their preferences as given by (1). Allowing these households to vote on the tax rate could result in a situation in which a majority-preferred tax rate does not reflect the preferences of the households to which the tax rate applies, i.e., those remaining in the public system. Second, households vote on the public tax rate before knowing which households have exited, that is, households play a simultaneous-move game.

---

4This case is discussed in a working paper by Myers and Lülfesmann (2009).
The maximized utility of a household who chooses to exit is \( U(y - h(y), h(y)) \) where \( h(y) \) is given by (3). Consider the exit decision of the household with the highest income. Regardless of what other households do, the highest income household is strictly better off exiting than remaining in the public system. Public provision redistributes income from high to low income households and as such the highest income household is worse off in a public system than in a private-only system. Therefore, the highest income household has a strictly dominant strategy to exit. Consider then the next highest income household. Recognizing that the highest income household will exit, this household now has a strictly dominant strategy to also exit the public system. By the continued iterated deletion of strictly dominated strategies, we obtain a prediction that all households, except the household with the lowest income (denoted by \( y_{\text{min}} \)), will choose to exit the public system. The lowest income household will be indifferent between remaining in the public system or exiting and purchasing the private good privately. Both systems give rise to the same level of utility for that household given by \( U(y_{\text{min}} - h(y_{\text{min}}), h(y_{\text{min}})) \). If the household stays in the public system, then the equilibrium tax rate is given by \( t(y_{\text{min}}) = h(y_{\text{min}})/y_{\text{min}} \).

**Theoretical Prediction 2** In a mixed financing system with an universal-exit option, all households will choose to exit except the lowest-income household, who will be indifferent between exiting and not exiting.

### 2.3 Mixed Financing: Conditional-Exit Option

Now consider an income threshold that must be met in order to be able to exit the public system. The timing of this treatment is as follows:

1. Households with income at or above the threshold decide whether to exit the public system. Households who choose not to exit the public system or have an income below the threshold vote on the level of public provision, i.e., vote on the proportional income tax to be applied to all those households remaining in the public system. The voting outcome is determined by majority rule.

2. Households who chose to exit choose how much private good to purchase privately.
Again, by iterated deletion of dominated strategies we have that all households with incomes at or above the threshold will exit. The public system will consist of all households with incomes below the threshold income level, denoted by $\hat{N} < N$, and the analysis of this public system is as described in section 2.1 with $N$ replaced by $\hat{N}$.

**Theoretical Prediction 3** In a mixed financing system with an income-conditioned exit option, all those households with income above the income threshold will exit the public system. The equilibrium tax rate in the public system will be determined by the preferred tax rate of the household with the median income of those households remaining in the public system.

3 Laboratory Implementation

We use a controlled laboratory experiment to test the above theoretical predictions regarding the equilibrium outcomes of majority-rule voting over the tax-financed public provision of a private good under public-only financing and mixed financing with either a universal-exit option or a conditional-exit option. Following standard experimental economic methodology, household or individual decision-makers, i.e., subjects, in the experiment are incentivized with real monetary payoffs. The experiment is framed in a neutral context rather than referring to the private good that will be publicly provided as a specific good such as education or health care in order to minimize potential content-related framing effects (Alm and Jacobson 2007). Specifically, subject decisions are framed as choices over how much to invest in alternative investment funds, including a collective fund and an individual private fund. The complete set of instructions used in the experiment can be found in the Appendix.

Each session ran with ten subjects who were told that they would be randomly assigned to be a member of a group of five people, but were not told who were in their group. Each group remained together through the session (following Kroll et al., 2007 and Margrieter et al., 2005) so that the two groups in each session represented independent observations. Subjects were told that, at the beginning of each decision period, each member of their group would randomly be assigned an income, expressed in laboratory dollars (L$), from the following set of five income levels (125, 275, 640, 700, 1500), and that each individual would
be assigned each of the income levels twice over the course of the next ten periods of the session. The income distribution was chosen to ensure that the median income was below the mean (consistent with the theoretical assumption). To keep subjects actively thinking about their decisions, incomes were assigned in a pre-determined pseudo-random order such that subjects experienced each of the five income levels in the first five periods of each treatment and then again in the last five periods of each treatment, but in a different order.

As noted earlier, the experiment used a combination of within-subject and between-subject designs. All subjects experienced ten decision periods of a public-only financing treatment and ten decision periods of one of the two mixed financing systems, where the order of the two treatments (public/mixed) was randomized across experimental sessions to control for potential order effects. Comparison of the baseline public-only financing system and the two mixed financing systems relies on within-subject variation, while the comparison of the different mixed financing systems (universal-exit and conditional-exit) relies on between-subject variation.

At the beginning of each decision period of the public-only finance treatment, subjects were told that their income must be divided between two Investment Funds: a Group Investment Fund (GIF) and a Private Investment Fund (PIF). Subjects were told that everyone in their group must contribute the same fixed percentage of their income to the GIF and that this percentage would be determined by the group. The total amount contributed to the GIF would be divided into five equal shares. Each share would be invested in Market A and the subject would earn a return from this investment. The subject’s remaining income after contributing to the GIF would go into the subject’s PIF and invested in Market B where it would earn a return for the subject. The returns earned on the investments were calculated using the payoff function given by (1), where the GIF investment in Market A is for the private good \( E \) and the PIF investment in Market B is for the numeraire good \( c \) with the following parameter values: \( a = 20, b = 22 \) and \( \eta = 0.6 \).

In each of the decision periods of the public-only treatment, subjects were asked to submit their preferred mandatory GIF contribution rate. To replicate the outcome of majority-rule in a laboratory environment, subjects were told that submitted GIF contribution rates would be ranked from highest to lowest and that the median contribution rate would be
implemented.\textsuperscript{5} It was explained to them why there was no incentive to submit a contribution rate other than their preferred rate. Subjects were provided with a table to illustrate how the returns worked in the markets and given a tutorial in the use of an onscreen calculator that allowed them to determine their returns in both markets as well as their total return for different income levels and different GIF contribution rates. Subjects were able to access the calculator throughout the session.

In the universal-exit treatment, subjects were provided the same information as in the public-only treatment as described above, but were also told that they could decide whether or not to participate in the group investment fund. Subjects were told that if they choose not to participate in the GIF, then they would not make any contribution to the GIF and would not receive any share of the GIF. The subjects would, however, be able to choose how much of their income to invest in a different market, Market C, where the returns to investment in Market C are the same as in Market A. Whatever amount not invested in Market C, would then be automatically invested in Market B on behalf of the subject. The subject’s total return for each period if they choose not to participate in the GIF is the sum of the returns of their investments in Markets B and C. Subjects were told that if they choose not to exit, everyone who remained in the GIF would be asked to submit their preferred GIF contribution rates, the submitted GIF contribution rates would be ranked from highest to lowest, and, in the case of an odd number of subjects remaining in the GIF, the middle contribution rate in the ranking would be implemented, but in the case of an even number of subjects remaining in the GIF one of the two middle-ranked submitted GIF rates would be randomly chosen and implemented.

The conditional-exit treatment was described similarly to the universal-exit treatment except only subjects with the two highest income levels (700, 1500) were given the choice of participating in the GIF or exiting. Subjects with incomes of 125, 275 and 640 automatically remained in the GIF. At the end of each of the ten periods of both exit treatments, subjects

\textsuperscript{5}Differing voting processes have been implemented experimentally. The seminal work by Fiorino and Plott (1978) uses a sequential amendment driven voting protocol while more recent papers use either simultaneous voting protocols (e.g., Margreiter et al. 2005; Kroll et al. 2007) or a binary yes/no vote on a given tax proposal (e.g. Sutter and Weck-Hannemann 2003.) Another approach is to allow each individual to propose a tax rate and to implement the median tax rate (e.g. Norton and Isaac 2013.) We adopt the latter voting process since it most closely resembles the theoretical environment that was being implemented in the lab.
were told the total number of subjects who participated in the GIF, the implemented GIF contribution rate, the total amount contributed to the GIF, and their investments and returns in Market A and B (if the subject participated in the GIF) or in Markets C and B (if the subject did not participate in the GIF) and finally their total return for the period.

In both exit treatments, subjects were provided with examples to illustrate how the returns worked depending on which subjects participate in the GIF, including the cases when all subjects participate in the GIF, the subject remains in the GIF but other subjects exit, and when the subject herself exits the GIF. Subjects were also given a tutorial in the use of an onscreen calculator that allowed them to determine their total returns for different income levels, GIF contribution rates, and different exit decisions made by themselves and others. Subjects were given a few minutes to practice using the calculator and were able to access the calculator whenever they were asked to make a decision.

Twenty groups of five subjects were recruited using an online recruitment system for controlled laboratory experiments (ORSEE, Greiner 2003) and the experiment was administered in the McMaster Experimental Economics Laboratory. Five groups each experienced the following ordering of treatments: public-only followed by universal-exit; universal-exit followed by public-only; public-only followed by conditional-exit; and conditional-exit followed by public-only. Each experimental session had twenty decision periods (ten decision periods for each treatment) and lasted approximately 70 minutes. The average subject payoff was $23 including a $5 show-up fee. Subjects were individually paid their cash earnings in private. The experiment was conducted using z-Tree software (Fischbacher 2007) and the laboratory protocol was approved by the McMaster University Research Ethics Board. Observations from the 100 subjects are included in the results below.

4 Experimental Results

We begin by testing for learning effects between the first five decision periods and the second five decision periods with respect to the mean implemented GIF rate (hereafter referred to as the “the tax rate”), the subjects’ mean exit decisions, and the mean private purchases of those who choose to exit for each ordering of the treatments: public-only first followed by one of the two exit treatments, and one of the two exit treatments first followed by
the public-only treatment. There is some evidence of marginal learning effects in the mean implemented GIF rate when the universal-exit treatment was experienced first. We next test for order effects to determine if there are any differences in the mean implemented GIF rates, mean exit decisions, and mean private purchases depending on whether the universal-exit treatment or the conditional-exit treatment appears first or second in the session. We focus on the last five decision periods of each treatment to account for any marginal learning effects. Our tests confirm an absence of order effects.

Given the above observations, we create an independent observation for each group of five subjects in each session of each treatment for the "mean implemented GIF rate", "mean exit decisions" and "mean private purchases" by computing the mean value of each variable across the last five decision periods. Because there are no order effects, this provides 10 independent observations of each variable for the following treatments: public-only (paired with universal-exit), public-only (paired with conditional-exit), universal-exit and conditional-exit.

4.1 Exit Decisions

Exit behaviour differed substantially between the universal-exit and conditional-exit treatments as shown in Tables 1 and 2. The rates of exit in the universal-exit treatment were notably lower than predicted, though, perhaps understandably given the environment, they were increasing in income. In contrast the rates of exit in the conditional-exit treatment were quite close to the predicted frequencies, although the 0.940 rates of exit for individuals with incomes of 700 and 1500 are still statistically significantly different from a rate of 1.000.

In the conditional-exit treatment individuals with the two highest incomes appear to have understood the benefit to them of exiting; for some reason, in the universal-exit treatment

---

6 As the same subjects make decisions in both the first- and second-half of each treatment, we use a non-parametric Wilcoxon Signed Rank test to obtain five independent observations for each treatment. We cannot reject the null hypotheses that there are no differences in the mean implemented GIF rates, subjects' mean exit decisions or mean private purchases of those who choose to exit between the first five and the last five periods of each treatment when the public-finance-only treatment was seen first. We also conducted parametric paired t-tests and found similar results. Comparisons between within-subject treatments reported in subsections 4.1 to 4.6 below also use these same non-parametric and parametric significance tests.

7 Because ordering of treatments was varied between subjects, the mean observations are independent; we therefore test for order effects using both Mann-Whitney and Fisher-Pitman Randomization nonparametric tests (Moir, 1998). The p-values are all above 0.10 and we cannot reject the null hypotheses of no differences in these mean outcomes across the three treatments. These results are also supported by parametric t-tests.
they did not have this same degree of understanding because individuals with incomes of 700 and 1500 had exit rates of 0.720 and 0.760 respectively. Further, as long as there were higher-income individuals who do not exit, lower-income individuals had an incentive to remain in the public system because they receive income transfers from the higher-income individuals through the public provision of the private good. Hence, their exit rates are low and the public system does not unravel as predicted for the universal-exit treatment.

**Result 1** Participants in the conditional-exit treatment exited as predicted but participants in the universal-exit treatment exited less often than predicted with higher-income individuals exiting more frequently than lower-income individuals.

### 4.2 Private Purchase Decisions

As also shown in Tables 1 and 2, the average amounts of private purchases made by subjects who chose to exit in the universal-exit treatment track the predicted values quite well (none of the differences are statistically different), though there is a tendency for lower-income individuals to over-invest (by 17 and 11 percent for individuals with incomes 125 and 275) and for higher-income individuals to under-invest (by 5 percent for individuals with incomes 700 and 1500). For the conditional-exit treatment, individuals with incomes of 700 or 1500 who choose to exit invest about nine percent less than predicted.

**Result 2** Individuals who chose to exit in both of the exit treatments tended to purchase the amount of the private good as predicted by the theoretical model.

### 4.3 Mean Preferred Tax Rates

A comparison of the observed mean preferred tax rates (i.e., the mean of submitted contribution rates) by income with the theoretically predicted values is presented in Table 3.\(^8\) We must be careful when interpreting observed mean preferred tax rates by income because only the median tax rate will be of consequence to subject payoffs. These data reveal that observed mean preferred tax rates in the public-only treatment are decreasing in income as predicted, but that they are slightly lower (by less than ten percent) than the predicted

\(^8\)Any statistical test between each exit treatment and the public-finance-only treatment used public-only data from subjects in their associated exit treatments.
rates for incomes 125, 275, 640 and 700 (e.g., 0.856 versus 0.937 for income 125), but slightly higher (by less than ten percent) than predicted for individuals with income of 1500.9

Because the model for the universal-exit treatment predicts that individuals with income greater than 125 will exit, there are no predicted tax rates for the universal-exit treatment, except for the lowest-income subjects, who would prefer a tax rate of 0.559 if they remain in the public system. In the laboratory, many of the lowest-income subjects did remain in the public-system and their mean submitted rate (0.805) was substantially higher than 0.559. This is not unexpected if others with greater incomes choose not to exit. If individuals with income of 125 observed others not exiting from the public system, the preferred rate for the individual with an income of 125 would rise above 0.559.

In the conditional-exit treatment, the mean preferred rates reported by the three lowest income subjects with incomes of 125, 275 and 640, who must remain in the public system, differ from the predicted values by -0.033, 0.018 and 0.047, respectively. The differences are statistically significant for individuals with incomes of 125 and 640. However, the mean preferred tax rate of the median income individuals (those with incomes of 275) does not differ statistically from the predicted rate, consequently the mean implemented tax rate in the conditional-exit treatment will not differ from the predicted rate if subjects with incomes of 700 and 1500 exit. This happens more than ninety percent of the time and so it is not surprising that the observed mean tax rate for the conditional-exit treatment is close to the predicted value.10

In the universal-exit treatment, the mean preferred rates reported by individuals with incomes of 275 and 650 are between the rates predicted for the public-only and conditional-exit treatments. This is consistent with an environment in which individuals with incomes of 700 and 1500 frequently do not exit from the public system (which occurs more than a quarter of the time in the laboratory for the universal-exit treatment). The behaviour of participants in the universal-exit treatment is not consistent with the predictions of the

---

9This comparison pools the public-only data across the twenty groups.

10Out of 100 observations of decisions made by individuals with incomes of 700 or 1500 there are only six observations (three for individuals with income of 700 and three for individuals with income of 1500) when the individual does not exit. The mean tax rates selected by the individuals with income of 700 and 1500 are 0.628 and 0.750. Both of these are inconsistent with these individuals attempting to maximize their payoffs under any assumption of the mix of individuals who will remain in the public system.
theoretical model.

**Result 3** The mean preferred tax rates for individuals in the public-only and conditional-exit treatments are not substantially different from the rates predicted by the underlying theoretical model. The data generated by the individuals in the universal-exit treatment do not support the predictions of the theoretical model.

### 4.4 Mean Implemented Tax Rates

We now compare the observed mean implemented tax rates of the median voter against the theoretically predicted values for each of the three treatments as shown in Table 4. The predicted tax rate in the public-only treatment is 0.564 and the actual mean implemented tax rates in the public-only treatments (when paired with either exit treatment) do not differ from this prediction.\(^\text{11}\) In addition, the actual mean implemented tax rate of 0.655 in the conditional-exit treatment did not differ from its predicted tax rate of 0.642. In the universal-exit treatment, when all subjects can choose to exit, there is no prediction for the tax rate as all subjects, save the lowest income subject, are predicted to exit. If only the lowest income individual remained to participate in the public system, then the predicted tax rate is 0.559. The actual mean implemented tax rate of 0.664 in universal-exit treatment differs statistically from 0.559 and is consistent with an environment in which individuals with incomes greater than 125 choose to participate in the public system.

We next test for differences in mean implemented tax rates across the three treatments. First, there is no significant difference between the mean implemented tax rates from the public-only sessions that were combined with the universal-exit treatment (0.559) and from the public-only sessions that were combined with the conditional-exit treatment (0.562). Second, there is a significant difference between the universal-exit and public-only tax rates (0.664 versus 0.559) and between the conditional-exit and public-only tax rates (0.655 versus 0.562). And third, the difference between the universal-exit and conditional-exit tax rates (0.664 and 0.655) are not statistically different.

\(^{11}\text{Any differences from null hypotheses will be judged statistically significant if the p-value is less than the significance level of 0.10. Unless otherwise noted, significant differences for all hypothesis tests apply for both parametric t-tests (paired or unpaired, as appropriate) and non-parametric tests (Mann-Whitney or a Wilcoxon Signed Ranks, as appropriate).}\)
result 4 The mean implemented tax rate in the public-only and conditional-exit treatments are not significantly different from the rates predicted by the underlying theoretical model. The mean implemented rate rate in the universal-exit treatment was significantly higher than predicted.

4.5 Implications for Consumption

The fact that subjects behaved as predicted in the public-only treatment, did not exit as predicted in the universal-exit treatment and slightly underinvested when they exited in the conditional-exit treatment has implications for the distribution of the total consumption of the private good and total payoffs in the three treatments. Table 5 summarizes the mean total per period consumption of the publicly provided private good by treatment and income based on the data from the last five decision periods. The total consumption of the publicly provided good includes both the amount publicly financed and consumed by those in the public system and the amount of the good purchased privately by those who exit from the public system. There are no significant differences in observed total consumption of the private good across the three treatments. The only significant difference among the observed total consumption values is the amount by which the observed total consumption falls short of the predicted total consumption under the conditional-exit treatment that is attributable to subjects who exit purchasing less than predicted.

One way to summarize the effects of the different treatments on consumption of the private good is with a measure of the distribution of consumption across individuals by income. We consider the coefficient of variation (CoV) which is the ratio of the standard deviation of consumption of the identified good across income classes divided by the mean consumption by subjects in the treatment. A CoV of zero indicates an equal or uniform distribution of consumption. By definition, the public-only finance treatment will have a CoV of zero. Larger values indicate less equal distributions of consumption. If subjects behaved as predicted in the universal-exit treatment then the CoV would be the same as in a pure privately financed system and equal to 0.824. In the conditional-exit treatment, only high income individuals are permitted to exit from the public system. It would be in their self-interest to leave the public system and purchase the same amount of the good that
they would purchase if a public system did not exist. For the remaining individuals, the tax rate resulting from majority-rule voting would result in redistribution from the remaining high-income individuals to the low-income individuals. The net effect is an increase in the amount of the good consumed. This comes at the expense of the highest income individual remaining in the public system. This results in a CoV that is lower than under a regime of universal-exit ($0.702 < 0.824$). What is observed in the universal-exit and conditional-exit treatments implemented in the laboratory is a distribution of total consumption of the private good that is more equal than either predicted distribution. These deviations are significantly different from the predicted CoVs ($0.602$ versus $0.824$ for universal-exit and $0.657$ versus $0.702$ for conditional-exit). These deviations occur because subjects did not exit as predicted in the exit treatments and consequently more consumption of the private good was financed publicly than predicted and therefore, more uniformly. Note that the relatively small deviations from an exit rate of 1.000 in the conditional-exit treatment than in the universal-exit treatment accounts for the much smaller deviation from the prediction in the conditional-exit treatment. The observed values are also different from the public-only value.

**Result 5** *Consumption of the private good that could be provided publicly does not differ significantly across treatments but the distribution of consumption across income classes is substantially more unequal in the exit treatments.*

### 4.6 Implications for Total Payoffs

Total per periods payoffs per person by treatment and income based on data from the last five decision periods are summarized in Table 6. Total payoffs provide a rough measure of social welfare in our environment. The predicted total payoffs are greatest for the public-only treatment. The predicted total payoffs are lowest for the universal-exit treatment by about four percent of the public-only total. The predicted total payoff for the conditional-exit treatment is only about one-and-a-half percent lower than the public-only total.

The observed total payoffs only statistically differ from their predicted values for the conditional-exit treatment, reflecting the under-investment by the high-income subjects who exited. Total payoffs are higher in the public-only treatment than in each of the two exit
treatments. The distributions of payoffs from the exit treatments are not significantly different from one another as measured by their CoVs, but they are both significantly different from the CoVs for the public-only finance treatment. The distribution of payoffs for the universal-exit treatment is more equal than its predicted value, but the distribution of payoffs for the conditional-exit treatment is not different from the predicted value. The improvement in equality of the distribution of payoffs relative to the distribution of consumption of the publicly provided private good is predicted by the models (see Tables 5 and 6) and can be attributed to the decreasing-returns-to-scale characteristic of the payoff function used in the experiment (see Equation (1)). As in other situations presented earlier, these differences between exit treatment outcomes and their predicted values reflect the observed exit decisions of subjects in these treatments.

Result 6 Mean total payoff in the public-only treatment is not different from the predicted value (in aggregate and by subject income). Mean total payoffs in the exit treatments fall short of the mean total payoff in the public-only treatment and they are distributed less equally.

5 Why Don’t Individuals Exit as Predicted?

The difference in subject exit behaviour across the two exit treatments is surprising. As noted, the two highest-income individuals in the conditional-exit treatment had no difficulty recognizing the payoff benefit available to them by exiting from the public system. Yet, individuals with the same incomes in the universal-exit treatment (which did not impose an income threshold on the exit option) did not recognize the gains from exiting from the public system. We conjecture this difference may have been driven by two alternative explanations.

First, high-income individuals consider exiting in the universal-exit treatment but feel that to do so would constitute jumping ship. This occurs in part because the instructions framed the choice as staying in the public system or leaving the public system. In a sense, the default was to remain in the public system, which may have created something akin to an endowment effect associated with the baseline institution. In contrast, in the conditional-exit treatment, those with incomes of 700 and 1500 were told that they were permitted to exit from the public system within a design that on the surface gives them permission (or
indeed a special right) to exit which lower income individuals did not possess. This may replace the *endowment effect* of the universal-exit treatment.

Second, it may take time for individuals in the universal-exit treatment to realize that the highest-income person should exit from the public system and that the natural consequence of this is that the next-highest-income individual should then exit until the unraveling process takes place and everyone exits. This suggests that exit rates in the universal-exit treatment would be higher if it was easier for this *unraveling* process to take place faster.

We investigate both of these conjectures with the sensitivity analysis presented below. To explore the first, we modified our design so that subjects participated in a conditional-exit treatment for ten periods and then switched to the universal-exit treatment for another ten periods. If our conjecture is true, exposing participants first to the conditional-exit treatment will prime high-income subjects to exit more frequently in the following universal-exit treatment.

To examine the second conjecture, we modified our design so that subjects had the same income for all decision periods (rather than experiencing all five income levels in random order), thereby giving high-income subjects greater opportunity to learn the benefits of exiting and thus allowing for the cascade of exits to occur down the income levels much easier. For these sessions we modified the design in which subjects first participated in a public-only treatment for ten decision periods and then introduced the universal-exit treatment for another ten decision periods, so that individuals had the same income for all twenty decision periods. In a further minor variation of this, we also ran a version of this constant-income design in which all subjects were told after each period which of the five subjects chose to exit, hypothesizing that explicit information about the income levels of the individuals who exit may affect exit behaviour and may speed up the predicted cascade of exits.

Table 7 summarizes exit behaviour for our original designs and our three new designs. Column (1) presents the exit rates by income in the original conditional-exit treatment reported in Table 2. Column (2) presents the exit rates by income in the original universal-exit treatment reported in Table 1. Column (3) presents the exit rates by income for the universal-exit treatment preceded by a conditional-exit treatment and column (4) presents the exit rates by income for the universal-exit treatment preceded by a public-only treatment.
but in which incomes are not randomized after each decision period. Finally, column (5) presents the design similar to that in column (4) only information about the income of the individuals who exited is also provided to everyone. Data for each of the three new designs were obtained from three sessions, each of which included two independent groups of five subjects (who were randomly assigned to groups).

The priming design had the expected effect on exit rates: comparing columns (1) and (3) reveals that high-income individuals in the universal-exit treatment that followed the conditional-exit treatment exited at rates equivalent to rates in the conditional-exit treatments and are now not significantly different from the theoretical prediction. Furthermore, the higher rates of exit among high-income individuals cause the exit rates to increase among those with incomes of 125, 275 and 640. These exit rates rise from 0.080, 0.160 and 0.560 to 0.160, 0.600 and 0.800 respectively (see columns (2) and (3)), although these are still significantly below the exit prediction of 1.00.

Learning also appears to explain part of the low exit rate in the universal-exit treatments. A comparison of columns (2) and (4) reveals that keeping subjects’ incomes constant (so high-income subjects more easily learn the benefits of exiting) also leads to higher rates of exit by high-income individuals. Further providing subjects information after each period regarding which incomes exited does not provide much additional impact on exit behaviour as seen in column (5).

We considered the possibility that the decision to exit from the public system may be related cooperativeness or altruism of the participants. Because participating in the public system results in income redistribution from high-income participants to low-income participants, the social value orientations of the participants may be important. The sessions described in columns (4) and (5) were followed by a brief social value orientation ring game similar to those presented in Mentzakis and Mestelman (2013). This allowed individuals to be categorized as having altruistic, cooperative, individualistic or competitive other-regarding preferences based on their decisions in the non-strategic payoff allocation ring

---

12 While the social value orientation game used was developed by Griesinger and Livingston (1973) and Liebrand (1984), the exact ring game used was identical to the non-incentivized social value orientation mechanism presented in Mentzakis and Mestelman (2013). The authors found no hypothetical bias when comparing these social value orientation measures to those elicited when salient monetary incentives were involved.
game. However, we found no evidence that individuals exit decisions were correlated with either a continuous or categorical measure of their social value orientation measure.

These supplemental findings indicate that the low exit rates by high-income individuals in the universal-exit treatment are not driven by other-regarding preferences, but likely derive at least in part from a type of endowment effect associated with the framing of the experiment and from learning effects, but these factors cannot explain all of the differences observed between the universal-exit treatments, conditional-exit treatments and the theoretical predictions.

6 Conclusion

This paper uses a controlled laboratory experiment to test theoretical predications regarding equilibria for mixed financing systems that allow for complete exit from the public system. Exiting from the public system means that an individual neither contributes to the financing of the public system nor consumes any of the publicly provided good. The individual who exits may purchase privately their desired quantity of the good. The environments we investigate mimic key features of real-world systems that allow for exit, including those that allow exit for all individuals and those that allow only high-income individuals to exit the collective scheme. On the other hand, combining the universal-exit treatment and the public-only treatment provides a stress test of a public provision system by permitting all individuals to exit from the public system.

Our results largely confirm the theoretical prediction regarding exit behaviour within conditional-exit designs that allow exit only by individuals with incomes above a specified threshold. Both exit rates by high-income individuals and the amounts of private purchases line up well with predictions. In contrast, our results are not consistent with predictions that support for public provision will unravel under universal-exit arrangements. In the universal-exit designs high-income individuals do not exit as predicted; conditional on high-income individuals remaining in the public system, it was then rational for lower-income individuals to also remain (to benefit from the income redistribution carried out through public provision). A key question is why high-income individuals failed to exit as predicted in the universal-exit treatments. Subsequent sessions using modified designs to test some
specific conjectures regarding this unexpected behaviour suggest it arises in part from a type of endowment effect that arose from framing the public system, in a sense, as the default option and created a valence of jumping-ship if one exited, and in part from learning effects. Subjects required multiple periods with the same income to fully appreciate the benefits of exiting if they had a high-income. This being said, even with constant incomes and full information regarding which incomes were exiting, individuals did not totally abandon the public system as predicted. Importantly, we find that this exit behaviour was not related to altruistic, other-regarding preferences.

Both of our exit treatments have clear predictions regarding exit from a public system, distribution of benefits and collective decision-making about financing the public provision of a private good. By necessity, they represented simplified versions of naturally occurring arrangements, albeit simplified versions that capture essential features of the real-world arrangement. As such, they provide a starting point for studying alternative mixed financing schemes for publicly providing private goods such as education, health care or garbage collection. The results will suggest to some that pure private provision of some goods may not be an unequivocally desirable mechanism because they show that when given a choice between participating in the collective provision of a private good or the personal private provision of that same good, the private provision is not always enthusiastically adopted. Further, our results have two immediate implications for future research on mixed systems with exit. First, it would be informative to run the same treatments as we have completed with a different frame. Rather than give people the opportunity to exit from a public system (which serves as the baseline), give them opportunity to enter into the collective provision of the private good from a baseline of pure private provision. Second, research needs to identify better the determinants of exit behaviour within such systems.
References


### Tables

#### Table 1: Exit and Private Purchases Decisions, Universal-Exit Treatment

<table>
<thead>
<tr>
<th>Income</th>
<th>Predicted Percentage of Exits</th>
<th>Predicted Amount of Private Purchases, L$</th>
<th>Observed Percentage of Exits</th>
<th>Observed Mean Amount of Private Purchases, L$</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>n/a</td>
<td>69.96</td>
<td>8%</td>
<td>82</td>
</tr>
<tr>
<td>275</td>
<td>100%</td>
<td>153.8</td>
<td>16%*</td>
<td>171.13</td>
</tr>
<tr>
<td>640</td>
<td>100%</td>
<td>357.94</td>
<td>56%*</td>
<td>358.29</td>
</tr>
<tr>
<td>700</td>
<td>100%</td>
<td>391.5</td>
<td>72%*</td>
<td>370.57</td>
</tr>
<tr>
<td>1500</td>
<td>100%</td>
<td>838.93</td>
<td>76%*</td>
<td>793.29</td>
</tr>
</tbody>
</table>

All statistical tests are conducted using a 10% significance level. * indicates that the observed value is significantly different from its predicted value.

#### Table 2: Exit and Private Purchases Decisions, Conditional-Exit Treatment

<table>
<thead>
<tr>
<th>Income</th>
<th>Predicted Percentage of Exits</th>
<th>Predicted Amount of Private Purchases, L$</th>
<th>Observed Percentage of Exits</th>
<th>Observed Mean Amount of Private Purchases, L$</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>100%</td>
<td>391.5</td>
<td>94%*</td>
<td>361.47*</td>
</tr>
<tr>
<td>1500</td>
<td>100%</td>
<td>838.93</td>
<td>94%*</td>
<td>752.68*</td>
</tr>
</tbody>
</table>

Notes: See notes for Table 1.
Table 3: Mean Preferred Tax Rates by Income and Treatment

<table>
<thead>
<tr>
<th>Income</th>
<th>Public-Only Predicted Rate</th>
<th>Conditional-Exit Predicted Rate</th>
<th>Public-Only Observed Mean Rate (with Universal-Exit)</th>
<th>Universal-Exit Observed Mean Rate</th>
<th>Public-Only Observed Mean Rate (with Conditional-Exit)</th>
<th>Conditional-Exit Observed Mean Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>0.937</td>
<td>0.854</td>
<td>0.856*</td>
<td>0.809</td>
<td>0.857*</td>
<td>0.821*</td>
</tr>
<tr>
<td>275</td>
<td>0.821</td>
<td>0.642</td>
<td>0.776(^X,\ast)</td>
<td>0.680(^P)</td>
<td>0.761(^C,\ast)</td>
<td>0.660(^P)</td>
</tr>
<tr>
<td>640</td>
<td>0.564</td>
<td>0.336</td>
<td>0.545</td>
<td>0.474(^C)</td>
<td>0.549(^C)</td>
<td>0.383(^P,\ast)</td>
</tr>
<tr>
<td>700</td>
<td>0.531</td>
<td>n/a</td>
<td>0.527*</td>
<td>0.509</td>
<td>0.507*</td>
<td>0.627</td>
</tr>
<tr>
<td>1500</td>
<td>0.265</td>
<td>n/a</td>
<td>0.288(^X,\ast)</td>
<td>0.426(^P,\ast)</td>
<td>0.292</td>
<td>0.750(^X)</td>
</tr>
</tbody>
</table>

Notes: All statistical tests are conducted using a 10% significance level. * indicates that the observed value is significantly different from its predicted value. \(^P\) indicates that there is a statistically significant difference between the universal-exit or conditional-exit value and associated public value. \(^X(C)\) indicates that there is a statistically significant difference between the observed universal-exit (conditional-exit) value for the treatment to which the superscript is attached. There are 20 observations for the public-only treatment for all endowment levels. There are 10, 10, 8, 8 and 7 observations for the universal-exit treatment endowments of 125, 275, 640, 700 and 1500, respectively and 10, 10, 3 and 3 observations for the conditional-exit treatment endowments of 125, 275, 640, 700 and 1500, respectively. The mean observed preferred tax rate of the highest income subject in the exit treatment (0.426) is only significantly different from the mean observed preferred rate of the highest income subject in the conditional-exit treatment (0.750) using a t-test, but is not significantly different using a Mann-Whitney test.
### Table 4: Mean Implemented Tax Rates by Treatment

<table>
<thead>
<tr>
<th></th>
<th>Public-Only (with Universal-Exit)</th>
<th>Universal-Exit</th>
<th>Public-Only (with Conditional-Exit)</th>
<th>Conditional-Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Rate</td>
<td>0.564</td>
<td>n/a</td>
<td>0.564</td>
<td>0.642</td>
</tr>
<tr>
<td>Observed Mean</td>
<td>0.559&lt;sup&gt;X&lt;/sup&gt;</td>
<td>0.664&lt;sup&gt;P&lt;/sup&gt;</td>
<td>0.562&lt;sup&gt;C&lt;/sup&gt;</td>
<td>0.655&lt;sup&gt;P&lt;/sup&gt;</td>
</tr>
<tr>
<td>(Std Dev)</td>
<td>(0.028)</td>
<td>(0.046)</td>
<td>(0.019)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>Observations</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Notes: See notes for Table 3. In the universal-exit treatment, the individual with endowment of 125 will be indifferent between exiting or remaining in the public system. In the case when the individual does not exit, the individual’s preferred tax rate is 0.559. The observed mean implemented tax rate of 0.664 in the universal-exit treatment is significantly different from this value.
Table 5: Total per period Consumption Private Good per Person by Treatment and Income

<table>
<thead>
<tr>
<th>Income</th>
<th>Public-Only</th>
<th>Universal-Exit</th>
<th>Conditional-Exit</th>
<th>Public-Only (with Universal-Exit)</th>
<th>Universal-Exit</th>
<th>Public-Only (with Conditional-Exit)</th>
<th>Conditional-Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>365</td>
<td>70</td>
<td>223</td>
<td>362(^X)</td>
<td>[221(^<em>) (7(^</em>))](^P)</td>
<td>364(^C)</td>
<td>241(^*),(^P)</td>
</tr>
<tr>
<td>275</td>
<td>365</td>
<td>154</td>
<td>223</td>
<td>362(^X)</td>
<td>[211(^<em>) (27(^</em>))](^P)</td>
<td>364(^C)</td>
<td>241(^*),(^P)</td>
</tr>
<tr>
<td>640</td>
<td>365</td>
<td>358</td>
<td>223</td>
<td>362(^X)</td>
<td>[133(^<em>) (201(^</em>))](^C,P)</td>
<td>364(^C)</td>
<td>241(^*),(^X,P)</td>
</tr>
<tr>
<td>700</td>
<td>365</td>
<td>392</td>
<td>392</td>
<td>362</td>
<td>93 (259)</td>
<td>364</td>
<td>16(^<em>) (340(^</em>))</td>
</tr>
<tr>
<td>1500</td>
<td>365</td>
<td>839</td>
<td>839</td>
<td>362(^X)</td>
<td>[97(^<em>) (603(^</em>))](^P)</td>
<td>364(^C)</td>
<td>[23 (708(^*))](^P)</td>
</tr>
<tr>
<td>Total</td>
<td>1825</td>
<td>1813</td>
<td>669 (1231)</td>
<td>1810</td>
<td>755(^<em>) (1097(^</em>))</td>
<td>1820</td>
<td>[762(^*) (1048)]</td>
</tr>
</tbody>
</table>

Notes: See notes for Table 3. Bolded numbers reflect privately financed purchases. Superscripts on brackets [ ] refers to the significant differences of the total consumption (publicly and privately financed) from the predicted value for total consumption. The above numbers do not condition on the exit decision of the subjects. Therefore, the amount of privately financed consumption reported above are all less than those reported in Tables 1 and 2 since the observed percentages of exit were all below the predicted 100\%.  

Coefficient of Variation (Std Dev) | 0       | 0.824   | 0.702   | 0\(^X\)                           | 0.602\(^P,*,\(^\)\) | 0\(^F\)               | 0.657\(^P,*,\)   |

(0)    | (0.232)  | (0.068) |
Table 6: Total per period Payoffs per Person by Treatment and by Income

<table>
<thead>
<tr>
<th>Income</th>
<th>Predicted</th>
<th>Observed</th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public-Only</td>
<td>Universal-Exit</td>
<td>Conditional-Exit</td>
</tr>
<tr>
<td>125</td>
<td>979</td>
<td>503</td>
<td>791</td>
</tr>
<tr>
<td>275</td>
<td>1112</td>
<td>807</td>
<td>909</td>
</tr>
<tr>
<td>640</td>
<td>1346</td>
<td>1340</td>
<td>1117</td>
</tr>
<tr>
<td>700</td>
<td>1378</td>
<td>1414</td>
<td>1414</td>
</tr>
<tr>
<td>1500</td>
<td>1737</td>
<td>2234</td>
<td>2234</td>
</tr>
<tr>
<td>Total</td>
<td>6550</td>
<td>6300</td>
<td>6465</td>
</tr>
</tbody>
</table>

| Coefficient of Variation (Std Dev) | 0.221 | 0.526 | 0.446 | 0.223<sup>X</sup> | 0.431<sup>P,*</sup> | 0.222<sup>C</sup> | 0.443<sup>P</sup> |

Notes: See notes for Table 5.
<table>
<thead>
<tr>
<th>Income</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Universal-Exit</td>
<td>Universal-Exit</td>
<td>Universal-Exit</td>
<td>Universal-Exit</td>
<td>Universal-Exit</td>
</tr>
<tr>
<td></td>
<td>Conditional-Exit</td>
<td>with Constant Incomes</td>
<td>with Constant Incomes</td>
<td>with Constant Incomes</td>
<td>with Constant Incomes</td>
</tr>
<tr>
<td>125</td>
<td>0% (0)</td>
<td>8% (4)</td>
<td>16% (5)</td>
<td>7% (2)</td>
<td>24% (7)</td>
</tr>
<tr>
<td>275</td>
<td>0% (0)</td>
<td>16% (8)</td>
<td>60%** (18)</td>
<td>50%** (15)</td>
<td>69%** (20)</td>
</tr>
<tr>
<td>640</td>
<td>0% (0)</td>
<td>56% (28)</td>
<td>80%* (24)</td>
<td>80%* (24)</td>
<td>72% (21)</td>
</tr>
<tr>
<td>700</td>
<td>88% (70)</td>
<td>72%γ (36)</td>
<td>87%$ (26)</td>
<td>80% (24)</td>
<td>86% (25)</td>
</tr>
<tr>
<td>1500</td>
<td>96% (77)</td>
<td>76%γγ (38)</td>
<td>93%**$ (28)</td>
<td>100%**$ (30)</td>
<td>97%**$ (28)</td>
</tr>
</tbody>
</table>

Note: N indicates the number of observations per income value for each treatment. γ and γγ indicate that the percentage of exits for the two highest income levels is significantly different from the percent of exits in Column (1) at the 10% and 5% significance level, respectively. * and ** indicate that the percentage of exits is significantly different from the percent of exits in Column (2) at the 10% and 5% significance level, respectively. None of the observed frequencies in Columns (3), (4) and (5) are significantly different from each other at a 10% or better significance level. All tests are t-tests computed using a clustered probit regression model for each income value in which an exit dummy is regressed on the full set of treatment dummies and errors are assumed to be clustered at the session level to account for correlation among exit decisions made over time and across subjects within the same session. Finally, $ indicates that the percentage of exits is not significantly different from 100% at the 5% significant level using a chi-square test.