MEASURING THE ECONOMIC VALUE OF GOVERNMENT PROGRAMS: AN APPLICATION TO EARLY-CHILDHOOD INTERVENTIONS

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ABSTRACT

SEMRA OZDEMIR: MEASURING THE ECONOMIC VALUE OF GOVERNMENT PROGRAMS: AN APPLICATION TO EARLY-CHILDHOOD INTERVENTIONS
(Under the direction of Dale Whittington)

Compelling evidence has been found that investing in early-childhood development for disadvantaged children has long-term economic benefits to program participants and non-participants alike. Public provision of early-childhood intervention programs requires allocation of taxpayers' money to these programs. At a time when the opportunity cost of public dollars is very high, it is important to estimate taxpayers' preferences for allocating public funds to early-childhood development programs now for benefits that would be accrued years later. The objectives of this dissertation were 1) To quantify public's willingness to pay for reducing childhood poverty in the US; 2) To present a budget-allocation framework to measure public demand for specific government programs by allowing respondents to express preferences for smaller government; and 3) To discuss the presence and implications of asymmetry in stated preferences for multiple non-market goods. To achieve these objectives, this study utilized stated-preference (SP) survey methods using a contingent valuation survey and two discrete-choice experiment surveys. The web-enabled surveys were administered to a representative sample of US general population.

Four findings stand out across the chapters: 1) The population-weighted mean WTP for an intensive high-quality early-childhood program was $33 to $52 per year per household and was much lower than the annual per household program cost; 2) Preferences for supporting early-childhood development programs were correlated with

ideological perspective, and government involvement seemed to be the main reason for the lack of conservatives' support on the program; 3) The budget-allocation framework was used successfully to calculate welfare changes based on changes in disposable income and/or reallocation of funding from one government program to another while mitigating possible protest responses; and 4) Large asymmetry in preferences was observed for taxes and government programs.

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LIST OF ABBREVIATIONS

CV – Contingent valuation

DCE – Discrete choice experiment

KN – Knowledge Networks

MRS – Marginal rate of substitution

SP – Stated preference

TTT – Time to think

Version CFJ – Version with early-childhood, food-safety and job-training programs

Version CFD – Version with early-childhood, food-safety and disaster-relief programs

Version CJD – Version with early-childhood, job-training and disaster-relief programs

Version FJD – Version with food-safety, job-training and disaster-relief programs

WTA – Willingness to accept

WTP – Willingness to pay

WTT – Willingness to reallocate

CHAPTER 1

INTRODUCTION

1.1 Childhood Poverty in the US

One in every five children lives in poverty in the US (DeNavas-Walt, Proctor, & Smith, 2010). The total economic value of increased production and higher quality of life that would accrue if childhood poverty were eliminated in the US was estimated to be $500 billion per year in 2008 dollars or 4% of total GDP (Holzer, Schanzenbach, Duncan, & Ludwig, 2008). Children who are born into poverty are very likely to have lower quality of life when they become adults and pass poverty on to their children as well (Francesconi, 2008; Rutter, 2006).

Poverty has negative effects on the physical, socio-emotional, and cognitive well-being of children (Evans, 2004). Low-income children experience substantially less cognitive stimulation and enrichment in comparison to wealthier children. In addition, low-income parents are less involved in their children's school activities (Nestmann & Hurrelmann, 1994) and are less likely to engage with their children in literary activities such as reading aloud or visiting a library (Coley, 2002). Furthermore, low-income children watch more TV (Larson & Verma, 1999) and have less access to books (G. J. Duncan, Brooks-Gunn, & Klebanov, 1994) and computers (Becker, 2000). It was found that less involvement in literacy activities and more time watching television adversely affect cognitive development (Coley, 2002; Larson & Verma, 1999).

1.2 Early-Childhood Development

The difference in socio-economic status between the poor and the non-poor starts early in childhood and often persists through the rest of someone's life. Research shows that ages 0 through 5 are the sensitive years which affect skill development, especially cognitive skill development, more than any other periods of the lifecycle (G. J. Duncan et al., 2007; Knudsen, Heckman, Cameron, & Shonkoff, 2006). The skills created at an early developmental stage increase the skills acquired at a later stage and also increase the productivity of investments in later stages. However, if investments start later for children or adolescents in at-risk families, it is harder for these children/adolescents to catch up with their counterparts from non-risk families.

Experimental studies, such as the Perry Preschool (Schweinhart, Montie, Xiang, Barnett, Belfield, & Nores, 2005a) and the Abecedarian programs (F. A. Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002) show evidence on how enrichment of the early environments of children in poor households can make a difference for these children in the short and long term. Compared to non-participants, the participants of the Perry Program 1) were more likely to have graduated from high school (65% versus 45%), 2) were more likely to have a full-time job (76% versus 62%), 3) were more likely to be home owners (37% versus 28%), 4) were more likely to have a savings account (76% versus 50%), and 5) were less likely to have been arrested (36% versus 55%) (Schweinhart, Montie, Xiang, Barnett, Belfield, & Nores, 2005b). Compared to non-participants, the participants of the Abecedarian program 1) scored 1.8 grade years higher in reading and 1.3 years higher in math as young adults, 2) were more likely to attend a four-year college (36% versus 14%), 3) were more likely to have a skilled job (47% versus 27%), 4) were less likely to have had their first child at age 18 or younger (26% versus 45%), 5) tended to smoke less (39% versus 55%), and 6) were less likely to use marijuana (18% versus 39%) (F. A. Campbell, Pungello, Miller-Johnson,

Burchinal, & Ramey, 2001; F. A. Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002). These findings support a causal link between early-childhood development programs and poverty alleviation.

1.3 The Value of Early-Childhood Development Programs

A number of studies have conducted economic analyses of experimental early-childhood development programs by attaching dollar values to realized program outcomes (Aos, Lieb, Mayfield, Miller, & Pennucci, 2004; Karoly, 1998; Reynolds, Temple, Robertson, & Mann, 2002). These studies, however, differed in terms of what economic values they measured based on the outcomes of the experimental programs and how these values were measured. Despite their differences, these benefit-cost studies have agreed that the cost savings of alleviating the causes of crime, unemployment, ill health, and other consequences of social inequities more than offset the costs of small-scale, high-quality early-childhood interventions (W. S. Barnett & Masse, 2007; Heckman, Moon, Pinto, Savelyev, & Yavitz, 2010). For example, Heckman et al. (2010) found an estimated annual social rate of return of 7–10% for the Perry project.

Public provision of early-childhood development services assumes that taxpayers' monies will be allocated to these programs. It is therefore important to estimate taxpayers' preferences for allocating public funds to early-childhood development programs. Another important point in understanding public preferences is that the social benefits are realized long after the investment cost of early-childhood development are born. People might prefer to give priority to more immediate needs in the current economic and political climate in the US. The shadow value of public funds invested in early-childhood development is therefore greater than the simple cost estimates for early-childhood programs would suggest. Policymakers and legislators may want to know whether the public is willing to pay for such investments now when

they are faced with other social priorities, high unemployment, and a large and growing federal deficit.

1.4 Public Preferences for Government Programs

The definition of the opportunity cost and the choice of method of payment could affect preferences and welfare estimates in stated preference (SP) methods, which have been used extensively to measure the value of non-market goods, including publicly provided goods and services. Taxes are the most commonly used method of payment for eliciting the value of publicly provided goods in SP studies. However, SP studies are likely to receive protest responses for new taxes or for any increase in existing taxes in the current political climate. This was apparent in focus-group interviews for this study, which revealed that some subjects were opposed to any increase in income taxes no matter what the purpose of the increase was even if they cared about the social problems that government programs targeted. Other subjects suggested that inefficient government programs should be reduced to fund good-quality government programs.

Previous SP studies employed a budget reallocation scenario where they measured whether subjects were willing to reallocate existing taxes to a specified public program (Bergstrom, Boyle, & Yabe, 2004; Nunes & Travisi, 2009; Swallow & McGonagle, 2006), and some also investigated preferences for allocating a fixed amount of public dollars among a set of public programs (Blomquist, Newsome, & Stone, 2004; Costa-Font & Rovira, 2005). However, these studies did not derive a welfare-theoretic estimate of individuals' willingness to pay (WTP). They also did not specify the exact opportunity costs of budget reallocations and the consequences of a funding cut on households' consumption of existing goods and services. Literature shows that the framing of the evaluations of a commodity and how the opportunity cost is defined affect values (Cummings, Ganderton, & McGuckin, 1994; Hoehn & Loomis, 1993; Neill, 1995).

Therefore, a vague definition of the opportunity cost in budget reallocation studies is likely to produce invalid welfare estimates.

1.5 Asymmetry in Stated Preferences

The gap between WTP and willingness to accept (WTA) has been investigated and well documented in previous SP studies (Horowitz & McConnell, 2002), and loss aversion and reference dependency has been offered as the primary source for this disparity (Bateman, Munro, Rhodes, Starmer, & Sugden, 1997). Loss aversion has been measured as a steeper slope of the utility function in the losses domain than in the gains domain. Recently, discrete-choice experiment (DCE) studies have found evidence of loss aversion in stated preferences and that preferences for an attribute differed depending on whether an attribute was defined negatively or positively relative to a reference (De Borger & Fosgerau, 2008; Hess, Rose, & Hensher, 2008; Hjorth & Fosgerau, 2011; Lanz et al., 2009; Masiero & Hensher, 2010; Masiero & Hensher, 2011). These studies also suggested that models that did not allow asymmetric preferences overestimated WTP and underestimated WTA values.

These studies, however, were conducted on preferences for private goods; specifically all but one were transportation studies, focusing on asymmetry in preferences for time and money. It is not obvious whether individuals value gains and losses differently for public programs where benefits would accrue mostly to others compared to how they value gains and losses for private decisions; and whether the degree of preference asymmetry change based on the method of payment. Previous studies also have focused on one good at a time and did not provide information on how preference asymmetry could affect marginal rate of substitution among goods when multiple goods are evaluated jointly.

1.6 Objectives

This dissertation was written in a 3-paper format. The first paper (chapter 2) approximated the value of reducing childhood poverty via two different measures: 1) the value of a high-quality government program for early-childhood development and 2) the value of living in a country with lower childhood poverty rates than the US. The former focused on an intervention and aimed to estimate the value of solving the problem through an early-childhood program. The latter focused only on the outcome, with no reference to the means of reducing childhood poverty. This paper quantifies whether the U.S. public would be willing to pay for government programs to reduce childhood poverty in the US.

The second paper (chapter 3) presents a budget-allocation framework to measure public demand for specific government programs. This framework offered increases as well as reductions in government programs and income taxes which allowed respondents to express preferences for smaller government. This type of framework aimed to decrease possible scenario rejection for new or higher taxes. The opportunity cost of moving public dollars among or spending private dollars on different government programs were linked to the changes in the outcomes of these programs to allow researchers to estimate the dollar values or changes in other government programs that would offset a change in the particular government program of interest. This paper also investigated whether the value of an early-childhood development program is independent of the other programs competing for the same resources by comparing the program with other alternative programs in different versions of the survey instrument.

The third paper (chapter 4) investigated the presence and implications of asymmetry in stated preferences for increases and reductions in multiple non-market goods. This paper approached the question of valuing gains and losses from two distinct

perspectives by investigating whether individuals treat gains and losses differently for social versus private decisions. This paper also distinguished the degree and implications of asymmetry in preferences for goods and money. By investigating asymmetry in preferences for multiple goods in a joint-evaluation setting, this paper verified preference asymmetry in the marginal rates of substitution among goods. This paper also explored whether the degree of asymmetry differed for income taxes and cost-of-living expenses and how this affects different welfare measures.

1.7 Conceptual Framework

Reducing childhood poverty provides benefits to taxpayers, such as reduced crime rate, increased labor productivity and reduced welfare use, and benefits to children in poverty and their families who receive help. The benefits to children can be divided into two categories: 1) Benefits they receive during childhood, such as better nutrition and better health care, and 2) benefits they receive later in life, such as higher earnings, better quality of life, and higher next-generation earnings.

Altruistic individuals care not only about their own share of social benefits but also about benefits to child beneficiaries and other taxpayers. The literature distinguishes between paternalistic and non-paternalistic, or pure, altruism. Pure altruism refers to the situation where an individual (altruist) values the welfare of another individual (beneficiary), whereas paternalistic altruism refers to the situation where the altruist values the beneficiary's consumption of particular merit goods, irrespective of the beneficiary's preferences.

An individual's utility for childhood poverty rates thus is a function of benefits to taxpayers G_N where N represents taxpayers, and benefits to children in the short term when they are children (BC_M) and benefits in the long term (BL_M), where M represents the number of children who receive help. Notation can be used to differentiate social benefits to oneself (G_n) and to other taxpayers (G_{-n}), where n represents an individual

and –n represents all other taxpayers. Altruism usually is represented analytically by the entry of the beneficiary's consumption of the good into the utility function of the altruist if paternalistic; by the entry of the beneficiary's utility function into the altruist's utility function if pure. Hence, individual n's utility function for childhood-poverty levels would be

$$U_n = U(G_n, G_{-n}, U_{-n}(G_{-n}), BC_M, BL_M, U_M(BC_M, BL_M), Y_n)$$

where

$$\partial U_n/\partial G_n > 0,\ \partial U_n/\partial G_{-n} \geq 0,\ \partial U_n/\partial U_{-n} \geq 0,$$

$$\partial U_n/\partial BC_M \geq 0,\ \partial U_n/\partial BL_M \geq 0,\ \partial U_n/\partial U_M \geq 0$$

and Y_n is individual n's disposable income. If the utility function is additive it can be decomposed into three components:

1) self-motivated or private utility: $U_n^{SELF} = U(G_n, Y_n)$,

2) paternalistic altruism: $U_n^{PAT-ALT} = U(G_{-n}, BC_M, BL_M)$, and

3) pure altruism: $U_n^{PURE-ALT} = U\big(U_{-n}(G_{-n}), U_M(BS_M, BL_M)\big)$.

1.8 Methods

The research objectives were realized by employing three SP surveys. These methods were developed to obtain money-equivalent values for goods and services for which there are no market prices, or for which market prices are poor measures of social values. Two of the surveys were developed as a DCE while one of them was developed as a CV survey. Market researchers as well as environmental and health economists have employed such SP methods as CV and DCEs since the 1970s (Green & Rao, 1971; Green & Wind, 1975; Mitchell & Carson, 1989; Randall et al., 1974). These methods have been recommended for use in benefit-cost analysis for resource-allocation decisions (Boyle, 2003; Hanley, Ryan, & Wright, 2003). CV has been used to quantify subjects' WTP for a particular intervention in a hypothetical market for non-

market goods (Bishop & Welsh, 1992; Diener, O'Brien, & Gafni, 1998; Mitchell & Carson, 1990). DCEs were specifically designed to provide information about individuals' willingness to accept trade-offs among alternatives with multiple features (Boxall, Adamowicz, Swait, Williams, & Louviere, 1996; F. R. Johnson & Desvousges, 1997; F. R. Johnson et al., 2009; Özdemir, Johnson, & Hauber, 2009). DCE quantifies the implicit utility parameters of features and feature levels elicited through a series of trade-off tasks that require subjects to choose among alternative profiles with different combinations of features. Estimated utility parameters then can be used to calculate the relative importance of each feature and WTP for changes in alternative features.

A CV survey measured subjects' willingness to pay for high-quality, intensive early-childhood development programs at federal and state levels. This CV survey was designed to focus solely on childhood poverty as well as to address possible public concerns related to the relative roles of federal and state governments in investing in early-childhood programs. A second survey measured public's budgetary preferences for increasing or reducing taxes, and the early-childhood program was compared to other government programs of similar sizes. This DCE survey was developed to account for concerns with the growing federal budget deficit and competing social priorities and to reduce possible aversion to tax increases by accommodating preferences for both smaller and larger government. A third survey assessed the value of living in a country with higher or lower childhood-poverty rates than the US. This third survey focused on the outcomes alone and avoided any discussion of possible interventions.

The first paper (chapter 2) uses information from all three surveys, while the second paper (chapter 3) only employs the DCE survey on budgetary preferences. The third paper (chapter 4) uses information from the two DCE surveys on budget and country preferences. All three surveys were web-enabled and administered in June 2012 by GfK Knowledge Networks (KN) to members of their nationally representative, U.S.

general population panel. The CV survey targeted 1,500 observations, while the second and third surveys targeted 2,000 and 1,000 observations, respectively.

1.9 Empirical Approach

This study approximated the value of reducing childhood poverty using two different approaches: 1) the value of a high-quality government program for early-childhood development in the CV and budget surveys, and 2) the value of living in a country with different levels of childhood poverty rates in the country survey. The CV and budget surveys facilitated an ex-ante evaluation of these programs such that the benefits associated with reducing childhood poverty are a function of a number of factors as follows:

$G_N = f(\alpha_n, t)$: Benefits to taxpayers are a function of perceived effectiveness of the program (α_n) and time (t). Time plays a role in social benefits in this context because there is latency between investing in young children and realized social benefits. Children participate in the early-childhood program when they are very young but most social benefits are observed as they become teenagers and adults. The success of the programs depends on their effectiveness, and because these programs are evaluated ex-ante, individuals have a perception of how effective the programs are, denoted by α_n.

$BC_M = f(L_n)$: Perceived benefits to children from participating in the early-childhood program are a function of perceived legitimacy (L_n). Individuals could think that early-childhood is a private matter; it is not a legitimate role of government to intervene.

$BL_M = f(\alpha_n, t)$: Long-term benefits to children are a function of perceived effectiveness of the program (α_n) and time (t). There is latency between participating in the early-childhood program and children receiving benefits, such as higher earnings. As in the case of social benefits, perceived effectiveness affects what an individual thinks the long-term benefits would be for children.

$\alpha_n = f(M, I, D, Z)$: Perceived effectiveness is a function of the number of children beneficiaries (M), the type of institution funding the program (I), ideology (D) and socio-economic characteristics (Z). The number of children is related to the scalability of the program: whether small-scale programs can be implemented successfully for large numbers of children or not. The trust and confidence in the funding institution affects perceived effectiveness. The perceived effectiveness can also be correlated with ideology and other socio-economic characteristics.

- If individual n thinks that the early-childhood program is not effective in helping children break out of poverty, then $U_n(G_N)$ and $U_n(BL_M)$ would be zero.
- If individual n thinks that the early-childhood program is not effective in producing social benefits at scale (but might help some children), then only $U_n(G_N)$ would be zero. This could be the case when an individual thinks that these programs would not reduce childhood poverty overall but could help some children have better lives.
- If individual n thinks that it is not legitimate for government to intervene in early-childhood development, then $U_n(BC_M)$ would be zero. However, this does not necessarily mean that $U_n(BL_M)$ would be zero although most individuals who think "it is not government's job to intervene in early-childhood development" are expected to have low perceived effectiveness for government programs as well.
- A purely altruistic individual n could have positive $U_n\big(U_{-n}(G_{-n}), U_M(BS_M, BL_M)\big)$ even if the program has low perceived effectiveness.

In the CV survey, individual n's utility for an early-childhood program would be $U_n = U(G_n(\alpha_n, t), G_{-n}(\alpha_n), U_{-n}(G_{-n}), BC_M(L_n), BL_M(\alpha_n), U_M(BS_M, BL_M), Y_n)$ .Social benefits to other taxpayers and benefits to children are not a function of time (t) when they enter individual n's utility function because altruistic benefits are received right away when

helping children even though the consumption of these benefits by others would be in the future. That is why an individual's own share of social benefits is a function of time (t), while altruistic benefits are not. This study tested whether WTP was affected by whether the program was funded by the federal government (IF) or state government (IS). The preference for federal versus state government enters into the utility function through perceived effectiveness. Individuals can have more or less trust and confidence in federal government over state government. The indirect utility function can be specified as $V_n = V(\boldsymbol{X}^{CHILD}, Y_n, Z_n)$ where $\mathbf{X}^{\mathbf{CHILD}}$ is a vector of perceived benefits associated with the early-childhood program as described above, and Z_n denotes individual n's socio-economic characteristics. WTP for the early-childhood program is the solution to the following equation

$$V\left(\boldsymbol{X}_0^{CHILD}, Y_n, Z_n\right) = V\left(\boldsymbol{X}_1^{CHILD}, Y_n - WTP, Z_n\right) \tag{1.1}$$

where $\boldsymbol{X}_0^{CHILD}$ denotes benefits at the status quo and $\boldsymbol{X}_1^{CHILD}$ denotes improved benefits.

The budget survey investigated the value of increasing or decreasing four government programs, including the early-childhood program. In the budget survey, individual n's utility function for budget preferences would be

$$U_n = U(G_n(\alpha_n, t), G_{-n}(\alpha_n), U_{-n}(G_{-n}), BC_M(L_n), BL_M(\alpha_n), U_M(BS_M, BL_M), \boldsymbol{X}^{FOOD}, \boldsymbol{X}^{JOB}, \boldsymbol{X}^{DIS}, Y_n)$$

where $\mathbf{X}^{\mathbf{FOOD}}$ is a vector of benefits associated with a food-safety program, $\mathbf{X}^{\mathbf{JOB}}$ and $\mathbf{X}^{\mathbf{DIS}}$ are vectors of benefits associated with job-training and disaster-relief programs, respectively. The benefits associated with the early-childhood program are the same as in the CV survey. Individual *n* chooses alternative *i* over alternative *j* (*i* ≠ *j*) if and only if

$$V\left(\boldsymbol{X}_i^{CHILD}, \boldsymbol{X}_i^{FOOD}, \boldsymbol{X}_i^{JOB}, \boldsymbol{X}_i^{DISAS}, Y_n - C_i, Z_n\right) - V\left(\boldsymbol{X}_j^{CHILD}, \boldsymbol{X}_j^{FOOD}, \boldsymbol{X}_j^{JOB}, \boldsymbol{X}_j^{DISAS}, Y_n - C_j, Z_n\right) > (\varepsilon_{nj} - \varepsilon_{ni}) \tag{1.2}$$

where ε_{ni} and ε_{nj} are the error terms. This study also tested whether the value of an early-childhood program depends on other government programs it is compared to. For example, this study tested whether WTP for the early-childhood program at the level described in alternative *i* are the same when calculated based on Equation 1.3a versus Equation 1.3b while everything else is held at the status quo:

$$V\left(\boldsymbol{X}_0^{CHILD}, \boldsymbol{X}_0^{FOOD}, \boldsymbol{X}_0^{JOB}, Y_n, Z_n\right) = V\left(\boldsymbol{X}_i^{CHILD}, \boldsymbol{X}_0^{FOOD}, \boldsymbol{X}_0^{JOB}, Y_n - WTP_i, Z_n\right) \quad (1.3a)$$

$$V\left(\boldsymbol{X}_0^{CHILD}, \boldsymbol{X}_0^{FOOD}, \boldsymbol{X}_0^{DISAS}, Y_n, Z_n\right) = V\left(\boldsymbol{X}_i^{CHILD}, \boldsymbol{X}_0^{FOOD}, \boldsymbol{X}_0^{DISAS}, Y_n - WTP_i, Z_n\right) \quad (1.3b)$$

The country survey asked subjects to choose between countries with different levels of childhood poverty rates, environmental quality, and access to health care. Subjects were asked to make a decision for themselves and their family on where to live and faced a higher (lower) cost of living for better (lower) quality of life. Although the decision seems to affect only the decision maker, a lower childhood poverty rate also means better social benefits to the rest of society and benefits to these children and their families. The same benefits described earlier for both the CV and budget surveys apply to the country survey as well. However, the main difference between the country survey and the other surveys was that benefits already are realized (no latency) and are not a function of time or perceived effectiveness. An individual can benefit from lower childhood poverty rate whenever the (hypothetical) relocation occurs. Hence, individual n's utility for living in a society with lower childhood poverty rate would be $U_n = U(G_N, U_{-n}(G_{-n}), BC_M, BL_M, U_M(BS_M, BL_M), \boldsymbol{X}^{ENVR}, \boldsymbol{X}^{HEALTH}, Y_n)$ where $\mathbf{X}^{\mathbf{ENVR}}$ and $\mathbf{X}^{\mathbf{HEALTH}}$ are vectors of benefits associated with environmental quality and access to health care, respectively. Individual *n* chooses country *i* over country *j* (*i* ≠ *j*) if and only if

$$V\left(\boldsymbol{X}_i^{CHILD}, \boldsymbol{X}_i^{ENVR}, \boldsymbol{X}_i^{HEALTH}, Y_n - C_i, Z_n\right) - \quad (1.4)$$

$$V\left(\boldsymbol{X}_j^{CHILD}, \boldsymbol{X}_j^{ENVR}, \boldsymbol{X}_j^{HEALTH}, Y_n - C_j, Z_n\right) > (\varepsilon_{nj} - \varepsilon_{ni})$$

Altruism plays a role in all surveys, but, could be less prominent in the country survey than in the other surveys. In the country survey, the individual contribution to reducing childhood poverty is less obvious. Subjects pay indirectly for lower childhood poverty through a higher cost of living. It might not be as obvious that the higher cost of living contributes to helping children in poverty and reducing childhood poverty as in the other surveys. In the CV and budget surveys subjects evaluated mechanisms to help children and reduce childhood poverty, and so they might care more about a project that they are involved in more actively, especially if they agree with the method of intervention. This implies that no or low levels of altruism should generate lower WTP when everything else is held constant. Moreover, ideology does not play a role in the country survey because the benefits are assumed to be realized immediately when the household moves to the selected country, and there is no discussion of the type of intervention in this survey.

The CV and budget surveys were developed to measure the value of a high-quality intensive early-childhood program. However, if subjects evaluated the early-childhood program as a way to expand government services (large versus small government) rather than as an intervention to reduce childhood poverty, then these subjects did not value the targeted commodity as the survey instruments intended. If that was the case, these subjects evaluated “government intervention” or “government role” as a commodity rather than the early-childhood program. However, it is hard to distinguish whether subjects evaluated a different commodity or whether they did not believe that the early-childhood programs could produce successful outcomes in helping children break out of poverty. The CV and budget surveys also asked subjects to evaluate these programs as taxpayers, not as program participants. Although the sample consisted of likely participants of this kind of programs, WTP values do not necessarily reflect an individual’s utility as a potential program participant. The country

survey, on the other hand, was developed to measure the value of living in a society with lower (or higher) childhood poverty rates than the current rate in the US. This survey also asked subjects to evaluate better (or worse) quality of life as taxpayers, not as someone in poverty who could potentially receive more direct benefits.

1.10 Organization of the Dissertation

Chapters 2-4 were written in manuscript format. Chapter 2 (the first paper) measures the value to the U.S. citizens of reducing childhood poverty in the US. Chapter 3 (the second paper) shows how a discrete-choice experiment survey can be used to create a budget-allocation framework to elicit public preferences for specific government programs. Chapter 4 (the third paper) investigates the implications of asymmetry in stated preferences for non-market goods. They are followed in Chapter 5 by the conclusions and discussion of the overall results from the three papers.

CHAPTER 2

PUBLIC'S WILLINGNESS TO PAY FOR REDUCING CHILDHOOD POVERTY IN THE US

2.1 Introduction

High childhood poverty in the US has been associated with high-school dropout rates among native-born children (Heckman & LaFontaine, 2010) and low labor productivity (G. J. Duncan, Magnuson, Kalil, & Ziol-Guest, 2012; Heckman, 2008). Much of the difference in socio-economic status between poor and non-poor adults can be traced back to early childhood (Heckman, 2008). The total economic value of increased production and higher quality of life that would accrue if childhood poverty were eliminated in the US was estimated to be $500 billion per year in 2008 dollars or 4% of total GDP (Holzer et al., 2008). This estimate included reductions in the annual aggregate US production of goods and services associated with childhood poverty, as well as reduced safety and well-being because of crime and poor health associated with adults who have grown up poor. Compelling evidence has been found that investing in early-childhood education for disadvantaged children has long-term economic benefits to program participants and non-participants alike (W. S. Barnett & Masse, 2007; Heckman et al., 2010).

In his State of the Union speech in February 2013, President Obama called upon Congress to expand access to high-quality preschool for every child in the US, in acknowledgment that the beginning years of a child's life are critical for building the necessary foundation for success in school and in life. The president proposed federal-state initiatives to improve quality and expand preschool to low- and middle-income 4-year olds, maintain and expand current Early Head Start and Head Start programs, and expand

professional, evidence-based home visits to at-risk families. As he proposed to accomplish these initiatives without contributing to the federal budget deficit, the president assured the public that every tax dollar spent on such investments returns seven dollars. However, it is not clear whether the American public is willing to pay for or allocate government funding to such interventions now, in order to obtain benefits that may accrue largely to others in the future. The opportunity cost of public funds is very high in the current fiscal climate, when government is trying to find ways to cut spending.

The objective of this study was to quantify willingness to pay for reducing childhood poverty in the US. Reducing childhood poverty is a heterogeneous good, meaning that both the outcome (i.e., whether and how much childhood poverty is reduced) and the process (i.e., how childhood poverty is reduced) come into play. Measuring the value of reducing childhood poverty involves tackling both of these components. This study approximated the value of reducing childhood poverty via two different measures: 1) the value of a high-quality government program for early-childhood development and 2) the value of living in a country with lower childhood poverty rates than the US. The former focused on an intervention and aimed to estimate the value of solving the problem through an early-childhood program. The latter focused only on the outcome, with no reference to the means of reducing childhood poverty. This study utilized stated-preference (SP) survey methods to measure ex ante willingness to pay (WTP) for reducing childhood poverty.

An ex-ante valuation poses several challenges to valuing an early-childhood program. First, a government program on early-childhood development is susceptible to polarized ideological views about the appropriate role and size of government; in addition, some individuals consider early-childhood development to be a private domain and oppose outside intervention. Second, some individuals could be skeptical about the ability of government programs to produce successful outcomes and could therefore question the effectiveness of early-childhood development programs when they are evaluated ex ante.

Third, some individuals could be skeptical about the likely success of early-childhood programs when they are implemented at scale. Fourth, government programs are financed through taxes or public borrowing: not only does investing in young children compete with other publicly provided goods and services for allocations from the public budget, some taxpayers could object to increases in their taxes for any purpose. Fifth, the investment cost of early-childhood development has to be borne long before the benefits to society are realized; people might prefer to invest tax revenues in social priorities that they think require more immediate attention.

Three SP survey instruments were developed to achieve the objectives of this research. The first two focused on the value of a particular intervention (i.e., early-childhood programs) and the third focused on poverty reduction without reference to a particular process. In a contingent-valuation survey (hereafter, CV survey) this study measured subjects' willingness to pay for high-quality, intensive early-childhood development programs at federal and state levels. This CV survey was designed to focus solely on childhood poverty as well as to address possible public concerns related to the relative roles of federal and state governments in investing in early-childhood development. To reduce possible aversion to tax increases, and to account for concerns with the growing federal budget deficit and competing social priorities, this study developed a discrete-choice experiment (DCE) survey that accommodated preferences for both smaller government and larger government. This survey (hereafter, budget survey) measured public preferences for increasing or reducing taxes and early-childhood programs compared to other government programs of similar sizes. A third survey focused on the outcomes alone and avoided any discussion of possible interventions. This DCE survey (hereafter, country survey) assessed the value of living in a country with higher or lower childhood-poverty rates than the US. All three surveys were web-enabled and administered in June 2012 by GfK Knowledge

Networks (KN) to about 4,800 members of their nationally representative, U.S. general population panel.

The next section provides background on the previous literature. The third section presents the research methods. The fourth section discusses the study design, which was developed based on information from focus-group and pretest interviews. The fifth and sixth sections provide details on the survey design and survey development. The seventh and eight sections present information on survey administration protocol and statistical analysis. The ninth and tenth sections of the paper present the results and the discussion.

2.2 Background

The difference in socio-economic status between the poor and the non-poor starts in early childhood, often persists through the rest of their lives, and is often passed on to their children. Poverty has been found to have negative effects on the physical, socio-emotional, and cognitive well-being of children (Evans, 2004). Cunha et al. (Cunha, Heckman, & Schennach, 2010) showed that children's experiences from ages 0 through 5 affect skill development, especially cognitive skill development, more than during any other periods of the lifecycle. Skills acquired at one stage affect the skills acquired in later stages and increase the productivity of later investments (Cunha & Heckman, 2007). Enhancements of family environments improve child outcomes and affect both cognitive and non-cognitive skills. If investments in children or adolescents from at-risk families begin later, it is harder for these children/adolescents to catch up with their counterparts from non-risk families. Heckman (Heckman, 2008) has shown that investments in the early years provide the highest returns among alternative investments in different life stages and that the rate of return from investments at different stages indicates the highest returns are achieved between 0 and 5 years, especially between 0 and 3. Thus, the timing of the investments in children matters and investing on childhood development in the early years of life seems to be crucial.

A number of early-childhood programs have been investigated closely (Aos et al., 2004; Karoly, 1998; Reynolds et al., 2002). (For a survey of the early-childhood programs, please refer to (Karoly, Kilburn, & Cannon, 2005).) The Perry Preschool Project (Schweinhart, Montie, Xiang, Barnett, Belfield, & Nores, 2005a) and the Abecedarian project (F. A. Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002) are two of the best known experimental early-childhood programs. These were rigorous empirical studies that compared a treatment group to a control group, with long-term follow-up data. The Perry Preschool Project was administered to 58 disadvantaged African American children in Ypsilanti, Michigan between 1962 and 1967. The treatment consisted of five weekday-mornings, 2.5-hour classroom sessions and one 90-minute home visit by the teacher on a weekday afternoon. The length of each preschool year was 30 weeks. To date, the Abecedarian project was the most intensive early-childhood program offered to young children at risk for development delays and school failure (F. A. Campbell et al., 2001; F. A. Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002). The program ran full-day, year-round, and continued until kindergarten entry in Chapel Hill, NC. Between 1972 and 1977, 57 infants were randomly assigned to receive early educational intervention and 54 infants were assigned to a control group. The curriculum involved educational “games” that emphasized development skills in cognition and language. Children also received healthcare on site from a staff pediatrician. The latest measurements of participant outcomes from these programs were conducted when the Perry participants were 40 years old and the Abecedarian participants were 21 years old. These measurements found achievements in education, earnings, social behavior, and health (Abecedarian only) for the children in the treatment group that persisted long after the programs had ended.

Previous studies have conducted economic analyses of experimental early-childhood development programs by attaching dollar values to realized program outcomes. A direct comparison of the benefit-cost findings of different programs could be misleading, however,

because there were variations in outcomes of the programs' targets and measures as well as in the economic values the benefit-cost studies attached to these outcomes (Karoly, 2010)(Karoly, 2010). Early-childhood programs have varied in terms of their goals, duration, timing, intensity, targeting criteria, and control-group definitions (Karoly et al., 2005). For example, the status quo for the Perry project, which lasted about 1.5 years for each child, was no formal early-childhood program, whereas the Abecedarian project lasted 5 years and provided some health, developmental, and family services to the control group.

The economic evaluation of these studies also varied in terms of what outcomes were measured and how they were measured. Previous literature has included educational achievements (e.g., reduced grade repetition and special education) and increased earnings as benefits to the participants in the Perry Preschool Project, as well as tax savings associated with educational achievements,[1] reduced crime (e.g., reduced victim costs and criminal justice system costs including police, court, and correctional costs), and reduced welfare use[2] as benefits to the taxpayers. Researchers have also calculated future-generation earnings, maternal earnings, and savings from improved health (as reduced smoking) as benefits to the participants in the Abecedarian Project. Monetization of outcomes such as a reduced crime rate is challenging, however, and requires several assumptions that have varied across economic studies (W. S. Barnett, 1993; Heckman et al., 2010). Karoly (2010) has offered a set of guidelines for the standardization of benefit-cost analysis on early-childhood programs.

The main conclusion of previous benefit-cost studies is that they provide evidence of high economic returns to society. The benefit-cost analysis conducted by Barnett and Masse (W. S. Barnett & Masse, 2007) found a benefit-cost ratio of 2.5 for the Abecedarian Project,

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[1] Educational achievements also led to longer time in school, which created further costs for taxpayers.

[2] Because welfare payments are a transfer from taxpayers to the program participants, the administrative welfare costs are the only net costs associated with welfare.

and a corresponding figure of 9 for the Perry project. In a recent study, Heckman et al. (2010) found an estimated annual social rate of return of 7–10% for the Perry project. The internal rate of return was around 6.3 for the participants and ranged between 8.1 and 9.2 for society overall, including non-participants. The net benefits to the non-participants constituted between 55% and 72% of the total net benefits, depending on the assumptions on the costs associated with crime and the deadweight cost of taxation.

Previous benefit-cost analysis studies have calculated the cost savings from investing in children in poverty or the return on investing in young children in poverty. These types of valuations are different than the WTP measure that was the focus of this study. WTP in this study theoretically includes the perceived value of individual share of the social benefits and altruism. Possible social benefits can be listed as reduced crime rate, increased labor productivity and reduced welfare use. Altruism (i.e., caring about the welfare of others) is one of the reasons people make donations to publicly provided goods or contribute to a common pool, according to empirical (Viscusi, Magat, & Forrest, 1988; Vázquez Rodríguez & León, 2004) and experimental (Andreoni, 1995; Andreoni & Miller, 2003; Fischbacher, Gächter, & Fehr, 2001) literature. Coate (Coate, 1995) showed that altruism provides an efficiency rationale for public provision of insurance to the poor. Similarly, individuals might care that society in general benefit from reducing childhood poverty and might want to help disadvantaged children, who are in poverty through no fault of their own, to get out of poverty and have a better future if they are altruists. They also might support the program for the short-term benefits children receive during their participation. An ex-ante evaluation of benefits perceived by a subject, however, could be quite different than monetary values attached to ex-post (realized) outcomes. For example, one of the largest benefits associated with these programs calculated in the literature was savings from reduced crime, yet it was not obvious how much each subject in this study

considered reduced crime as one of the benefits she or the rest of society would receive from reduced childhood poverty.

Previous benefit-cost studies have shown that the cost savings of alleviating the causes of crime, unemployment, ill health, and other consequences of social inequities more than offset the costs of small-scale, high-quality early-childhood interventions (W. S. Barnett & Masse, 2007; Heckman et al., 2010). Public provision of these services requires allocation of taxpayers' money to these programs, however, and the opportunity cost of public dollars is very high in the current economic climate. The investment cost of early-childhood development has to be borne long before the social benefits are realized. People might prefer to give priority to more immediate needs, in addition to government efforts to find ways to cut spending while continuing to provide current services. Thus, the shadow value of investing on early-childhood development is greater than the simple cost estimates for early-childhood programs would suggest. It is therefore important to estimate taxpayers' preferences for allocating public funds to early-childhood development programs now, keeping in mind that the benefits would be accrued years later. Policymakers and legislators may want to know not only that returns on investments in early-childhood development are economically attractive from an overall societal perspective, but also the strength of support of non-participants for such programs and their willingness to pay for such investments. The public might or might not be willing to pay for these interventions now when they are faced with other social priorities, high unemployment, and a large and growing federal deficit.

2.3 Methods

SP survey methods were used for an ex-ante evaluation of the U.S. public's willingness to pay for reducing childhood poverty. These methods were developed to obtain money-equivalent values for goods and services for which there are no market prices, or for which market prices are poor measures of social values. Market researchers as well as environmental and health economists have employed such SP methods as CV and DCEs

since the 1970s (Green & Rao, 1971; Green & Wind, 1975; Mitchell & Carson, 1989; Randall et al., 1974). These methods have been recommended for use in benefit-cost analysis for resource-allocation decisions (Boyle, 2003; Hanley, Ryan, & Wright, 2003). CV has been used to quantify subjects' WTP for a particular intervention in a hypothetical market in environmental and health applications (Bishop & Welsh, 1992; Diener et al., 1998; Mitchell & Carson, 1990). DCEs were specifically designed to provide information about individuals' willingness to accept trade-offs among alternatives with multiple features (Boxall et al., 1996; F. R. Johnson & Desvousges, 1997; F. R. Johnson et al., 2009; Özdemir et al., 2009). DCE quantifies the implicit utility parameters of features and feature levels elicited through a series of trade-off tasks that require subjects to choose among alternative profiles with different combinations of features. Estimated utility parameters then can be used to calculate the relative importance of each feature and WTP for changes in alternative features.

2.4 Focus Groups and Study Design

SP survey development heavily relies on focus-group interviews and pretesting of the survey instrument, especially for research topics in areas where these methods have not been much utilized. To the best of our knowledge, SP methods have not been used to estimate willingness to pay for childhood-poverty programs; moreover, there is a general lack of data on people's opinions about and attitudes toward the problem of childhood poverty in the US. Therefore, focus-group interviews were conducted to understand people's opinions about childhood poverty and what factors might influence their preferences for reducing it. This information was used to develop the survey instruments. Forty-nine adult U.S. residents were interviewed in 2008 in Raleigh, NC, Chicago, IL, and Dallas, TX.

These interviews revealed that the majority of the subjects had experienced poverty directly or indirectly. Some subjects stated that they had been poor in the past, some were poor in the present, and others had family members who had experienced poverty. A

significant portion of the subjects indicated that they were currently living paycheck to paycheck. Breaking the cycle of poverty seemed to be the main motivation for these people's desire to reduce childhood poverty in the US. Also, several subjects observed that reducing childhood poverty would increase labor productivity and decrease crime rates, in acknowledgment that poverty has been a real burden to society. Some subjects suggested that poverty is not widely publicized or acknowledged in the US. The following sections discuss the main topics from the focus-group interviews that shaped the study design.

2.4.1 Intervention versus Outcome

Some of the first questions raised during the focus-group interviews were how childhood poverty would be reduced and whether it is actually possible to achieve this outcome. To create a realistic and credible scenario, this study focused on early-childhood programs that have produced successful child outcomes and Heckman et al.'s research on this topic. Because these successful programs were implemented at smaller scales, this study used government interventions into early-childhood development that provide high-quality services (e.g., Perry and Abecedarian) to illustrate nationwide impact. Although evidence of program success was provided, focus-group participants were skeptical that a possible large-scale government program on early-childhood development would work effectively and produce successful outcomes. About half of the interviewees stated that current government programs were not effective in reducing childhood poverty. There seemed to be two reasons for this skepticism. First, people doubted whether the success of small-scale experimental programs could be replicated at larger scales. Second, people doubted whether government programs could produce successful outcomes as other programs had done. In the former, skepticism was related to scalability; in the latter, it was related to the involvement of government.

The focus-group discussions also revealed that many subjects had strong ideological beliefs about the role of government. Many stated that government should spend more

money on programs to reduce poverty and associated problems, while others opined that it was not government's responsibility to fund such programs and that extended family, churches, and local communities should be involved in early-childhood development. These opinions tended to be highly associated with political ideology. Previous research has shown that, in U.S. policy debates, political ideology, party affiliation, and political trust are highly associated with beliefs about government spending. In general, Democrats and liberals are more likely to support spending than Republicans and conservatives are (Jacoby, 1994; Jacoby, 2006). People who lack political trust (Rudolph & Evans, 2005) and confidence in institutions (Eismeier, 1982) are more likely to favor reductions in government spending.

This study found in the focus-group interviews that valuing programs to reduce childhood poverty was largely inseparable from views on the appropriate size and role of government, perceptions about the effectiveness of U.S. government programs, and other real-world complications. This inseparability was a consequence of the type of good being evaluated, which would have been part of real-life decision making on this topic. Valuing poverty levels apart from process considerations could mitigate such confounding factors. The third survey attempted to mitigate these effects by taking people out of the U.S. political context and avoiding discussions about the specific type of interventions that might be needed to reduce childhood poverty.

2.4.2 Federal versus State Programs

Some subjects in the focus-group interviews expressed mistrust of federal government in general and were reluctant to support federal poverty-alleviation programs. Some subjects also cared about whether programs were funded by federal, state, or local governments. These findings are consistent with previous studies that have shown trust in government is low (Chanley, Rudolph, & Rahn, 2000; Citrin, 1974; Dalton, 2005). In a 2012 opinion survey, the Pew Research Center found that the favorable rating was only 33% for

the federal government but 52% for state government[3]. State governments received slightly higher ratings than the federal government for being mostly honest (49% versus 31%), addressing people's needs (42% versus 30%) and being generally efficient (38% versus 24%).

2.4.3 Aversion to Tax Increases

The focus-group discussions also revealed that some subjects were against any increase in taxes, no matter what the purpose for the increase was, even if they cared about childhood poverty. Some of these subjects also stated that they were unwilling to accept a bigger burden as taxpayers while almost half of U.S. citizens do not pay federal income taxes. In a pilot study conducted in 2008, about 35% of subjects who said "no" to a tax increase reported that other government programs should be reduced to fund early-childhood programs. Childhood poverty is one of a number of competing social concerns, and early-childhood programs are only some of the many competing government programs that require allocations from public dollars. This perception of competition and aversion to tax increases bring up questions about how important childhood poverty is, compared to other programs, and whether subjects would be willing to cut funding from other government programs in favor of early-childhood programs. Several studies have shown that subjects and policy makers care about the mechanism by which funds have been raised (Johnston, Swallow, & Weaver, 1999; Stevens, DeCoteau, & Willis, 1997) and the method of payment affects individuals' preferences (Champ & Bishop, 2001; Ivehammar, 2009; Mazur & Bennett, 2010; Wiser, 2007).

2.5 Survey Design

Three survey instruments were developed to measure the value of reducing childhood poverty while addressing the issues revealed during the focus-group interviews:

[3] Accessed at the website of the Pew Research Center at http://www.people-press.org/2012/04/26/growing-gap-in-favorable-views-of-federal-state-governments/ on October 11, 2012.

- CV survey. This instrument focused solely on poverty and asked subjects whether they would be willing to pay higher taxes for a high-quality early-childhood development program. This survey was designed to test in a between-sample experiment whether preferences would be different for federal-level and state-level programs.
- Budget survey. This DCE survey presented hypothetical budget alternatives in which the early-childhood program was evaluated with three other government programs and individual tax burdens that go to pay for them. It presented the issue as a part of a budget-allocation problem in which a group of programs was competing for the same resources, in order to highlight the opportunity cost of public dollars. The survey was developed to address possible aversion to tax increases by offering reductions in taxes and in early-childhood programs, allowing for preferences for a smaller government.
- Country survey. This DCE survey asked subjects to imagine moving to a different, hypothetical country that was defined in terms of childhood poverty, environmental quality, access to health care, and cost of living. This survey instrument was developed to focus on outcome (as changes in the childhood-poverty rate) without discussing a specific intervention. The survey took people out of the U.S. political context to avoid preformed opinions about government programs and taxes.

Different factors played roles in stated preferences for programs or features described in each survey instrument. Mean WTP could vary across the surveys based on which factor was dominant. The following sections discuss possible findings on differences among the survey instruments.

2.5.1 Federal-level versus state-level programs

$WTP_{STATE} > WTP_{FEDERAL}$: Opinion surveys and the focus-group discussions indicated a higher mistrust for a federal-level program than for state-level programs, which could lead to a lower mean WTP for a federal-level program than for state-level programs.

$WTP_{FEDERAL} > WTP_{STATE}$: Mean WTP could be higher for a federal-level program than for a state-level program because an individual state program would target a lower number of children than a federal program would. Subjects in the "state" version were informed only about a state-level program in their own state, whereas subjects in the "federal" version were informed about a nationwide program.

2.5.2 Intervention versus outcome

$WTP_{COUNTRY} > WTP_{BUDGET}$ or $WTP_{COUNTRY} > WTP_{CV}$: Although the values from the country survey were not directly comparable to the budget and CV surveys, the mean WTP values for the country survey could be higher because of the nature of the benefits described in this survey. The country survey offered realized outcomes, whereas the other surveys offered a program to reduce childhood poverty, but how much reduction either alternative would lead to was not defined. In addition, the benefits could (hypothetically) be utilized immediately in the country survey, whereas benefits (hypothetically) accrued in the future in the other surveys.

$WTP_{BUDGET} > WTP_{COUNTRY}$ or $WTP_{CV} > WTP_{COUNTRY}$: Altruism theoretically plays a role in all surveys, but, could be less prominent in the country survey than in the other surveys. In the country survey, the individual contribution to reducing childhood poverty is less obvious. Although subjects pay for lower childhood poverty through higher cost of living, it might not be as obvious that the higher cost of living contributes to helping children in poverty and reducing childhood poverty. In the CV and budget survey, on the other hand, subjects evaluated mechanisms to help children and reduce childhood poverty, and so they

might care more about a project that they are involved in more actively, especially if they agree with the method of intervention.

2.6 Survey Development

The CV questionnaire first introduced Heckman's findings on investing in early childhood and highlighted the main results from the Perry and Abecedarian early-childhood programs. This web-enabled survey also presented a 1-minute video of Heckman describing his findings.[4] The CV question was motivated by asking subjects to suppose that their (congressional or state) representative sent them a letter asking how they wanted him or her to vote on funding a program. Subjects were asked to assume that if the majority of the congressional or state-house members voted "yes," the legislation would pass, and that as a result they would have to pay higher taxes to fund this program. Subjects were then asked whether they would vote "for" or "against" funding this program. If they voted "for," they were also asked how certain they were of their answer (Champ, Bishop, Brown, & McCollum, 1997; Champ & Bishop, 2001; Vossler, Kerkvliet, Polasky, & Gainutdinova, 2003). These questions were followed by debriefing questions to understand the motivation behind how subjects voted.

A scope test (Carson & Mitchell, 1993) was included in the CV survey. According to standard economic theory, utility should increase as the amount of a given desired good increases; therefore, WTP for a program that targets a larger number of children should be higher than WTP for a program with a smaller number of children. Generally, the scope test has been used to test the validity of data from CV surveys, but findings have been mixed (Heberlein, Wilson, Bishop, & Schaeffer, 2005). A study could fail a scope test for several reasons. In this case, to begin with, the early-childhood program may not be considered as a desired good by everyone. For example, some individuals during the focus-group and

[4] A short version of Heckman's "The Urgency of Now" video was used. The original video, which is provided for public use, can be found at http://www.heckmanequation.org/

pretest interviews stated that early-childhood care was a private domain and a family responsibility, and that involvement from government would be intrusive. In addition, some subjects were against any government involvement in early-childhood development because they did not think it is government's responsibility to fund such involvement. Similar opinions might also have led some individuals to support a smaller-scale program that would target only the most impoverished children, rather than a larger-scale program. Second, subjects who were skeptical of government's ability to successfully implement a large national program might be willing to support a smaller program, but would be much less likely to support a larger program.

Subjects were randomly assigned to one of four hypothetical CV scenarios: 1) A federal, small-scale program; 2) a federal, large-scale program; 3) a state-level, small-scale program; and 4) a state-level, large-scale program. These scenarios are presented in Table 2.1. The small-scale and large-scale programs were developed to conduct a between-sample scope test that targeted only the beneficiaries of current programs and about 90% of children in poverty (under the age of 6), respectively. The method of payment was identified as federal and state taxes for the federal and state programs, respectively.

The budget survey also focused on an intervention but employed a DCE method to allow a joint comparison of the early-childhood program with other programs of similar size (Table 2.1). Subjects were told that the U.S. Congress had been debating government budget issues, trying to decide which government programs to cut, which ones to increase, and whether to cut or increase taxes to pay for these programs. They were also told that the U.S. Congress was going to vote on how federal spending should be divided among government programs, and asked to suppose that their congressman had sent them a letter asking how he or she should vote on this matter. Subjects were presented with a series of choice tasks that included two hypothetical budget alternatives with changes in government-program outcomes and household tax amounts, and were asked which of the two budget

alternatives they would want their representative to vote for. The early-childhood program was compared to three other programs: 1) a job-training program, 2) a disaster-relief program, and 3) a food-safety monitoring program. These programs were selected because they were of similar size in terms of budget impact and they constituted a relatively small share of the federal budget; controversial programs (e.g., climate-change-related expenditures) were avoided. The early-childhood program was treated as one of the government programs; no information was given to suggest that the survey was related to childhood poverty.

Program benefits were defined in terms of the number of beneficiaries; this number was presented both in relative (e.g., 50% improvement) and absolute (e.g., 640,000 children can participate) terms. The cost attribute was defined as the additional annual household taxes that would be required to pay for these government programs. Because a substantial portion of American citizens do not pay federal income taxes[5], an income-tax credit was used for those who receive earned-income tax credits. The tax-attribute levels were also defined in terms of increases and reductions in tax levels (or tax-credit levels) from the amounts that households currently pay (or receive). The analysis of the budget survey in this paper was based on the "tax" version because the sample size for the "tax-credit" version was very small.[6] Table 2.2 presents the attributes and levels used in the budget survey and Figure 2.1 presents a sample budget trade-off question.

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[5] The information was accessed at http://www.taxpolicycenter.org/UploadedPDF/1001547-Why-No-Income-Tax.pdf on March 2012.

[6] This study used Knowledge Networks' general population panel, which is a representative sample of the U.S. population. Based on this panel, 40–50% of the subjects should have received income tax credits. The reason for a small sample size for this group appears to be a result of screening questions used to identify tax-credit receivers. The screening questions to identify the "income-tax credit" version were only asked to those who were considered to be living in poverty according to the definition of the U.S. Census Bureau, based on their annual household incomes and household sizes as archived by KN. It is possible that some Americans who receive income-tax credits do not live in poverty according to this definition; these subjects were assigned to the "tax" version. Another contributing factor might be the fact that 761 subjects were ineligible to take the survey because they were not able to watch a video on their computers. It is possible that these were low-income subjects who received earned-income credits.

The country survey, the only survey that focused on outcomes, employed a DCE method to compare childhood poverty with other quality-of-life features. Subjects were asked to suppose that they and their families had to move to another country. They were then presented with a series of choice tasks that included two hypothetical country alternatives with changes in quality of life and cost of living, and were asked which country they would choose to live in. Childhood poverty was compared to two other country features: 1) environmental quality and 2) access to affordable health care. Environmental quality and access to health care were chosen because they are plausible social indicators that compete with childhood poverty without being highly correlated.[7] The percentage of children living in poverty, the high-school graduation rate of teenagers in poverty, and the pregnancy rate among poor teenage girls were presented as some of the measures of childhood poverty. The country features were presented relative to the U.S. levels. Subjects were presented with a description of each country feature and the statistics on each feature before the country trade-off questions. As in the budget survey, childhood poverty was treated as just one of the country features; no information was given to suggest that the survey was related to childhood poverty. The cost attribute was defined as the annual cost of living because this attribute has been successfully used in other SP studies (Viscusi, Huber, & Bell, 2008). The cost-attribute levels were also defined in terms of increases and reductions in subjects' current cost of living. Table 2.3 presents the attributes and levels used in the country survey and Figure 2.2 presents a sample country trade-off question. The survey instruments were presented in Appendices A, B and C.

Earlier versions of the CV and country surveys were administered to about 300 subjects[8] via a web-enabled survey in January 2009. The budget survey and the state-level

[7] Some of the other important social priorities (e.g. unemployment and education) were not selected because they are likely to be correlated with childhood poverty.

[8] The results from this pilot study were presented at the Benefit-Cost Analysis Conference in Washington, D.C., in October 2009.

program in the CV survey were developed after assessments were made of the findings from the focus-group interviews and the pilot study. Reductions in both monetary and non-monetary attributes were added as levels of attributes in the budget and country survey instruments. One-on-one, face-to-face interviews were used to evaluate the draft survey instruments. The CV survey instrument was tested with 15 subjects in July and December 2011. These interviews were used to frame the CV scenario and the question format. The budget survey instrument was pretested with 17 subjects in July–August 2011 and with 18 subjects in October 2011. These interviews helped to refine the context descriptions of budget priorities for government programs, to identify a reasonable method of payment, and to select government programs to be evaluated with the early-childhood program. The country survey instrument was pretested with 18 subjects in July and November 2011. These interviews helped to refine the context description for the scenario and to identify a reasonable method of payment. The pretest interviews were also used to test the language of the text and to confirm that subjects were capable of answering the trade-off questions. The web-enabled survey instruments were pilot-tested again in March–April 2012. The CV and the budget survey were administered to about 200 subjects each and the country survey was administered to 100 subjects. The findings from the pilot data were used to finalize the budget and country features and the levels of cost attributes and also to test the web-survey administration.

Subjects were randomly assigned to one of seven annual tax increases in the CV survey: $10, $25, $50, $100, $300, $1,000 and $2,000. The tax-attribute levels in the budget survey were $2,000 more/less, $300 more/less, $50 more/less, and no change, which overlapped with the three tax levels used in the CV survey. Because cost of living was highly associated with annual household income, the cost of living in the country survey was indexed to subjects' own annual household income. The attribute levels were the dollar

amounts that corresponded to 20%, 5% and 1% of annual household income.[9] A variation of a commonly used algorithm was used to construct a near-optimal experimental design for the DCE surveys (F. R. Johnson et al., 2013).

To reduce subject burden, the trade-off questions were divided into 14 blocks of 8 questions within the DCE surveys, and each subject was randomly assigned to one of the blocks. To minimize possible order effects, the sequence of the trade-off questions was randomized. The internal validity of the DCE data was tested using a transitivity test in which subjects who chose Alternative A over Alternative B in one choice set and Alternative B over Alternative C in another choice set had to pick Alternative A over Alternative C in a third choice set. Transitivity is a fundamental axiom of utility theory and is required for valid welfare estimation (Just, Hueth, & Andrew. Schmitz, 2004). A second test identified subjects who had no variation in their answers to the trade-off questions; that is, they always picked either Alternative A or Alternative B in all trade-off questions.

This paper investigated whether subjects dominated on or were insensitive to the cost attribute. Dominance on the cost attribute was used as an indicator of protest responses, especially for the tax attribute in the budget survey. Protest responses in DCE studies could manifest as decisions based only on the cost attribute, without regard to the other attributes. Someone was considered as dominating on the cost attribute if he or she chose the alternative with the lower level of cost increase or the higher level of cost reduction in all of the trade-off questions. Finally, subjects in all three surveys were tested for whether they were insensitive to the cost attribute. In the DCE data, subjects who were insensitive to the cost attribute were identified as those who had zero utility for the cost

[9] For example, the levels for a subject with an annual household income of $52,000 were $10,400 less per year, $2,600 less per year, $520 less per year, same as now, $520 more per year, $2,600 more per year, and $10,400 more per year.

attribute (Scarpa, Gilbride, Campbell, & Hensher, 2009). [10] In the CV survey, subjects who were willing to pay taxes higher than 5% of their annual household income were identified as insensitive to the cost. Appendix D provides detailed information on the internal-validity tests.

SP surveys have been criticized for being hypothetical and for not accurately predicting actual behavior (Cummings & Harrison, 1995; Diamond & Hausman, 1994). To mitigate the hypothetical nature of our surveys, a cheap-talk script was used (Ajzen, Brown, & Carvajal, 2004; Cummings & Taylor, 1999). The term "cheap talk" has been used in game theory to describe nonbinding communication between players that is intended to influence the outcome of a game (Lusk, 2003). In this context, cheap talk can be thought of as communication that breaches the usual anonymity between survey researchers and respondents. In a survey situation, the researcher attempts to engage subjects in the research problem and to motivate them to devote more effort, attention, and imagination to the preference-elicitation task than they would otherwise do (Özdemir et al., 2009). A very similar cheap-talk script was used for the three surveys, although some differences in text could not be avoided because of the different context in each survey. The cheap-talk text in this study asked subjects to consider the consequences of paying higher or lower taxes on their incomes or having a higher or lower cost of living, and to answer the questions as if the study findings would affect the policy decisions in the US.

2.7 Survey Administration and Time-to-think Protocol

When people make actual decisions, they often take some time to think about their choices and may discuss the decision with family and friends. If budget constraints are relevant, they may give more careful thought than usual to this factor. The general practice in SP studies, however, is to ask subjects to give an answer during a survey that typically

[10] I used the method developed by Scarpa et al. (2009) to identify likely non-attendance to the cost attribute by using an equality-constrained latent-class model where a class of subjects with likely zero utility weights for the cost attribute was identified. Appendix D provides detailed information on this method and its findings.

lasts for less than half an hour. The “time-to-think” (TTT) protocol mimics a more realistic decision-making process and helps mitigate the hypothetical nature of a survey by giving subjects extra time (Whittington et al., 1992). A review of studies with a TTT protocol showed evidence of improved preference data (Cook, Maskery, Jeuland, & Whittington, 2011). Cook et al. (2011) found that the certainty of answers to CV questions increased and the number of internal-validity test failures decreased in DCE surveys for subjects who had time to think compared to those who did not have time to think.

A similar survey structure and design was followed in all three questionnaires. In the CV survey, subjects were presented with the CV scenario but the survey did not ask them to provide answers right away. Subjects were asked to think about the survey, discuss the survey with others if they would like, and return to the second part of the survey within one to 10 days. The second part of the survey began with a reminder of the task and provided a link to a summary of the first part of the survey if subjects would like to check. After the cheap-talk text, subjects were asked to answer the same CV question they saw in the first part of the survey. In the DCE surveys, subjects were presented with the trade-off questions before the first part of the survey ended. The second part of the surveys followed the same procedure as the CV survey. After the cheap talk text, subjects were asked to answer the trade-off questions. All three surveys ended with attitudinal questions on beliefs about the causes of wealth and poverty, social mobility, and ideological perspectives.

The web-enabled survey instruments were hosted on a secure site and were administered in June 2012 by GfK KN. Survey subjects were recruited from KN’s nationally representative general population panel and asked to participate in a social survey via e-mail. Subjects received KN incentive points for their participation and extra points if they returned the second part of the survey. All subjects were required to be U.S. residents, to be at least 18 years of age, and to have indicated their willingness to proceed with the survey after reading the informed-consent materials. Because this study was interested in citizen

preferences, the e-mail invitation was sent to KN members who currently resided in the US and who were currently or formerly registered to vote. Subjects who did not have computer capabilities to see a video (n = 761) were identified at the beginning of the CV survey and dropped from the sample. This study received IRB approval from the University of North Carolina at Chapel Hill's Office of Human Research Ethics.

2.8 Model Estimation

Statistical analysis of the SP data is based on random-utility theory. Appendix E provides details on model estimation and econometrics used in this study. A binomial-probit model was used to estimate the binary response data from the CV question. The dependent variable was a dummy variable equal to 1 if a subject voted for paying higher taxes to fund the early-childhood program and 0 otherwise. In the CV question, the support for funding was considered positive only if a subject reported that she was certain or very certain of her answer.

Mixed-logit (also known as random-parameters logit) models were employed to analyze the budget and country trade-off questions. Two linear variables were created for each attribute: one for increases and the other for reductions. [11] The empirical models of the budget and country data are defined as:

$$V = \propto^k X_{dec}^k + \beta^k X_{inc}^k + \mu Cost_{inc} + \check{\mu} Cost_{dec} \tag{2.1}$$

where *k* indicates a government program in the budget survey and a quality-of-life attribute in the country survey. Marginal WTP was calculated by dividing a non-monetary attribute by the estimate of the cost-increase parameter. For example, WTP for a 50% increase in the early-childhood program was calculated as:

$$WTP = \frac{50 * \beta^{child}}{-\mu} \tag{2.2}$$

where β^{child} indicates the parameter for increases in the early-childhood program.

[11] A discussion on functional form can be found in the third paper.

2.9 Results

2.9.1 Survey Sample

The CV survey consisted of 1,712 observations and the budget and country surveys consisted of 2,037 and 1,010 observations, respectively. Table 2.4 presents the descriptive statistics for the three surveys. A list of descriptive statistics on the common questions in all three surveys is listed in Appendix F, and a full list of descriptive statistics from the three survey instruments is provided in Appendices G, H and I. The distribution of the demographic characteristics and the mean values were very similar among the surveys. Based on the U.S. Census Bureau statistics,[12] the main differences of the sample from the general population is in lower representation of females (47% versus 51%), African Americans (9% versus 13%) and Hispanics (8% versus 17%), and slightly higher representation of college graduates (34% versus 30%). The median income of the sample ($55k) was about the same as the median household income ($53k) in the US.

Poverty was reported to be one of the two most important priorities in the US by about 13% of the subjects, while about 15% reported that it was one of the two least important priorities. About 14% and 16% of the subjects had an experience with current government programs (e.g., Head Start) in the CV and budget surveys, respectively; they indicated that one of their children or a family member's children had participated in a current government program on early-childhood development.[13]

About 25% of the subjects identified themselves as liberal, about 33% as moderate, and about 40% as conservative (Table 2.5). About 40% of the subjects reported that government policy should be harder on gun control, while another 40% said it should be about the same. About 50% of the subjects reported that by law, a woman should always be

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[12] The U.S. Census Bureau statistics was accessed at http://www.census.gov/ on March 13, 2013.

[13] This question was not asked in the country survey because this survey instrument did not discuss the early-childhood program.

able to obtain an abortion as a matter of personal choice, while 33% reported that the law should permit abortion only in cases of rape or incest, or when the woman's life is in danger. To reduce the number of explanatory variables, a factor analysis was conducted on the ideological questions (i.e., gun control, abortion, and self-identified political ideology) and on attitudinal questions about the reasons for wealth and success, and chances of social mobility. The factor analysis grouped these explanatory variables into 5 factors labeled as "wealth because of luck," "wealth because of bias," "wealth because of hard work and intelligence," "chance of social mobility," and "social ideology." Appendix J provides more information about the factor analysis. Questions about gun control, abortion, and self-identified political ideology were grouped into the "social ideology" factor. The social-ideology factor score was used to assign each subject to a specific ideological group for some of the analyses. Subjects within the highest 30% of the social-ideology factor scope were classified as liberals and subjects within the lowest 30% were classified as conservatives. The rest were considered to be moderates.

Table 2.6 presents the descriptive statistics on experience with poverty by ideology. Liberals formed a higher percentage of subjects who had never lived in poverty (*p* value = 0.006), while conservatives formed a higher percentage of subjects who had lived in poverty in the past but not anymore (*p* value = 0.001). Moderates formed a higher percentage of subjects who lived paycheck-to-paycheck and felt as if they could easily fall into poverty (*p* value = 0.000). Although a significant portion of subjects across all political groups indicated that the poor should have the greatest responsibility for helping themselves, this option was the most popular with conservatives and moderates (Figure 2.3). Liberals were more likely to indicate that the federal government should have the greatest responsibility for helping the poor.

Subjects in the CV survey were asked about their opinions about current government programs on early-childhood development, such as Head Start (Figure 2.4). The negative

opinions about current government programs were selected on average by 20% of conservatives, 10% of moderates, and only 6% of liberals. In addition, about 20% of conservatives indicated positive opinions about Head Start programs. Positive opinions were selected by about one third of moderates and by half of liberals, while one third of all subjects indicated no knowledge about these programs. In the CV survey, subjects were also asked about the likelihood of success of an intensive early-childhood program to help children break out of poverty when funded by the 1) federal government, 2) state governments, and 3) local governments or private institutions (Figure 2.5). Conservatives had the most confidence in local government or private institutions, and the least confidence in federal government. Moderates and liberals supported all three types of institutions about equally, although a larger percentage of liberals had more confidence in these institutions. In the budget survey, 23% of subjects indicated a low likelihood of success for the early-childhood program to help children break out of poverty. The low chances of success were indicated by 54% of conservatives, 25% of moderates and 14% of liberals in the budget-survey sample.

2.9.2 Internal Validity Results

Just over 1% of the subjects had no variation in their answers to the SP questions in the budget and country surveys. These subjects also failed the transitivity test and were very likely to go through the survey without paying close attention to the questions. For these reasons, these subjects were dropped from the subsequent analysis. About 9% of the subjects failed the transitivity test in the budget and country surveys. This rate is much less than the failure rates for internal-validity test results in similar studies (Ryan & San Miguel, 2000; Ryan & Bate, 2001; Özdemir, Mohamed, Johnson, & Hauber, 2010). The preferences of subjects who failed the transitivity test were found not to be significantly different than others after the subjects who had no variation were dropped in the preliminary analysis.

Therefore, these subjects were kept in the final analysis. Appendix D provides detailed information on the internal-validity test results.

Only 1% of subjects in the budget survey dominated on the tax attribute while 10% of subjects in the country survey dominated on the cost-of-living attribute. The low level of dominance on the tax attribute in the budget survey indicates that possible protest votes over taxes were reduced. The higher level of dominance on the cost-of-living attribute is not so surprising, because this attribute was indexed to household income in the country survey.

Around 1% of the subjects in the CV survey supported funding the early-childhood program when the tax level was more than 5% of their annual household income. These subjects were eliminated from the subsequent analysis as it is commonly practiced. About 35% and 33% of the subjects in the budget and country surveys, respectively, were identified as insensitive to the cost attribute. In the budget survey, liberals, subjects who indicated that “federal government” should be the group most responsible for helping the poor, and subjects who failed the transitivity test were more likely to be insensitive to the tax attribute; subjects who indicated that “poor themselves” should be the group most responsible for helping the poor were less likely to be insensitive to the tax attribute. In the country survey, income was positively associated with insensitivity to the cost; subjects who indicated that “poor themselves” should be the group most responsible for helping the poor were less likely to be insensitive to the cost attribute. The insensitivity to the cost attribute is within the range of the statistics reported by the studies that have investigated this issue (Gilbride, Allenby, & Brazell, 2006; Hensher, 2008; Lagarde, 2012) and lower than the statistics reported by these studies that used taxes as method of payment (D. Campbell, Hutchinson, & Scarpa, 2008; Scarpa et al., 2009; Scarpa, Notaro, & Raffelli, 2009). However, because about one-third of the subjects were insensitive to the cost attribute in DCE surveys, the model estimation was controlled for these preferences by including interaction terms between the cost variables and the dummy variable that indicated the

insensitivity to the cost attribute. The marginal utility of income, however, was calculated based on the main-effects cost coefficient assuming that the marginal utility of income is not different between the subjects who were insensitive to the cost attribute and the rest of the sample.

2.9.3 Estimation Results

2.9.3.1 CV Survey Estimates

The questions on the chances of success of the early-childhood program to help children break out of poverty, other attitudinal questions, ideology and socio-economic characteristics were used to understand individuals' willingness to pay for the early-childhood program. Table 2.7 presents three sets of binomial-probit estimates for the CV question. The first model consists only of the tax level and annual household income. The second one consists of the tax level, socio-economic characteristics and dummy variables indicating whether a subject indicated low chances of success for an early-childhood program if funded by the federal and state governments. This second model was used to check the validity of survey responses as subjects who perceived the effectiveness of early-childhood programs to be low should not support the early-childhood program. The third one is the most comprehensive model which includes the tax level, socio-economic characteristics and variables indicating subjects' attitudes towards government spending and public programs. The tax level and annual household income were significant at the 1% level.[14] Subjects who indicated low chances of success for an early-childhood program if funded by the federal or state governments were significantly negatively associated with supporting the early-childhood program as expected. College degree, believing that "federal government" should be responsible for the poor, being liberal, "wealth because of bias," and "wealth because of hard work and intelligence" factors were positively associated with supporting the early-childhood program. The dummy variable for state-level programs was

[14] From this point forward, significance is considered to be at the 1% level if not otherwise specified.

not significant. However, people who believed that “federal government” should be responsible for the poor were more likely to support the federal-level program than the state-level program at the 5% level. It is reasonable for subjects who indicated that federal government should have the main responsibility were more supportive of a federal-level program. The dummy variable for the small-scale program was not significant. These findings show that neither the level of trust for the type of government nor the number of targeted children had a significant effect on people’s responses to the valuation question. In the case of federal versus state programs, it is possible that these two forces counterbalanced each other’s effects such that although the trust for state-run programs was higher than the trust for federal-run programs, an individual state program would target a smaller number of children than a federal-level program would do. The finding on the scale of the program, however, confirms that the number of targeted children was not the primary influence upon subjects’ responses.

Subjects were asked why they were in support of (Figure 2.4) or against (Figure 2.5) funding the early-childhood program in the CV survey. As their reason for being supportive, almost half of the subjects indicated that they wanted to stop the cycle of poverty. This was the most frequently selected reason by all ideological groups. The second-most-selected reason was “Lower taxes for me in the future” for conservatives and “the future of the economy depends on a well-trained labor force” for liberals. The majority of subjects seemed to think about the overall benefits (both to the society and participants) from reducing childhood poverty by wishing to stop the cycle of poverty. However, the second-most-selected reasons shade light on how each ideological group approached to childhood poverty. Conservatives seem to think about the individual share of the social benefits by choosing “lower taxes”, and liberals seem to think about the benefits to the society by choosing “well-trained labor force”. The most-selected reason for being against funding was “Government should not be involved in the care of young children, this is family’s

responsibility" for conservatives, followed by being against any new taxes and affordability. A significant portion (10%) of conservatives also indicated that it is not government's responsibility to fund early- childhood development programs. Affordability was the most-selected reason for liberals and moderates, followed by "Other programs should be reduced to pay for it" for being against funding. Fifteen percent of moderates also indicated being against any new tax increases. These findings show that although affordability was the main issue for liberals, ideology motivated conservatives' opposition to funding early-childhood programs. Moderates' opinions were somewhere in between.

2.9.3.2 Budget Survey Estimates

Table 2.8 presents the mixed-logit parameter estimates for the early-childhood program and taxes in the budget survey. The full model estimates were provided in Appendix K. Table 2.8 present parameters from three different models: 1) the parameters were interacted with perceived effectiveness; for example, the early-childhood parameters were interacted with a dummy variable indicating low likelihood of success for the early-childhood program to help children break out of poverty[15], 2) the parameters were interacted with ideology, and 3) the parameters were interacted with ideology and the early-childhood parameters were interacted with experience with the early-childhood program (that is, if their own or a family member's children had participated a current early-childhood program). The parameter estimate for reductions in the early-childhood program was significantly negative for all groups in all three models. In the first model, the parameter estimate for increases in the early-childhood program was not significant for subjects who perceived the effectiveness of early-childhood programs to be low but significantly positive for others. As in the case of the CV survey, subjects who perceived the effectiveness of early-childhood programs to be low were not willing to pay for increases in the early-childhood program. In the second and

[15] I also tried interactions with perceived effectiveness and ideology in the same model, but the model did not converge.

third models, the parameter estimate for increases in the early-childhood program was significantly positive for liberals, and was not significant for conservatives. It was significantly positive for moderates when it was interacted only with ideology (second model), but it became insignificant when interactions with experience were included (third model). The mean-parameter for increases in the early-childhood program was significantly larger for subjects with experience than for subjects without experience. The slope of the utility function for program reductions was much steeper than the slope of the utility function for program increases in the same program—a display of preference asymmetry[16]. The parameter estimates for reductions in other programs were significantly negative for all groups. The estimates for increases were significant for all programs for liberals; for job-training and disaster-relief programs for moderates and for only job-training program for conservatives. The parameter estimate for tax increases was significantly negative for all groups in all three models. The parameter estimate for tax reductions in the first model was significantly positive for subjects no matter what their opinion was on the effectiveness of early-childhood programs. It was also significantly positive for conservatives and moderates, but was not significant for liberals in the second and third models. As in the case of government programs, the slope of the utility function for tax increases was much steeper than the slope of the utility function for tax reductions. The conditional-logit estimates were parallel to the findings from the mixed-logit estimates, and can be found in Appendix L.

2.9.3.3 Country Survey Estimates

Table 2.9 present the mixed-logit parameter estimates for childhood poverty and cost of living in the country survey. Appendix K presents the full model estimates. The interactions with ideology show that conservatives had significantly different preferences than moderates and liberals. The parameter estimate for living in a country with higher childhood-poverty rates than the US was significantly negative for all ideological groups; it

[16] More information on preference asymmetry can be found in chapter 4.

was significantly larger for liberals and moderates than for conservatives. The parameter estimate for living in a country with lower childhood poverty was not significant for any of the groups. Preferences for environmental quality followed the same pattern. Preferences for access to health care were the same across ideological groups; the parameter estimate for deterioration in access to health care was significantly negative and the one for improvements in health care was significantly positive. However, the utility for deterioration in access to health care was much larger than the utility for improvements in health care. The parameter estimates for cost of living had the expected signs and did not differ by ideology. The conditional-logit estimates were parallel to the findings from the mixed-logit estimates and were presented in Appendix L.

2.9.3.4 WTP Estimates

Table 2.10 presents the mean annual WTP (standard errors in parentheses) per household from each survey analysis.[17] The WTP values from the CV survey were estimated based both on parametric estimates and non-parametric estimates. The parametric estimates were based on the third model presented in Table 2.7. The non-parametric estimates were based on the Turnbull estimator, and more information on non-parametric estimates was provided in Appendix L. In the CV survey, liberals were willing to pay $742 (116) annually for a large-scale federal program that aimed to enroll 90% of children in poverty under the age of 6 based on the Turnbull estimator. The corresponding WTP value was $739 (102) based on the parametric estimates. Moderates were willing to pay $422 (102) annually based on the Turnbull estimator, and $224 (91) based on the parametric estimates for the same program. Conservatives, in contrast, were willing to pay $149 (59) based on the non-parametric analysis, while they did not have positive WTP values based on the parametric analysis.

[17] This paper presents WTP for improvements and WTP to avoid worsening conditions. For more information on gains and losses, please refer to the fourth chapter.

There is a big difference between the non-parametric and parametric analyses, especially for moderates and conservatives. While the non-parametric analysis is informative to see the split-sample mean Turnbull estimators, and is free of distributional assumptions, the parametric analysis control for all other factors, such as socio-economic characteristics. The parametric analysis suggests that conservatives had negative WTP values and would have to be compensated if the early-childhood program was implemented. However, negative WTP is not a relevant condition in circumstances as this, where there are no property rights to be compensated, and it should be interpreted as zero or no willingness to pay. The negative WTP could be due to the distributional assumptions and/or the fact that the bid range was selected very high for conservatives. Overall, these results indicate that conservatives would not be willing to pay for the early-childhood program while liberals would be willing to pay $500 to $700 per year for this program. The population-weighted mean WTP values were calculated by weighing the mean WTP value for each group by its representation in the sample. The population-weighted mean WTP based on the characteristics included in the parametric analysis shown in Table 2.7 would be $188 and $195 per year for federal and state programs, respectively.[18]

Table 2.10 presents the mean annual WTP for the early-childhood program in the budget survey based on the second and third models presented in Table 2.8. Liberals on average were willing to pay $95 (14) to $70 (16) per year for a 50% increase in the early-childhood program (enrolling 640,000 children) while conservatives had zero willingness to pay for this outcome. Moderates were willing to pay $49 (12) per year based on the second model; they were not willing to pay for increasing the early-childhood program based on the third model. Subjects with direct experience with similar current government programs had significantly higher WTP values than subjects without experience. If these subjects were

[18] The population-weighted mean WTP was calculated by weighting the mean WTP for each group with its representation in the sample.

liberals, the mean WTP increased to $139 (24). Moderates and conservatives with experience had a mean WTP of $87 (20) and $57 (22) per year, respectively. The population-weighted mean WTP in the second model was $52 annually, and it was $34 in the third model for a 50% increase in the early-childhood program in the budget survey. The population-weighted mean WTP was $50 annually based on the conditional-logit estimates with ideology interactions (Table L.6 in Appendix L). Subjects from all three ideological groups were willing to pay to avoid reductions in the early-childhood program. Liberals were willing to pay $227 (18) to $225 (21) to avoid a 50% reduction in the early-childhood program (enrolling 210,000 children), while moderates and conservatives were willing to pay $153 (15) to $143 and $80 to $74 (16), respectively based on the model. The population-weighted mean WTP to avoid a 50% reduction in the program was $153 annually in the second model, and it was $147 in the third model in the budget survey.

Subjects who perceived the effectiveness of early-childhood programs to be low were not willing to pay for increases in the early-childhood program but they were willing to pay $39 annually to avoid a 50% reduction in this program. The perceived effectiveness denotes the likelihood of success of the program in helping children break out of poverty when they become adults. It does not necessarily indicate the effectiveness of the program of providing children with short-term benefits, such as better nutrition and health-care services. Subjects with low perceived effectiveness could be willing to pay to avoid cutting the program so that current participants can continue benefiting from short-term benefits. This also could be true for conservatives who did not want to reduce the program although they did not want to pay for program increases.

The mean WTP values for a federal-level early-childhood program from the CV survey were higher than the mean WTP values from the budget survey. However, a direct comparison between the two survey instruments is difficult because they targeted different numbers of children, and their contexts and framing differed. The federal program in the CV

survey targeted a larger number of children than the budget survey did, but this difference was probably not highly influential because preferences were not sensitive to the number of children in the CV survey. It is possible that CV values, especially the magnitude of the association with ideology, could have been overestimated. It is also possible that conservatives did not support the early-childhood program because they were reacting negatively to the prospect of tax increases and that liberals were supporting the early-childhood program without seriously considering the opportunity cost of public dollars. The budget-allocation framework could have mitigated these problems by 1) eliminating possible tax aversions by offering reductions in taxes, and 2) reminding subjects about the opportunity cost of public dollars (for example, by presenting other programs that were competing for same resources and by mentioning the budget problem in general).

In the country survey, regardless of their political ideology, subjects did not perceive more value for living in a country with lower childhood poverty than living in the US at current childhood-poverty rates. However, moderates and liberals were willing to pay $2,992 (216) per year and conservatives were willing to pay $2,057 (259) per year to avoid living in a country with 50% higher childhood-poverty rate than the US. The only quality-of-life feature subjects cared about was improvements in access to health care; and preferences for health care had no significant association with ideology. Subjects would be willing to pay $486 (142) per year for a 50% improvement in access to health care and perceived an annual loss of $3,678 (244) for a 50% deterioration (compared to the current U.S. situation).

Comparison of WTP values from the country survey to the values in the other surveys indicated that subjects valued being involved in the process for reducing childhood poverty in the CV and budget surveys. WTP should have been higher in the country survey because the benefits offered in this survey were larger and could be utilized with no latency compared to the benefits in the other two surveys. However, as the results show, this was not the case. Subjects did not value benefits of living in a society with lower childhood-

poverty rates than the US, but, on the other hand, liberals and sometimes moderates valued helping children in poverty through the early-childhood program in the CV and budget surveys. This shows that although the early-childhood program could be rejected by some groups because of the involvement of the government, others, such as liberals valued being directly involved in decisions on how to reduce childhood poverty, especially if they think these interventions would be successful.

2.9.4 Sensitivity Analysis

The ideological groups were identified based on the "social ideology" factor by categorizing subjects with the highest 30% factor score as liberals and the lowest 30% factor score as conservatives, and all others as moderates (base-case scenario). This categorization of the ideological groups could affect the findings because ideology seemed to play a significant role on preferences for reducing childhood poverty. Table 2.11 presents the mean annual WTP values when liberals and conservatives were identified based on the highest and lowest 20% factor scores, and then based on the highest and lowest 40% factor scores. The mean annual WTP from the CV survey ranged from $170 to $192, which was actually within the range of the mean annual WTP values for the base-case scenario. In the budget survey, when attributes were interacted with ideology, the population-weighted mean WTP for a 50% increase in the early-childhood program increased from $52 (base-case scenario) per year to $58-$59 for the 20% and 40% scenarios; when attributes were interacted with ideology and the early-childhood program was interacted with experience, the population-weighted mean WTP increased from $34 (base case scenario) per year to $37 and $40 for the 20% and 40% scenarios, respectively. The sensitivity analysis on the definition of the ideological groups did not affect the findings for the country survey; the mean parameter estimates for increases in the early-childhood program were not statistically significant for any of the groups.

2.10 Discussion and Conclusion

This paper presents WTP estimates for reducing childhood poverty in the US. SP survey methods were used to measure the value of implementing intensive early-childhood development programs at scale and to measure the value of living in a country with lower childhood-poverty rates than the US. First, to account for attitudes about government centralization, a CV survey was used to assess subjects' willingness to pay for high-quality, intensive early-childhood development programs at federal and state levels. Second, a DCE survey investigated subjects' budgetary preferences for increasing and reducing the high-quality, intensive early-childhood program with associated impacts on individual tax burdens. This survey was developed to avoid possible aversions to tax increases by offering subjects options that included smaller government and lower levels of public spending. The early-childhood program was compared to other government programs with similar budget sizes to help subjects consider the opportunity cost of public dollars. Third, another DCE survey investigated subjects' preferences for living in a country with lower or higher childhood-poverty rates than the US. This survey was developed to mitigate the effect of subjects' preformed opinions and attitudes associated with taxes, government programs, and the role of government while avoiding any discussion of a possible intervention. Individual share of social benefits and altruism theoretically played role in all three surveys, but benefits were a function of perceived effectiveness and ideology in the CV and budget surveys because the early-childhood program was evaluated ex-ante, and a function of time because most benefits would be realized as participants become teenagers and adults.

One of the important findings of this study is that the involvement of government in early-childhood development was unacceptable for conservatives, who seemed to have several objections to governmental involvement. First, the environment of children in early childhood was seen as a private matter and governmental involvement was considered intrusive. Twenty percent of conservatives indicated government intrusion as the primary

reason for voting against the early-childhood program in the CV survey. In addition, 26% of conservatives indicated that extended family should be responsible for early-childhood care. Second, conservatives did not think it is government's responsibility to fund these programs. About 10% of conservatives indicated inappropriate assignment of responsibility as the primary reason for voting against the program and 21% of conservatives indicated this item when asked about current government programs related to early childhood. Third, being against any new tax increases contributed to being against government programs related to early childhood. Aversion to tax increases was selected as the primary reason for voting against the program by 18% of conservatives. Finally, conservatives indicated very low perceived effectiveness for the early-childhood program for helping children to break out of poverty. Programs funded by federal and state governments were indicated to be likely to produce successful outcomes only by 26% and 35% of conservatives, respectively, but this approval rate increased to 66% for programs funded by local governments, churches, and private charities in the CV survey. More than half of conservatives also indicated very low likelihood of success for the early-childhood program in the budget survey. These issues were all related to ideology and provide evidence of conservatives' disapproval of governmental involvement in this matter.

These findings reveal another very important finding, namely that subjects cared greatly about the process (i.e., how childhood poverty is reduced). One of the main differences between the results of this study and the benefits calculated in previous benefit-cost analysis studies is that this study assessed the perceived value placed by people on reducing childhood poverty by incorporating preferences for the process as well as the outcome. Subjects who indicated low perceived effectiveness for the early-childhood program and conservatives in general did not want to pay for increasing the program. Others, especially liberals, valued making decisions on how to help children in the CV and budget surveys instead of just receiving outcomes as it was offered in the country survey.

When an intervention is evaluated in benefit-cost analysis, values associated with the intervention itself were usually excluded from the analysis. However, this study shows that individuals care about the process and could perceive benefits differently based on the intervention type.

Subjects across all groups, including conservatives and subjects who perceived the effectiveness of early-childhood programs to be low were not in favor of reducing the early-childhood program. The population-weighted mean annual WTP to avoid a 50% reduction in the early-childhood program was $147 to $153 per household. This shows that even if subjects were against government involvement or they did not think the programs were effective in achieving the long-term goals of reducing childhood poverty, they might support keeping the programs for their short-term benefits to the children while attending the program. It also indicates that even if subjects were not willing to pay for increasing the early-childhood program and enrolling higher number of children into the program, they were willing to pay to avoid a reduction in the program.

The CV survey did not pass a scope test. It is possible that an early-childhood program was not seen as a desired good by everyone, especially by conservatives. Carson et al. (2012) noted that the likelihood of government delivering on very large projects can be perceived to be much lower than the likelihood for smaller projects, which may indicate that values placed on two goods may be entangled with beliefs about how well government functions. Subjects in this study might have considered a program that targeted 90% of children in poverty to be structurally impossible, or might not have believed that a very large-scale program could produce successful outcomes. Instead, they might have believed that a small-scale program was more likely to be successful, or might have preferred helping the most impoverished children (via a small-scale program) to reaching out to a larger population.

The early-childhood program in the CV and budget surveys provides benefits to the program participants and taxpayers. Most of these benefits, such as reduced crime rate or increased earnings as adults for program participants would be realized in the long term. This paper assumed that survey subjects took the effect of latency between the timing of the investment and receiving the benefits into consideration when they answered the questions. Thus, WTP values estimated for the CV and budget surveys were assumed to inherently account for latency.

There is evidence that estimates from the budget survey are more reliable than the estimates from the other two surveys. First, the CV survey did not pass the scope test, and the WTP values were not sensitive to the number of children enrolled in the early-childhood program Second, the budget-allocation framework helped to mitigate possible protest responses (due to tax aversion) by offering smaller government: only 1% of the subjects dominated on the tax attribute by always picking either a lower tax increase or a higher tax reduction. Third, the budget survey revealed that conservatives and others did not want to cut the early-childhood programs. A more traditional method of investigating program improvements or increases would not have revealed this information, which implied that conservatives did care about children in poverty. Fourth, the budget-allocation framework helped subjects understand the opportunity costs of public dollars because WTP values were generally lower than the values in the CV survey. One problem with the budget survey was that 33% of the subjects were likely to be insensitive to the tax attribute, and that liberals were positively associated with this reaction. However, the parameter estimates associated with both the tax increase and reduction showed that liberals were insensitive to tax reductions even as they indicated disapproval of tax increases. This result shows that their insensitivity to the cost attribute likely was a result of their insensitivity to tax reductions. Controlling for the preferences of these subjects produced much lower mean WTP values.

These results can be interpreted in a referendum context to predict whether a majority of Americans would vote to support these programs and pay higher taxes as a result. The total cost of enrolling one child for 5 years in the Abecedarian project was $80,969, and the total cost of enrolling one child in the Perry project, which lasted about 1.5 years per child, was $19,626 in 2012 dollars (W. S. Barnett & Masse, 2007; G. J. Duncan & Magnuson, 2013). The annualized cost for enrolling one child in the Abecedarian project would be $17,749, while the cost per child would be $13,629 for the Perry project using a 3% discount rate. The annual cost of enrolling 640,000 children would be $11.3 billion and $8.7 billion for the Abecedarian and Perry style projects, respectively. When the annualized costs are divided by the number of households in the US (approximately 117 million in 2010), the annual cost of enrolling one child to a household would be $96.95 and $74.44 based on the Abecedarian and Perry projects, respectively. If 5% is used as a discount rate, then the annual cost of one child to a household would be $102.55 and $76.25 for the Abecedarian and Perry projects, respectively. Would a nationwide referendum pass if the proposed annual tax increase was $97 or $74? This question can be answered by investigating whether at least 50% of the subjects would say “yes” to this tax increase in support of funding the early-childhood program. Based on the second model for the budget survey in Table 2.10, only liberals were willing to pay more than $74, which constitutes 40% of the sample. Based on the third model for the budget survey, only 11% of the subjects who were moderates and liberals with experience were willing to pay higher than $74. Even if we consider that the WTP values for conservatives (and possibly for moderates) were underestimated, the mean WTP for these groups could not be higher than $70, which was the mean WTP for liberals (who had no experience with these programs). Even under these circumstances, a hypothetical referendum would not pass. This is also the case based on the findings from the sensitivity analysis on the definition of the ideological groups. Although the differences are smaller when the Perry program costs were used, the cost estimates

from the Abecedarian project would be more relevant to this study for comparison because the high-quality intensive early-childhood programs in the survey instruments were described based on the Abecedarian program.

The mean WTP values could be even lower than the ones estimated in this study for two reasons. First, the WTP values estimated in the budget survey were very likely to include pure altruism which should be excluded from benefit-cost analysis to avoid double counting of the benefits received by the altruists and beneficiaries. The mean WTP values would be lower if the WTP associated with pure altruism is excluded from total WTP. Second, the WTP values could be overestimated because of the social desirability bias. Social desirability bias is known as over-reporting socially approved behaviors or attitudes, and under-reporting socially disapproved behaviors or attitudes since people like to appear favorably or respectable in the eyes of others as well as in their own (Lindhjem & Navrud, 2011). Social desirability bias, however, might not be a major problem in this study since research shows that internet surveys reduced this bias compared to phone interviews (Chang & Krosnick, 2010; Holbrook & Krosnick, 2010; Kreuter, Presser, & Tourangeau, 2008) and face-to-face interviews (Heerwegh, 2009). Also, it is less obvious what the socially desirable choice is in DCE surveys (compared to CV surveys).

When he proposed his initiative on investing in early childhood, President Obama referred to the high rates of return on investing in young children. Previous studies show that benefits of alleviating the causes of crime, unemployment, and other consequences of social inequities more than offset the costs of small-scale, high-quality early-childhood interventions. However, the results from this study show the lack of public support for allocating public dollars to early-childhood development: subjects' perceived value of investing in early-childhood development was found to be low. A plausible interpretation of this reluctance is that individuals considered the opportunity cost of public funds to be very

high in the current economic climate. In any case, at this time childhood poverty does not seem to be high priority for the majority of Americans.

This study focused on government programs on early-childhood development as a means of reducing childhood poverty; subject preferences were strongly associated with political ideology. Future research can investigate whether an early-childhood program managed by churches, charities, or private institutions would receive support from all parts of the political spectrum. Another area that is important to investigate is benefits to the participants. Future research can estimate the economic value to a household of participating in an effective early-childhood program (for example, how much a potential participant, such as a parent of a disadvantaged child might be willing to pay to have her child participate in an intensive early-childhood program or how much she would accept in monetary compensation rather than being a participant household). Intangible benefits should also be considered in future studies, because child participants receive benefits such as better and more productive quality of life in the long run, and their current and future families would also benefit from these advantages. The current study did not include these intangible benefits. Although the sample included participants in current government programs, the current study focused on overall benefits to society rather than on participant benefits. Therefore, the subjects whose children or relatives were current program participants could have underestimated the potential benefits they would receive from an effective early-childhood program.

2.11 Tables

Table 2.1 Description of the Survey Instruments

Survey	Commodity	Administrative Level	Number of Children	Method of Payment
CV (federal, small-scale)	Early-childhood program	Federal	Only the children who are currently enrolled in existing government programs (18% of children living in poverty) under the age of 6	Federal income tax
CV (federal, large-scale)	Early-childhood program	Federal	90% of children living in poverty under the age of 6, including the current beneficiaries	Federal income tax
CV (state, small-scale)	Early-childhood program	State	Only the children who are currently enrolled in existing programs in a state	State taxes
CV (state, large-scale)	Early-childhood program	State	90% of children living in poverty under the age of 6 in a state, including the current beneficiaries	State taxes
Budget	Early-childhood program	Federal	210,000 / 320,000 / 430,000 / 530,000 / 640,000 children can participate	Federal income tax
Country	Childhood poverty rate	Country	50% or 25% higher than the US, same as the US, 25% or 50% lower than the US	Cost of living

Table 2.2 Budget Survey Attributes and Levels, "Tax" Version

Attribute	Level
Intensive early-childhood development program	▪ 50% worse: 210,000 children can participate ▪ 25% worse: 320,000 children can participate ▪ No change: 430,000 children can participate ▪ 25% improvement: 530,000 children can participate ▪ 50% improvement: 640,000 children can participate
Job-training program	▪ 50% worse: 3 million people can participate ▪ 25% worse: 4.5 million people can participate ▪ No change: 6 million people can participate ▪ 25% improvement: 7.5 million people can participate ▪ 50% improvement: 9 million people can participate
Food-safety monitoring program	▪ 50% worse: 200,000 severe food poisoning cases ▪ 25% worse: 165,000 severe food poisoning cases ▪ No change: 130,000 severe food poisoning cases ▪ 25% improvement: 100,000 severe food poisoning cases ▪ 50% improvement: 65,000 severe food poisoning cases
Disaster-relief program	▪ 50% worse: 90,000 households can be assisted ▪ 25% worse: 140,000 households can be assisted ▪ No change: 180,000 households can be assisted ▪ 25% improvement: 230,000 households can be assisted ▪ 50% improvement: 270,000 households can be assisted
Effects on household taxes	▪ You pay $2,000 more per year ($170 more per month) in taxes than now ▪ You pay $300 more per year ($25 more per month) in taxes than now ▪ You pay $50 more per year ($4 more per month) in taxes than now ▪ No change: Same amount of taxes as now ▪ You pay $50 less per year ($4 less per month) in taxes than now ▪ You pay $300 less per year ($25 less per month) in taxes than now ▪ You pay $2,000 less per year ($170 less per month) in taxes than now

Table 2.3 Country Survey Attributes and Levels

Attribute	Description	Level
Environmental quality	▪ Percentage of deaths due to air pollution ▪ Percentage of rivers that do not meet water-quality standards for fishing and swimming ▪ Percentage of total land that are protected	▪ 50% worse than the US ▪ 25% worse than the US ▪ Same as the US ▪ 25% better than the US ▪ 50% better than the US
Childhood Poverty	▪ Percentage of children living in poverty ▪ High school graduation rate of teenagers living in poverty ▪ Pregnancy rate among poor teenage girls	▪ 50% worse than the US ▪ 25% worse than the US ▪ Same as the US ▪ 25% better than the US ▪ 50% better than the US
Health care	▪ Percentage of people who have high-quality health insurance with affordable co-payments ▪ The average waiting time to see a specialist ▪ The average number of hospital beds	▪ 50% worse than the US ▪ 25% worse than the US ▪ Same as the US ▪ 25% better than the US ▪ 50% better than the US
Cost of living†	▪ You would have $11,000 less per year to spend ($917 per month) ▪ You would have $2,750 less per year to spend ($229 per month) ▪ You would have $550 less per year to spend ($46 per month) ▪ Same as now ▪ You would have $550 more per year to spend ($46 per month) ▪ You would have $2,750 more per year to spend ($229 per month) ▪ You would have $11,000 more per year to spend ($917 per month)	

† The cost of living levels were indexed to a subject's annual household income. The levels shown here are for an annual household income of $55,000.

Table 2.4 Demographic Information

	CV Survey N=1712	Budget Survey N=2037	Country Survey N=1010
Gender, %			
Male	54	52	52
Female	46	48	48
Age, mean (SD), years	53 (16)	52 (16)	52 (16)
Marital status, %			
Married	60	60	58
Widowed	5	5	5
Divorced/separated	12	13	13
Single	16	16	17
Living with partner	7	6	7
Race/ethnicity, %			
White	78	76	77
Hispanic	7	8	8
African-American	9	9	9
2 or more races	3	3	3
Other	3	3	3
Highest education, %			
Less than high school graduate	8	8	8
High school or equivalent (e.g., GED)	27	27	27
Some college	31	30	32
Bachelor's or graduate degree (e.g., BA, BS)	34	35	33
Employment, %			
Paid employee	46	48	48
Self-employed	7	8	7
Temporary layoff from a job	1	1	1
Looking for work	8	6	7
Retired	25	23	24
Disabled	7	7	7
Other	6	7	6
Household Income, mean (SD), $	69K (49K)	72K (49K)	71K (48K)
Household size, mean (SD)	2.6 (1.4)	2.6 (1.5)	2.6 (1.3)
1 child between 0 and 5	11	11	12
2 or more children between 0 and 5	2	2	2

Table 2.5 Political and Ideological Perspectives

	CV Survey	Budget Survey	Country Survey
Government policy on buying a handgun, %			
Make it more difficult	42	42	44
Make it easier	10	9	9
Keep these rules about the same	41	42	40
Don't know/not sure	7	6	6
Missing	<1	<1	<1
Abortion, %			
By law, abortion should never be permitted	12	11	12
The law should permit abortion only in case of rape, incest or when the woman's life is in danger	31	33	33
By law, a woman should always be able to obtain an abortion as a matter of personal choice	50	50	48
Don't know/not sure	6	6	7
Missing	<1	<1	<1
Political perspective, %			
Extremely liberal	3	3	2
Liberal	13	12	11
Slightly liberal	9	11	11
Moderate, middle-of-the-road	30	30	33
Slightly conservative	13	13	12
Conservative	24	24	24
Extremely conservative	5	4	5
Libertarian	3	2	2
Missing	1	1	1

Table 2.6 Subjects' Experience with Poverty, % (check all that apply)

	Conservatives N=1242	Moderates N=1687	Liberals N=1163	All N=4318†
I am not poor now and have never lived in poverty.	30	27	33	30
I grew up in a family in poverty and my family is still poor.	5	10	6	7
I have been poor in the past, but I am not poor now.	27	22	24	24
I was not poor in the past, but am poor now.	4	6	5	5
Members of my family have experienced poverty, but I have not.	11	9	10	10
Families in my neighborhood have experienced poverty.	11	12	15	12
I am not poor now, but I feel like I could easily fall into poverty. I live paycheck to paycheck.	24	31	26	27
None of the above	10	9	11	10

† This question was not asked in version FJD in the budget survey because this version excluded the early-childhood program.

Table 2.7 CV Survey Binomial-Probit Estimates

	Model 1 Coefficient (St. Err.)	Model 2 Coefficient (St. Err.)	Model 3 Coefficient (St. Err.)
Tax level	-7.08E-04*** (5.54E-05)	-7.47E-04*** (5.75E-05)	-8.66E-04*** (6.73E-05)
Household income	3.58E-06*** (6.66E-07)	3.71E-06*** (7.57E-07)	3.49E-06*** (8.95E-07)
BS degree		0.169** (0.075)	0.180** (0.088)
White		-0.104 (0.080)	0.053 (0.098)
Male		-0.038 (0.066)	0.073 (0.078)
Age		0.002 (0.002)	-0.001 (0.003)
Program success low under federal government		-0.529*** (0.102)	
Program success low under state governments		-0.365*** (0.111)	
Living in a high-poverty area			0.303* (0.171)
Has a child in Head Start			0.081 (0.114)
"Federal government"†			0.681*** (0.152)
"State governments" †			0.059 (0.182)
"Poor themselves" †			0.003 (0.127)
Liberal			0.446*** (0.093)
Conservative			-0.532*** (0.094)
Wealth because of luck			-0.038 (0.037)
Wealth because of bias			0.152 (0.039)
Wealth because of hard work			0.101*** (0.038)
Chance of social mobility			-0.016 (0.039)
State-level program			0.064 (0.131)
Small-scope program			0.013 (0.075)
"Federal government" * State-level program¥			-0.487 (0.212)
"State government" * State-level program¥			0.085 (0.182)

	Model 1 Coefficient (St. Err.)	**Model 2 Coefficient (St. Err.)**	**Model 3 Coefficient (St. Err.)**
"Poor themselves" * State-level program[¥]			0.136 (0.258)
Constant	-0.170*** (0.058)	-0.033 (0.137)	-0.338 (0.204)
N of observations	*1698*	*1698*	*1376*
Log likelihood	*-1046*	*-987*	*-751*
AIC	*1.24*	*1.17*	*1.13*

[†] These are the categories for the question about which group should be the most responsible for helping the poor.

[¥] Interaction variables between the categories for the question about which group should be the most responsible for helping the poor and a dummy variable indicating a state-level program.

Table 2.8 Budget Survey Mixed-Logit Parameter Estimates

	Others (Neutral or Effective)	Ineffective†	Moderate	Liberal	Conservative	Main-Effects
	Parameter (St. Error)	Parameter (St. Error)	Parameter (St. Error)	Parameter (St. Error)	Parameter (St. Error)	St. Deviation (St. Error)
Model 1: Budget Survey, Interactions with Perceived Effectiveness						
Decrease in early-child program	-0.042*** (0.002)	-0.008** (0.003)				0.038*** (0.003)
Increase in early-child program	0.015*** (0.002)	0.001 (0.003)				0.027*** (0.003)
Increase in taxes	-10.591*** (0.440)	-10.360*** (0.452)				*NA*
Decrease in taxes	0.146*** (0.044)	0.796*** (0.048)				*NA*
Model 2: Budget Survey, Interactions with Ideology						
Decrease in early-child program			-0.032*** (0.003)	-0.048 (0.004)***	-0.017*** (0.003)	0.040*** (0.003)
Increase in early-child program			0.010*** (0.003)	0.020*** (0.003)	-0.003 (0.003)	0.026*** (0.003)
Increase in taxes			-10.552*** (0.442)			*NA*
Decrease in taxes			0.210*** (0.053)	0.015 (0.066)	0.583*** (0.059)	*NA*
Model 3: Budget Survey, Interactions with Ideology and Experience¥						
Decrease in early-child program			-0.031*** (0.003)	-0.049*** (0.004)	-0.016*** (0.003)	0.038*** (0.003)
Increase in early-child program			0.004 (0.003)	0.015*** (0.003)	-0.003 (0.003)	0.024*** (0.003)
Increase in program (for subjects with experience)			0.019*** (0.004)	0.030*** (0.005)	0.012** (0.005)	*NA*
Increase in taxes			-10.799*** (0.446)			*NA*
Decrease in taxes			0.205*** (0.047)	*NA*	0.569*** (0.053)	*NA*

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

[†] Subjects who indicated a low likelihood of success for a government program on early-childhood development in helping children to break out of poverty.

[¥] Subjects with children or family member's children participating in one of the current government programs on early-childhood development (e.g., Head Start).

Table 2.9 Country Survey Mixed-Logit Parameter Estimates

	Moderates	Liberals	Conservatives	Main-Effects
	Parameter (St. Error)	**Parameter (St. Error)**	**Parameter (St. Error)**	**St. Deviation (St. Error)**
Childhood poverty				
Higher	-0.035 (0.002)***	-0.035 (0.002)***	-0.024 (0.003)***	0.022*** (0.003)
Lower	-0.001 (0.002)			0.017*** (0.004)
Cost of living				
Increase	-0.583 (0.032)***			*NA*
Decrease	0.072 (0.008)***			*NA*

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

† Subjects with children or family member's children participating in one of the current government programs on early childhood (e.g., Head Start).

Table 2.10 Mean Annual WTP per Household

	Moderates	Liberals	Conservatives	Weighted Mean*
CV survey nonparametric estimates, Early-childhood program				
Federal-level large-scale program	$422 (102)	$742 (116)	$149 (59)	$436
State-level large-scale program	$92 (15)	$510 (105)	$156 (76)	$237
CV survey parametric estimates, Early-childhood program				
Federal-level large-scale program	$224 (91)	$739 (102)	-$390 (113)	$188
State-level large-scale program	$246 (115)	$761 (122)	-$369 (132)	$195
Budget survey, Early-childhood program (Model 2) ¥				
50% decrease/Enrolling 210,000 children	$153 (15)	$227 (18)	$80 (16)	$153
50% increase/Enrolling 640,000 children	$49 (12)¥	$95 (14) ¥	$0	$52
Budget survey, Early-childhood program (Model 3)				
50% decrease/Enrolling 210,000 children	$143 (15)	$225 (21)	$74 (16)	$147
50% increase/Enrolling 640,000 children	$0	$70 (16)	$0	$34
50% increase/Enrolling 640,000 children for Subjects with Experience †	$87 (20)	$139 (24)	$57 (22)	
Country survey, Childhood poverty				
50% higher rate	$2,992 (216)		$2,057 (259)	$2,711
50% lower rate	$0			

† The mean WTP per year for subjects with children or family member's children participating in one of the current government programs on early childhood (e.g., Head Start)

¥ The WTP values were based on the second model presented in Table 2.8. The next set of WTP values for the early-childhood program in the budget survey were based on the third model in Table 2.8.

*This was calculated by weighting the mean WTP for each group with its representation in the sample. For example, moderates constituted 40% of the sample, while liberals and conservatives constituted 30% each. Subjects with experience constituted 16% of the sample in the budget survey, so, for example, liberals with experience would be 4.8% of the sample.

Table 2.11 Sensitivity Analysis on the Categorization of Ideological Groups, Mean Annual Population-Weighted WTP per Household†

	Base-case (Top & bottom 30%)	Top & bottom 20%	Top & bottom 40%
CV survey parametric estimates, Early-childhood program			
Federal-level large-scale program	$188	$170	$175
State-level large-scale program	$195	$192	$188
Budget survey, 50% increase in the early-childhood program			
Interactions with ideology	$51.81	$58.46	$59.14
Interactions with ideology and experience	$33.11	$37.05	$50.66

† In the base-case scenario, subjects with the highest 30% factor score were identified as liberals, the lowest 30% identified as conservatives, and the others were identified as moderates. In the "top & bottom 20%" scenario, subjects with the highest 20% factor score were identified as liberals, the lowest 20% identified as conservatives, and the others were identified as moderates. In the "top & bottom 40%" scenario, subjects with the highest 40% factor score were identified as liberals, the lowest 40% identified as conservatives, and the others were identified as moderates.

2.12 Figures

If these were the only two alternatives, which one would you want your Congressman to vote for?

	Alternative A	Alternative B
Disaster-relief program	**50% improvement:** 270,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**50% worse:** 210,000 children can participate	**25% worse:** 320,000 children can participate
Food-safety monitoring program	**25% worse:** 165,000 severe food poisoning cases	**25% improvement:** 100,000 severe food poisoning cases
Effects on household taxes	You pay $2,000 **less** per year ($170 less per month) in taxes than now	You pay $50 **more** per year ($4 more per month) in taxes than now
Which alternative would you like your Congressman to vote for?	○	○

Figure 2.1 A Sample Budget Trade-off Question

If these were the only two alternatives, which country would you choose to live in?

Country Feature	Current US Levels	Country A	Country B
Environmental Quality	• 3% of all deaths due to air pollution • 40% of rivers fail standards • 8% of total land is protected	25% **better** than the US	25% **worse** than the US
Childhood Poverty	• 20% of children live in poverty • 65% graduate high school • 13% teenage pregnancy rate	50% **worse** than the US	50% **better** than the US
Health Care	• 60% have high-quality health insurance • 20 days of waiting time to see a specialist • 1 hospital bed per 350 people	Same as the US	Same as the US
Cost of Living		You would have $5,000 **more** per year to spend ($420 **more** per month)	You would have $5,000 **less** per year to spend ($420 **less** per month)
Which country would you choose?		○	○

Figure 2.2 A Sample Country Trade-off Question

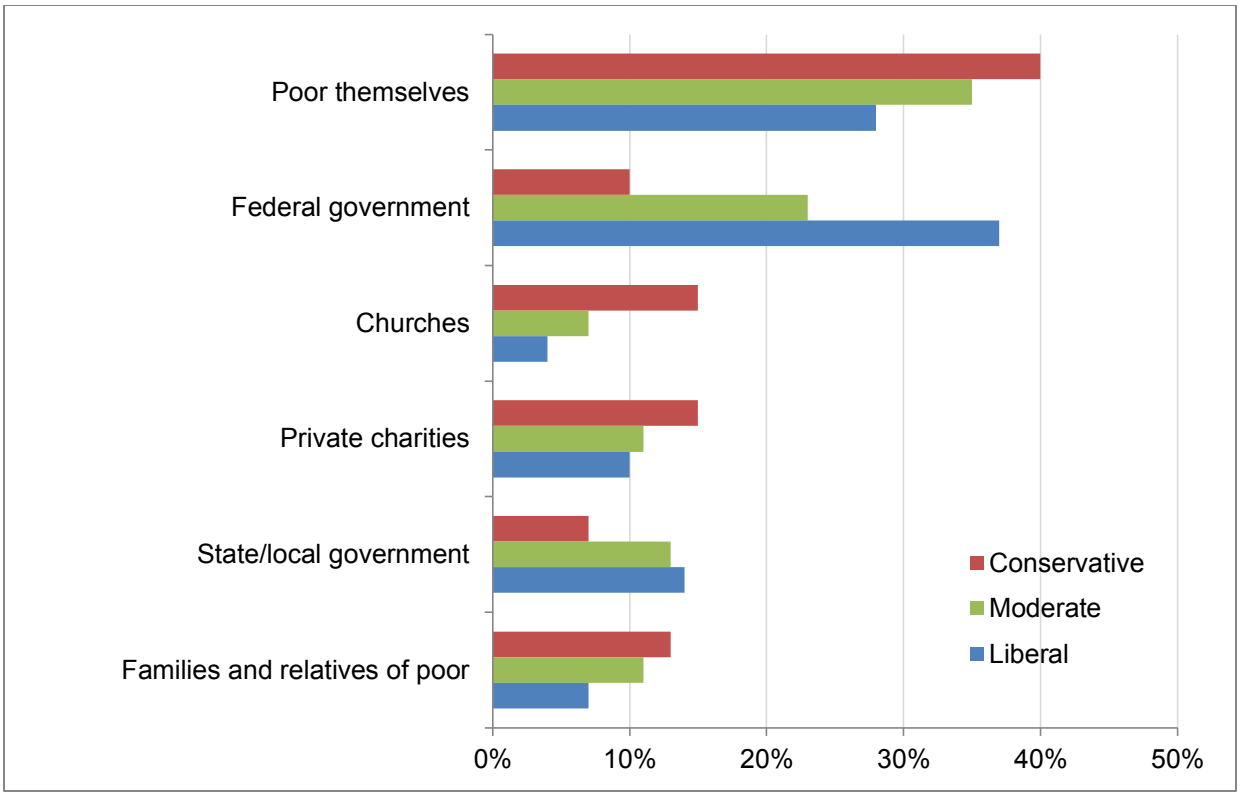

Figure 2.3 Opinions on the Group Who Should Have the Greatest Responsibility to Health the Poor, by Ideology

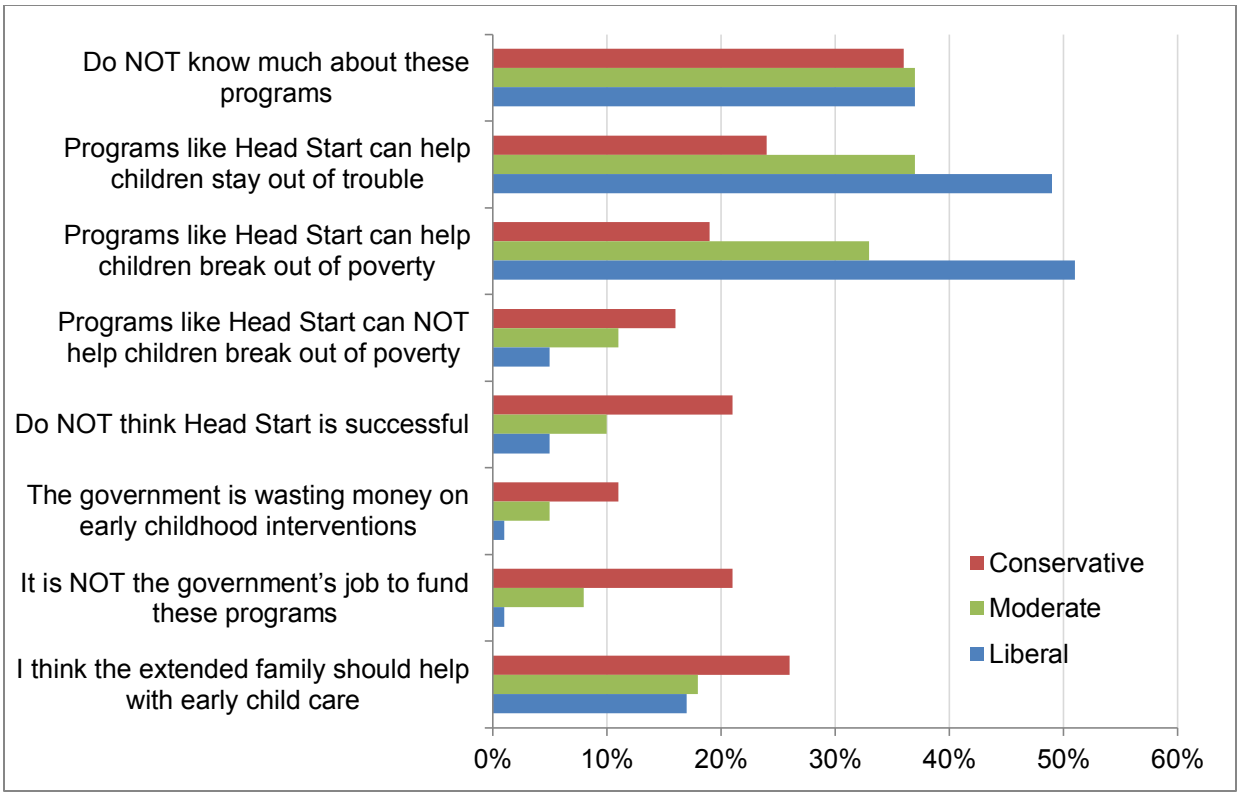

Figure 2.4 Opinions on Current Government Programs on Early-Childhood Development, by Ideology

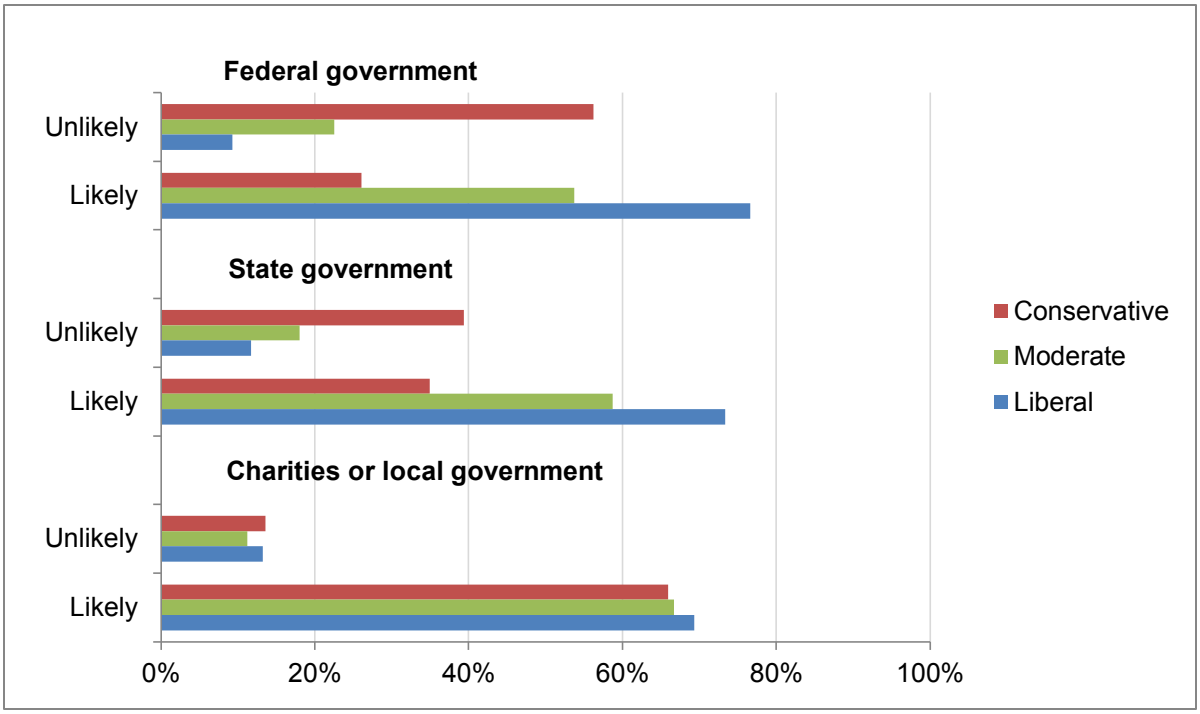

Figure 2.5 Opinions on Likely Success of Early-Childhood Programs Funded by Federal, State and Local Governments, and Private Charities, by Ideology

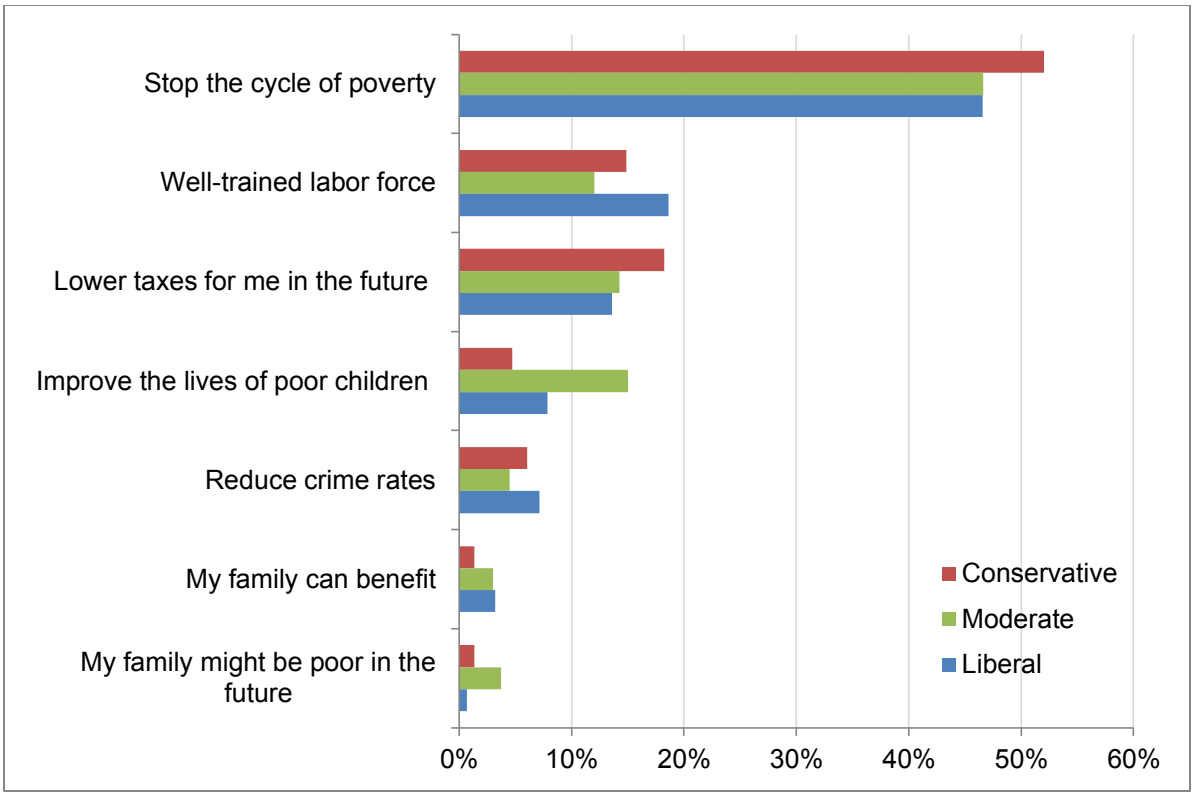

Figure 2.6 The Main Reason for Voting in Support of Funding the Early-Childhood Program in the CV Survey, by Ideology (N = 847)

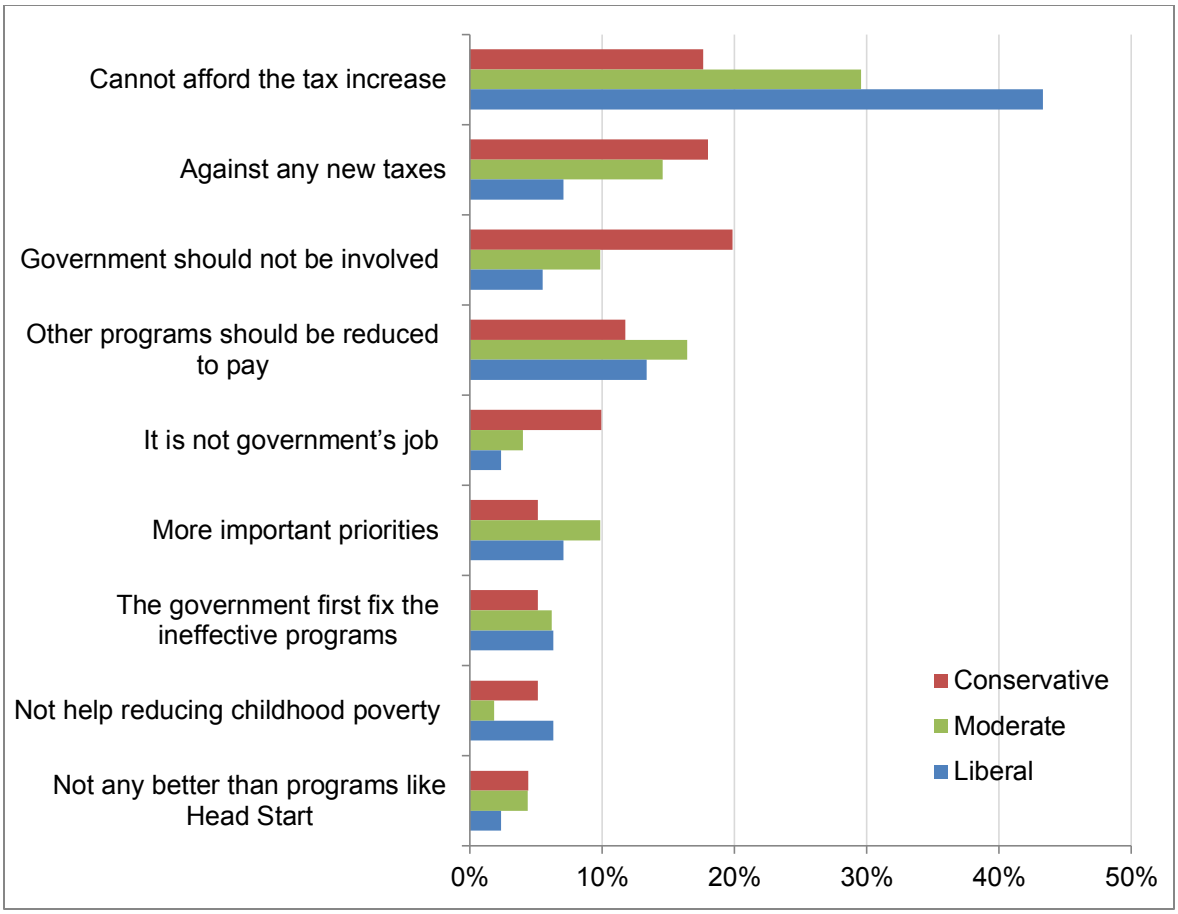

Figure 2.7 The Main Reason for Voting Against Funding the Early-Childhood Program in the CV Survey, by Ideology (N = 835)

CHAPTER 3

USING A BUDGET-ALLOCATION FRAMEWORK TO ASSESS PREFERENCES FOR PUBLICLY PROVIDED GOODS IN A DISCRETE-CHOICE EXPERIMENT SURVEY

3.1 Introduction

Stated preference (SP) methods have been used extensively in the fields of environmental and health economics to measure the value of non-market goods, including publicly provided goods and services. Within this type of research, a payment vehicle is specified to facilitate the method of payment for hypothetical changes in the good of interest, under the premise that the choice of payment vehicle and definition of the opportunity cost could affect preferences and welfare estimates. Taxes are the most commonly used payment vehicle for publicly provided goods in SP studies. However, in the current political climate in the US and other developed countries, SP studies are likely to garner high numbers of protest votes for any type of increase in taxes or for new taxes. The focus-group interviews for this study revealed this type of payment-vehicle problem.

The main focus of the larger research question for this study was to measure the perceived value placed by the public upon government investments in early-childhood development programs. Focus-group interviews were conducted in Raleigh, NC; Chicago, IL; and Dallas, TX in 2008 with 49 adult U.S. residents to test various SP scenarios. These discussions showed that some subjects were against any income-tax increase no matter what the purpose for the increase was, even if they cared about the social problems that the government programs were targeted to alleviate. Some of these subjects also stated that they were unwilling to accept a heavier burden as taxpayers while almost half of U.S. citizens do not pay federal income taxes. Other subjects suggested that inefficient

government programs should be reduced in order to fund high-quality government programs. These observations from the focus-group interviews led to the question of whether subjects would prioritize one government program over another and would be willing to cut one government program to expand another.

Researchers have used budget reallocations of existing government funding or tax revenues as payment vehicles (Bergstrom et al., 2004; Nunes & Travisi, 2009; Swallow & McGonagle, 2006) and have quantified subjects' willingness to trade existing taxations for a specified public program. However, these studies were vague about the opportunity costs of budget reallocations and the possible consequences of funding cuts on households' consumption of existing goods and services. Literature has shown that values are affected by both the framing of the evaluations of a commodity and how the opportunity cost is defined (Cummings et al., 1994; Hoehn & Loomis, 1993; Neill, 1995). Therefore, vague definitions of opportunity costs in budget reallocation studies are likely to produce invalid welfare estimates. A handful of SP studies have also investigated preferences for allocating a fix amount of public dollars among a set of public programs (Blomquist et al., 2004; Costa-Font & Rovira, 2005); however, these studies did not use the budget-allocation surveys to derive welfare-theoretic estimates of individuals' willingness to pay (WTP).

This study shows how a discrete-choice experiment (DCE) survey can be used to create a budget-allocation framework to elicit public preferences for specific government programs. This framework contributes to the literature in the following ways. First, offering reductions as well as increases in government programs and income taxes allows respondents to express preferences for smaller government, which may also decrease scenario rejection. Second, the opportunity cost of either moving public dollars among different programs or spending private dollars on these programs were linked to changes in the outcomes of these programs. This framework allows researchers to estimate the dollar values or changes in other government programs that would offset a change in the particular

government program of interest. Third, this study tested whether the value of an early-childhood development program would be considered independently of other programs competing for the same resources by comparing a given government program with various alternative programs in different versions of the survey instrument.

The next section provides background from previous literature. The third section introduces the budget-allocation framework. The fourth and fifth sections present the case study, and the model specification. The sixth and seventh sections present the results and the discussion.

3.2 Background

The most commonly used payment vehicles in SP studies are income, property and sales taxes, utility bills, park entrance fees, and trust-fund payments (M. D. Morrison, Blamey, & Bennett, 2000). Researchers have proposed numerous criteria for choosing a payment vehicle in an SP study. Cummings et al. (1986) recommended using a payment vehicle that is reasonable for the specific case (Cummings, Brookshire, Schulze, Bishop, & Arrow, 1986). Boyle (2003) suggested identifying a payment vehicle that has a relatively small impact on welfare estimates (Boyle, 2003)(Boyle, 2003)(Boyle, 2003). Carson and Groves (2007) stated that a payment vehicle should be incentive-compatible. Several studies (Champ & Bishop, 2001; Ivehammar, 2009; Mazur & Bennett, 2010; Wiser, 2007) have shown that the payment vehicle affects the parameter estimates. Payment vehicle effects are reasonable because subjects and policy makers may care about the mechanism by which the funds are raised (Johnston et al., 1999; Stevens et al., 1997).

The value of the provision of publicly provided goods and services is usually assessed in terms of tax increases or the introduction of new taxes. Two conditions have been proposed under which tax use might not be credible: 1) if respondents focus on the exclusion of non-taxpayers from the vehicle; and 2) if subjects do not trust that the funds raised will go to the program of interest (Kontoleon, Yabe, & Darby, 2005). In the current

economic environments of most developed countries, utilizing any form of new taxes as a payment vehicle in an SP study may lead to a high number of protest responses or to scenario rejection. During pretest interviews, Morrison et al. (2000) found that 32% of their sample proposed that the Australian government should pay for an environmentally friendly drainage-pipe system out of existing taxation funds. I observed similar attitudes during the focus-group interviews and in a pilot study conducted for this study in 2008 in the US. Of the subjects who said “no” to a tax increase in the pilot study, 15% reported that they were against any new tax increases and 37% reported that other government programs should be reduced to fund the good of interest. Morrison and MacDonald (2011) have observed that increases in taxes may not always be relevant in developing countries because nontax revenues (e.g., foreign aid) could be the source of provision of public services.

The literature contains two lines of studies on budget (re)allocation (Table 3.1). To understand the demand for public goods, the first line has used budget reallocation as a possible alternative to tax increases (Bergstrom et al., 2004; Kontoleon et al., 2005; M. Morrison & Hatton MacDonald, 2011; Nunes & Travisi, 2009; Swallow & McGonagle, 2006). These studies measured subjects’ willingness to allocate public dollars from existing publicly provided goods and services to a particular publicly provided good, and compared these values to willingness to pay new taxes for the public provision of the same good. They emphasized that subjects would not need to pay extra taxes under a tax-reallocation payment scenario. Under the assumptions that X_{SQ} denotes the publicly provided good X of interest and G_{SQ} denotes the existing publicly provided goods and services at the status quo level, these studies estimated the amount of public dollars (existing taxes) subjects were willing to allocate from existing publicly provided goods G_{SQ} for an improvement of ΔX. Using a contingent valuation (CV) survey method, Bergstrom et al. (2004) found that, in the U.S. states of Maine and Georgia, willingness to reallocate funds from other publicly provided

goods to groundwater quality protection was significantly higher than willingness to pay a new tax. However, Kontoleon et al. (2005) found in the UK that willingness to pay a higher tax was not significantly different than willingness to reallocate funds from other government-funded goods for the labeling of genetically modified food.

Other studies (M. Morrison & Hatton MacDonald, 2011; Nunes & Travisi, 2009; Swallow & McGonagle, 2006) utilized both tax reallocation and new taxes as a payment vehicle in a DCE survey. Swallow and McGonagle (2006) and Nunes and Travisi (2009) asked subjects to choose between hypothetical alternatives in which the cost of the program was described either by new taxes or tax reallocation in a within-sample experiment. Morrison and MacDonald (2011) conducted a between-sample experiment in which one questionnaire employed new taxes and the other employed tax reallocation as a payment vehicle.

These studies have all shared a common problem: the opportunity cost of public dollars was vaguely defined. For example, Swallow and McGonagle (2006) defined WTP of individual *n* for alternative *i* over status quo as:

$$V(X_i, M_n - WTP_{ni}, T_n, Z_n) = V\left(X_{SQ}, M_n, T_n, Z_n\right) \tag{3.1}$$

for (*i* ≠ *SQ*) where X_i and X_{SQ} denotes the attributes associated with alternative *i* and status quo, respectively, M_n represents individual *n*'s disposable income, T_n denotes the current level of taxes individual *n* pays, and Z_n is a vector of socio-economic characteristics of individual *n.* The authors defined the willingness to reallocate (WTT) existing taxes using the WTP analogy as

$$V(X_i, M_n, T_n - WTT_{ni}, Z_n) = V\left(X_{SQ}, M_n, T_n, Z_n\right) \tag{3.2}$$

This approach implicitly assumes that reallocating some of the existing taxes from other publicly provided goods G to X leads to a change of ΔG. For example, Bergstrom et al. (2004) stated that the funds would be allocated from the bundle of all other public goods,

and Swallow and McGonagle (2006) stated that the funds would be drawn from publicly provided goods in proportion to their existing share of the public budget. The problem, however, as acknowledged by Morrison and MacDonald (2011), is that the change in G was not clearly identified in the previous studies. Even when people might know the existing goods at the status quo level (G_{SQ}), it was not reasonable to expect that they would know ΔG. It could be hard for people to understand the exact opportunity cost of reallocating public dollars without knowing the consequences of a funding cut on households' consumption of existing goods and services. An individual's utility and her decision about reallocation may change based on what she assumes about ΔG. It is possible that subjects assume taxes would be reallocated from goods and services that they do not care about or care about the least. For example, a family without children could assume that taxes would be reallocated from funding for public schools, which arguably would have no effect on their budget or quality of life.

After highlighting the shortcomings of previous studies, Morrison and MacDonald (2011) described the opportunity cost of public dollars in terms of possible reduced services (ΔG) without indicating a specific program or identifying an explicit change for each reallocation. They concluded that "the question remains about how definitions of alternative reallocations influences value estimates, including the effect of using single budget areas (e.g. roads, education) versus broadly defined reallocations" (p. 11). Nunes and Travisi (2009) investigated whether preferences change when the reallocated budget comes from program G_A versus program G_B within the same sector, and found that it did not matter. However, they did not explain what the specific consequences (ΔG_A and ΔG_B) would be for the services for which spending was reduced. Thus the problem with previous studies has been compounded: not only was ΔG not clearly defined, but a subject's decision on reallocation could also change when the opportunity cost was associated with the existing

good G_A , good G_B , or a bundle of goods G. McCaffery and Baron (2005) found that their subjects were willing to cut both taxes and spending to appreciably low levels when a single large category was provided. However, when subjects evaluated specific programs, they were unwilling to cut spending.[19]

These studies also lacked the essential welfare-theoretic connection between preferences and personal budget constraints. Subjects were basically asked to spend existing taxes as if they were spending someone else's money in exchange for a personally ambiguous share of publicly provided goods and services. For these reasons, WTP or willingness to accept (WTA) which are the essential concepts for benefit-cost analysis cannot be calculated. The WTT approach also directly assumes that the marginal utility of public dollars $(\frac{\partial V}{\partial T})$ is different than the marginal utility of income/private dollars $(\frac{\partial V}{\partial M})$. The authors have hypothesized that if the marginal utility of income exceeds the marginal utility of a public dollar, then WTT would indicate a greater willingness than WTP to allocate funds to the good of interest. Previous studies cited in this paper (except Kontoleon et al., 2005) found that this was the case: in other words, the estimates of willingness to reallocate taxes were greater than the WTP estimates for a new tax.

Vague definitions of the opportunity cost of a good or the source of reallocation could have led to invalid estimates of demand for trade-offs among goods and services in the previous studies. Indeed, those researchers suggested that further research was needed to understand how the opportunity costs should be specified and how the definitions of alternative reallocation scenarios influence value estimates. Publicly provided goods and services could have substitution and complementary effects in terms of outcomes and targeted beneficiaries; in addition, a publicly provided service can affect multiple outcomes

[1] The authors defined this effect analogously to the "identified victim" effect (Kogut & Ritov, 2005; Small & Loewenstein, 2003; Small, Loewenstein, & Slovic, 2007) in which people were more willing to help a specific victim than a general cause.

and may also affect outcomes generated by another service. SP studies have found substitution and complementary effects in the valuation of environmental goods and services (Hailu, Adamowicz, & Boxall, 2000; Hoehn, 1991; Hoehn & Loomis, 1993), non-environmental goods (Cummings et al., 1994), and health- care services (Donaldson, Luchini, Protière, & Moatti, 2008).

The second line of SP studies (Blomquist et al., 2004; Costa-Font & Rovira, 2005) measured the relative preference strength of alternative public programs (i.e., the rate of preference for one program over another) using a fixed amount of public dollars. Although these studies could be helpful in understanding public preferences about allocating a certain budgetary amount, they did not link public dollars to WTP or translate budgeted dollars into program outcomes; nor did individuals know how changes in public spending would change the quantity or quality of public services targeted. Koford (2010) linked preferences for state spending on state-provided services with private WTP values. The first stage of his study was similar to the earlier studies in that it asked subjects to allocate a certain amount of public dollars across a set of public sectors. He used this information to calculate marginal willingness to trade between two sectors. In the second stage, he elicited WTP for expanding one of the sectors in this set using a CV question. He then calculated WTP for other sectors by multiplying the WTP for the specific sector elicited in the second stage with the marginal willingness to trade between two budget categories elicited in the first stage.[20] The problem with this method is that subjects could be considering the specified tax increase as the only tax increase when answering the WTP question; moreover, they might not be able to afford the sum of the taxes calculated for all budget categories. If they were aware of all possible tax increases for the full set of publicly provided services, their WTP for

[20] For example, assume that in the first stage, the sample allocated $20, $40, $10, and $30 million (out of $100 million) to A, B, C, and D sectors, respectively. The marginal willingness to trade off between two budget categories would be 1, 2, 0.5, and 1.5 if A is used as the numeraire. Assuming that the mean WTP for A is estimated to be $60 as a one-time payment in the second stage, the WTP for B, C, and D are calculated as $120, $30, and $90, respectively.

one or more of the sectors could have been smaller. It is also possible that they might be willing to reallocate existing public funding to a program without wanting to pay new taxes for that program.

The existing budget-allocation studies have focused only on increases in funding for publicly provided goods and services; they have not investigated how preferences for funding cuts differ from expansions. The reallocation scenarios used in previous studies have assumed cuts in existing services but did not explicitly describe reductions in the existing public goods from which the taxes would be reallocated. Literature has shown that people are more averse to experiencing losses than to obtaining gains; for example, the disutility from losing $100 is greater than the utility of earning $100 (Kahneman, Knetsch, & Thaler, 1991; Tversky & Kahneman, 1991). These findings on loss aversion in different settings and for a variety of goods led us to expect that preferences for reducing publicly provided services could be quite different than preferences for increases or improvements in these services.

3.3 Budget Allocation Framework

3.3.1 Welfare Measure

The budget-allocation framework used in this study made the standard assumption that an individual *n*'s utility for alternative *i* is divided into a deterministic V_{ni} and a random part ε_{ni}:

$$U_{ni} = V(X_i, M_n, Z_n) + \varepsilon_{ni} \tag{3.3}$$

where X_i denotes the public program X associated with alternative *i*, M_n represents individual *n*'s disposable income, and Z_n is a vector of socio-economic characteristics of individual *n.* Individual *n* chooses alternative *i* over alternative *j* (*i* ≠ *j*) if and only if

$$V(X_i, M_n - C_i, Z_n) > V\left(X_j, M_n - C_j, Z_n\right) \tag{3.4}$$

where C_i denotes the taxes associated with alternative *i*. Similarly, individual *n* chooses alternative *i* over alternative *j* if and only if

$$V(X_i, G_i, M_n - C_i, Z_n) > V\left(X_j, G_j, M_n - C_j, Z_n\right) \tag{3.5}$$

where G_i denotes other public programs associated with alternative *i*, such that individuals are informed about changes in these programs. In this case, C_i denotes the taxes associated with alternative *i*, which goes to pay for X_i and G_i.

3.3.2 Budget-Allocation Survey Design

The survey design for a budget-allocation framework follows similar steps that are used in developing a typical DCE study. DCE studies present hypothetical commodity alternatives, each of which is defined by several attributes including—in most applications—a payment vehicle. A budget-allocation study defines hypothetical budget alternatives in which each budget is described by a set of public programs and the household share of taxes that are used to pay for these goods. Instead of identifying the key attributes associated with a commodity, the first step in this case is to specify a set of public programs.

There might be two apparent cases for selecting a set of public programs. First, a study might already be interested in understanding preferences for a group of public programs. If this is the case, then this group of public programs would naturally constitute the budget. Second, it is possible that a study might be interested in identifying preferences for only a particular public program. In this case, the next step is to select public programs that are institutionally relevant and are plausibly representative of programs that would compete with the good of interest for the same resources. Determining these possibilities, which is perhaps one of the most challenging parts of the budget-allocation framework, requires pretesting of the selected public programs. Not only is it important to choose programs among which subjects are willing to accept trade-offs, it is also reasonable to choose programs that are of similar size in terms of budget spending.

The second step is to decide how each public program is defined. An important difference between the budget-allocation framework proposed in this study and the other budget-allocation studies is that here each program is defined in terms of outcomes, not in terms of dollars. Communicating outcomes helps subjects understand what they are trading. There could be several ways of defining program outcomes, depending on the type of public programs in question. This study used the number of beneficiaries as program outcomes; other possibilities are quantity or quality of services.

The third step is to choose a payment vehicle with respect to the interest of the study. Taxes are the common way of paying for public programs and so are a natural choice for use as a cost attribute in a DCE study. However, taxes are not considered credible if respondents focus on the exclusion of non-taxpayers from the vehicle (Kontoleon et al., 2005). It is important to choose a credible cost attribute (e.g., the right type of tax) that is inclusive of the majority of subjects who are paying for the program and is relevant to the study.

The next step is identification of attribute levels. The main difference between this study and a typical DCE study at this step is that it offered both increases in and reductions from status quo program budgets (i.e., the budget alternatives offered increases and reductions in program outcomes and also in taxes). A budget-allocation framework does not have to offer reductions; it may focus only on increases, or only on reductions. Offering changes in both directions from the status quo, as this study did, helps to capture preferences and mitigate possible protest responses by those who believe in smaller government. The other steps in the development of a budget-allocation framework, such as the question format and experimental design, are similar to those of a typical DCE study. Subjects should be provided with similar amounts and kinds of information on each program, and if the study is about a particular program they should not be told so that the evaluation they receive for each program can be neutral.

3.4 Case Study

This study was motivated by informing subjects that the U.S. Congress has been debating government budget issues (i.e., trying to decide which programs to cut, which ones to increase, and whether to cut or increase taxes to pay for these programs). They were also told that the U.S. Congress was going to vote on how federal spending should be divided among three government programs, and that their congressional representative had sent them a letter asking how he or she should vote on this matter. Subjects were then presented with a series of choice tasks that included two hypothetical budget alternatives and asked which of the two they would want their representative to vote for.

As the main focus of this study was to measure WTP for a government program on early-childhood development, three other programs were selected for comparison: (1) a job-training program, (2) a disaster-relief program, (3) a food-safety monitoring program. These programs were selected because they are of similar size in terms of budget impact. Controversial programs such as climate-change-related expenditures were avoided. Pretest interviews confirmed that subjects were willing to make trade-offs among these programs. A brief description of each program was provided in the survey instrument.

Program outcomes were defined in terms of the number of beneficiaries. The status quo was the number of beneficiaries based on the 2010 federal budget; the other levels were assigned as reductions or increases from the status quo. These levels were presented both in relative (e.g., 50% improvement) and absolute terms (e.g., 640,000 children can participate) because providing this information only in relative terms might have led subjects to overestimate the changes. The attributes and levels used in this study are shown in Table 3.2, and a sample trade-off question is shown in Figure 3.1. The full survey instrument is presented in Appendix B. To test whether the competing programs in a choice set affected preferences, each hypothetical budget contained three out of four of the government programs. Four different versions of the survey instrument were constructed so that each

program appeared with the other two programs twice (Table 3.3). Each version was named after the initials of the three programs included in a survey version; for example, Version CFJ included early-childhood (C), food-safety (F) and job-training (J) programs. The order of the programs was randomized in the survey instrument to minimize possible order effects.

The cost attribute was the change in annual household federal income taxes or income-tax credits. This paper is focused only on the results from the taxes because the sample size for the tax-credit version was very small. However, the survey informed subjects that the budget alternatives offered changes not only in taxes but also in tax credits some individuals would receive, to highlight that individuals who do not pay federal income taxes would be paying their share. The tax-attribute levels were defined in terms of increases and reductions in tax (credit) levels from what households currently pay (receive). These levels were $2000 more/less, $300 more/less, $50 more/less, and no change.

I employed a variation of a commonly used algorithm to construct a statistically efficient experimental design (F. R. Johnson, Kanninen, Bingham, & Ozdemir, 2007; Rose & Bliemer, 2010). A statistically efficient design minimizes the asymptotic variance covariance matrix. I chose a D-efficient design created in SAS (SAS Institute, Cary, NC) that minimizes the D-error (F. R. Johnson et al., 2013; Kuhfeld, 2005). To reduce subject burden, the trade-off tasks were divided into 14 blocks. Each subject was randomly assigned to one of the block versions. To minimize possible order effects, the sequence of the trade-off questions was randomized.

This study investigated several possible manifestations of scenario rejection. First, if subjects rejected the hypothetical scenario, they might have refused to answer or have skipped the entire set of trade-off questions in the survey. Second, scenario rejection might have manifested as making decisions based on only the tax attribute. A participant was considered to be dominating on the tax attribute if he or she chose the alternative with the lower level of tax increase or the higher level of tax reduction in all of the trade-off questions.

Third, the use of an opposite heuristic to dominance on making decisions was also considered to be scenario rejection. Because subjects might not have paid attention to the amount of taxes they would need to pay, they were tested for whether they were likely to be non-attendant or insensitive to the tax attribute, following the method developed by Scarpa et al. (Scarpa et al., 2009). Based on this method, a class of subjects whose utility weights for the tax attribute were likely zero was identified using an equality-constrained latent-class model.

Two other tests were conducted to test the internal validity of the DCE data. A transitivity test in which subjects who chose Alternative A over Alternative B in one choice set and Alternative B over Alternative C in another choice set had to pick Alternative A over Alternative C in a third choice set. Transitivity is a fundamental axiom of utility theory and is required for valid welfare estimation (Just et al., 2004). A second test identified subjects who had no variation in their answers to the trade-off questions; that is, they always picked either Alternative A or Alternative B in all of the trade-off questions. Appendix D provides detailed information on these tests.

The survey was implemented online as a web survey. Earlier versions of the paper questionnaire were pretested by one-on-one, face-to-face interviews with 17 subjects in July and August 2011 and with 18 subjects in October 2011. These interviews helped select the government programs to be evaluated and to refine our descriptions of these programs. The pretest interviews were also used to test the language of the text and to confirm that subjects were capable of answering the trade-off questions. The web survey was pilot-tested with 200 subjects to evaluate the attribute-level ranges, especially the tax-attribute levels.

A cheap-talk script (Ajzen et al., 2004; Cummings & Taylor, 1999) was used to mitigate the effects of possible hypothetical bias. The cheap-talk text in this study asked subjects to consider the consequences of paying taxes on their income and to answer the

questions as if the study findings would affect policy decisions in the US. The study also followed a “time to think” (TTT) protocol (Whittington et al., 1992). A review of studies with a TTT protocol (Cook et al., 2011) has shown that the certainty of answers to CV questions increased and the number of internal-validity test failures decreased in DCE surveys for subjects who had time to think compared to those who did not have time to think. After a brief introduction of government programs and review of the trade-off questions, subjects were given time to think about the survey and were asked to return to the survey within 1 to 10 days. The second part of the survey began with a reminder of the task and provided a link that summarized the first part if participants wanted to check. After they read the cheap-talk text, subjects were asked to answer the budget trade-off questions.

The web-based survey instrument targeted 2,000 subjects, was hosted on a secure site, and was administered in June 2012 by GfK Knowledge Networks (KN) to their general-population panel members. All participants were required to be U.S. residents at least 18 years of age and to have indicated their willingness to proceed with the survey after they had read the informed-consent materials. This study received IRB approval from the University of North Carolina at Chapel Hill’s Office of Human Research Ethics.

3.5 Model Estimation

Statistical analysis of the DCE data was based on random-utility theory. Mixed-logit (also known as random-parameters logit) models were employed to analyze the budget trade-off questions. Appendix E provides details on model estimation and econometrics used in this study, and Appendix L presents the conditional-logit estimates. Two linear variables were created for each attribute: one for increases from the status quo and the other for reductions. NLOGIT 4.0 was used for all the econometric analysis. Five hundred Halton draws were used for the mixed-logit estimates. All attribute parameters except the

cost parameters were specified as normally distributed;[21] cost parameters were assumed to be nonrandom. The empirical model was defined as the following:

$$V = \propto^k X_{dec}^k + \beta^k X_{inc}^k + \mu Cost_{inc} + \breve{\mu} Cost_{dec} \tag{3.6}$$

where *k* indicates a government program. The attributes were also interacted with individual-specific characteristics, and these parameters were assumed to be non-random. The marginal WTP was calculated by dividing a non-monetary attribute by the cost-increase parameter. For example, marginal WTP for an increase in the job-training program was calculated as the following:

$$WTP = \frac{\beta^{job}}{-\mu} \tag{3.7}$$

where β^{job} indicates the parameter for increases in the job-training program. An interested researcher can also calculate welfare changes based on subjects' willingness to accept tax reductions by using the cost-reduction parameter.[22] The marginal WTP values as shown in Equation 3.7 were used to compare different model estimates or estimates from the different versions presented in the next sections to address differences in scale across the different models.

3.6 Results

3.6.1 Sample

The descriptive statistics of the sample (Table 3.4) were compared to statistics on the general population demographics from the U.S. Census Bureau.[23] A full list of descriptive statistics on the survey questions are presented in Appendix H. The sample had a slightly lower representation of females than the general population (48% versus 51%).

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[21] Assuming triangular distribution for all parameters produced very similar results. When parameters were assumed to be log-normally distributed, the models did not converge.

[22] Willingness to accept values are presented in the fourth chapter.

[23] This information on the general population is based on U.S. Census Bureau statistics accessed at http://www.census.gov/ on March 13, 2013.

Although the white population was well represented (78% versus 78%), the percentage of African Americans (9% versus 13%) and Hispanics (8% versus 17%) were lower in the sample than in the general population. The household size of the sample (2.6) matched the mean U.S. household size. The sample had a higher representation of college graduates than the general population (37% versus 30%). The median income of the sample ($67k) was higher than the U.S. median household income ($53k). The full descriptive statistics on the survey questions are presented in Appendix H.

To reduce the number of explanatory variables, a factor analysis was conducted on the ideological questions (i.e., gun control, abortion, and self-identified political ideology) and on attitudinal questions about the reasons for wealth and success and the chances of social mobility. Appendix J provides more information about the factor analysis. These explanatory variables were grouped into five factors that were labeled as “wealth because of luck,” “wealth because of bias,” “wealth because of hard work and intelligence,” “chance of social mobility,” and “social ideology.” The factor analysis grouped the questions about gun control, abortion, and self-identified political ideology into the “social ideology” factor. The social-ideology factor score was then used to assign each subject to a specific ideological group. Subjects within the highest 30% of the social-ideology factor score were classified as liberals and subjects within the lowest 30% were classified as conservatives. The rest were considered to be moderates. For some of the analyses, these dummy variables were used instead of the social-ideology factor to identify subjects’ ideology (i.e., liberal, moderate, or conservative).

3.6.2 Results on Internal-Validity and Scenario Rejection

In total 31 (1.5%) subjects had no variation in their answers to the budget trade-off questions. These subjects also failed the transitivity test and were very likely to go through the survey without paying close attention to the questions. For these reasons, these subjects were dropped from the subsequent analysis. One hundred ninety-five (9.6%)

subjects failed the transitivity test. This percentage is much lower than the failure rates for internal validity test results in similar studies (Ryan & San Miguel, 2000; Ryan & Bate, 2001; Özdemir et al., 2010) and may have been because the respondents in this study were given time to think about their answers (Cook et al., 2011).

Two of the three tests on scenario rejection were satisfactory: only 1 subject skipped all the trade-off questions, and only 22 subjects (about 1% of the sample) dominated on the cost attribute. However, 709 subjects (35%) were classified as likely to be non-attendant to the cost attribute. Although this statistic was relatively high, it fell within the range of the statistics reported by the studies that investigated attribute non-attendance (Gilbride et al., 2006; Hensher, 2008; Lagarde, 2012) and was lower than the statistics reported by these studies that used taxes as a payment vehicle (D. Campbell et al., 2008; Scarpa et al., 2009; Scarpa, Notaro et al., 2009).

Table 3.5 presents the binomial-probit estimates of who was likely to fail the transitivity test and who was likely to be non-attendant to the cost attribute.[24] Subjects with a college degree were less likely and subjects who were non-attendant to the cost attribute were more likely to fail the transitivity test. Subjects who failed the transitivity test were found to have no significantly different preferences for the tax attribute than others in the preliminary analysis. Therefore these subjects were kept in the final analysis, which consisted of 1,896 subjects. Liberals, subjects who indicated that "federal government" should be the group most responsible for helping the poor, and subjects who failed the transitivity test were more likely to be non-attendant to the tax attribute, and subjects who indicated that the "poor themselves" should be the group most responsible for helping the poor were less likely to be non-attendant. Interaction terms between the cost variables (C_{inc}

[24] Models based on no variation and dominating on the cost attribute are not discussed here because they constituted a very small portion of the sample. More information on internal validity test can be found in Appendix A.

and C_{dec}) and a dummy variable indicating likely non-attendance to the cost (D_{nonatt}) were included such that the empirical model in Equation 6 can be rewritten as:

$$V = \propto^k X_{dec}^k + \beta^k X_{inc}^k + \mu C_{inc} + \breve{\mu} C_{dec} + \mu_1 C_{inc} D_{nonatt} + \breve{\mu}_1 C_{dec} D_{nonatt} \quad (3.8)$$

The cost-increase ($\mu + \mu_1$) and cost-reduction ($\breve{\mu} + \breve{\mu}_1$) parameters for subjects who were non-attendant to the cost equal zero. The main-effects cost-increase parameter (μ) was used to calculate the marginal utility of income. This method of calculating WTP used the mean parameter β for all subjects for non-monetary attributes and the mean parameter μ for the subjects, excluding the ones who were likely non-attendant to the cost attribute for cost increase. This approach assumed that the marginal utility of income for those who were non-attendant to the cost attribute was not different than the marginal utility of income for others.

3.6.3 Alternative Programs Matter in a Choice Set

The mixed-logit model estimates show the evidence of cross-effects between the programs.[25] The interaction between increases in the early-childhood program and increases in the food-safety program was significantly positive at the 1% level in Version CFJ.[26] The interaction between increases in the job-training program and increases in the disaster-relief program was significantly positive in Version CJD. The pairwise comparison of different versions was conducted using marginal WTP values (Table 3.6). Of the 30 pairwise comparisons across versions, nine marginal WTP values were significantly different at the 1% or 5% levels. For example, the value of a 1% increase in the early-childhood program was not significantly different among the versions. However, a 1% reduction in the early-childhood program led to an annual loss of $2.76 per household in Version CFJ, $3.74 in Version CFD, and $2.05 in Version CJD. These values for the early-childhood development

[25] The final models were run only with the significant interaction variables.

[26] From this point forward, if the significance level is not mentioned specifically it was considered significant at the 1% level.

program were significantly different between Version CFJ and Version CFD (p = 0.050) and between Version CFD and CJD (p = 0.001). The full mixed-logit estimates for each survey version are presented in Table M.1 in Appendix M.

The greatest loss was associated with the early-childhood program for all the versions that included it. In Version FJD, which did not include the early-childhood program, the greatest loss was associated with the job-training program. Preferences for program increases were more heterogeneous. An increase in the early-childhood program had the greatest value among programs in Version CFJ; an increase in the disaster-relief program had the greatest value in Version CFD; the job-training program had the greatest value in Version CJD; and the food-safety program had the greatest value in Version FJD. These results indicate that valuation of a given government program was not independent of the programs to which it was compared, and that marginal WTP values for a specific program changed based on what other programs were being considered.

Different survey versions can be pooled after adjusting for possible scale differences across the versions using an error-components (EC) model (Hensher, Rose, & Greene, 2008). The EC model relaxes the assumption of independence across individuals in mixed-logit models by including an alternative-specific constant (ASC) for each version. In an unlabeled design such as this, ASCs provide the average utility distances between the mean effects in each version and the alternatives in a version. The random parameters associated with each version approximate the distribution of the scale for a version relative to the scale of the version without an intercept, which this study designated as Version CFJ. The only significant scale parameter for the scale-controlled model was the one associated with Version CFD, which indicated that the mean effect of Version CFD was significantly different than Version CFJ (Table M.2 in Appendix M). The associated standard deviations were not significant for any of the versions, which signaled that these versions did not have

significantly different scales than Version CFJ. The pooled model estimates were used for the subsequent analysis.

3.6.4 The Effect of Likely Non-Attendance to the Cost Attribute

Table 3.7 presents the marginal WTP estimates with and without adjustments for likely non-attendance to the cost attribute; the full mixed-logit estimates are presented in Table M.2 in Appendix M. The controlled (adjusted) model is used in Equation 3.6, followed by the uncontrolled model (without adjustment) in Equation 3.8. Pairwise comparisons of these estimates indicated that only two out of nine comparisons (increases in the early-childhood and job-training programs) were not significantly different between the controlled and uncontrolled estimates. The mean marginal WTP values for program reductions were significantly larger in the uncontrolled model than in the controlled model. While the uncontrolled model provided significantly negative or insignificant mean values for program increases, the mean marginal WTP estimates had the expected sign for three program increases in the controlled model. This result shows that not controlling for likely non-attendance to the cost attribute would have led to implausible mean WTP values. These models were also compared based on log likelihood and on Akaike's information criterion (AIC), which balances the reduction in the log-likelihood function with the increase in the number of parameters. The controlled model performed better than the uncontrolled model, with a smaller log likelihood (in magnitude) and a smaller AIC measure.

Standard deviations provide information on unobserved taste heterogeneity: a high standard deviation signals more heterogeneous preferences and a small standard deviation signals more homogeneous preferences. The taste heterogeneity was in general larger for reductions in a program than increases in a program (see Table M.2 in Appendix M). Preferences with the largest heterogeneity were for reductions in the early-childhood program and the job-training program. The significant standard deviations associated with

all attribute parameters indicated significant unobserved taste heterogeneity in the attributes and confirmed the importance of estimating a mixed-logit model.

3.6.5 The Effect of Ideology

An important consideration when measuring preferences for government programs and budget allocation is the possibility of correlations with political ideology. Dummy variables associated with being a liberal and a conservative were interacted with the attribute parameters; being moderate was left out as the omitted category. The tax-increase parameter, which was used to calculate the marginal WTP values, was negative and was not significantly different across the ideological groups. Table 3.8 presents the mean marginal WTP values (i.e., the mean WTP for a 1% increase or reduction) per household per year and the standard errors for moderates, liberals, and conservatives. The full mixed-logit model estimates are presented in Table M.3 in Appendix M.

Subjects across all ideological groups perceived losses from reductions in all four government programs. The largest losses for all groups were associated with reductions in the early-childhood program. The mean WTP to avoid a 1% reduction in the early-childhood program was $4.50, $2.90 and $1.50 per household per year for liberals, moderates, and conservatives, respectively. Liberals valued increases in all programs except the food-safety program. Liberals had a mean annual WTP of $1.40 for a 1% increase in the early-childhood program and about $0.6 for a 1% increase in the job-training and disaster-relief programs.[27] Conservatives valued increases only in the job-training program with a mean annual marginal WTP of $0.6, but perceived losses from increases in the food-safety program with a mean annual marginal loss of $1.4. Moderates valued increases in the job-training and disaster-relief programs; their WTP values lay somewhere in between liberals and conservatives. In general, compared to other groups, liberals valued increases more and

[27] A 1% increase corresponds to around 4,200 children in the early-childhood program, 60,000 food-poisoning cases in the food-safety program, 1,400 beneficiaries in the job-training program, and 1,800 households in the disaster-relief program.

perceived larger losses from reductions. Conservatives and moderates (conservatives more than moderates) valued reductions in their taxes; while this was not significant for liberals.

Some of these findings were consistent with the expectations; for example, liberals liked program increases but did not like program reductions. The findings on conservatives, however, were somewhat surprising: they did not want to give up any of the four programs, although they significantly supported expanding only the job-training program, and seemed to support the status quo for the other three programs. These findings show that some subjects were reluctant to accept program reductions when the opportunity cost and the consequences of changes were laid out very explicitly.

3.6.6 Budget Allocation and Welfare Changes

The value of a 50% increase in a program can be evaluated in two ways: 1) by calculating how much subjects are willing to pay in taxes for this increase; and 2) by comparing it to a value of reductions in other programs. The values for the early-childhood program are presented in this section as an example. The mean WTP per household (based on the main-effects model) for a 50% increase in the early-childhood development program was $32 per year. Liberals were willing to pay $70 and moderates were willing to pay $18, while conservatives did not value increases in the early-childhood program based on the interactions model. If subjects had children or family members' children participating in one of the current government programs on early-childhood development, WTP increased to $139 and $87 for liberals and moderates, respectively. Conservatives in this group were willing to pay $57 per year.

The second approach estimates the value of reductions in other government programs that would offset the value of a 50% increase in the early-childhood program. Using the main-effects estimates, the value associated with a 50% increase in the early-childhood program was offset by a 19% reduction in the food-safety program, a 17% reduction in the job-training program, or a 22% reduction in the disaster-relief program.

Another option is to partly cut two or more programs. For example, the food-safety program could be decreased by 10% and the job-training program by about 9%. For a 50% increase in the early-childhood program, moderates would be willing to decrease the food-safety program by 11%, the job-training program by 7%, or the disaster-relief program by 10%. Liberals would be willing to decrease the food-safety program by 49%, the job-training program by 29%, or the disaster-relief program by 41%. Possible budget reallocation scenarios for increasing the early-childhood program could not be calculated for conservatives because they did not value increases in this program. For conservatives, budget reallocation scenarios could only be calculated for increasing the job-training program, in which the only program they valued the expansions.

A 10% increase in all four government programs would lead to an average perceived gain of $15 per year per household based on the main-effects model. The gain would be $17 for moderates and $26 for liberals, but would only be $6 for conservatives. A perhaps more interesting and policy-relevant scenario, a 10% cut across all four programs, led to an average perceived loss of $77 per year per household based on the main-effects model. Liberals would suffer the most ($111), followed by moderates ($84) and last by conservatives ($47) based on the interactions model.

3.7 Conclusion and Discussion

This study used a DCE method in a budget-allocation framework to elicit public preferences for specific government programs. Hypothetical budget alternatives were described by changes in the number of beneficiaries together with individual shares of the taxes that would be used to pay for these programs. Each program and household tax shares were defined both in terms of increases and reductions from the status quo, which allowed preferences for smaller as well as larger government roles to mitigate scenario rejection.

This study presents four important findings. First, consistent with predictions of economic theory, this study showed that the valuation of one program was not independent of valuation of the alternative programs: the perceived value of a program changed according to which other programs it was compared to. This finding has major consequences for budget reallocation studies that did not clearly define the opportunity cost. A vague definition of the opportunity costs of allocating budget among publicly provided goods could produce invalid estimates. The value of a particular program changes based on subjects' assumption about the (existing) goods from which budgetary amounts are reallocated. It is possible that subjects assumed different status-quo levels for the existing goods, or might even have focused on the different existing goods in the previous studies. In any case, the findings of this study imply that individuals care about where the funding for a government program comes from. If value estimates are to be used in a benefit-cost analysis, it is important to choose institutionally relevant alternatives for comparison.

Second, preferences exhibited strong asymmetry in which the disutility associated with program reductions was much higher than the utility associated with corresponding increases. Subjects in the sample were reluctant to approve of cuts when they were faced with the exact definition of what they needed to give up or how a reduction would affect the provision of services. Several subjects stated during the pretest interviews that they did not want to take rights away from a program's current beneficiaries even though they weren't particularly supportive of that program. This result could be consistent with previous findings that indicate people change their preferences when a specific program or a specific victim is identified instead of a single large category (McCaffery & Baron, 2005).

Third, this study showed how to calculate welfare changes based on changes in disposable income and/or reallocation of funding from one government program to another. An allocation of public dollars from one program to another without changing taxes led to changes in welfare within society. Decreasing programs led to a welfare loss for all groups

while increasing programs generally led to perceived welfare gains for liberals and sometimes for moderates, but not for conservatives: in our sample, conservatives preferred status quo and the perceived losses from decreasing or increasing funding for three out of four programs. These findings seem consistent with expectations; however, this is the first study to quantify the effect of ideology on the value of changes, especially reductions, in experimentally controlled budget alternatives.

Fourth, the budget-allocation framework mitigated the problems with scenario rejection. Possible manifestations of scenario rejection in this study were identified as not answering the trade-off questions, not trading away from the lower level of tax increase or higher level of tax reduction, and paying no attention to the tax levels. The statistics on the first two tests were relatively low, although 35% of the subjects were likely to be non-attendant to the cost attribute. This result indicates that the use of increases as well as reductions in individual tax shares might have helped to reduce possible aversion to tax increases but instead created a problem of insensitivity to tax reductions for some individuals. However, it was not possible to distinguish the effect of budget-allocation from the effects of the cheap-talk text and the TTT protocol on the internal validity of the survey data.

One advantage of using a DCE method in this context was that likely non-attendance to the cost attribute could be identified and controlled for. Being a liberal was positively correlated with likely non-attendance to the tax attribute. As to whether liberals supported government programs, regardless of the tax level, findings imply that this was not necessarily the case. Liberals significantly perceived losses from tax increases, which indicates that this group paid attention to the tax increases. The difference between this group and others was its preference for tax reductions; unlike other groups, liberals were indifferent to tax reductions. This seeming contradiction has been addressed in the literature on tax psychology. Studies have shown that some groups of individuals would like

government to provide services such that they support paying taxes even for an inefficient use of government funds (McCaffery & Baron, 2005). This stance might help explain why liberals in our sample did not particularly value tax reductions. In fact, during the pretest interviews several subjects stated that if they got $100 back on their taxes they would just waste it on shopping, and also that they might be able to help others by paying taxes.

Results from this study suggest that tax reductions should be used together with tax increases to reduce scenario rejection in future DCE studies. The use of lower taxes as a payment vehicle (without tax increases) might not work as effectively, however, because subjects in general were much less sensitive to tax reductions than tax increases—a result that has been shown elsewhere as well (Hess et al., 2008; Lanz et al., 2009; Masiero & Hensher, 2010). It is possible that mental accounting played a role (Thaler, 1985); if so, it might explain the large difference between tax increases and tax reductions. Individuals might have categorized the taxes they had been already paying as forgone income and thus would not have considered a reduction in taxes as an increase in their disposable income.

This paper shows how a DCE survey can be used to assess preferences for publicly provided goods and services. This framework is especially relevant in the current economic climate where governments are trying to make decisions on where to cut spending while also providing existing and new services. It is hard to distinguish the effect of the budget-allocation framework on preferences from the effects of the cheap-talk scenarios and the TTT protocol used in this study. It is likely that combined use of these methods avoided high numbers of scenario rejections or unrealistically high WTP values. Future studies would do well to further investigate this likelihood, as well as whether this framework works for other programs or programs in a specific area (e.g., public-health programs or programs in other countries). The use of tax reductions and tax credits as payment vehicles is another area future SP studies could investigate.

3.8 Tables

Table 3.1 Summary of Previous Literature

Study	Details	Problems	SP Question
Budget reallocation studies			
Bergstrom and colleagues (2004)	CV; G was defined as all other publicly provided goods	ΔG was not identified	Split Sample: 1) Subjects were asked whether they would vote for a program if the special tax costs their household $100 per year for 10 years. 2) Subjects were asked whether they would vote for a program if the amount of their households' tax money spent on other public services is reduced by $100 per year for 10 years.
Kontoleon, Yabe, & Darby (2005)	CV; G was defined as all other publicly provided goods	ΔG was not identified	Split Sample: 1) Subjects were asked whether they would vote for a program to ensure all foods clearly state their GM content if the program would cost their household an extra £X for every £100 they spend on food. 2) Subjects were asked whether they would vote for a program to ensure that all foods clearly state their GM content if the program would cost the government £X of their family's taxes for every £100 they spend on food.
Swallow & McGonagle (2006)	DCE; G was defined as all other publicly provided goods	ΔG was not identified	Subjects were asked to consider two land parcels described by 11 physical and management attributes and cost. Subjects chose among parcels A and B and the cost-free option of neither parcel. Costs involved either an amount of "additional taxes next year" or an amount of "taxes that have already been paid."
Nunes & Travisi (2009)	DCE; G was defined as 1) reallocation from spending on public transport 2) reallocation from spending on administration/ entertainment	ΔG_A and ΔG_B were not identified.	Subjects were asked to consider two noise-abatement options described by five attributes, including annual cost per household and the type of financing. The type of financing involved 1) a new provincial one-time tax, and 2) a reduction of the 2006 provincial budget on public transport, or 3) reduction of the 2006 provincial budget on administrative expenses.
Morrison & Hatton MacDonald (2011)	DCE; G was defined as all other publicly provided goods; possible ΔG were presented	ΔG was identified without referring to a specific program	Split Sample: Subjects were asked to consider two land protection options described by four attributes and a status-quo option. Half of the sample saw a levy on income tax (new tax) and the other half saw that government expenditure would be reallocated from other government programs (tax reallocation).

Study	Details	Problems	SP Question
Allocation of fixed budget			
Blomquist, Newsome, & Stone (2004)	DCE	No link to WTP	Subjects were asked how they would allocate an extra $100 million to a list of programs if they were making choices for the state of Kentucky.
Costa-Font & Rovira (2005)	DCE	No link to WTP	
Koford (2010)	DCE (first stage) and CV (second stage)	Link to WTP for one of the programs in the second stage	Stage 1: Subjects were asked how they would allocate an extra $100 million to a list of programs if they were making choices for the state of Kentucky. Stage 2: Subjects were asked how they would vote for an additional one-time increase in their taxes of $X for [one of the budget categories] Kentucky Community and Technical College System.

Table 3.2 Attributes and Levels

Attribute	Level
Intensive early-childhood development program	▪ 50% worse:210,000 children can participate ▪ 25% worse:320,000 children can participate ▪ No change:430,000 children can participate ▪ 25% improvement:530,000 children can participate ▪ 50% improvement:640,000 children can participate
Job-training program	▪ 50% worse:3 million people can participate ▪ 25% worse:4.5 million people can participate ▪ No change:6 million people can participate ▪ 25% improvement:7.5 million people can participate ▪ 50% improvement: 9 million people can participate
Food-safety monitoring program	▪ 50% worse:200,000 severe food poisoning cases ▪ 25% worse:165,000 severe food poisoning cases ▪ No change: 130,000 severe food poisoning cases ▪ 25% improvement:100,000 severe food poisoning cases ▪ 50% improvement:65,000 severe food poisoning cases
Disaster-relief program	▪ 50% worse:90,000 households can be assisted ▪ 25% worse:140,000 households can be assisted ▪ No change:180,000 households can be assisted ▪ 25% improvement:230,000 households can be assisted ▪ 50% improvement:270,000 households can be assisted
Effects on household taxes	▪ You pay $2,000 more per year ($170 more per month) in taxes than now ▪ You pay $300 more per year ($25 more per month) in taxes than now ▪ You pay $50 more per year ($4 more per month) in taxes than now ▪ No change: Same amount of tax credits as now ▪ You pay $50 less per year ($4 less per month) in taxes than now ▪ You pay $300 less per year ($25 less per month) in taxes than now ▪ You pay $2,000 less per year ($170 less per month) in taxes than now

Table 3.3 Government Programs Included in Each Survey Version

Version	Government Programs Included
Version CFJ	Early childhood, food safety and job training programs
Version CFD	Early childhood, food safety and disaster relief programs
Version CJD	Early childhood, job training and disaster relief programs
Version FJD	Food safety, job training and disaster relief programs

Table 3.4 Demographic Information

Gender, %	
Male	52
Female	48
Age, mean (SD), years	52(16)
Marital status, %	
Married	61
Widowed	5
Divorced/separated	13
Single	15
Living with partner	6
Race/ethnicity, %	
White	78
Hispanic	8
African-American	9
2 or more races	3
Other	2
Highest education, %	
Less than high school graduate	7
High school or equivalent (e.g., GED)	26
Some college	30
Bachelor's or graduate degree (e.g., BA, BS)	37
Employment, %	
Paid employee	49
Self employed	8
Temporary layoff from a job	1
Looking for work	6
Retired	24
Disabled	6
Other	6
Household Income, mean (SD), $	76K (48K)
Household size, mean (SD)	2.6 (1.4)
1 child between 0-5	9
2 or more children between 0-5	2

Table 3.5 Binomial-Probit Model Estimates for the Internal Validity Tests

	Failing Transitivity		Non-attendant to the Tax Attribute	
	Coef	**St. Error**	**Coef**	**St. Error**
Income	-3.57E-07	1.03E-06	8.00E-07	7.24E-07
BS degree	-0.220**	0.103	0.010	0.073
White	-0.064	0.103	-0.081	0.079
Male	0.024	0.089	0.011	0.065
Age	-0.003	0.003	0.000	0.002
Social ideology	-0.018	0.047	0.312***	0.036
Federal government †	0.205*	0.114	0.188**	0.085
Poor themselves †	0.089	0.102	-0.228***	0.075
Non-attendant to cost	0.213**	0.092	*NA*	
Failed transitivity test	*NA*[¥]		0.237*	0.121
No variation	*NA*		0.274	0.298
Tax-Credit version	-0.023	0.213	0.020	0.167
Version CFD	-0.055	0.123	0.007	0.090
Version CJD	-0.189	0.133	-0.141	0.094
Version FJD	0.046	0.123	0.090	0.093
Constant	-1.216***	0.200	-0.392**	0.152
N of observations	*1708*		*1708*	
Log Likelihood	*-490*		*14*	
Degrees of freedom	*13*		*-1030*	

† These are the categories for the question on who should be the most responsible group for helping the poor.

* indicates statistical significance at the 10% level, ** indicates at the 5% level and *** indicates at the 1% level.

¥ NA denotes “not applicable”.

Table 3.6 Marginal WTP Values (per Household per Year) and Standard Errors for Each Version

	Version CFJ		Version CFD		Version CJD		Version FJD	
	Mean	***St. Err***	***Mean***	***St. Err***	***Mean***	***St. Err***	***Mean***	***St. Err***
Early childhood								
decrease	-2.759***	0.343	-3.737***	0.362	-2.052***	0.342	*NA*	
increase	0.831***	0.250	0.787***	0.274	0.452	0.312	*NA*	
Food safety								
decrease	-1.484***	0.255	-1.936***	0.305	*NA*		-1.872***	0.285
increase	-0.116	0.305	-0.116	0.265	*NA*		0.641***	0.201
Job training								
decrease	-1.705***	0.286	*NA*		-1.487***	0.351	-2.522***	0.313
increase	-1.000**	0.416	*NA*		0.482	0.292	0.592**	0.252
Disaster relief								
decrease	*NA*[¥]		-1.705***	0.283	-1.372***	0.308	-1.348***	0.293
increase	*NA*		1.029***	0.223	-0.157	0.332	0.523**	0.232
Tax								
decrease[†]	0.015**	0.007	0.033***	0.008	0.027***	0.007	0.040***	0.008

* indicates statistical significance at the 10% level, ** indicates at the 5% level and *** indicates at the 1% level.

[¥] NA denotes “not applicable”.

[†] This is the ratio of the marginal utility of tax-reductions to the marginal utility of tax-increases.

Table 3.7 Marginal WTP Values (per Household per Year) and Standard Errors for the Pooled Sample

	Controlled		Uncontrolled	
	Mean	***St. Err***	***Mean***	***St. Err***
Early childhood				
decrease	-2.791***	0.193	-18.134***	1.277
increase	0.634***	0.161	-0.505	1.110
Food safety				
decrease	-1.651***	0.156	-11.409***	1.039
increase	-0.004	0.153	-5.144***	1.049
Job training				
decrease	-1.867***	0.171	-12.364***	1.150
increase	0.546***	0.157	-1.172	1.078
Disaster relief				
decrease	-1.411***	0.154	-8.891***	1.017
increase	0.328**	0.155	-3.093***	1.039
Tax				
decrease†	0.029***	0.004	0.086***	0.020
Log likelihood	*-6052*		*-7139*	
AIC criterion	*0.92*		*1.08*	

* indicates statistical significance at the 10% level, ** indicates at the 5% level and *** indicates at the 1% level.

† This is the ratio of the marginal utility of tax-reductions to the marginal utility of tax-increases.

Table 3.8 Marginal WTP Values (per Household per Year) and Standard Errors by Ideology for the Pooled Sample

	Moderates		Liberals		Conservatives	
	Mean	***St. Err***	***Mean***	***St. Err***	***Mean***	***St. Err***
Early childhood						
decrease	-2.851***	0.291	-4.508***	0.426	-1.473***	0.310
increase	0.352	0.255	1.403***	0.325	-0.256	0.291
Food safety						
decrease	-1.424***	0.182	-2.457***	0.288	-1.424***	0.182
increase	0.194	0.186	0.194	0.186	-0.440*	0.264
Job training						
decrease	-2.413***	0.216	-2.413***	0.216	-0.904***	0.269
increase	0.609***	0.157	0.609***	0.157	0.609***	0.157
Disaster relief						
decrease	-1.720***	0.188	-1.720***	0.188	-0.940***	0.287
increase	0.590***	0.193	0.590***	0.193	-0.239	0.278
Tax						
decrease†	0.019***	0.004	-2.4E-04	0.006	0.053***	0.005

* indicates statistical significance at the 10% level, ** indicates at the 5% level and *** indicates at the 1% level.

† This is the ratio of the marginal utility of tax-reductions to the marginal utility of tax-increases.

3.9 Figures

If these were the only two alternatives, which one would you want your Congressman to vote for?

	Alternative A	Alternative B
Disaster-relief program	**50% improvement:** 270,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**50% worse:** 210,000 children can participate	**25% worse:** 320,000 children can participate
Food-safety monitoring program	**25% worse:** 165,000 severe food poisoning cases	**25% improvement:** 100,000 severe food poisoning cases
Effects on household taxes	You pay $2,000 **less** per year ($170 less per month) in taxes than now	You pay $50 **more** per year ($4 more per month) in taxes than now
Which alternative would you like your Congressman to vote for?	○	○

Figure 3.1 A Sample Budget Trade-off Question

CHAPTER 4

PREFERENCE ASYMMETRY IN STATED PREFERENCES FOR NON-MARKET GOODS AND MONEY

4.1 Introduction

Reference-dependent theory proposes that utility does not depend on final wealth but rather on the changes in wealth from a reference point, and also that individuals interpret options as gains or losses relative to a reference level (usually the status quo). Loss aversion implies that a difference in a dimension is generally greater when that difference is evaluated as a loss instead of as a gain (Tversky & Kahneman, 1991). It has been suggested that loss aversion and reference dependency are the primary sources of the disparity between willingness to pay (WTP) and willingness to accept (WTA) (Bateman et al., 1997). Although the gap between WTP and WTA has been investigated and well documented in previous stated-preference (SP) studies (Horowitz & McConnell, 2002), only a few studies (De Borger & Fosgerau, 2008; Hess et al., 2008; Masiero & Hensher, 2010) have separately investigated asymmetry in preferences for changes in the opposite direction from status quo in non-market goods and money.

Loss aversion in riskless choices occurs when the utility function is steeper in the loss domain than in the gains domain. The present study formally assumed a basic utility function U, where the observable part of this utility function V reflects the different processing of gains and losses as:

$$V(x) = \begin{cases} V(x) & if\ x \geq 0 \\ \lambda V(x) & if\ x < 0 \end{cases} \tag{4.1}$$

where x is a deviation from the status quo and $\lambda > 0$ is a loss-aversion coefficient or index (Köbberling & Wakker, 2005; Tversky & Kahneman, 1991). If the ratio of the steepness of the utility function for losses and gains λ is greater than 1, this indicates a kink at the reference level. Loss aversion indicates a structural change between gains and losses that assumes different rates of diminishing marginal utility above and below the reference level. The loss-aversion coefficient has also been used as the degree of loss aversion or preference asymmetry in previous stated-preference studies (Hess et al., 2008; Masiero & Hensher, 2010).

A meta-analysis of 45 studies (Horowitz & McConnell, 2002) showed that 1) the WTA/WTP ratio was not significantly different between hypothetical markets and real transactions; 2) incentive compatible elicitation yielded higher ratios; and 3) ratios were the highest for public and non-market goods. Loss aversion seems to disappear only for traded goods that are purchased for exchange rather than use (Novemsky & Kahneman, 2005). SP methods are likely to exhibit loss aversion because they are mostly used for the valuation of non-market goods with low substitutability. The majority of the studies that investigated reference dependency on non-market goods used contingent valuation (CV) methods, and most focused on the comparison of WTP and WTA values in between-sample experiments.

Another popular SP method involves discrete-choice experiment (DCE) surveys that offer hypothetical alternatives with varying attribute levels and ask respondents to choose among alternatives in a series of questions. A few relatively recent DCE studies have investigated preference asymmetry and diminishing sensitivity (De Borger & Fosgerau, 2008; Hess et al., 2008; Hjorth & Fosgerau, 2011; Lanz et al., 2009; Masiero & Hensher, 2010; Masiero & Hensher, 2011). These studies investigated whether preferences for an attribute differed if the attribute was defined negatively or positively in relation to a reference point. All of these studies investigated preferences for transportation options, with a focus on time and money trade-offs, except for one that investigated preferences for water-supply

services. The transportation studies used pivot experimental designs (Hess & Rose, 2009; Train & Wilson, 2008) in which the levels of travel time and travel cost from a subject's recent journey were increased and decreased, thereby creating individual-specific levels for both variables. Results showed that models that allow non-linear parameterization of utility or linear parameterization of utility that allows asymmetric preferences for decreases and increases in attributes outperformed the commonly used models whose continuous variables assumed symmetric preferences. These studies also found evidence of asymmetric preferences such that the utility function was steeper in the losses domain than in the gains domain.

One of the advantages of using a DCE is that it allows the investigation of preference asymmetry in monetary as well as non-monetary attributes. Previous DCE studies have found that individuals were much more sensitive to increases in cost (losses) than to decreases in cost (gains). Masiero and Hensher (2010) found that the utility function for increases in travel cost was 1.3 times steeper than for decreases in travel cost. Hess et al. (2008) found that the slopes of the total travel cost for increases were 3.2 to 6.6 times higher than those for decreases, depending on the sample (commuters vs. non-commuters). Lanz et al. (2009) found that, compared to the marginal utility for decreases in water bills, the marginal utility for increases in water bills was about 13 times higher in a piecewise model and 197 times higher in an exponential model. Preference insensitivity for price decreases has also been observed in real markets; for example, the price elasticity of eggs was found to be -1.10 for increases and -0.45 for decreases (Putler, 1992).

Another advantage of a DCE survey is that it allows researchers to calculate different welfare measures for the same sample. Previous DCE studies that estimated WTP and WTA values reported that models that did not allow asymmetric preferences overestimated WTP and underestimated WTA (Masiero & Hensher, 2010). The WTA/WTP ratio ranged from 3 to 65; the highest ratio was reported for preferences for water supply services (Lanz

et al., 2009). Hjorth and Fosgerau (2011), who investigated how loss aversion was correlated with individual characteristics in a DCE study, found that it increased by age and decreased by education.

The present study investigated the implications of preference asymmetry in stated preferences for non-market goods and money. The first research question concerned whether an individual treats gains and losses differently when his or her decision mostly affects others rather than mostly affecting the individual and his or her family. To resolve this issue, this study approached the question of valuing gains and losses from two distinct perspectives and contexts, using two DCE surveys. The first survey investigated preferences for public programs with associated individual tax burdens; the second survey quantified preferences for quality-of-life features in a country with associated cost of living. The first survey elicited social preferences where individuals' decisions had direct implications for others in need. In the second survey, individuals couldn't change societal levels of quality-of-life attributes but their decisions could (hypothetically) make a difference for themselves according to their choices of where they would like to live. All of the attribute levels were specified as increases and reductions from the status quo.

Two factors were expected to influence social preferences differently than private decisions. The first factor was subjects' ideological perspectives on the appropriate role of government. I expected that some ideological groups (e.g., conservatives) would be willing to reduce public programs while objecting to program increases; therefore, I did not expect conservatives to be loss-averse to public programs. I formed this expectation because conservatives in general are against government involvement in public life and support smaller roles for government in general. Altruism was the second factor that I expected to influence social preferences. Because reducing public programs could lead some current beneficiaries to lose their benefits, and some recipients could suffer substantially from even small changes in their benefits, altruism could cause some individuals to be strongly against

reducing public programs (so that the current beneficiaries could continue to be aided by them). Increasing such programs might not elicit similar emotional reactions in other individuals, however, because they might think that people who had not benefited from public programs had survived anyway and would not be harmed by continuing in their current lifestyles.

Unlike previous studies that have focused on loss aversion using one commodity at a time, the second research question of the present study focused on how subjects valued gains and losses in multiple goods in a joint-evaluation setting. When individuals are asked to make tradeoffs between two or more goods, they may need to give up one good to be able to increase another one. If subjects value losses differently than gains, this discrepancy could affect how they trade one good for another. Therefore, this paper includes a discussion of the implications of preference asymmetry on the marginal rate of substitution (MRS) between goods.

The third research question of the present study concerned whether preference asymmetry changes according to the method of payment or the method of transaction. Previous studies have shown that individuals have asymmetric preferences for cost increases and reductions; the majority focused on out-of-pocket payments for private goods that generally constitute a smaller share of individual income. By contrast, I investigated whether subjects have different perceptions of gains and losses in income taxes and cost-of-living expenses. I expected different findings between these two types of payments, and from previous studies, for several reasons. First, the marginal propensity to spend on taxes or cost of living could differ based on the “mental accounting” theory, which assumes that individuals assign activities to specific budget accounts; for example, expenditures are grouped into categories (e.g., housing, food, entertainment, etc.) and money assigned to one mental account is not a perfect substitute for the money assigned to another account. Second, taxes constitute a smaller share of a household’s income while cost of living

constitutes a larger share of a household's budget. Third, I expected to find correlations between ideology and income-tax preferences.

The fourth research question of the present study concerned different welfare measures, using the same sample, in the context of preference asymmetry. Unlike previous studies that have found large disparities between WTP and WTA estimates, I compared how the disparity between welfare measures changes with different non-market goods and types of payment. Investigating preference asymmetry in both the numerator (for goods) and the denominator (for money) allowed me to determine the major source of the WTA/WTP disparity.

Study data is presented in the second section and model specifications are presented in the third section. Study findings are provided in the fourth section. The implications of these findings are discussed in the fifth section.

4.2 Data

This paper used data from two DCE surveys. The first survey (hereafter, budget survey) elicited individuals' social preferences for budget alternatives with changes in household tax amounts and the number of beneficiaries of public programs. These amounts and numbers were defined as increases and decreases from the status quo. The public programs were defined as no change (status quo), decreases and increases of 50% and 25% in the number of current beneficiaries. These levels were presented in both relative (e.g. 50% improvement) and absolute terms (e.g. 640,000 children can participate). The tax attribute was defined as $2000 more/less, $300 more/less, $50 more/less than the current taxes paid by a household and same as now (status quo). The public programs included an early-childhood program, a food-safety monitoring program, a job-training program and a disaster-relief program. Table 4.1 presents the attributes and levels used in the budget survey.

The second survey (hereafter, country survey) asked individuals to assume that they had to move to a new country and to therefore evaluate hypothetical countries; these were defined in terms of quality-of-life attributes including environmental quality, childhood poverty and access to health care, and cost of living. The quality-of-life attributes were defined as no change (status quo) and at levels 50% and 25% better and worse than comparable U.S. statistics. Because cost of living is highly associated with annual household income, the cost of living in the country survey was indexed to subjects' own annual household income. The cost-attribute levels were the dollar amounts that corresponded to same as now (status quo) and 20%, 5% and 1% of annual household income.[28] Table 4.2 presents the attributes and levels used in the country survey. Both survey instruments are presented in Appendices B and C.

Both surveys followed a similar style in terms of offering multiple commodities and offering increases and decreases from the status quo level (see figures 4.1 and 4.2). Increases in public programs, improvements in quality-of-life attributes and reductions in costs were considered as gains; decreases were considered as losses. The two surveys differed in terms of context and payment vehicles. The budget survey asked subjects to reveal social preferences on issues related to public policy, whereas the country survey asked subjects to indicate their individual preferences about decisions that would only affect themselves and their families. The former used taxes which were expected to be correlated with ideology; the latter used cost of living, which constituted a larger share of income.

A D-efficient design was created in SAS (Kuhfeld, 2005) to create the trade-off questions. The trade-off tasks were divided into 14 blocks to reduce subject burden. Two trade-off questions were included in each block to test for the transitivity of preferences. According to transitivity, a fundamental axiom of utility theory (Just et al., 2004), if a subject

[28] For example, the levels for a subject with a household income of $52,000 were $10,400 less per year, $2,600 less per year, $520 less per year, same as now, $520 more per year, $2,600 more per year and $10,400 more per year.

chooses Alternative A over Alternative B in one choice set, and Alternative B over Alternative C in another choice set, he or she will pick Alternative A over Alternative C in a third choice set.

Each subject was randomly assigned to one of the block versions. To minimize possible order effects, the sequence of the trade-off questions was randomized. Preferences were investigated according to whether subjects were likely to be non-attendant or insensitive to the cost attribute. Using an equality-constrained latent-class model developed by Scarpa et al. (2009), a class of subjects with likely-zero utility weights for the cost attribute was identified. Appendix D provides detailed information on the internal-validity tests.

Both surveys were designed as web-enabled questionnaires. Face-to-face personal interviews with a convenience sample were used to evaluate the draft survey instruments. These interviews helped to refine the descriptions of the public programs in the budget survey and the quality-of-life attributes in the country survey. The pretest interviews were also used to test the language of the text and to confirm that subjects were capable of answering the trade-off questions. The web-survey instruments were pilot-tested with 300 subjects to evaluate the attribute-level ranges, especially the cost-attribute levels. The web-based survey instruments were hosted on a secure site and were administered in June 2012 by GfK Knowledge Networks to their nationally representative general-population panel. The budget survey targeted 2,000 subjects and the country survey targeted 1,000 subjects.

The surveys were administed in two sections in order to provide subjects with time to think (TTT) (Whittington et al., 1992) before they answered the trade-off questions. Subjects were first given the motivation of the study and briefly presented with some information on the public programs or country features they were being asked to evaluate. Subjects were then presented with the budget or country trade-off questions before they were given time to think about the survey. They were asked to return to the second part of the survey within 1

to 10 days. In the second part of the survey, before the trade-off questions, subjects were presented with “cheap talk” text (Ajzen et al., 2004; Cummings & Taylor, 1999) that asked them to consider the consequences of paying higher or lower taxes on their incomes or having a lower or higher cost of living. Both the TTT protocol and the cheap talk text were used to mitigate the hypothetical nature of the surveys.

4.3 Model Specification

Statistical analysis of the DCE data was based on random-utility theory. Five different model specifications were developed to investigate reference dependency and preference asymmetry; some of the models were also controlled for nonlinearity. The symmetric linear model specified each attribute as a set of continuous variables assuming symmetric preferences around the status quo, whereas the symmetric nonlinear model incorporated nonlinearity by adding squares of variables to the model. The empirical symmetric linear and nonlinear models were defined as:

$$V = \beta^k X^k + \mu Cost \tag{4.2a}$$

$$V = \beta^k X^k + \beta^{sk}\left(X^k\right)^2 + \mu Cost + \mu^s Cost^2 \tag{4.2b}$$

where β^k denoted the parameter associated with X^k, X^k denoted a non-monetary attribute k, β^{sk} denoted the parameter associated with the square of attribute k, μ and μ^s denoted the parameters associated with $Cost$ and $Cost^2$. The asymmetric linear model allowed for asymmetric preferences for changes from the status quo by specifying two linear variables for each attribute, one for increases and one for decreases. The empirical asymmetric linear model was defined as:

$$V = \beta^k_{dec} X^k_{dec} + \beta^k_{inc} X^k_{inc} + \mu_{inc} Cost_{inc} + \mu_{dec} Cost_{dec} \tag{4.3a}$$

where X^k_{dec} denoted decreases and X^k_{inc} denoted increases in attribute k, $Cost_{inc}$ and $Cost_{dec}$ denoted increases and decreases in the cost attribute, respectively. The nonlinearity

of gains and losses was incorporated into the model by adding the squares of the variables in equation 4.3a:

$$V = \beta_{dec}^{k} X_{dec}^{k} + \beta_{inc}^{k} X_{inc}^{k} + \beta_{dec}^{sk} \left(X_{dec}^{k}\right)^2 + \beta_{inc}^{sk} \left(X_{inc}^{k}\right)^2 + \mu_{inc} Cost_{inc} + \mu_{dec} Cost_{dec} + \mu_{inc}^{s} (Cost_{inc})^2 + \mu_{dec}^{s} (Cost_{dec})^2 \quad (4.3b)$$

The categorical model did not impose any functional-form specification for the non-monetary attributes; dummy coding was used where the status quo categories were omitted. The cost attribute was added as a continuous variable and nonlinearity was assumed for the cost variables. The empirical categorical model was specified as:

$$V = \beta_{50\%(dec)}^{k} X_{50\%(dec)}^{k} + \beta_{25\%(dec)}^{k} X_{25\%(dec)}^{k} + \beta_{25\%(inc)}^{k} X_{25\%(inc)}^{k} + \beta_{50\%(inc)}^{k} X_{50\%(inc)}^{k} + \mu_{inc} Cost_{inc} + \mu_{dec} Cost_{dec} + \mu_{inc}^{s} (Cost_{inc})^2 + \mu_{dec}^{s} (Cost_{dec})^2 \quad (4.4)$$

The degree of asymmetry in stated preferences was calculated as the ratio between the slope of the utility function for a loss and the slope of the utility function for a corresponding gain. This ratio, for example $\frac{|\mu_{inc}|}{|\mu_{dec}|}$ for the cost attribute in the asymmetric linear model, shows the marginal utility of losses to gains. The degree of asymmetry would be $\frac{|\mu_{inc}+\mu_{inc}^{s} Cost_{inc}|}{|\mu_{dec}+\mu_{dec}^{s} Cost_{dec}|}$ for the asymmetric nonlinear model, in which the mean values are usually used for $Cost_{inc}$ and $Cost_{dec}$.

Compensating and equivalent variations were calculated for gains and losses (Knetsch, 2010). Under the assumption that the utility associated with the status quo was zero, compensating variation was calculated as:

$$gains\text{:}\ \beta_{inc}^{k} / \mu_{inc} \quad (4.5a)$$

$$losses\text{:}\ \beta_{dec}^{k} / \mu_{dec} \quad (4.5b)$$

Equation 4.5a illustrates how much subjects are willing to pay for a 1% improvement from the status quo. Equation 4.5b illustrates how much they are willing to accept in

compensation for a 1% reduction or deterioration from the status quo. The equivalent variation was calculated as:

$$gains\colon\ \beta_{dec}^{k}/\mu_{inc} \tag{4.5c}$$

$$losses\colon\ \beta_{inc}^{k}/\mu_{dec} \tag{4.5d}$$

Equation 4.5c illustrates how much subjects are willing to pay to avoid 1% deterioration from the status quo. Equation 4.5d illustrates how much they are willing to accept to forgo a 1% improvement. These welfare measures would be the same in the symmetric models. For the nonlinear models, compensating variation for a 1% change can be calculated as:

$$gains\colon\ (1 * \beta_{inc}^{k} + 1^2 * \beta_{inc}^{sk})/(\mu_{inc} + \mu_{inc}^{s} Cost_{inc}) \tag{4.6a}$$

$$losses\colon\ (1 * \beta_{dec}^{k} + 1^2 * \beta_{dec}^{sk})/(\mu_{dec} + \mu_{dec}^{s} Cost_{dec}) \tag{4.6b}$$

and the equivalent variation for a 1% change can be calculated as:

$$gains\colon\ (1 * \beta_{dec}^{k} + 1^2 * \beta_{dec}^{sk})/(\mu_{inc} + \mu_{inc}^{s} Cost_{inc}) \tag{4.6c}$$

$$losses\colon\ (1 * \beta_{inc}^{k} + 1^2 * \beta_{inc}^{sk})/(\mu_{dec} + \mu_{dec}^{s} Cost_{dec}) \tag{4.6c}$$

These welfare values for 50% increases and decreases from the status quo condition are presented in Section 4.4.5. Mixed-logit (also known as random-parameters logit) models were employed to analyze the trade-off questions in both surveys. The conditional-logit estimates are provided in Appendix L.

4.4 Results

4.4.1 Sample Characteristics

The budget survey consisted of 2,037 observations and the country survey consisted of 1,010 observations. Table 4.3 presents the descriptive statistics, which were very similar between the two surveys. The percentage of females (48% vs. 51%) and whites (76.5% vs. 78%) in the sample was slightly lower than in the general population.[29] African Americans (9% vs. 13%) and Hispanics (9% vs. 17%) were underrepresented in the sample; college

[29] The information on the general population statistics was retrieved from the website of the U.S. Census Bureau, accessed at http://www.census.gov/ on March 13, 2013.

graduates were slightly overrepresented (34% vs. 30%). The median income of the sample ($67k) was higher than the U.S. median household income ($53k). The full descriptive statistics on the survey questions are presented in appendices H and I.

Slightly more than 1% of the subjects always picked Alternative A or Alternative B in their answers to all of the trade-off questions in both surveys. These subjects also failed the transitivity test and were very likely to go through the survey without paying close attention to the questions. For these reasons, these subjects were dropped from the final analysis. About 9% of the subjects failed the transitivity test in both surveys, which is a comparable failure rate to that of other DCE studies (Ryan & San Miguel, 2000; Ryan & Bate, 2001; Özdemir et al., 2010). Subjects who failed the transitivity test did not have significantly different preferences for the cost attribute than others had indicated in the preliminary analysis. Therefore, these subjects were included in the final analysis.

About 35% and 33% of the subjects in the budget and country surveys, respectively, were identified as likely non-attendant to the cost attribute. Identifying as liberal in the budget survey and and reporting a higher level of annual household income in the country survey were positively associated with being likely non-attendant to the cost attribute. Insensitivity to the cost attribute in this study was within the range of the statistics reported by studies that have investigated likely non-attendance to a cost attribute (Gilbride et al., 2006; Hensher, 2008; Lagarde, 2012). However, because 33–35% of the subjects in this study were non-attendant to the cost attribute, the model estimation for these preferences was controlled by including interaction terms between the cost variables and the dummy variable that indicated insensitivity to the cost attribute. The marginal utility of income (MUM) was calculated based on only the main-effects cost parameters, under the assumption that that the MUM for subjects who were likely to be non-attendant to the cost attribute was not different than the MUM for the rest of the sample. Appendix D provides detailed information on the internal-validity test results.

4.4.2 Asymmetric Preferences for Non-Market Goods and Marginal Rate of Substitution

Table 4.4 presents the random-parameter estimates and standard deviations for the symmetric linear, asymmetric linear and categorical models for the budget survey. In the symmetric linear model, the random-parameter estimates were significantly positive for the program attributes at the 1% level.[30] The random-parameter estimates for program decreases in the asymmetric model were significantly negative, whereas the estimates for program increases were significantly positive. The categorical model estimates were parallel to the estimates from the asymmetric model. The findings from all three models indicate that subjects significantly valued program increases as well as perceived losses from program decreases.

In the asymmetric linear and categorical models, the utility function for program decreases was significantly steeper than the utility function for the corresponding increases for each program type,[31] which indicates a kink at the status quo level (Figure 4.3). In the categorical model, the marginal utility for program decreases was 2.03 to 11.82 times larger than the marginal utility for program increases. In the asymmetric model, the degree of asymmetry was the largest for the food-safety program (4.33), followed by the early-childhood program (2.90). The standard deviations for 50% changes were larger than those for 25% changes but the same for the corresponding gains and losses. These results indicate that taste heterogeneity was not different between gains and losses in the categorical model. However, the standard deviations for program decreases in the asymmetric model were larger than those for program increases, which indicated more heterogeneous preferences for losses than gains. Moreover, in the categorical model,

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[30] Hereafter, significance was noted at the 1% level unless a different significance level is specified.

[31] The null hypothesis is $H_0: \beta_{dec} - \beta_{inc} = 0$. The wald statistics is defined as $(\beta_{dec} - \beta_{inc})^2 \,/ (var(\beta_{dec}) + var(\beta_{inc}) - 2cov(\beta_{dec}, \beta_{inc}))$ where the covariance between the coefficients equal to zero in this study. The statistics was compared to a chi-squared distribution.

subjects discriminated between the adjacent attribute levels better for program decreases than increases. For all four programs, the disutility from a 50% program decrease was significantly larger than the disutility from a 25% program decrease. The utility associated with a 50% program increase was larger than a 25% program increase, but the difference was only significant for two (early-childhood and job-training) of the four programs. Overall, preferences for program reductions were more pronounced than preferences for program increases.

Table 4.5 presents the random-parameter estimates and standard deviations for the symmetric and asymmetric nonlinear models for the budget survey. The parameter estimates associated with $\left(X^k\right)^2$ were significantly negative in the symmetric model, which indicated a diminishing marginal utility for public programs. In the asymmetric model, the parameter estimates for $\left(X^k\right)^2$ were significant only for decreases in the job-training program. Reductions in the job-training program reduced the utility at an increasing rate. Preferences remained asymmetric even when nonlinearity was accounted for. The degree of asymmetry was smaller for one of the four program attributes (disaster-relief program) in the asymmetric nonlinear model, compared to the degree of asymmetry in the asymmetric linear model.

Table 4.6 presents the random-parameter estimates and standard deviations for the symmetric linear, asymmetric linear and categorical models for the country survey. The random-parameter estimates were significantly positive for the quality-of-life attributes in the symmetric linear model, which indicated that subjects significantly both valued improvements in the quality-of-life attributes and perceived losses from deterioration in the quality-of-life attributes. In the asymmetric linear and categorical models, the estimates associated with deterioration in the quality-of-life attributes were significant and negative. However, estimates associated with improvements in the quality-of-life attributes were

significantly positive for the access-to-health-care attribute and were not significant for the other attributes. The symmetric linear model, therefore, was found to misrepresent preferences for improvements in childhood poverty and environmental quality.

As with the budget survey, the utility function for deteriorations in quality-of-life attributes was significantly steeper than the utility function for improvements in quality-of-life attributes in both the asymmetric and categorical models. In the asymmetric linear model, the degree of asymmetry was the largest for childhood poverty (27.67), closely followed by environmental quality (23.08); last was access to health care (7.37). In the categorical model, subjects significantly discriminated between the adjacent attribute levels for deteriorations in the quality-of-life attributes. This was not the case for improvements in the quality-of-life attributes, however: improvements in childhood poverty and environmental quality were found to be not significant.

Table 4.7 presents the random-parameter estimates and standard deviations for the symmetric and asymmetric nonlinear models for the country-survey data. The parameter estimates associated with $\left(X^k\right)^2$ were significantly negative in the symmetric nonlinear model, which indicated a diminishing marginal utility for the quality-of-life attributes. The asymmetry in preferences persisted in the asymmetric nonlinear model but the parameter estimates for $\left(X^k\right)^2$ were not significant.

Based on data from the asymmetric and categorical models, the country survey was similar to the budget survey in terms of the preferences for decreases/deterioration but not for increases/improvements. In both surveys, subjects did not like giving up on programs or reducing quality-of-life levels. However, although they supported program expansions in the budget survey, they supported only improvements in access to health care in the country survey. This insensitivity to improvements in the quality-of-life attributes in the country survey was indicative of a much larger asymmetry in preferences for these attributes than

the ones observed for the public programs in the budget survey. It is possible that subjects were already familiar with the status-quo conditions and therefore found the status-quo childhood poverty and environmental-quality conditions to be tolerable, but did not want deterioration in unfamiliar conditions for their own quality of life.

The MRS between two goods was investigated in the context of asymmetric preferences. Considering the MRS between other programs and job training, the MRS was larger than 1 only for the early-childhood program in the symmetric linear model (job training was used as the numeraire). The MRS between the early-childhood and the job-training programs was also larger than 1 when only program increases were compared and when only program decreases were compared in the asymmetric linear model. Specifically, subjects were willing to give up a 1.15% increase in the job-training program for a 1% increase in the early-childhood program and were willing to give up a 1.46% decrease in the job-training program for a 1% decrease in the early-childhood program. Although the magnitudes were different, subjects favored changes in the early-childhood program over changes in the job-training program, whether these changes were increases or decreases. This was not always the case for the disaster-relief program, however. In the asymmetric linear model, subjects favored increases in the job-training program over increases in the food-safety program and favored decreases in the food-safety program over decreases in the job-training program. Subjects were willing to give up a 0.58% increase in the job-training program for a 1% increase in the food-safety program; however, they were willing to give up a 1.19% decrease in the job-training program for a 1% decrease in the food-safety program. These findings show that, depending on the direction of the comparison, subjects could have different MRS between two goods.

4.4.3 Asymmetric Preferences for Changes in Money

The random-parameter estimates for increases in cost were significantly negative, whereas estimates for reductions in cost were significantly positive both in the budget and

country surveys, based on both the asymmetric and categorical models. The slope of the utility for the cost increase was significantly steeper than the slope for the cost reduction with a kink at the status quo, which indicated that subjects' perceptions of losses from increases in cost were larger than their valuations of the corresponding reductions in cost. The marginal utility for a tax increase was 32 times higher than the one for a tax decrease in the budget survey (8 times higher for changes in cost of living in the country survey based on the asymmetric linear model).

The parameter for $Cost^2$ was significantly negative whereas the parameter for $Cost^2$ was significantly negative only at the 10% level in the budget survey. The parameters associated with the square of changes in the cost-of-living attribute were significantly negative at the 1% level in the country survey. These findings suggest a diminishing MUM for both taxes and cost of living. The preference asymmetry persisted but became smaller after nonlinearity was controlled for in the asymmetric nonlinear model. The ratio between the cost-increase parameter and the cost-reduction parameter decreased to 15 for taxes in the budget survey, but decreased to 5 for cost of living in the country survey.

The results on the cost attributes show that stated preferences were asymmetric not only for goods but also for money. Subjects perceived reductions in forgone spending on cost of living and taxes much differently than possible new spending on the same items, and this effect was especially apparent for taxes. I offer two possible reasons for these results: 1) Preference for taxes could be more heterogeneous than preferences for cost of living; and 2) Taxes constitute a smaller portion of income, whereas cost of living in this study was indexed to annual household income. These reasons could explain why subjects were not very sensitive to reductions in taxes compared to reductions in cost of living. In other words, insensitivity to tax increases led to a larger difference in the slopes of the utility function for tax increases and tax reductions than the difference for changes in cost of living.

4.4.4 Asymmetric Preferences by Ideology and Experience

Standard deviations provide information on unobserved taste heterogeneity. A high standard deviation signals more-heterogeneous preferences, whereas a small standard deviation signals more-homogeneous preferences. In the asymmetric models, in both datasets, taste heterogeneity was higher for decreases than increases in all attributes. In the categorical model, taste heterogeneity was generally larger for changes at the 50% level than changes at the 25% level for all attributes in the budget survey and also for the access-to-health-care attribute in the country survey. Note that the other attributes in the country survey had parameters that were not significant for improvements in environmental quality and childhood poverty, which meant that the standard deviations associated with these parameters were smaller. Because standard deviations indicated evidence of high taste heterogeneity, I investigated interactions with individual characteristics and attributes and found that ideology had a significant effect on preferences in the budget survey.

All ideological groups displayed asymmetry in their stated preferences (Table 4.8 presents the degree of asymmetry for each ideological group). Contrary to expectations, conservatives were loss averse to changes in public programs although the loss aversion was not as pronounced as the aversion exhibited by the other groups. For liberals, the difference between the marginal utility of increases and decreases was significant for 7 out of 9 comparisons. Moderates had significant differences for 6 comparisons, whereas conservatives had 4 significant differences at the 1% level, 1 at the 5% level and 1 at the 10% level. The preference asymmetry was largest for the cost attribute among all attributes for all ideological groups. The preference asymmetry for the cost attribute was largest for liberals, which is explained by the non-significance for liberals of the parameter estimate associated with a tax reduction. The asymmetry in preferences for the early-childhood program was largest for moderates, whereas the asymmetry in preferences for the food-

safety and disaster-relief programs was largest for conservatives. The preference asymmetry for the job-training program was similar among all three groups.

Table 4.9 presents the Wald test chi-squared statistics for the difference between a 25% and a 50% decrease and between a 25% and a 50% increase. The difference in 25% and 50% decreases was significant for the early-childhood and food-safety programs for all ideological groups; the difference was largest for liberals. The difference in 25% and 50% decreases was significant for the job-training and disaster-relief programs for moderates and liberals, but not for conservatives. The difference in 25% and 50% increases was significant for the early-childhood and food-safety programs only for liberals at the 5% level. The difference in 25% and 50% increases was significant for the job-training and disaster-relief programs for all ideological groups at the 5% level. Overall, liberals significantly discriminated among changes at the 25% and 50% levels for all attributes; moderates did for 6 out of 8 comparisons; and conservatives did for 4 out of 8 at the 5% and 10% levels.

This study also investigated whether experience with answering the trade-off questions helped decrease the asymmetry in preferences for increases and decreases from the status quo. Experience with the trade-off questions was explored by separately analyzing the first and second halves of the questions. Subjects were expected to be more experienced with the survey tasks by the time they began to answer the second half of the questions. Table 4.10 presents the degree of asymmetry for the first and second halves of the questions in the budget and country surveys based on the categorical model. The estimates from the second half of the questions produced smaller asymmetry in preferences for 4 out of 9 variables than the estimates from the first half of the questions in the budget survey, whereas the second half produced smaller asymmetry in preferences for all variables in the country survey. Also in the country survey, experience with tasks seemed to help decrease the asymmetry in preferences but did not eliminate it.

4.4.5 Implications for Welfare Calculations

The welfare estimates varied based on what was assumed for the MUM. This study considered two candidates for MUM: 1) the parameter estimate for increases in cost and 2) the parameter estimate for decreases in cost. The choice of measure depends on the specific question or situation at hand.

Table 4.11 presents the welfare estimates for the asymmetric linear, asymmetric nonlinear and categorical models for the budget survey. The second and fourth columns present welfare losses and gains where the tax-increase parameter was used to calculate the MUM; the third and fifth columns show these values where the tax-reduction parameter was used to calculate the MUM for the asymmetric models. The next two columns present these values for the categorical model.

The welfare values can be used to compare the different model specifications because willingness to pay is free of scale. The values between the asymmetric linear and asymmetric nonlinear models were not significantly different when the tax-increase parameter was used to calculate the MUM, but they were significantly different for all but two parameters at the 1% or 5% level when the tax-reduction parameter was used to calculate the MUM. The values between the asymmetric (linear and nonlinear) and categorical models were not significantly different for all but one parameter when the MUM was based on the tax-increase parameter. When tax reduction was used for the MUM, only 3 parameters were not significantly different at the 10% level between the asymmetric linear and categorical models; none of the parameters were significantly different between the asymmetric nonlinear and categorical models. These findings show that the asymmetric nonlinear model produced results that were much closer to the categorical model because both models incorporated nonlinear tax variables.

The welfare values varied substantially based on whether the tax-increase or tax-decrease parameter was used to calculate the MUM. The values were largest for willingness

to accept tax reductions for program decreases and smallest for willingness to pay higher taxes for program increases. Using a 50% change in the job-training program as an example, subjects were willing to pay $36 per year for a 50% increase and $92 per year to avoid a 50% decrease in the program based on the categorical model. Subjects were willing to accept $1,376 per year for a 50% decrease in the job-training program and $542 per year to forgo a 50% increase in this program.

Table 4.12 presents the welfare calculations for the attributes that were significantly different than zero for the country survey. The values between the asymmetric linear, asymmetric nonlinear and categorical models were not significantly different for all but one parameter when the cost-increase parameter was used to calculate the MUM. The only significant difference was for a 25% decrease in the access to health-care at the 10% level between the asymmetric nonlinear and categorical models. When MUM was calculated based on the cost-reduction parameter, decreases in all three quality-of-life attributes were significantly different between the asymmetric linear and nonlinear models, and between the asymmetric linear and categorical models at the 5% and 10% levels. None of the parameters were significantly different between the asymmetric nonlinear and categorical models. The main differences in welfare values seemed to be associated with how much subjects were willing to accept deterioration in the quality-of-life attributes when nonlinearity of the cost variables were not accounted for.

Willingness to accept reductions in cost of living in exchange for deterioration in the quality-of-life attributes were much higher than willingness to forgo improvements in these attributes. The welfare values for increases in childhood poverty and environmental quality were not calculated because subjects did not value improvements in these attributes. For access to health care, willingness to accept cost reductions for deterioration were much higher than the willingness to pay higher taxes for improvements.

The findings show that asymmetry in preferences for increases and decreases from the status quo led to wide differences across welfare values and that these differences were due to two reasons: 1) asymmetric preferences for the numerators (programs and quality-of-life attributes), and 2) asymmetric preferences for the denominator (marginal utility of income). Within these two forces, the effect of the asymmetric preferences for taxes was more pronounced than the other effects because subjects were not as sensitive to reductions in taxes as they were to increases in taxes. For example, the slope of the utility function for tax reductions was flat for liberals in the budget survey. The use of reductions in the tax attribute led a smaller MUM and very high welfare estimates. Similar findings in both surveys show that the symmetric model was not a good fit when asymmetric preferences existed. Another important finding is that accounting for nonlinearity and especially for nonlinearity in the cost attributes produced estimates that were much more reasonable. The asymmetric models were a good approximation of the categorical models for both surveys.

4.5 Discussion and Conclusion

DCE survey data were used in two different contexts with multiple commodities and two different payment vehicles to investigate asymmetry in stated preferences. This paper investigated five model specifications: 1) A symmetric linear specification of all variables, 2) A symmetric nonlinear specification of all variables, 3) An asymmetric linear specification that allowed separate variables for increases and decreases from the status quo, 4) An asymmetric nonlinear specification that allowed separate variables for increases and decreases from the status quo, and 5) A categorical specification of non-monetary attributes and asymmetric nonlinear specification of cost attributes. The asymmetric and categorical models showed evidence of preference asymmetry even after nonlinearity was accounted for. The slope of the utility function for decreases or deterioration from the status quo was much steeper than the slope of the utility function for increases or improvements for non-market goods. In addition, the utility function for increases in taxes and cost of living (losses)

was much steeper than the one for tax and cost reductions. Experience with the trade-off tasks seemed to reduce (but not eliminate) the asymmetry in preferences for the country survey but did not make a difference in the budget survey.

This study yielded several important findings. First, preferences for increases and decreases in the non-market goods from the status quo were found to be asymmetric in both surveys. Asymmetry was observed in social preferences as well as in preferences related to private decisions. These results suggest that, apart from being attached to a commodity or ownership of a commodity, altruism is likely to lead people to be more averse to losses than to enjoy corresponding gains. Reducing the benefits of other people in need could have triggered emotional reactions for survey subjects, including conservatives, that might not emerge in relation to increasing services for new beneficiaries. It should be noted that, during the pretest interviews, some subjects reported that they would not like to take rights away from people who were currently benefiting from these programs.

Second, the results show that the MRS between increases in two programs differed from the MRS between decreases in two programs. The magnitude of the MRS as well as the ranking of the preference changed for some programs. For example, subjects valued increases in the disaster-relief program more than increases in the food-safety program. However, they acquired larger losses from decreases in the food-safety program than from decreases in the disaster-relief program.

Third, this study showed evidence of asymmetry in preferences for money even after nonlinearity was accounted for. This area has been little studied because previous research has mostly bundled preferences for cost and non-cost goods. By contrast, in this study money was treated just as another commodity. In addition, using DCE surveys allowed me to detangle the preference asymmetry for money from the asymmetry for non-monetary goods. The degree of asymmetry was much more pronounced for taxes than for cost of living. Taxes had the largest asymmetry among attributes in the budget survey, the

asymmetry in preferences for cost of living was not as high as two of the other attributes in the country survey. This discrepancy could be due to the difference in the nature of the two payment vehicles. Subjects were not as sensitive to tax reductions as they were to reductions in cost of living because taxes constituted a small portion of income whereas cost of living was indexed to household income. Moreover, subjects were highly sensitive to increases in taxes and preferences for taxes were correlated with ideology. The presence of an interaction between political ideology and the tax attribute indicated that subjects from all ideological groups did not like tax increases; moderates and conservatives like tax decreases, while liberals were indifferent. Interactions between political ideology and the cost-of-living attribute were not significant. Liberals' insensitivity to tax reductions and oversensitivity to tax increases caused the asymmetry in preferences for this attribute to be larger than the asymmetry for cost of living. The different degrees of asymmetry in preferences for changes in taxes and cost of living showed that money in one mental account was not a perfect substitute for money in another mental account. Future research could investigate the correlation between preference asymmetry and different types of payment vehicles in SP studies or method of payment in general.

Fourth, subjects discriminated different levels of changes in the losses domain better than different levels of changes in the gains domain. Only liberals significantly discriminated between 25% and 50% increases in the budget survey. They were indifferent to tax reductions, however, possibly because the range of the tax reductions was not large enough for this group. This insensitivity in the gains domain does have significant implications for welfare calculations in SP studies, however, because most research has been based on improvements in non-market goods. Insensitivity to different levels of improvements could help explain why some SP studies have not passed the scope test. The cheap-talk method

could be used to ask individuals to pay attention the magnitude of each individual level, as was done successfully in a DCE study by Ozdemir et al. (2009).[32]

Fifth, the random-parameter estimates show that a symmetric specification was not a good representation of preferences when preferences were asymmetric. A symmetric model was also unsuccessful in capturing evidence that preferences for a range of attributes could be insignificant (as they were in this study). In the country data, for example, asymmetric and categorical models both showed that preferences for improvements in childhood poverty and environmental quality were insignificant; such preferences in this range were not be captured by a symmetric model. The log likelihood and AIC statistics also showed that the asymmetric linear and nonlinear models fit the data the best in both surveys, closely followed by the categorical model.

Sixth, the differences in welfare measures were quite large, similar to the ones reported by Lanz et al. (2009), and even larger than those reported in the DCE studies on transportation preferences that investigated preference asymmetry. Accounting for nonlinearity, especially in the cost attributes, reduced the difference in welfare measures. The large asymmetry in preferences for public programs and quality-of-life attributes, compared to preferences for the goods evaluated in other DCE studies, could be due to the non-market nature of the goods evaluated in this study and possibly to the low substitution for these goods in this study. In addition, the preference asymmetry observed both in the numerator (public program or quality-of-life attribute) and denominator, especially for changes in taxes, widened this difference even more. As previously stated, the choice of parameter to be used as the MUM depends on the specific situation. Using the cost-reduction parameter to calculate the MUM, however, can lead to very high welfare values when subjects are not as sensitive to cost reductions as they are to cost increases.

[32] In this study, cheap talk was used to ask subjects to pay attention to how changes in taxes or cost of living affect their income. Ozdemir et al. (2009) asked subjects to pay special attention to each tax or cost level.

4.6 Tables

Table 4.1 Attributes and Levels in the Budget Survey

Attribute	Level
Intensive early-childhood development program	▪ 50% worse:210,000 children can participate ▪ 25% worse:320,000 children can participate ▪ No change:430,000 children can participate ▪ 25% improvement:530,000 children can participate ▪ 50% improvement:640,000 children can participate
Job-training program	▪ 50% worse:3 million people can participate ▪ 25% worse:4.5 million people can participate ▪ No change:6 million people can participate ▪ 25% improvement:7.5 million people can participate ▪ 50% improvement: 9 million people can participate
Food-safety monitoring program	▪ 50% worse:200,000 severe food poisoning cases ▪ 25% worse:165,000 severe food poisoning cases ▪ No change: 130,000 severe food poisoning cases ▪ 25% improvement:100,000 severe food poisoning cases ▪ 50% improvement:65,000 severe food poisoning cases
Disaster-relief program	▪ 50% worse:90,000 households can be assisted ▪ 25% worse:140,000 households can be assisted ▪ No change:180,000 households can be assisted ▪ 25% improvement:230,000 households can be assisted ▪ 50% improvement:270,000 households can be assisted
Effects on household taxes	▪ You pay $2,000 more per year ($170 more per month) in taxes than now ▪ You pay $300 more per year ($25 more per month) in taxes than now ▪ You pay $50 more per year ($4 more per month) in taxes than now ▪ No change: Same amount of tax credits as now ▪ You pay $50 less per year ($4 less per month) in taxes than now ▪ You pay $300 less per year ($25 less per month) in taxes than now ▪ You pay $2,000 less per year ($170 less per month) in taxes than now

Table 4.2 Attributes and Levels in the Country Survey

Attribute	Description	Level
Environmental quality	▪ Percentage of deaths due to air pollution ▪ Percentage of rivers that do not meet water-quality standards for fishing and swimming ▪ Percentage of total land are protected	▪ 50% worse than the US ▪ 25% worse than the US ▪ Same as the US ▪ 25% better than the US ▪ 50% better than the US
Childhood Poverty	▪ Percentage of children live in poverty ▪ The high school graduation rate of teenagers living in poverty ▪ The pregnancy rate among poor teenage girls	▪ 50% worse than the US ▪ 25% worse than the US ▪ Same as the US ▪ 25% better than the US ▪ 50% better than the US
Health care	▪ Percentage of people that have high-quality health insurance with affordable co-payments ▪ The average waiting time to see a specialist ▪ The average number of hospital bed	▪ 50% worse than the US ▪ 25% worse than the US ▪ Same as the US ▪ 25% better than the US ▪ 50% better than the US
Cost of living†	▪ You would have $11,000 less per year to spend ($917 per month) ▪ You would have $2,750 less per year to spend ($229 per month) ▪ You would have $550 less per year to spend ($46 per month) ▪ Same as now ▪ You would have $550 more per year to spend ($46 per month) ▪ You would have $2,750 more per year to spend ($229 per month) ▪ You would have $11,000 more per year to spend ($917 per month)	

† The cost of living levels were indexed to a subject's annual household income. The levels that were shown here are for an annual household income of $55,000.

Table 4.3 Demographic Information

	Budget Survey N=2037	Country Survey N=1010
Gender, %		
Male	52	52
Female	48	48
Age, mean (SD), years	52 (16)	52 (16)
Marital status, %		
Married	60	58
Widowed	5	5
Divorced/separated	13	13
Single	16	17
Living with partner	6	7
Race/ethnicity, %		
White	76	77
Hispanic	8	8
African-American	9	9
2 or more races	3	3
Other	3	3
Highest education, %		
Less than high school graduate	8	8
High school or equivalent (e.g., GED)	27	27
Some college	30	32
Bachelor's or graduate degree (e.g., BA, BS)	35	33
Household Income, mean (SD), $	72K (49K)	71K (48K)
Household size, mean (SD)	2.6 (1.5)	2.6 (1.3)

Table 4.4 Budget Survey Mixed-Logit Random-Parameter Estimates for the Linear and Categorical Models

	Symmetric Linear		Asymmetric Linear		Categorical	
	Coef. (St. Err)	***St. Dev. (St. Err)***	***Coef. (St. Err)***	***St. Dev. (St. Err)***	***Coef. (St. Err)***	***St. Dev. (St. Err)***
Early childhood	0.013*** (0.001)	0.021*** (0.001)				
Decrease			-0.032*** (0.002)	0.044*** (0.003)		
Increase			0.011*** (0.002)	0.027*** (0.003)		
50% decrease					-1.462*** (0.099)	1.575*** (0.108)
25% decrease					-0.848*** (0.076)	0.728*** (0.114)
25% increase					0.305*** (0.075)	0.728*** (0.114)
50% increase					0.530*** (0.094)	1.575*** (0.108)
Food safety	0.006*** (0.001)	0.013*** (0.001)				
Decrease			-0.019*** (0.002)	0.028*** (0.003)		
Increase			0.004*** (0.002)	0.015*** (0.003)		
50% decrease					-0.952*** (0.086)	0.951*** (0.112)
25% decrease					-0.512*** (0.070)	0.238 (0.207)
25% increase					0.043 (0.073)	0.238 (0.207)
50% increase					0.184*** (0.085)	0.951*** (0.112)
Job training	0.009*** (0.001)	0.016*** (0.001)				
Decrease			-0.022*** (0.002)	0.035*** (0.003)		
Increase			0.010*** (0.002)	0.021*** (0.003)		
50% decrease					-0.977*** (0.089)	1.185*** (0.110)
25% decrease					-0.809*** (0.077)	0.720*** (0.099)

	Symmetric Linear		Asymmetric Linear		Categorical	
25% increase					0.200*** (0.077)	0.720*** (0.099)
50% increase					0.385*** (0.090)	1.185*** (0.110)
Disaster relief	0.006*** (0.001)	0.012*** (0.001)				
Decrease			-0.016*** (0.002)	0.027*** (0.003)		
Increase			0.008*** (0.002)	0.017*** (0.003)		
50% decrease					-0.791*** (0.088)	0.997*** (0.109)
25% decrease					-0.447*** (0.071)	0.400*** (0.144)
25% increase					0.220*** (0.075)	0.400*** (0.144)
50% increase					0.270*** (0.087)	0.997*** (0.109)
Tax^{+}	-1.006*** (0.029)	*NA*				
Tax increase			-10.912*** (0.461)	*NA*	-10.420*** (0.494)	*NA*
Tax decrease			0.336*** (0.042)	*NA*	0.796*** (0.270)	*NA*
Tax increase^2					-0.666*** (0.211)	*NA*
Tax decrease^2					-0.238* (0.132)	*NA*
Non-attendant to cost attribute	1.017*** (0.038)	*NA*				
Higher			10.590*** (0.457)	*NA*	10.371*** (0.479)	*NA*
Lower			-0.588*** (0.068)	*NA*	-0.531*** (0.066)	*NA*
Version						
Version 2	-0.058*** (0.022)	0.001 (0.047)	-0.076*** (0.028)	0.023 (0.095)	-0.073*** (0.028)	0.009 (0.081)
Version 3	0.020 (0.023)	0.001 (0.062)	0.031 (0.031)	0.134 (0.105)	0.028 (0.030)	0.043 (0.141)
Version 4	-0.029 (0.023)	0.0002 (0.041)	-0.042 (0.028)	0.019 (0.073)	-0.032 (0.028)	0.0005 (0.064)

	Symmetric Linear	Asymmetric Linear	Categorical
Log Likelihood	*-7576*	*-6185*	*-6314*
AIC	*1.148*	*0.939*	*0.960*

*** indicates significance at the 1% level, ** indicates significance at the 5% level and * indicates significance at the 10% level.

[+] Tax variables are divided by 1000 to allow for faster convergence.

Table 4.5 Budget Survey Mixed-Logit Random-Parameter Estimates of the Nonlinear Models

	Symmetric Nonlinear		Asymmetric Nonlinear	
	Coef. (St. Err)	***St. Dev. (St. Err)***	***Coef. (St. Err)***	***St. Dev. (St. Err)***
Early childhood	0.0157*** (0.0011)	0.0255*** (0.0013)		
Childhood^2	2.19E-04*** (2.20E-05)	2.35E-04*** (5.04E-05)		
Decrease			-0.0410*** (0.0054)	0.0412*** (0.0038)
Increase			0.0130** (0.0055)	0.0279*** (0.0034)
Decrease^2			1.86E-04* (1.01E-04)	3.02E-04* (1.70E-04)
Increase^2			-3.73E-05 (1.08E-04)	9.76E-05 (2.01E-04)
Food safety	0.0071*** (0.0008)	0.0155*** (0.0012)		
Food^2	-2.10E-04*** (2.14E-05)	1.69E-04** (6.88E-05)		
Decrease			-0.0225*** (0.0052)	0.0241*** (0.0053)
Increase			-0.0025 (0.0055)	0.0133* (0.0077)
Decrease^2			4.60E-05 (1.02E-04)	3.29E-04* (1.69E-04)
Increase^2			1.36E-04 (1.08E-04)	1.72E-04 (2.43E-04)
Job training	0.0106*** (0.0009)	0.0193*** (0.0013)		
Job^2	1.83E-04*** (2.31E-05)	3.30E-04*** (4.57E-05)		
Decrease			-0.0448*** (0.0054)	0.0350*** (0.0027)
Increase			0.0078 (0.0056)	0.0156* (0.0087)
Decrease^2			4.59E-04*** (1.02E-04)	8.84E-06 (5.27E-04)
Increase^2			6.56E-06 (1.11E-04)	3.24E-04** (1.59E-04)
Disaster relief	0.0071*** (0.0008)	0.0150*** (0.0012)		

	Symmetric Nonlinear		Asymmetric Nonlinear	
Disaster^2	-1.51E-04*** (2.15E-05)	1.54E-04** (6.89E-05)		
Decrease			-0.0189*** (0.0052)	0.0226*** (0.0040)
Increase			0.0105* (0.0055)	0.0112* (0.0066)
Decrease^2			4.09E-05 (1.02E-04)	3.09E-04*** (1.16E-04)
Increase^2			-7.05E-05 (1.10E-04)	2.67E-04** (1.21E-04)
Taxes	-1.5505 (0.0498)	*NA*		
Taxes^2	-0.4149 (0.0171)	*NA*		
Higher			-10.7237*** (0.4840)	*NA*
Lower			0.8274*** (0.2859)	*NA*
Higher^2			-0.5183** (0.2094)	*NA*
Lower^2			-0.2474* (0.1401)	*NA*
Non-attendant to cost attribute	1.5365 (0.0575)	*NA*		
Higher			11.4628*** (0.5765)	*NA*
Lower			-0.5442*** (0.0698)	*NA*
Version 2	-0.0616** (0.0257)	0.0214 (0.0650)	-0.0768*** (0.0286)	0.0311 (0.1038)
Version 3	0.0373 (0.0274)	0.0822 (0.0814)	0.0346 (0.0310)	0.1269 (0.1017)
Version 4	-0.0246 (0.0261)	0.0118 (0.0579)	-0.0337 (0.0287)	0.0232 (0.0734)
N of subjects	*1896*		*1896*	
Log Likelihood	*-6768*		*-6166*	
AIC	*1.03*		*0.94*	

Table 4.6 Country Survey Main-Effects Mixed-Logit Random-Parameter Estimates of the Linear and Categorical Models

	Symmetric Linear		Asymmetric Linear		Categorical	
	Coef. (St. Err)	*St. Dev. (St. Err)*	*Coef. (St. Err)*	*St. Dev. (St. Err)*	*Coef. (St. Err)*	*St. Dev. (St. Err)*
Poverty	0.012*** (0.001)	0.014*** (0.001)				
Decrease			-0.031*** (0.002)	0.022*** (0.003)		
Increase			-0.001 (0.002)	0.017*** (0.004)		
50% decrease					-1.637*** (0.118)	1.244*** (0.155)
25% decrease					-0.838*** (0.086)	0.427* (0.242)
25% increase					-0.023 (0.098)	0.624*** (0.229)
50% increase					0.037 (0.096)	0.564** (0.251)
Environment	0.010*** (0.001)	0.012*** (0.001)				
Decrease			-0.028*** (0.002)	0.028*** (0.003)		
Increase			0.001 (0.002)	0.016*** (0.003)		
50% decrease					-1.535*** (0.118)	1.042*** (0.182)
25% decrease					-0.678*** (0.090)	0.128 (0.258)
25% increase					0.044 (0.090)	0.840*** (0.177)
50% increase					0.034 (0.094)	0.623*** (0.207)
Health Care	0.017*** (0.001)	0.015*** (0.001)				
Decrease			-0.043*** (0.003)	0.034*** (0.003)		
Increase			0.006*** (0.002)	0.015*** (0.004)		
50% decrease					-2.253*** (0.150)	1.576*** (0.176)
25% decrease					-0.942*** (0.089)	0.008 (0.277)

	Symmetric Linear		Asymmetric Linear		Categorical	
25% increase					0.309*** (0.086)	0.829*** (0.156)
50% increase					0.370*** (0.101)	1.064*** (0.155)
Cost of living[+]	-0.131*** (0.006)	*NA*				
Cost increase			-0.583*** (0.032)	*NA*	-0.607*** (0.036)	*NA*
Cost decrease			0.073*** (0.008)	*NA*	0.114*** (0.014)	*NA*
Cost increase^2					-0.002*** (0.001)	*NA*
Cost decrease^2					-0.002*** (0.0005)	*NA*
Non-attendant to cost attribute	0.127*** (0.006)	NA				
Cost increase			0.585*** (0.032)	*NA*	0.669*** (0.040)	*NA*
Cost decrease			-0.059*** (0.010)	*NA*	-0.150*** (0.011)	*NA*
Log Likelihood	*-3909*		*-3279*		*-3283*	
AIC	*1.125*		*0.946*		*0.952*	

*** indicates significance at the 1% level, ** indicates significance at the 5% level and * indicates significance at the 10% level.

[+] Cost-of-living variables are divided by 1000 to allow for faster convergence.

Table 4.7 Country Survey Mixed-Logit Random-Parameter Estimates of the Nonlinear Models

	Symmetric Nonlinear		Asymmetric Nonlinear	
	Coef. (St. Err)	***St. Dev. (St. Err)***	***Coef. (St. Err)***	***St. Dev. (St. Err)***
Childhood poverty	0.0139*** (0.0010)	0.0142*** (0.0015)		
Poverty^2	-2.80E-04*** (2.74E-05)	2.45E-04*** (6.48E-05)		
Decrease			-0.0369*** (0.0057)	0.0112* (0.0066)
Increase			-0.0059 (0.0068)	0.0178*** (0.0049)
Decrease^2			8.72E-05 (1.10E-04)	4.72E-04*** (8.93E-05)
Increase^2			1.06E-04 (1.31E-04)	1.08E-04 (2.36E-04)
Environmental quality	0.0121*** (0.0010)	0.0136*** (0.0015)		
Environment^2	-2.78E-04*** (2.57E-05)	2.00E-04*** (6.74E-05)		
Decrease			-0.0235*** (0.0064)	0.0284*** (0.0034)
Increase			-0.0073 (0.0062)	0.0139*** (0.0046)
Decrease^2			-1.20E-04 (1.25E-04)	1.01E-04 (2.12E-04)
Increase^2			-1.26E-04 (1.24E-04)	1.21E-04 (1.67E-04)
Health Care	0.0223*** (0.0013)	0.0188*** (0.0015)		
Health^2	-3.71E-04*** (3.03E-05)	3.62E-04*** (5.03E-05)		
Decrease			-0.0345*** (0.0061)	0.0268*** (0.0079)
Increase			-0.0118** (0.0057)	0.0083 (0.0127)
Decrease^2			-2.26E-04* (1.22E-04)	4.70E-04** (1.96E-04)
Increase^2			-1.10E-04 (1.13E-04)	3.55E-04*** (1.28E-04)
Cost of living	-0.1818*** (0.0085)	*NA*		

	Symmetric Nonlinear		**Asymmetric Nonlinear**	
Cost^2	-0.0015*** (0.0002)	*NA*		
Higher			-0.5902*** (0.0344)	*NA*
Lower			0.1156*** (0.0140)	*NA*
Higher^2			-0.0019*** (0.0006)	*NA*
Lower^2			-0.0017*** (0.0005)	*NA*
Non-attendant to cost attribute	0.1751*** (0.0093)	*NA*		
Higher			0.6497*** (0.0377)	*NA*
Lower			-0.0507*** (0.0108)	*NA*
N of subjects	*997*		*997*	
Log Likelihood	*-3552*		*-3257*	
AIC	*1.02*		*0.94*	

Table 4.8 Preference Asymmetry† by Ideology in the Budget Survey

	Moderates	Liberals	Conservatives
Early childhood			
50% change	3.79***	2.28***	1.88*
25% change	3.83***	2.32***	1.68
Food safety			
50% change	4.29***	7.51***	4.29***
25% change	2.14*	5.96***	30.81***
Job training			
50% change	2.52***	3.13***	1.23
25% change	3.57***	3.57***	3.57***
Disaster relief			
50% change	1.41	2.00***	5.01**
25% change	1.69	1.69	1.69
Tax			
Marginal increase versus decrease	63.59***	384.57***	17.34***

† Preference asymmetry was calculated as the ratio of the marginal utility of losses to the marginal utility of corresponding gains.

*** indicates significant difference at the 1% level, ** indicates significant difference at the 5% level and * indicates significant difference at the 10% level. The null hypothesis is $H_0: \beta_{dec} - \beta_{inc} = 0$. The wald statistics is defined as $(\beta_{dec} - \beta_{inc})^2 / (var(\beta_{dec}) + var(\beta_{inc}) - 2cov(\beta_{dec}, \beta_{inc}))$ where the covariance between the coefficients equal to zero in this study. The statistics was compared to a chi-squared distribution.

Table 4.9 Wald Test Statistics on the Attribute-Level Difference by Ideology for the Budget Survey

	Moderates	Liberals	Conservatives
Early childhood			
50% versus 25% reduction	10.5***	21.5***	3.1*
50% versus 25% increase	1.2	4.8**	1.2
Food safety			
50% versus 25% reduction	8.9***	10.6***	8.9***
50% versus 25% increase	0.0	4.4**	1.9
Job training			
50% versus 25% reduction	4.4**	11.5***	2.3
50% versus 25% increase	3.3*	3.3*	3.3*
Disaster relief			
50% versus 25% reduction	6.0**	16.8***	0.2
50% versus 25% increase	5.6**	5.6**	4.4**

† The null hypothesis is $H_0: \beta_{50\%} - \beta_{25\%} = 0$. The wald statistics is defined as $(\beta_{50\%} - \beta_{25\%})^2 / (var(\beta_{50\%}) + var(\beta_{25\%}) - 2cov(\beta_{50\%}, \beta_{25\%}))$ where the covariance between the coefficients equal to zero in this study. The statistics was compared to a chi-squared distribution.

*** indicates significant difference at the 1% level, ** indicates significant difference at the 5% level and * indicates significant difference at the 10% level.

Table 4.10 Preference Asymmetry† by Task Experience

	Budget Survey		Country Survey	
	First half	**Second half**	**First half**	**Second half**
Early childhood / Childhood poverty				
50% change	2.13***	2.67***	36.63***	6.15***
25% change	3.18***	1.78***	13.64***	4.53***
Food safety / Environmental quality				
50% change	8.85***	3.88***	20.89***	11.77***
25% change	5.58***	26.46***	23.73***	2.12***
Job training / Health care				
50% change	1.58***	3.45***	12.97***	3.08***
25% change	2.58***	4.56***	4.92***	1.58***
Disaster relief				
50% change	3.68***	1.22***		
25% change	3.18***	0.74***		
Tax / Cost of living				
Marginal increase versus decrease	31.36***	35.94***	9.43***	7.90***

† Preference asymmetry was calculated as the ratio of the marginal utility of losses to the marginal utility of corresponding gains.

*** indicates significant difference at the 1% level, ** indicates significant difference at the 5% level and * indicates significant difference at the 10% level. The null hypothesis is $H_0: \beta_{dec} - \beta_{inc} = 0$. The wald statistics is defined as $(\beta_{dec} - \beta_{inc})^2 / (var(\beta_{dec}) + var(\beta_{inc}) - 2cov(\beta_{dec}, \beta_{inc}))$ where the covariance between the coefficients equal to zero in this study. The statistics was compared to a chi-squared distribution.

Table 4.11 Budget Survey Mean Annual Welfare Values per Household ($)

	Asymmetric Linear		Asymmetric Nonlinear		Categorical	
Marginal utility of income†	***Cost increase***	***Cost decrease***	***Cost increase***	***Cost decrease***	***Cost increase***	***Cost decrease***
Early childhood						
50% decrease	148	4,796	146	2,150	138	2,058
25% decrease	74	2,398	73	1,075	80	1,194
25% increase	25	828	25	379	29	429
50% increase	51	1,655	51	758	50	746
Food safety						
50% decrease	87	2,821	93	1,369	90	1,341
25% decrease	43	1,410	46	685	48	721
25% increase	10	326	10	146	4	61
50% increase	20	651	20	292	17	259
Job training						
50% decrease	101	3,287	100	1,481	92	1,376
25% decrease	51	1,643	50	740	76	1,140
25% increase	22	722	19	275	19	281
50% increase	44	1,444	37	550	36	542
Disaster relief						
50% decrease	73	2,366	77	1,142	74	1,113
25% decrease	36	1,183	39	571	42	630
25% increase	17	561	16	235	21	310
50% increase	35	1,121	32	469	25	380

† For each model, the first column presents the welfare values when the marginal utility of a cost-increase was used as the marginal utility of income, and the second column presents the welfare values when the marginal utility of a cost-decrease was used as the marginal utility of income.

Table 4.12 Country Survey Mean Annual Welfare Values per Household ($)

	Asymmetric Linear		Asymmetric Nonlinear		Categorical	
Marginal utility of income	***Cost increase***	***Cost decrease***	***Cost increase***	***Cost decrease***	***Cost increase***	***Cost decrease***
Childhood Poverty						
50% decrease	2,697	21,625	2,739	14,689	2,678	14,936
25% decrease	1,349	10,813	1,369	7,344	1,371	7,646
25% increase						
50% increase						
Environment Quality						
50% decrease	2,411	19,334	2,475	13,273	2,512	14,007
25% decrease	1,206	9,667	1,237	6,636	1,109	6,187
25% increase						
50% increase						
Access to Health Care						
50% decrease	3,673	29,451	3,853	20,665	3,686	20,555
25% decrease	1,836	14,725	1,926	10,332	1,541	8,591
25% increase	249	1,999	265	1,423	505	2,816
50% increase	499	3,998	531	2,847	606	3,379

† For each model, the first column presents the welfare values when the marginal utility of a cost-increase was used as the marginal utility of income, and the second column presents the welfare values when the marginal utility of a cost-decrease was used as the marginal utility of income.

4.7 Figures

If these were the only two alternatives, which one would you want your Congressman to vote for?

	Alternative A	Alternative B
Disaster-relief program	**50% improvement:** 270,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**50% worse:** 210,000 children can participate	**25% worse:** 320,000 children can participate
Food-safety monitoring program	**25% worse:** 165,000 severe food poisoning cases	**25% improvement:** 100,000 severe food poisoning cases
Effects on household taxes	You pay $2,000 **less** per year ($170 less per month) in taxes than now	You pay $50 **more** per year ($4 more per month) in taxes than now
Which alternative would you like your Congressman to vote for?	○	○

Figure 4.1 A Sample Budget Trade-off Question

If these were the only two alternatives, which country would you choose to live in?

Country Feature	Current US Levels	Country A	Country B
Environmental Quality	• 3% of all deaths due to air pollution • 40% of rivers fail standards • 8% of total land is protected	25% **better** than the US	25% **worse** than the US
Childhood Poverty	• 20% of children live in poverty • 65% graduate high school • 13% teenage pregnancy rate	50% **worse** than the US	50% **better** than the US
Health Care	• 60% have high-quality health insurance • 20 days of waiting time to see a specialist • 1 hospital bed per 350 people	Same as the US	Same as the US
Cost of Living		You would have $5,000 **more** per year to spend ($420 **more** per month)	You would have $5,000 **less** per year to spend ($420 **less** per month)
Which country would you choose?		○	○

Figure 4.2 A Sample Country Trade-off Question

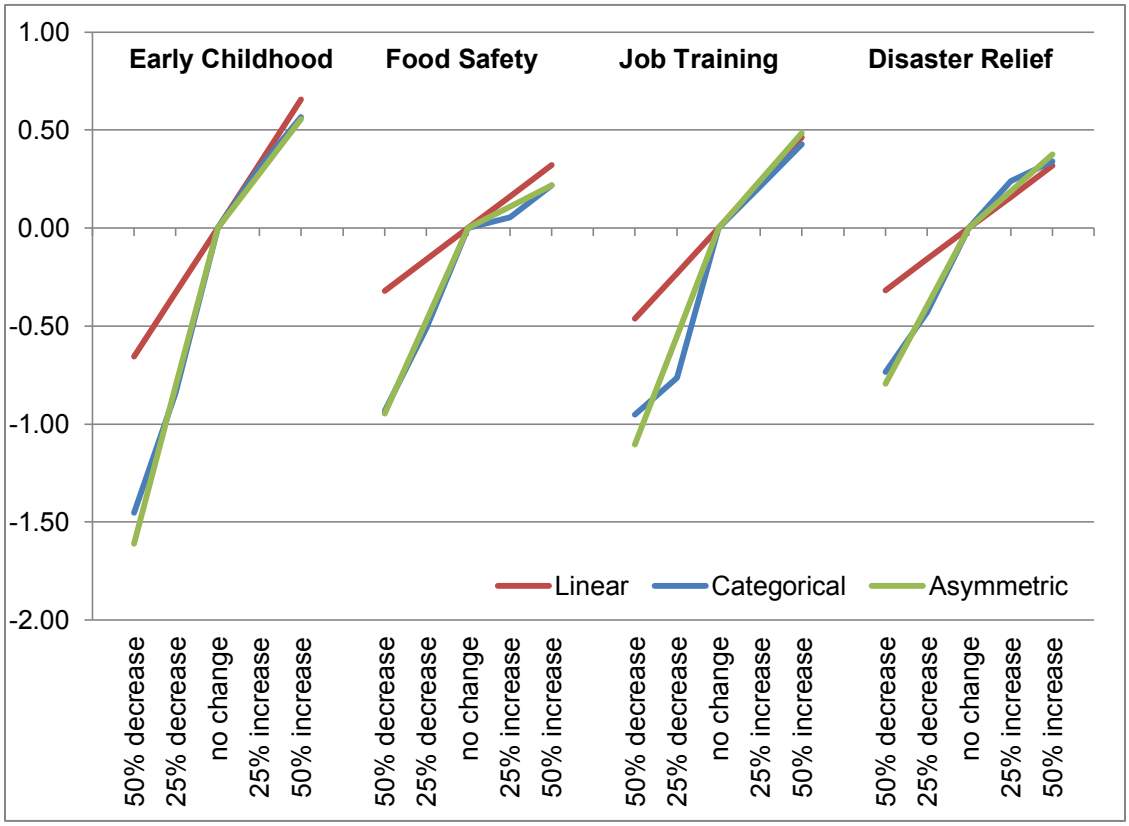


Figure 4.3 Preference Asymmetry for Public Programs in the Budget Survey

CHAPTER 5

CONCLUSION

5.1 WTP Values from the CV vs Budget Surveys

Both the CV and the budget surveys measured the value of a high-quality early-childhood program, but the context and framing were different between the two survey instruments. First, only the federal program in the CV survey was comparable to the budget survey which also targeted a nationwide intervention. Second, the two survey instruments targeted different numbers of children for enrolling in early-childhood programs. The federal program in the CV survey targeted either 18% or 90% of children in poverty under the age of 6, depending on the survey version, which corresponds to 1,077,000 and 5,385,000 children in poverty. This is much larger than the number of children targeted in the budget survey, which ranged from 210,000 to 640,000. This should lead the WTP estimates from this survey version to be higher than the budget survey.

Second, the two surveys provided different amounts of information to the survey subjects. The CV survey provided much more information on problems associated with childhood poverty, examples from successful early-childhood programs and benefits to taxpayers from reducing childhood poverty in the US than the budget survey did. Subjects in the CV survey also watched a short video of Heckman, which was not shown to the budget survey respondents. This might also lead to higher WTP estimates from the CV survey than those from the budget survey. I think this is a more influential factor than the number of children because preferences were not sensitive to the number of children when the results from the different versions of the CV survey instrument were compared.

Based on the expectations above, WTP for a federal program in the CV survey should be higher than the WTP from the budget survey. The findings confirm these expectations. The population-weighted mean annual WTP for enrolling 90% of poor children in the US was $436 per household based on the non-parametric estimates and $188 per household based on the parametric estimates (Chapter 2). On the other hand, the population-weighted mean annual WTP for enrolling 640,000 children was between $34-52 in the budget survey. The budget survey also included a policy trade-off question where one of the budget alternatives offered a 50% increase in the early-childhood program with tax increases and everything else was held constant. The nonparametric analysis of this question produced a mean annual WTP of $205 per household. This WTP value was much higher than the values from the parametric analysis of the rest of the trade-off questions, but was still lower than the nonparametric analysis of the CV data.

The question is then which estimates are more reliable although the two survey instruments were not directly comparable. I think that the estimates from the budget survey are more reliable than the estimates from the CV survey. First, the CV survey did not pass the scope test, and the WTP values were not sensitive to the number of children enrolled in the early-childhood program in the CV survey while this was not the case in the budget survey. Second, the amount of information given in the budget survey is much closer to the knowledge of an average person than the amount of information given in the CV survey. Thus, a subject from the budget survey represents an average person better than a subject from the CV survey[33].

Third, the budget-allocation framework helped to mitigate possible protest responses (due to tax aversion) by offering smaller government: only 1% of the subjects dominated on the tax attribute by always picking either a lower tax increase or a higher tax reduction. This

[33] However, if there was an actual referendum, there would be a public debate on the early-childhood program and people would receive more information than they have now.

implies that the CV survey should offer more conservative estimates than the budget survey. However, there are other factors that played a role in subjects' stated preferences, such as being insensitive or non-attendant to the tax attribute. The DCE surveys allow researchers to investigate whether subjects were insensitive to the tax attribute. In the budget survey 33% of the subjects were likely to be insensitive to the tax attribute. Also, the budget-allocation framework provided a better understanding of the opportunity costs of public dollars. These factors affect WTP in the opposite direction of the effect of dominance.

The methods used to investigate dominance on or insensitiveness to the cost attribute in DCE surveys cannot be used for the CV survey because tax is the only attribute in the CV survey. However, one of the ways of comparing the two surveys on this topic is to investigate the percent of subjects who said "no" to the highest tax level. In the budget survey, 89% of subjects said "no" to paying the highest tax level of $2,000 in the policy question and this number increased to 94% when subjects who were insensitive to the cost attribute were excluded. The percent of "no" responses to the highest tax level was 83%, 85%, 89% and 92% in the CV survey based on the survey version. These findings show that the percent of subjects who said "no" were not much different between the two surveys. However, the availability of methods that are used in the budget survey to examine dominance and attribute non-attendance makes the budget survey instrument more attractive than the CV survey.

Overall, the attractiveness of the budget survey were 1) it provided the amount of information that is much closer to the knowledge of an average person than the CV survey did, 2) it presented the opportunity cost of public funding better than the CV survey, 3) it presented the problem as a public budgeting problem which helped to reduce protest voting against tax increases, and 4) it investigated preferences for program reductions. The budget survey revealed that conservatives and others did not want to cut the early-childhood program. A more traditional method of investigating only program improvements or

increases would not have revealed this information, which would have implied that conservatives did care about children in poverty. Because of the reasons listed above, the results from the budget survey are recommended for use in policy analysis of the early-childhood programs.

5.2 Discussion

The findings from this study indicate that the population-weighted mean WTP for a 50% increase in an intensive high-quality early-childhood program was $34 to $52 per year per household (chapter 2). This is lower than the annual per household cost of this kind of a program (chapter 2). At first glance, the findings from this study appear to contradict findings from previous studies that show that the benefits for alleviating the causes of crime, unemployment, ill health, and other consequences of social inequities more than offset the costs of small-scale, high-quality early-childhood interventions. However, studies that show high rates of return on investing in children in poverty quantify a different kind of value for reducing childhood poverty than this study obtains. This dissertation research shows how much the public is willing to allocate public dollars to early-childhood development by surveying a representative sample of US respondents. A plausible interpretation of low WTP is that most individuals do not think of the value of poverty reduction as a return on investment. Rather, they see poverty reduction as a social issue competing with other uses of public funds. Childhood poverty was not perceived as a high-priority social problem in the current economic climate when the unemployment rate is high and the national debt is growing.

One of the important findings of this study is that preferences for supporting early-childhood development programs were correlated with experience and ideological perspective (chapters 2). Subjects with children or family member's children who had participated in one of the current government programs on early-childhood had the highest willingness to pay for the early-childhood program. This finding indicates that being familiar

with the program or being a direct beneficiary of the program led to a higher WTP. It was not perhaps so surprising to find that liberals and some moderates were supportive of increasing the early-childhood program, while conservatives were not. The interesting part of the findings was that all groups, including conservatives and subjects who indicated low chances of success for the early-childhood program in helping children break out of poverty, were against decreasing the early-childhood program. This could indicate that altruism and the short-term benefits to children when they participate to these programs played a role in being against to reducing the program (chapters 2 and 4).

Related to the topic above, subjects were willing to pay to avoid higher childhood poverty rates even if they were not willing to pay for reducing the poverty. Subjects from all ideological groups were willing to pay to avoid reductions in the early-childhood program in the budget survey. The population-weighted mean WTP to avoid a 50% reduction in the early-childhood program was $147 to $153 per year per household in the budget survey (chapter 2). The population-weighted mean WTP to avoid living in a society with higher childhood poverty rates than the US was $2,711 per year per household in the country survey. These results indicate that subjects do not want to tolerate higher childhood poverty rates.

Another important finding was that subjects cared strongly about how childhood poverty is reduced (chapter 2). One of the main differences between the results of this study and the benefits calculated in previous benefit-cost analysis studies is that this study assessed the perceived value individuals placed on reducing childhood poverty by incorporating preferences for processes as well as outcomes. Involvement of government in early-childhood development was a strongly negative factor for conservatives, who had several objections to government programs in early-childhood development (chapter 2). These concerns clearly affected the individuals' perceived value of poverty reduction. Another indication of the effect of process was that subjects' did not value the realized

benefits of living in a society with lower childhood-poverty rates than the US in the country survey, but liberals and some moderates valued being part of the process to reduce childhood poverty in the CV and budget surveys (chapter 2).

Using survey methods and a representative sample of US adult population enabled this study to investigate taste heterogeneity in greater detail than is usually possible. The findings reported in this study all show evidence on how heterogeneous the preferences were for reducing childhood poverty. In previous benefit-cost analysis studies, the benefits and costs were calculated for participants and non-participants only. This study investigated preferences based on individual-specific characteristics, such as socio-economic characteristics and opinions on and attitudes towards the early-childhood program and found that ideology, experience and perceived effectiveness (i.e., how effective respondents thought the early-childhood programs would be) had strong associations with supporting the early-childhood program.

A budget-allocation framework in a DCE survey was used to show how to calculate welfare changes based on changes in disposable income or reallocation of funding from one government program to another (chapter 3). Preferences for budget allocation were correlated with ideological perspective, and allocating public dollars from one program to another without changing taxes led to changes in economic welfare. Decreasing programs led to a welfare loss for all groups while increasing programs in general led to perceived welfare gains for liberals and sometimes for moderates. Conservatives in our sample preferred the status quo, and perceived losses from decreasing or increasing programs for three out of four programs. The only program for which they valued expansions was the job-training program. While these findings are consistent with expectations, this is the first study to quantify the effect of ideology on the value of changes, especially reductions in experimentally-controlled budget alternatives.

Among the four public programs evaluated in this study, liberals valued increases in the early-childhood program the most, while moderates and conservatives valued increases in the job-training program the most (chapter 3). However, reductions in the early-childhood program had the highest perceived losses for all ideological groups. Subjects in general were much more averse to program reductions than they favored program increases, and the slope of the utility function for program reductions was much steeper than the slope of the utility function for program increases indicating asymmetry in preferences for all programs (chapter 4). The degree of preference asymmetry was the highest for the food-safety program among the four programs.

This study also showed that the value of one program was not independent of the other programs it was compared to (chapter 3). The study findings imply that individuals care about the source of the funding for a government program. This finding has implications for budget reallocation studies that did not clearly define the opportunity cost. A vague definition of the opportunity costs of allocating budget among publicly-provided goods could produce invalid estimates because it is not clear what subjects assumed about the change in the existing allocation of goods and services.

What does this mean for using WTP estimates from the budget survey in benefit-cost analysis? The answer to this question, unfortunately, is not straightforward. It is not surprising that people care about the opportunity cost of public dollars and the funding mechanism. Individuals care about whether the funding is coming from increased or new taxes, or are reallocated from other public programs. The findings from this study reflect the complications of real-life decision making. These complications stem from decision making at a time when the perceived opportunity cost of public dollars is very high and when there are strong pressures to reduce the public deficit. I think that the benefit-cost analysis studies should incorporate and utilize findings from these types of studies where the perceived economic value of a publicly-provided good, such as an early-childhood program, was

estimated based on people's opinions. These values are a better representation of public preferences in real-life decision making. The WTP values from this study can be used to understand whether a public referendum on funding a public program in a realistic policy context would pass or not (as is illustrated in chapter 2).

The budget-allocation framework provides an alternative way of assessing preferences for publicly provided goods and services. Tax-reductions together with tax-increases can be used as an alternative payment vehicle in SP studies. However, the range of the tax reduction should be tested carefully to represent different groups. A budget-allocation scenario which offers increases and decreases in programs (or services) and taxes can in general be used to reduce possible aversion to tax increases and big government. This type of scenario allows researchers to assess preferences for cutting programs and is much more relevant in the current economic situation.

This study shows asymmetry in preferences for both money and the non-market goods included in this study (chapter 4). All ideological groups, including conservatives, exhibited much larger losses for reductions in public programs than they valued program increases. This could indicate that altruism affects subjects' preferences asymmetrically. The idea of cutting programs could induce different, elevated emotional reactions than expanding programs. The degree of asymmetry, however, was higher in preferences for quality-of-life attributes that in social preferences. This study suggests that subjects, ultimately, were more loss averse for services that would affect their own lives more directly than for services that would mostly affect others' lives.

This study also indicates large asymmetry in preferences for income taxes and cost of living expenses. The degree of asymmetry was much more pronounced for taxes than for cost of living. This could be due to the fact that taxes constituted a smaller share of the budget and subjects, especially liberals, did not care about tax reductions compared to strong dislike for tax increases exhibited by all ideological groups. On the other hand,

because cost of living constituted a larger share of subjects' income, they valued decreases in this expense. Cost of living could be a better indicator for calculating the marginal utility of income than taxes if cost of living is relevant to the public-policy scenario.

A symmetric linear specification was a poor representation of preferences when preferences were asymmetric (chapter 4). Based on the symmetric model, subjects on average valued increasing government programs and perceived losses in decreasing these programs. However, categorical and asymmetric models indicated that subjects did not necessarily value increases in all four government programs, and they did not always significantly differentiate among levels for program increases. A symmetric model was also unsuccessful in capturing that preferences were not significantly different than zero in certain ranges of an attribute. In the country data, a model that allowed asymmetric preferences and a model with categorical variables indicated that preferences for improvements in childhood poverty and environmental quality were not significant, in contrast with the results from the symmetric model. The log-likelihood and AIC statistics also indicated that the asymmetric models fit the data best in both surveys, closely followed by the categorical model.

As in previous studies, these data also indicated large disparities between WTP and WTA (chapter 4). The question, then, is which welfare measure should be used? For this particular study, I recommend using the parameter associated with cost increases to calculate the marginal utility of income. This study is interested in the general public's perceived value of an early-childhood development program. A direct welfare measure for this would be to calculate subjects' WTP using higher taxes as the payment vehicle for increasing the early-childhood program. For program reductions it does not necessarily make sense to use a WTA measure because the general public has no property rights for early-childhood programs. Thus, the public's perceived value should be measured as WTP to avoid program reductions in the case of decreases from the status quo. I also would like

to note that using asymmetric nonlinear model, especially a nonlinear representation of the cost attribute narrowed the disparity between WTP and WTA, and produced much more reasonable values for losses (chapter 4).

APPENDIX A

CONTINGENT-VALUATION SURVEY INSTRUMENT

SOCIAL SURVEY

Thank you for agreeing to participate in this survey. We are going to ask you questions about your thoughts on some social issues. There are no right or wrong answers to the questions in this survey. We really want to know what you think.

On the next screen, you will be shown a short video clip to determine if you are able to see videos on your device. Please be patient as it may take a few moments for the video to load, depending on your connection speed. Please be sure to turn up the volume on your device.

[DISPLAY]
[SHOW TEST VIDEO OF 10 SECONDS]

[RADIO]
[PROMPT IF SKIP]

V1. Did you see the video on the previous screen?

☐ Yes

☐ No

[if "no" to V1]

V2. Would you like to try again whether you can see the video?

☐ Yes

☐ No

[if "yes", show the video again and ask V1 again. If "no" then terminate]

[If ineligible to participate]

Thank you for your consideration, but you are not eligible to participate in this survey.

[DISPLAY]

[Consent Screen 1]

Study Purpose

You are one of about 1500 people in the United States who are being asked to take this survey to help us understand opinions on social issues.

Study Duration

This survey has two parts. It will take about 10-15 minutes to complete the first part. You cannot start the second part of the survey until at least 24 hours after you have completed the first part. You must finish the second part within 10 days of starting the first part. The survey will take about 30 minutes to complete in total.

Study Details

The University of North Carolina at Chapel Hill (UNC) is doing this study for a foundation. UNC has contracted with Knowledge Networks (KN) to collect data. If you have questions about this survey, please contact Panel Relations at 800-782-6899 and someone will direct your questions to the appropriate person at UNC.

[CONSENT SCREEN 2]

Possible Risks or Discomforts

If any questions make you uncomfortable, you do not need to answer them.

KN will protect your responses under its Privacy Policy. UNC will receive your survey responses without any personal identifiers. UNC also will make every effort to protect your responses. There is a potential risk of disclosure of the survey data, but the data could not be directly tied to you.

Benefits

There are no direct benefits to you from participating in this study. However, your responses are very important to us.

[CONSENT SCREEN 3]

Confidentiality

Many steps have been taken to protect your information. KN will report only your responses to UNC, not your name. If the results of this study are presented at scientific meetings or published in scientific journals, no information will be included that could identify you or your responses personally.

The Institutional Review Board (IRB) at UNC has reviewed this research. An IRB is a group of people who make sure that the rights of participants in research are protected. The IRB may check records of your activity in this research to see if proper procedures were followed.

Your Rights

Your decision to take part in this research study is completely voluntary. You can refuse to answer any question or stop at any point after you begin the survey and still receive your KN points for participating in the survey.

[PROMPT IF SKIP]
[CONSENT SCREEN 4]

If you have read the previous screens and agree to participate, please click the Yes button, if not, click the No button.

☐ Yes, I agree to participate.

☐ No, I do not agree to participate.

[DISPLAY]
[IF CONSENT= NO OR SKIP]

Thank you for your consideration. You have exited the survey.

CREATE DOV FED:
1=FEDERAL
2=STATE
RANDOMLY ASSIGN RESPONDENTS TO EITHER GROUP

[ASK THESE QUESTIONS TO RESPONDENTS WITH < 25,000 HOUSEHOLD INCOME AND HOUSEHOLD SIZE UP TO 4; OR FOR RESPONDENTS WITH <50,000 HOUSEHOLD INCOME AND HOUSEHOLD SIZE MORE THAN 4]

We will now ask you some questions on your household taxes.

S3. Did your household receive earned income tax credits when you filed your taxes last year?

- ☐ Yes
- ☐ No
- ☐ Not sure/Don't know

[IF S3=3 OR REFUSED]

S4. Did someone other than a household member (including professional assistance) help your household to fill in your federal income taxes last year?

- ☐ Yes
- ☐ No

[IF (S3=1 OR S4=1) AND FED=1, GROUP=1 =CREDIT RECEIVER.
ELSE GROUP=2 = TAX PAYER.]

[PROMPT IF SKIP]

1.

A. Here is a list of problems you may be concerned about. What do you think is the most important and least important concern for the country among the items listed below?

[SHOW ITEMS NOT SELECTED IN Q1A]

B. Of the remaining concerns, what do you think is the most important and least important concern for the country among the items listed below?

MOST Important (Please check ONE)		**LEAST Important (Please check ONE)**
	Crime	
	Education	
	Energy	
	Environment	
	Federal budget deficit	
	Health care	
	Homeland Security	
	Housing	
	Illegal Immigration	
	Poverty	
	Unemployment	

Now we want to tell you about Prof. James Heckman's research on poverty (having an annual income of less than $27,000 for a household with 5 members) in America. Prof. James Heckman is an economist at the University of Chicago. In 2000 he won the Nobel Prize in Economics.

Prof. Heckman has studied how government social programs --such as job training and counseling -- affect the incomes of poor people. He found that many of these government programs actually did not help poor people much in the long term. Years later, people who participated in job training programs were not making more income than poor people who had not participated. People who received counseling were just as likely to be in prison as people who had not received counseling.

But Prof. Heckman discovered that one kind of assistance turned out to be very effective in breaking the cycle of poverty. His research showed that the best way to help children living in poverty was to reach them when they are very young– ages 0-5 year old- to make sure they learned both intellectual and social skills very early in life. Prof. Heckman found that ***intensive*** early childhood development programs helped poor children move out of poverty by the time they become adults.

2. What do you think the rate of childhood poverty is in your area, compared to the national average?

   - ☐ Much higher
   - ☐ Somewhat higher
   - ☐ About the same
   - ☐ Somewhat lower
   - ☐ Much lower

Prof Heckman's research showed that low levels of intellectual and social skills in poor children have led to major economic and social problems in America, such as crime, teen pregnancy, drug use, and high school dropout rates. Intellectual and social skills are largely developed in early childhood between the ages of 0 to 5. Poverty reduces the chances of many children in the United States developing these critical skills.

Based on his research, Prof. Heckman believes that we should completely rethink the way we are tackling the problem of poverty in the United States. He and other researchers are convinced that we need to start helping children living in poverty right from birth. If we wait until kids are older than 5 years, poverty reduction programs do not work. It is just very hard for older children and teenagers to ever catch up.

3. What has been your own experience with poverty? (Please check all that apply)

- ☐ I am not poor now and have never lived in poverty.
- ☐ I grew up in a family in poverty, and my family is still poor.
- ☐ I have been poor in the past, but am not poor now.
- ☐ I was not poor in the past, but am poor now.
- ☐ Members of my family have experienced poverty, but I have not.
- ☐ Families in my neighborhood have experienced poverty.
- ☐ I am not poor now, but I feel like I could easily fall into poverty. I live paycheck to paycheck.
- ☐ None of the above. **[If chose this option, cannot choose the above options.]**

Two examples of ***intensive*** early childhood development programs like the ones Prof. Heckman studied are the Perry Preschool Program in Michigan and the Abecedarian Program in North Carolina.

Researchers have followed children in the Perry Preschool and Abecedarian Programs through their adult lives. They found that these ***intensive*** early childhood development programs really do work. For example, a child from a poor family who participates in one of these intensive early childhood development programs is

- more likely to go to a 4-year college,
- more likely to have a skilled job,
- less likely to become a teen parent, and
- less likely to be arrested for crime.

Prof. Heckman found that spending $100 on ***intensive*** early childhood programs results in about $10 in benefits every year for many years.

[OPTIONS 4 AND 5 SHOULD BE MUTUALLY EXCLUSIVE]

4. What is your opinion about the current government early-childhood programs such as Head Start? (Please check all that apply)

   - ☐ I do NOT know much about these programs
   - ☐ I do NOT think Head Start is successful
   - ☐ I think programs like Head Start can help children stay out of trouble
   - ☐ I think programs like Head Start can help children break out of poverty
   - ☐ I do NOT think programs like Head Start can help children break out of poverty
   - ☐ I think the government is wasting money on early childhood interventions
   - ☐ I think it is NOT the government's job to fund these programs
   - ☐ I think the extended family should help with early child care

These ***intensive*** early childhood development programs are different from the current government programs like Head Start. They provide much higher-quality education and other services, and they are more expensive. ***Intensive*** early childhood development programs like Prof. Heckman studied would provide babies and young children in poor families services such as:

- Educational activities that involve thinking, social and emotional skills,
- Activities that focus on language development,
- Adult-child interactions, including talking, showing toys and pictures, and reading to babies,
- On-site health care and nutrition (such as school lunches).

5. Have one of your children or a family member's child participated any current government early-childhood program like Head Start?

   ☐ Yes

   ☐ No

   ☐ Don't know/Not sure

We would now like to show you a 1-minute video of Prof. Heckman explaining his findings. Please click **here** to access the video.

V3. Did you **watch** the video on the previous screen?

- ☐ Yes
- ☐ No
- ☐ I tried, but couldn't see it

[CONTINUE EVEN IF VIDEO FAILED]

[IF VIDEO=YES]

6. Why does Prof. Heckman think America should invest in early childhood development?

- ☐ America has a large number of poor children
- ☐ Children in early ages are neglected in America
- ☐ Early childhood programs are good investments
- ☐ Don't know/ Not sure

7. How likely do you think it is that ***intensive*** early childhood development programs like the ones Prof. Heckman studied really can help children break out of poverty if they are funded by each of the sources listed below?

	Very Unlikely	**Unlikely**	**Neither Likely nor Unlikely**	**Likely**	**Very Likely**
A. The federal government	O	O	O	O	O
B. The state government	O	O	O	O	O
C. Private charities or local government	O	O	O	O	O

CREATE DOV SCOPE:
1=SCOPE1
2=SCOPE2
RANDOMLY ASSIGN RESPONDENTS TO EITHER GROUP

CREATE DOV BID:
1=$10
2=$25
3=$50
4=$100
5=$500]
6=$1000
7=$2000

RANDOMLY ASSIGN RESPONDENTS TO EACH GROUP

[FEDERAL VERSION]

About 6 million out of 25 million (about a quarter of) children under the age of 6 live in poverty in the USA. About 18% of these children participate in current government programs like Head Start.

[Federal - Scope 1]

Suppose that the United States Congress was considering changing the current early childhood programs into high-quality ***intensive*** early-childhood development programs such as Prof. Heckman studied. This nationwide plan would move all the children now in programs like Head Start (18% of children living in poverty) into improved, ***intensive*** early-childhood development programs. No additional children would be put into the new programs.

Local, private groups would have a major role in the implementation of the new programs.

If the money was approved for this change, children who are now in programs like Head Start (about 1 million children) would benefit from the higher-quality programs.

[Federal - Scope 2]

Suppose that the United States Congress was considering changing the current early childhood programs into high-quality ***intensive*** early-childhood development programs such as Prof. Heckman studied and expanding the number of children enrolled. This nationwide plan would enroll almost all (90%) children living in poverty under the age of 6, including all the children now in programs like Head Start, in these improved new ***intensive*** early-childhood development programs.

Local, private groups would have a major role in the implementation of the new programs.

If the money was approved for this change, 90% of all children living in poverty under the age of 6 throughout the United States (about 5.4 million children) would benefit from the higher-quality programs.

[FEDERAL]

Suppose that if the majority of the members of Congress voted YES, the legislation would pass; and your household and households like yours would have to pay higher federal taxes to pay for this intensive early childhood development program.

[Federal – Scope 1]

If the Congress voted NO, your taxes and the taxes of other households like yours would stay the same, and no children would be moved from current programs into new ***intensive*** early childhood development programs.

[Federal – Scope 2]

If the Congress voted NO, your taxes and the taxes of other households like yours would stay the same, and the new ***intensive*** early childhood development program such as Prof. Heckman studied would not be funded.

[Federal – All]

Now suppose that your representative in Congress sent you a letter asking you how you want him or her to vote on this matter. We want to know whether you would want your representative to vote for or against funding the new intensive early childhood development program if voting for the program would mean that your federal taxes and the federal taxes of households like yours would increase.,

[STATE VERSION]

About 6 million out of 25 million (about a quarter of) children under the age of 6 live in poverty in the USA. About 18% of these children participate in current government programs like Head Start.

[State - Scope 1]

Suppose that the [STATE] state legislature was considering changing the current early-childhood programs into high-quality ***intensive*** early-childhood development programs such as Prof. Heckman studied. This statewide plan would move all the children now in programs like Head Start in [STATE], into improved, ***intensive*** early-childhood development programs. No additional children would be put into the new programs.

Local, private groups would have a major role in the implementation of the new programs.

If the money was approved for this change, children who are now in programs like Head Start in [STATE] would benefit from the higher-quality programs.

[State - Scope 2]

Suppose that the [STATE] state legislature was considering changing the current early childhood programs into high-quality ***intensive*** early-childhood development programs such as Prof. Heckman studied and expanding the number of children enrolled. This statewide plan would enroll almost all (90%) children living in poverty under the age of 6, including the children now in programs like Head Start [STATE], in these improved new ***intensive*** early childhood development programs.

Local, private groups would have a major role in the implementation of the new programs.

If the money was approved for this change, 90% of all children living in poverty under the age of 6 in [STATE] would benefit from the higher-quality programs.

[STATE]

Suppose that if the majority of the state representatives voted YES, the legislation would pass; and your household and other households like yours would have to pay higher state taxes to pay for this program.

[State - Scope 1]

If the state legislature voted NO, your taxes and the taxes of other households like yours would stay the same, and no children would be moved from current programs into new ***intensive*** early childhood development programs.

[State - Scope 2]

If the state legislature voted NO, your taxes and the taxes of other households like yours would stay the same, and the new ***intensive*** early childhood development program such as Prof. Heckman studied would not be funded.

[State]

Now suppose that your state representative sent you a letter asking you how you want him or her to vote on this matter. We want to know whether you would want your representative to vote for or against funding the new ***intensive*** early childhood development program if voting for the program would mean that your state taxes and the state taxes of other households like yours would increase.

[ALL Versions - Closing the first part of the survey]

Now we'd like you to look at a question about how you would want your representative to vote, but we do NOT want you to answer the question at this time. We want to give you some time to think about whether you would like your representative to vote for these new ***intensive*** early childhood development programs, and whether you are willing to pay increased taxes. You may want to discuss this question with other people to help you decide how to answer. Please feel free to do that.

We are interested in how you feel about this legislation. There is no right or wrong answer.

Please assume that enough people would agree with you and that [if FED=1: Congress/ if FED=2: the state legislature] would follow your recommendation on whether funding these programs or not.

[FEDERAL]

8. If the Congress approved the new intensive early childhood development program, the program would be paid for by increasing federal taxes. Suppose that the increased taxes your household and households like yours would have to pay for the new ***intensive*** early-childhood development programs would be $[bid] per year. How would you want your representative to vote?

Please also remember that an increase in your taxes means you have to reduce spending on other items in your budget.

[GREY OUT RADIO BUTTONS SO THAT SUBJECTS CANNOT ANSWER]

[Federal – Scope 1]

Here are the options we want you to think about:

☐ **For** Congress moving the poor children under 6 who are currently in an existing government program like Head Start into the new *intensive* early-childhood development program and FOR increasing taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** Congress moving poor children under 6 who are currently in an existing government program like Head Start into the new *intensive* early-childhood development program; and AGAINST increasing taxes for my household and other households like mine by $[bid] per year.

[GREY OUT RADIO BUTTONS SO THAT SUBJECTS CANNOT ANSWER]

[Federal – Scope 2]

Here are the options we want you to think about:

☐ **For** Congress enrolling almost all (90%) children living in poverty under the age of 6, including all the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and FOR increasing taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** Congress enrolling almost all (90%) children living in poverty under the age of 6, including all the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and AGAINST increasing taxes for my household and other households like mine by $[bid] per year.

[STATE VERSION]

9. If the state legislature approved the new intensive early childhood development program, the program would be paid for by increasing state taxes. Suppose that the increased taxes your household and households like yours would have to pay for the new ***intensive*** early-childhood development programs would be $[bid] per year. How would you want your representative to vote?

Please also remember that an increase in your taxes means you have to reduce spending on other items in your budget.

[GREY OUT RADIO BUTTONS SO THAT SUBJECTS CANNOT ANSWER]

[STATE – Scope 1]

Here are the options we want you to think about:

☐ **For** the state legislature moving the poor children under 6 who are currently in an existing government program like Head Start in [STATE] into the new *intensive* early-childhood development program and FOR increasing state taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** the state legislature moving the poor children under 6 who are currently in an existing government program like Head Start in [STATE] into the new *intensive* early-childhood development program and AGAINST increasing state taxes for my household and other households like mine by $[bid] per year.

[GREY OUT RADIO BUTTONS SO THAT SUBJECTS CANNOT ANSWER]

[STATE – Scope 2]

Here are the options we want you to think about:

☐ **For** the state legislature enrolling almost all (90%) children living in poverty under the age of 6 in [STATE], including the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and FOR increasing state taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** the state legislature enrolling almost all (90%) children living in poverty under the age of 6 in [STATE], including the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and AGAINST increasing state taxes for my household and other households like mine by $[bid] per year.

[ALL Versions]

We request that you return to the second part of this survey after 24 hours but before 10 days from now (i.e., between [TIME, Pacific on DATE] Pacific time and [TIME, Pacific on DATE] Pacific time) to answer the legislation question, and complete the rest of the questionnaire.

We had one big problem in the past in this type of surveys. Some respondents did not return to the second part of the survey. This is a big problem for us since if someone does not return to the second part to complete the survey, we cannot use the information he or she provided in the first part, either. This means that the time these respondents spent on the first part was wasted. Please help our study by returning to complete the second part of the survey within the given time period.

You will receive 5,000 points after you complete the second part of this survey.

[CREATE DOV_TRANSTIME1: RECORD DATE AND TIME WHEN FIRST REACHED THE TRANSITION SCREEN ABOVE]

Thank you for returning to finish this second part of the survey.

If you would like to review the findings from Prof. Heckman's research about intensive early childhood development programs before proceeding with the questions in this part of the survey, click here.

Remember: we asked you to think about whether you would like your representative to vote for the new ***intensive*** early-childhood development programs, and whether you are willing to pay increased taxes.

Please assume that enough people would agree with you and that [if FED=1: Congress/ if FED=2: the state legislature] would follow your recommendation on whether funding these programs or not.

Remember: we are interested in how you feel about this legislation. There is no right or wrong answer.

Before you tell us how you want your representative to vote, we want you to help us with a problem we have had in studies like this one. You didn't really receive a letter from your representative asking for your help in making a decision on this matter. But we are asking you to tell us what you would do if you had actually received a letter and your opinion really could change the way your representative votes.

People sometimes find it hard to do this in our studies. They give different answers to survey questions than they actually would do in a real situation. For example, you might not pay much attention to the benefits and costs of reducing childhood poverty in a survey because your opinions may never be communicated to your representative and are unlikely to change how he/she votes. If your representative really did ask you for your opinion, you might think harder about whether the actual benefits from reducing childhood poverty are worth the increase in annual taxes your household would have to pay.

Some people make a decision without considering how much income will be left for them to spend after paying increased taxes. So please carefully consider your household income before making a decision that would increase your taxes.

Please also assume that corporations would pay their share of the tax increase as well.

If you don't answer the questions as if you were making real decisions, our study results will be wrong. Please help us measure your opinions correctly by answering the question as if it were a real decision.

[Federal]

Please think carefully about how you would want your representative to vote because the results of this survey will be shared with national media and are expected to influence public policy discussions in the US.

[State]

Please think carefully about how you would want your representative to vote because the results of this survey will be shared with state media and are expected to influence public policy discussions in [STATE].

Your opinion matters to us!

[FEDERAL]

10. If the Congress approved the new intensive early childhood development program, the program would be paid for by increasing federal taxes. Suppose that the increased taxes your household and households like yours would have to pay for the new ***intensive*** early-childhood development programs would be $[bid] per year. How would you want your representative to vote?

Please also remember that an increase in your taxes means you have to reduce spending on other items in your budget.

[Federal – Scope 1]

☐ **For** Congress moving the poor children under 6 who are currently in an existing government program like Head Start into the new *intensive* early-childhood development program and FOR increasing taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** Congress moving poor children under 6 who are currently in an existing government program like Head Start into the new *intensive* early-childhood development program; and AGAINST increasing taxes for my household and other households like mine by $[bid] per year.

[Federal – Scope 2]

☐ **For** Congress enrolling almost all (90%) children living in poverty under the age of 6, including all the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and FOR increasing taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** Congress enrolling almost all (90%) children living in poverty under the age of 6, including all the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and AGAINST increasing taxes for my household and other households like mine by $[bid] per year.

[STATE VERSION]

11. If the state legislature approved the new intensive early childhood development program, the program would be paid for by increasing state taxes. Suppose that the increased taxes your household and households like yours would have to pay for the new ***intensive*** early-childhood development programs would be $[bid] per year. How would you want your representative to vote?

Please also remember that an increase in your taxes means you have to reduce spending on other items in your budget.

[State - Scope 1]

☐ **For** the state legislature moving the poor children under 6 who are currently in an existing government program like Head Start in [STATE] into the new *intensive* early-childhood development program and FOR increasing state taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** the state legislature moving the poor children under 6 who are currently in an existing government program like Head Start in [STATE] into the new *intensive* early-childhood development program and AGAINST increasing state taxes for my household and other households like mine by $[bid] per year.

[State - Scope 2]

☐ **For** the state legislature enrolling almost all (90%) children living in poverty under the age of 6 in [STATE], including the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and FOR increasing state taxes for my household and other households like mine by $[bid] per year; or

☐ **Against** the state legislature enrolling almost all (90%) children living in poverty under the age of 6 in [STATE], including the children now in programs like Head Start, in the new ***intensive*** early-childhood development programs, and AGAINST increasing state taxes for my household and other households like mine by $[bid] per year.

[IF VOTED YES]

12. How certain are you that you would want your representative to vote in favor of <u>increased taxes</u> for households like yours to fund the new *intensive* early-childhood development program?

-2	-1	0	+1	+2
Very Uncertain	Uncertain	Not sure	Certain	Very certain

[IF VOTED YES]

13. What are the **most important and least important** reasons that you said you would want your representative vote **in support** of funding the new *intensive* early-childhood development program?

MOST Important (Please check ONE)	**Reasons**	**LEAST Important (Please check ONE)**
	I want to stop the cycle of parents passing on a culture of poverty to their children	
	The future of the economy depends on a well-trained labor force	
	It is possible that members of my family will be poor in the future and will need these programs	
	I want to improve the lives of poor children as soon as possible	
	Members of my family can benefit from these programs	
	These programs will reduce crime rates which affect us all	
	Paying for these programs now will mean lower taxes for me in the future because fewer people will be in prisons and more people will be paying taxes	
	Other	

[IF VOTED NO]

14. What are the **most important and least important** reasons that you said you would want your representative to vote **against** funding the new *intensive* early-childhood development program?

MOST Important (Please check ONE)	**Reasons**	**LEAST Important (Please check ONE)**
	There are more important priorities for my tax dollars	
	I am against any new taxes	
	I cannot afford the tax increase	
	I think other government programs should be reduced to pay for programs to reduce childhood poverty	
	I do not think the new early childhood development program would help reducing childhood poverty in the [if fed=1:US; if fed=2: state].	
	I do not think the new early childhood development program is any better than the current early childhood programs like Head Start	
	I do not think it is government's job to fund these programs	
	I do not think the government should be involved with the care of very young children; this is the family's responsibility.	

	The government should first fix the ineffective current programs like Head Start before investing in more children **[show if scope=2]**	
	Other	

[FEDERAL]

15. Now please think about other people like you who pay federal income taxes every year. What percent of these people do you think would want their representative in Congress to vote **FOR** and **AGAINST** the new *intensive* early-childhood development program if their taxes will be increased by $[bid] per year?

	Percent vote
FOR	_____%
AGAINST	_____%
	100 %

[STATE]

16. Now please think about other people like you who pay state taxes every year in [STATE]. What percent of these people do you think would want their state representative to vote **FOR** and **AGAINST** the new *intensive* early-childhood development program in [STATE] if their state taxes will be increased by $[bid] per year?

	Percent vote
FOR	_____%
AGAINST	_____%
	100 %

[IF VOTED NO]

[Federal – Scope 1]

17. Do you think you would still want your representative to vote NO if the increased taxes of $[bid] could provide sufficient funds to not only change the existing programs like Head Start into the new *intensive* early-childhood development programs studied by Prof. Heckman, but also to enroll almost all (90%) children living in poverty under the age of 6 in the United States in the new ***intensive*** early-childhood development programs? Remember that about 1 million children under 6 years of age are in existing programs (This is about 18% of the children in the USA who live in poverty).

    - ☐ I would still want my representative to vote NO even if almost all children living in poverty could be included.
    - ☐ If almost all children living in poverty under the age of 6 could be included in the new intensive early-childhood development programs, I would want my representative to vote YES and I would agree to pay $[bid] per year.
    - ☐ Don't know/ Not sure

[IF VOTED YES]

[Federal – Scope 2]

18. Do you think you would still want your representative to vote YES if the increased taxes of $[bid] per year for households like yours would only provide sufficient funds to change the existing programs into the new intensive early-childhood development programs studied by Prof. Heckman, but not enroll any additional children? Remember that about 1 million children under 6 years of age are in existing programs. (This is about 18% of the children in the USA who live in poverty).

    - ☐ I would still want my representative to vote YES.
    - ☐ If only 18% of the children in poverty – those who are now in the existing government programs like Head Start - were included in the new intensive early-childhood development programs, I would not agree to pay $[bid] per year.
    - ☐ Don't know/ Not sure

[IF VOTED NO]

[State – Scope 1]

19. Do you think you would still want your state representative to vote NO if the increased state taxes of $[bid] per year for households like years could provide sufficient funds to not only change the existing programs like Head Start into the new *intensive* early-childhood development programs studied by Prof. Heckman, but also to enroll almost all (90%) children living in poverty under the age of 6 in [STATE] in the new ***intensive*** early-childhood development programs?

    - ☐ I would still want my representative to vote NO even if almost all poor children in [STATE] could be included.
    - ☐ If almost all children living in poverty under the age of 6 in [STATE] could be included in the new intensive early-childhood development programs, I would want my representative to vote YES and I would agree to pay $[bid] per year.
    - ☐ Don't know/ Not sure

[IF VOTED YES]

[State – Scope 2]

20. Do you think you would still want your state representative to vote YES if the increased taxes of $[bid] per year for households like yours would only provide sufficient funds to change the existing programs in [STATE] into the new intensive early-childhood development programs studied by Prof. Heckman, but not enroll any additional children? Remember that nationally about 1 million children under 6 years of age are enrolled in existing programs (This is about 18% of the children in the USA who live in poverty). That's probably a pretty good estimate of the percentage of children living in poverty that are enrolled in the existing programs in [STATE].

    - ☐ I would still want my representative to vote YES.
    - ☐ If only the children in the existing government programs like Head Start were included in the new intensive early-childhood development programs, I would not agree to pay $[bid] per year.
    - ☐ Don't know/ Not sure

[ALL Versions]

21. Between the first time you logged off of the survey (the end of the first session) and when you logged on to complete the survey today, which of the following did you do?: [Please check all that apply.]

    - ☐ I thought about whether I would be willing to pay increased taxes for funding the new ***intensive*** early-childhood development program
    - ☐ I discussed whether I would be willing to pay increased taxes for funding the new ***intensive*** early-childhood development program with someone else.
    - ☐ I read some additional information about early childhood intervention programs
    - ☐ I read additional information about the current government programs such as Head Start
    - ☐ I did not think about this survey at all.

[NUMBER BOX 0-999]
[SHOW IF Q21=1,2,3,4]

22. About how much time did you spend thinking and/or discussing about the early childhood development programs?

    Total number of minutes: _____

[IF Q21=2]

23. [IF YES TO DISCUSSED] Whom did you talk to? Please check all that apply.

- ☐ My spouse/partner
- ☐ My children
- ☐ My parents
- ☐ My friends
- ☐ Others (please specify) _____

[IF Q21=3,4]

24. [IF YES TO READ] Where did you find the information you read? Please check all that apply.

- ☐ Websites/Internet
- ☐ Books
- ☐ Newspapers or magazines
- ☐ Brochures or pamphlets
- ☐ Other (please specify) : _____

Now we will ask you some questions to learn your opinion about the current state of things in the US.

25. Some people in the United States have better jobs and higher incomes than others. The table below lists some of possible reasons for these differences in people's incomes and jobs. Using a 1–5 scale, where '1' means not at all important and '5' means extremely important, please tell us how important each reason is for why some people have better jobs and higher incomes than others.

	Not at all important				**Extremely important**
A. Willingness to take risks	1	2	3	4	5
B. Money inherited from families	1	2	3	4	5
C. Hard work and initiative	1	2	3	4	5
D. Ability or talent that a person is born with	1	2	3	4	5
E. Taking advantage of others to get ahead	1	2	3	4	5
F. Good luck, being in the right place at the right time	1	2	3	4	5
G. Physical appearance and good looks	1	2	3	4	5
H. Connections and knowing the right people	1	2	3	4	5
I. Being a member of a particular race or ethnic group	1	2	3	4	5
J. Getting the right education or training	1	2	3	4	5

K. A person's gender, that is whether they are male or female	1_____2_____3_____4_____5

26. In your opinion, do most poor people in the US have a chance of escaping from poverty, or is there very little chance of escaping?

1_____2_____3_____4_____5

Very little chance of escaping — Very high chance of escaping

27. Do you agree or disagree with the statement:
"The way things are in America right now, people like me and my family have a good chance of improving our standard of living over the next ten years."

1_____2_____3_____4_____5

Strongly disagree — Strongly agree

28. Which of the following groups do you think should have the greatest responsibility and the least responsibility for helping the poor?

GREATEST responsibility **(Please check ONE)**		**LEAST responsibility** **(Please check ONE)**
O	Churches	O
O	Private charities (community service organizations)	O
O	Federal government	O
O	State/local government	O
O	Families and relatives of poor people	O
O	Poor themselves	O

29. Do you feel you are asked to pay more than you should in federal income taxes, about the right amount, or less than you should? What about poor people? What about rich people?

A. My household

- ☐ I am paying more than I should
- ☐ I am paying about the right amount
- ☐ I am paying less than I should
- ☐ Don't know/ Not sure

B. Poor people

- ☐ They are paying more than they should
- ☐ They are paying about the right amount
- ☐ They are paying less than they should
- ☐ Don't know/ Not sure

C. Rich people

- ☐ They are paying more than they should
- ☐ They are paying about the right amount
- ☐ They are paying less than they should
- ☐ Don't know/ Not sure

30. Do you think the government should make it more difficult for people to buy a hand gun than it is now, make it easier for people to buy a hand gun, or keep these rules about the same as they are now?

- ☐ More difficult
- ☐ Make it easier
- ☐ Keep these rules about the same
- ☐ Don't know/ Not Sure

31. Please check the opinion about abortion on the list below that best agrees with your view.

- ☐ By law, abortion should never be permitted.
- ☐ The law should permit abortion only in case of rape, incest or when the woman's life is in danger.
- ☐ By law, a woman should always be able to obtain an abortion as a matter of personal choice.
- ☐ Don't know/ Not Sure

32. Here is a list of the political views that people might hold. Which one describes your political views the best?

- ☐ Extremely liberal
- ☐ Liberal
- ☐ Slightly liberal
- ☐ Moderate; middle of the road
- ☐ Slightly conservative
- ☐ Conservative
- ☐ Extremely Conservative
- ☐ Libertarian

This is the end of the survey. Thank you very much for your participation.

APPENDIX B

BUDGET SURVEY INSTRUMENT

SOCIAL SURVEY

Thank you for agreeing to participate in this survey. We are going to ask you questions about your thoughts on some social issues. There are no right or wrong answers to the questions in this survey. We really want to know what you think.

[CONSENT SCREEN 1]

Study Purpose

You are one of about 1500 people in the United States who are being asked to take this survey to help us understand opinions on social issues.

Study Duration

This survey has two parts. It will take about 10-15 minutes to complete the first part. You cannot start the second part of the survey until at least 24 hours after you have completed the first part. You must finish the second part within 10 days of starting the first part. The survey will take about 30 minutes to complete in total.

Study Details

The University of North Carolina at Chapel Hill (UNC) is doing this study for a foundation. UNC has contracted with Knowledge Networks (KN) to collect data. If you have questions about this survey, please contact Panel Relations at 800-782-6899 and someone will direct your questions to the appropriate person at UNC.

[CONSENT SCREEN 2]

Possible Risks or Discomforts

If any questions make you uncomfortable, you do not need to answer them.

KN will protect your responses under its Privacy Policy. UNC will receive your survey responses without any personal identifiers. UNC also will make every effort to protect your responses. There is a potential risk of disclosure of the survey data, but the data could not be directly tied to you.

Benefits

There are no direct benefits to you from participating in this study. However, your responses are very important to us.

[CONSENT SCREEN 3]

Confidentiality

Many steps have been taken to protect your information. KN will report only your responses to UNC, not your name. If the results of this study are presented at scientific meetings or published in scientific journals, no information will be included that could identify you or your responses personally.

The Institutional Review Board (IRB) at UNC has reviewed this research. An IRB is a group of people who make sure that the rights of participants in research are protected. The IRB may check records of your activity in this research to see if proper procedures were followed.

Your Rights

Your decision to take part in this research study is completely voluntary. You can refuse to answer any question or stop at any point after you begin the survey and still receive your KN points for participating in the survey.

[PROMPT IF SKIP]
[CONSENT SCREEN 4]

If you have read the previous screens and agree to participate, please click the Yes button, if not, click the No button.

☐ Yes, I agree to participate.

☐ No, I do not agree to participate.

[IF CONSENT= NO OR SKIP]

Thank you for your consideration. You have exited the survey.

CREATE DOV FED:
1=FEDERAL
2=STATE
RANDOMLY ASSIGN RESPONDENTS TO EITHER GROUP

[ASK THESE QUESTIONS TO RESPONDENTS WITH < 25,000 HOUSEHOLD INCOME AND HOUSEHOLD SIZE UP TO 4; OR FOR RESPONDENTS WITH <50,000 HOUSEHOLD INCOME AND HOUSEHOLD SIZE MORE THAN 4]

We will now ask you some questions on your household taxes.

S3. Did your household receive earned income tax credits when you filed your taxes last year?

- ☐ Yes
- ☐ No
- ☐ Not sure/Don't know

[IF S3=3 OR REFUSED]

S4. Did someone other than a household member (including professional assistance) help your household to fill in your federal income taxes last year?

- ☐ Yes
- ☐ No

[IF (S3=1 OR S4=1) AND FED=1, GROUP=1 =CREDIT RECEIVER.
ELSE GROUP=2 = TAX PAYER.]

[PROMPT IF SKIP]

1.

A. Here is a list of problems you may be concerned about. What do you think is the most important and least important concern for the country among the items listed below?

[SHOW ITEMS NOT SELECTED IN Q1A]

B. Of the remaining concerns, what do you think is the most important and least important concern for the country among the items listed below?

MOST Important (Please check ONE)		**LEAST Important (Please check ONE)**
	Crime	
	Education	
	Energy	
	Environment	
	Federal budget deficit	
	Health care	
	Homeland Security	
	Housing	
	Illegal Immigration	
	Poverty	
	Unemployment	

CREATE DOV VERSION: 1-4
RANDOMLY ASSIGN RESPONDENTS TO ONE OF FOUR VERSIONS.

HOW DO YOU THINK WE SHOULD DIVIDE UP BUDGETS?

Recently both the US Congress and state legislatures have been debating government budgets, trying to decide which government programs to cut, which ones to increase, and whether to reduce taxes or increase taxes.

In this survey we are going to ask you some questions about what you think the government should do about budgets and taxes for three government programs:

[Version =1]

- An intensive early-childhood development program for children in poverty
- A food-safety monitoring program
- A job-training program

[Version =2]

- A disaster-relief program
- An intensive early-childhood development program for children in poverty
- A food-safety monitoring program

[Version =3]

- A job-training program
- A disaster-relief program
- An intensive early-childhood development program for children in poverty

[Version =4]

- A food-safety monitoring program
- A job-training program
- A disaster-relief program

Suppose the US Congress is going to vote on how federal spending should be divided between these three programs. Suppose also that your Congressman sent you a letter asking you how you think he or she should vote on this matter. We want to know whether you think spending for each program should be cut, held at its current level, or increased.

Decisions about spending affect results of the programs. We will explain how spending changes could affect the results of these three particular programs.

SHOW THE THREE SOCIAL PROGRAMS THAT ARE REQUIRED FOR EACH VERSION.

[Version =1]

- An intensive early-childhood development program for children in poverty
- A food-safety monitoring program
- A job-training program

[Version =2]

- A disaster-relief program
- An intensive early-childhood development program for children in poverty
- A food-safety monitoring program

[Version =3]

- A job-training program
- A disaster-relief program
- An intensive early-childhood development program for children in poverty

[Version =4]

- A food-safety monitoring program
- A job-training program
- A disaster-relief program

An Intensive Early-Childhood Development Program

There are 6 million children under 6 years old living in poverty (having an annual income of less than $27,000 for a household with 5 members) in the US. That is one in four children (25%). Children living in poverty are more likely to drop out of high school, be unemployed, commit crime and become teen parents. These children are very likely to be poor as adults as well. New research shows that the best way to break the cycle of poverty-- and make sure poor children move out of poverty by the time they are adults-- is to enroll them in intensive childhood development programs when they are very young (0-5 years old). Once children fall behind, it is very hard for them to catch up when they are older (6-12 years old) or teenagers.

New intensive early-childhood development programs provide high-quality care and schooling for babies and young children in poor families until they enter kindergarten. These programs include:

- Educational activities that involve thinking, social, and emotional skills,
- Activities that focus on language development,
- Adult-child interactions, including talking, showing toys and pictures, and reading to babies, and
- On-site health care and nutrition (such as school lunches).

About 1.1 million children under the age of 6 currently participate in the standard early childhood programs. If the existing government programs such as Head Start were changed to work like these new intensive early-childhood development programs, then current government funding would be enough for only about 430,000 children (7% of the children under 6 currently living in poverty).

2. What has been your own experience with poverty? (Please check all that apply)

- ☐ I am not poor now and have never lived in poverty.
- ☐ I grew up in a family in poverty, and my family is still poor.
- ☐ I have been poor in the past, but am not poor now.
- ☐ I was not poor in the past, but am poor now.
- ☐ Members of my family have experienced poverty, but I have not.
- ☐ Families in my neighborhood have experienced poverty.
- ☐ I am not poor now, but I feel like I could easily fall into poverty. I live paycheck to paycheck.
- ☐ None of the above. **[If chose this option, cannot choose the above options.]**

3. Has one of your children or a family member's children participated in any government early-childhood programs?

- ☐ Yes
- ☐ No
- ☐ Don't know/Not sure

Suppose that all existing early-childhood programs are turned into new intensive early-childhood development programs.

More spending for these new intensive early-childhood development programs means that more children in poverty can participate in such programs.

Less spending for these new intensive early-childhood development programs means that fewer children in poverty can participate in such programs.

Questions later in this survey will ask you to think about budget changes that would affect the number of children who can participate in these new intensive early-childhood development programs instead of the existing government programs.

A Food-Safety Monitoring Program

People can get food poisoning from bad food or drinks. Food poisoning is quite common. It is usually mild, but sometimes causes fatal illness. Food poisoning especially can be dangerous for children, elderly, sick people, and pregnant women. Typical symptoms include nausea, vomiting, stomach pain, and diarrhea. In severe cases, food poisoning can lead to brain damage and even death. In the US, food poisoning causes about 50 million illnesses, 130,000 hospitalizations, and up to 3,000 deaths each year. Recent cases of wide-spread food poisoning have been caused by tainted peanut butter, ground beef, chicken, eggs, milk, spinach, lettuce and cantaloupes.

Food-safety inspectors check both domestic and imported food. These programs:

- Regulate safety and labeling of domestic and imported food;
- Inspect food facilities such as warehouses, manufacturers and shippers;
- Prohibit food processing plants from importing crops into the US if their products are found to be unhealthy; and
- Examine animals destined for human food before and after slaughter, and check that plants are operating in a sanitary manner.

Food-safety programs cannot possibly check everything. Instead, these programs focus largely on high-risk food, such as meat, poultry and egg products and on facilities that are more likely to have problems.

4. Within the last 5 years, have you or someone in your household had food poisoning?

   ☐ Yes

   ☐ No

   ☐ Not sure

5. How likely do you think is your chance of getting food poisoning sometime during the next 12 months?

   ☐ Not likely at all

   ☐ Somewhat unlikely

   ☐ Neutral

   ☐ Somewhat likely

   ☐ Very likely

More spending for food-safety programs would mean more spending for food inspections, and reduced chances that contaminated food would reach consumers.

Less spending for food-safety programs would mean more cases of food poisoning.

Questions later in this survey will ask you to think about budget changes that would affect the number of food poisoning cases.

A Job-Training Program

Currently 13 million people are unemployed in the US, and 8 million people are employed part-time, because they were unable to find a full-time job. Also, an estimated 2.5 million additional people have given up looking for work. About 6 million adults participated in government job training programs in 2010. The goal of these programs is to reduce the unemployment rate in the country and raise wages.

Job-training programs particularly target people who are unemployed or have low-wage jobs because their skills do not match the jobs available. These programs:

- Train workers who are unemployed to improve their skills and to learn new skills;
- Train workers with low-wage jobs to get jobs in industries that offer better wages and more job security; and
- Help workers develop skills to succeed on the job and stay employed.

6. Have you or a member of your household lost a job within the last three years?

☐ Yes [next question]

☐ No [skip to next page]

[IF Q6=YES]

7. [If YES to Q6] Have you or a family member participated in any government job-training program?

☐ Yes [next question]

☐ No [skip to next page]

[IF Q7=YES]

8. [If YES to Q7] What kind of training did you or your family member receive? (Please check all that apply.)

☐ Computer skills

☐ Communication skills

☐ Skills for green jobs

☐ Management/Administrative skills

☐ Sales skills

☐ Job interview skills

☐ Skills for operation of heavy equipment

☐ Other _____

More spending for job-training programs means that more unemployed people can benefit from these programs.

Less spending for job-training programs means that fewer unemployed people can benefit from these programs.

Questions later in this survey will ask you to think about budget changes that would affect the number of people who can participate in these programs.

A Disaster-Relief Program

In 2005 about 1.5 million people lost their homes after Hurricane Katrina hit New Orleans and the Gulf Coast. About 275,000 people were sheltered right after the storm. In 2010 about 80 disasters that led to lost lives and property were declared in the US. If each household claimed the $13,000 maximum amount allowed for property damage, the current level of funding for government disaster-relief programs could assist about 180,000 households per year.

Disaster-relief programs help people affected by hurricanes, tornados, floods, earthquakes, fires, and acts of terrorism. These programs:

- Train full-time and volunteer personal on emergency management;
- Coordinate response efforts with communities, and nongovernmental organizations;
- Provide relief shelters, temporary housing, and permanent housing for survivors of disasters; and
- Provide financial help to people who lose their homes and property.

9. Have you, a relative, or friend ever had to stay in a relief shelter or temporary housing, or received help because of a disaster, such as tornado, earthquake, hurricane, or flood?

   ☐ Yes

   ☐ No

10. In your opinion, how likely is it that a large natural disaster would affect your area in the next ten years?

   ☐ Not likely at all

   ☐ Somewhat unlikely

   ☐ Neutral

   ☐ Somewhat likely

   ☐ Very likely

More spending will increase the number of households who can be provided with financial help for their damaged property after a disaster.

Less spending will decrease the number of households who can be helped for their damaged property after a disaster.

Questions later in this survey will ask you to think about budget changes that would affect the number of households that can be helped for their damaged property based on the maximum amount that is allowed per household.

[IF GROUP=2]
[TAX VERSION]

Effects on Household Taxes

[IF VERSION=1]
Every year the taxes of your household and households like yours pay for these three government programs (early-childhood, food-safety, and job-training programs).

[IF VERSION=2]
Every year the taxes of your household and households like yours pay for these three government programs (disaster-relief, early-childhood, and food-safety programs).

[IF VERSION=3]
Every year the taxes of your household and households like yours pay for these three government programs (job-training, disaster-relief, and early-childhood programs).

[IF VERSION=4]
Every year the taxes of your household and households like yours pay for these three government programs (food-safety, job-training, and disaster-relief programs).

[TAX VERSION]

- If total government spending increases, assume that the taxes for your household and households like yours would have to increase, and tax credits some low-income households receive would have to decrease.
- To keep the taxes and tax credits the same, assume that an increase in spending for one program would require a decrease in spending for another program.
- If total spending for these government programs is cut, assume that the taxes for your household and households like yours would decrease, and tax credits some low-income households receive would increase.

Questions later in this survey will ask you to think about budget changes that would affect the amount of taxes your household and households like yours pay for these social programs.

For example, suppose that your household currently pays $1,000 per year in taxes. Later in the survey we may ask you to assume that your household pays $2,000 less per year in taxes. In this case, we want you to assume that your household would receive the difference back ($1,000) as a tax refund check from the government.

[IF GROUP=1]
[CREDIT VERSION]

Effects on Household Tax Credits

[IF VERSION=1]
Every year the government receives pay for these three government programs (early-childhood, food-safety, and job-training programs).

[IF VERSION=2]
Every year the government receives pay for these three government programs (disaster-relief, early-childhood, and food-safety programs).

[IF VERSION=3]
Every year the government receives pay for these three government programs (job-training, disaster-relief, and early-childhood programs).

[IF VERSION=4]
Every year the government receives pay for these three government programs (food-safety, job-training, and disaster-relief programs).

[CREDIT VERSION]

- If total government spending increases, assume that the tax credits your household and households like yours receive would have to decrease, and taxes other households pay would have to increase.
- To keep the tax credits and taxes the same, assume that an increase in spending for one program would require a decrease in spending for another program.
- If total spending for these government programs is cut, assume that the tax credits your household and households like yours receive would increase, and taxes other households pay would decrease.

Questions later in this survey will ask you to think about budget changes that would affect the amount of tax credits your household and households like yours receive.

For example, suppose that your household currently receives $1,000 per year in tax credits. Later in the survey we may ask you to assume that your household receives $2,000 less per year in tax credits. In this case, we want you to assume that your household would pay the difference ($1,000) as taxes.

[ALL VERSIONS]

Remember that we want you to suppose that your Congressman sent you a letter asking you how he or she should vote on how federal spending should be divided between the three programs.

Later in the survey, we will ask you to compare two possible budget alternatives. Each alternative shows the effect on program results and [if group=1: tax credits/if group=2: taxes] if spending on these programs changes. For each question, we need you to tell us which alternative (A or B) you would want your Congressman to vote for *if these were the only alternatives available*. We will show you an example of a choice question in the next screen.

[FOR ALL EXAMPLE TABLES AND CONJOINT TABLES, RANDOMIZE THE ORDER OF THE ATTRIBUTES, BUT KEEP ONE ORDER THROUGOUT PER RESPONDENT]

[TAX VERSION]

When you make your decision about which alternative (A or B) to choose, consider carefully the effect on your household taxes presented in each alternative. For example, in the sample question below, consider the two budget alternatives A and B.

[Version =1]

EXAMPLE QUESTION

	Alternative A	Alternative B
Intensive early-childhood development program	**25% worse:** 320,000 children can participate	**No change:** 430,000 children can participate
Food-safety monitoring program	**No change:** 130,000 severe food poisoning cases	**No change:** 130,000 severe food poisoning cases
Job-training program	**No change:** 6 million people can participate	**No change:** 6 million people can participate
Effects on household taxes	You pay $1,000 **less** per year ($80 less per month) in taxes than now	**No change:** Same amount of taxes as now

[Version =2]

EXAMPLE QUESTION

	Alternative A	Alternative B
Disaster-relief program	**No change:** 180,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**25% worse:** 320,000 children can participate	**No change:** 430,000 children can participate
Food-safety monitoring program	**No change:** 130,000 severe food poisoning cases	**No change:** 130,000 severe food poisoning cases
Effects on household taxes	You pay $1,000 **less** per year ($80 less per month) in taxes than now	**No change:** Same amount of taxes as now

[Version =3]

EXAMPLE QUESTION

	Alternative A	Alternative B
Job-training program	**No change:** 6 million people can participate	**No change:** 6 million people can participate
Disaster-relief program	**No change:** 180,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**25% worse:** 320,000 children can participate	**No change:** 430,000 children can participate
Effects on household taxes	You pay $1,000 **less** per year ($80 less per month) in taxes than now	**No change:** Same amount of taxes as now

[Version =4]

EXAMPLE QUESTION

	Alternative A	Alternative B
Food-safety monitoring program	**No change:** 130,000 severe food poisoning cases	**No change:** 130,000 severe food poisoning cases
Job-training program	**25% worse:** 4.5 million people can participate	**No change:** 6 million people can participate
Disaster-relief program	**No change:** 180,000 households can be assisted	**No change:** 180,000 households can be assisted
Effects on household taxes	You pay $1,000 **less** per year ($80 less per month) in taxes than now	**No change:** Same amount of taxes as now

[TAX version – V1, V2, V3]

In this example,

- Alternative A would cut the spending on the early-childhood program, and you would pay $1,000 **less** per year in taxes than now. This corresponds to $80 **less** per month in taxes. However, because of the cut on the program, instead of 430,000 children, about 320,000 children can participate in the program, and the rest of the children would not be able to participate in any government early-childhood programs.

- Alternative B would not change the current spending on these programs, so you would pay the same amount of taxes as you pay now. The program results would remain the same as well.

[TAX version – V4]

In this example,

- Alternative A would cut the spending on the job-training program, and you would pay $1,000 **less** per year in taxes than now. This corresponds to $80 **less** per month in taxes. However, because of the cut on the program, instead of 6 million people, about 4.5 million people can participate in the program, and the rest would not be able to participate in any government job-training programs.

- Alternative B would not change the current spending on these programs, so you would pay the same amount of taxes as you pay now. The program results would remain the same as well.

[CREDIT VERSION]

When you make your decision about which alternative (A or B) to choose, consider carefully the effect on your household tax credits presented in each alternative. For example, in the sample question below, consider the two budget alternatives A and B.

[Version =1]

EXAMPLE QUESTION

	Alternative A	Alternative B
Intensive early-childhood development program	**25% worse:** 320,000 children can participate	**No change:** 430,000 children can participate
Food-safety monitoring program	**No change:** 130,000 severe food poisoning cases	**No change:** 130,000 severe food poisoning cases
Job-training program	**No change:** 6 million people can participate	**No change:** 6 million people can participate
Effects on household tax credits	You receive $1,000 **more** per year ($80 more per month) in tax credits than now	**No change:** Same amount of tax credits as now

[Version =2]

EXAMPLE QUESTION

	Alternative A	Alternative B
Disaster-relief program	**No change:** 180,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**25% worse:** 320,000 children can participate	**No change:** 430,000 children can participate
Food-safety monitoring program	**No change:** 130,000 severe food poisoning cases	**No change:** 130,000 severe food poisoning cases
Effects on household tax credits	You receive $1,000 **more** per year ($80 more per month) in tax credits than now	**No change:** Same amount of tax credits as now

[Version =3]

EXAMPLE QUESTION

	Alternative A	Alternative B
Job-training program	**No change:** 6 million people can participate	**No change:** 6 million people can participate
Disaster-relief program	**No change:** 180,000 households can be assisted	**No change:** 180,000 households can be assisted
Intensive early-childhood development program	**25% worse:** 320,000 children can participate	**No change:** 430,000 children can participate
Effects on household tax credits	You receive $1,000 **more** per year ($80 more per month) in tax credits than now	**No change:** Same amount of tax credits as now

[Version =4]

EXAMPLE QUESTION

	Alternative A	Alternative B
Food-safety monitoring program	**No change:** 130,000 severe food poisoning cases	**No change:** 130,000 severe food poisoning cases
Job-training program	**25% worse:** 4.5 million people can participate	**No change:** 6 million people can participate
Disaster-relief program	**No change:** 180,000 households can be assisted	**No change:** 180,000 households can be assisted
Effects on household tax credits	You receive $1,000 **more** per year ($80 more per month) in tax credits than now	**No change:** Same amount of tax credits as now

[CREDIT version – V1, V2, V3]

In this example,

- Alternative A would cut the spending on the early-childhood program, and you would receive $1,000 **more** per year in tax credits than now. This corresponds to $80 **more** per month in tax credits. However, because of the cut on the program, instead of 430,000 children, about 320,000 children can participate in the program, and the rest of the children would not be able to participate in any government early-childhood programs.

- Alternative B would not change the current spending on these programs, so you would receive the same amount of tax credits as you receive now. The program results would remain the same as well.

[CREDIT version – V4]

In this example,

- Alternative A would cut the spending on the job-training program, and you would receive $1,000 **more** per year in tax credits than now. This corresponds to $80 **more** per month in tax credits. However, because of the cut on the program, instead of 6 million people, about 4.5 million people can participate in the program, and the rest would not be able to participate in any job-training programs.

- Alternative B would not change the current spending on these programs, so you would receive the same amount of tax credits as you receive now. The program results would remain the same as well.

Now we'd like you to look at the budget-choice questions. We do not want you to answer these questions at this time. We would like to give you some time to think about your preferences for choosing between two budget alternatives with different levels of [if group=1: tax credits/if group=2: taxes] and different program results for the [Version =1: new intensive early childhood development program, food-monitoring program and job-training program] / [Version =2: disaster-relief program, new intensive early childhood development program and food-monitoring program] / [Version =3: job-training program, disaster-relief program and new intensive early-childhood development program] / [Version =4: food-safety program, job-training program and disaster-relief program]..

We will ask you to answer these questions when you return to the survey next time. You may want to discuss these questions with other people to help you decide how to answer. Please feel free to do that.

We are interested in how you feel about these choices for your own family. <u>There are no right or wrong answers.</u>

Please assume that enough people would agree with you and that Congress would follow your recommendation about keeping or changing spending on these programs.

[PLEASE SEE EXCEL DESIGN FILE FOR CONJOINT DESIGN]
[CREATE DOV BLOCK: 1-14]
[USE SAME BLOCK NUMBER FOR BEFORE AND AFTER TIME TO THINK CONJOINT TABLES]
[RANDOMIZE SETS. RECORD ORDER]
[SET ORDER DIFFERS BEFORE AND AFTER TIME TO THINK]
[DO NOT SHOW POLICY QUESTION IN THE FIRST PART]
[PROGRAM SUCH THAT RESPONDENTS CANNOT ANSWER THE QUESTIONS]

Please think about the following question. You will be asked to answer it later.

If these were the only two alternatives, which one would you want your Congressman to vote for?

		Alternative A		Alternative B
Effects on household and **[if group=1: tax credits/if group=2: taxes]**				
Which alternative would you like your Congressman to vote for?		☐		☐

[At the end of trade-off questions]

We request that you return to the second part of this survey after 24 hours but before 10 days from now (i.e., between [TIME, Pacific on DATE] Pacific time and [TIME, Pacific on DATE] Pacific time) to answer questions about your choice between two budget-alternatives, and complete the rest of the questionnaire.

We had one big problem in the past in this type of surveys. Some respondents did not return to the second part of the survey. This is a big problem for us since if someone does not return to the second part to complete the survey, we cannot use the information he or she provided in the first part, either. This means that the time these respondents spent on the first part was wasted. Please help our study by returning to complete the second part of the survey within the given time period.

You will receive 5,000 points after you complete the second part of this survey.

[CREATE DOV_TRANSTIME1: RECORD DATE AND TIME WHEN FIRST REACHED THE TRANSITION SCREEN ABOVE]

[SECOND PART OF THE SURVEY]

Thank you for returning to finish this second part of the survey.

In the next 8 [if version=4: 7] questions, we will ask you to compare two possible budget alternatives. Each alternative shows the effect on program results and [if group=1: tax credits/if group=2: taxes] if spending on these programs changes. For each question, please tell us which alternative (A or B) you would want your Congressman to vote for *if these were the only alternatives available*.

You may access to the information on the programs and taxes [/tax credits] by clicking <hyperlink>here</hyperlink>.

Please assume that enough people would agree with you and that Congress would follow your recommendation about keeping or changing spending on these programs.

Remember, we are interested in how you feel about these choices for your own family. There are no right or wrong answers.

Before you tell us how you want your Congressman to vote, we want you to help us with a problem we have had in studies like this one. You didn't really receive a letter from your Congressional representative asking for your help in making a decision on budget priorities. But we are asking you to tell us what you would do if you had actually received a letter and your opinion really could change the way your Congressman votes.

People sometimes find it hard to do this in our studies. They give different answers in a survey than they actually would do in a real situation. For example, you might not pay much attention to the benefits and costs of the budget choices in a survey because your opinions may never be communicated to your Congressman and are unlikely to change how he/she votes. If your Congressman really did ask you for your opinion, you might think harder about these budget choices and whether you would agree to [if group=1: receive lower tax credits / if group=2: pay more taxes].

Please also consider your household income before making a decision. Some people tend to make a decision without considering how much income they will have to spend on living expenses after [if group=1:receiving lower tax credits / if group=2: paying increased taxes].

Please also assume that corporations would be paying their share of the tax increase as well.

If you don't answer the questions as if you were making real decisions, our study results will be wrong. Please help us measure your opinions accurately by thinking about the questions as if they were real decisions before deciding which budget alternative (A or B) you would choose.

Please think carefully about your choices because the results of this survey will likely be shared with national media and may influence public policy discussions in the US.

Your opinion matters to us!

If these were the only two alternatives, which one would you want your Congressman to vote for?

		Alternative A		Alternative B
Effects on household taxes [tax credits]				
Which alternative would you like your Congressman to vote for?		☐		☐

[SHOW ONLY AFTER "POLICY" QUESTION IN THE DESIGN]
[NUMER BOX 0-100]
[AUTOMATICALLY UPDATE SUM]
[DO NOT ALLOW TO PROCEED UNTIL SUM IS 100]
[SHOW POLICY QUESTION AGAIN WITH ANSWERS SELECTED AND GREYED OUT]

[TAX version]

13. Now please think about other people like you who pay federal income taxes every year. What percent of these people do you think would vote for each budget-alternative in the question above?

	Percent vote
Alternative A	_____%
Alternative B	_____%
	100 %

[CREDIT version]

Now please think about other people like you who receive federal income tax credits every year. What percent of these people do you think would vote for each budget-alternative in the question above?

	Percent vote
Alternative A	_____%
Alternative B	_____%
	100 %

13. How well do you think the government programs described in this survey actually work in producing successful outcomes?

[SHOW ONLY THE PROGRAMS THAT ARE RELEVANT TO THE VERSION]

	Does not work at all	**Works very well**	**Don't know**
The intensive early-childhood development program in helping children break out of poverty when they become adults	1_____2_____3_____4_____5		
The food-safety monitoring program in reducing cases of food poisoning	1_____2_____3_____4_____5		
The job-training programs helping unemployed people find jobs	1_____2_____3_____4_____5		
The disaster-relief program in assisting households for their damaged property	1_____2_____3_____4_____5		

16. Between the first time I logged off of the survey (the end of the first session) and when I logged on to complete the survey today:

- ☐ I thought about which social programs are important.
- ☐ I discussed which social programs are important with someone else.
- ☐ I read some additional information about [Version 1=early-childhood, food-safety or job-training programs.] \ [Version 2 = disaster-relief, early-childhood intervention or job-training programs.] \ [Version 3 = food-safety, disaster-relief or early-childhood intervention programs.] \ [Version 4 = job-training, food-safety or disaster-relief programs.]
- ☐ I did not think about this survey at all

[IF Q16=1,2,3]

17. About how much time did you spend thinking and/or discussing about social programs?

Total number of minutes: _____

[IF Q16=2]

18. [IF YES TO DISCUSSED] Whom did you talk to?

- ☐ My spouse/partner
- ☐ My children
- ☐ My parents
- ☐ My friends
- ☐ Others (please specify) _____

[IF Q16=3]

19. [IF YES TO READ] Where did you find the information you read?

- ☐ Websites/internet
- ☐ Books
- ☐ Newspapers or magazines
- ☐ Brochures or pamphlets
- ☐ Other (please specify) : _____

Now we will ask you some questions to learn your opinion about the current state of things in the US.

20. Some people in the United States have better jobs and higher incomes than others. The table below lists some of the possible reasons for these differences in people's incomes and jobs. Using a 1–5 scale, where '1' means not at all important and '5' means extremely important, please tell us how important each reason is for why some people have better jobs and higher incomes than others.

	Not at all important				**Extremely important**
L. Willingness to take risks	1_____	2_____	3_____	4_____	5
M. Money inherited from families	1_____	2_____	3_____	4_____	5
N. Hard work and initiative	1_____	2_____	3_____	4_____	5
O. Ability or talent that a person is born with	1_____	2_____	3_____	4_____	5
P. Taking advantage of others to get ahead	1_____	2_____	3_____	4_____	5
Q. Good luck, being in the right place at the right time	1_____	2_____	3_____	4_____	5
R. Physical appearance and good looks	1_____	2_____	3_____	4_____	5
S. Connections and knowing the right people	1_____	2_____	3_____	4_____	5
T. Being a member of a particular race or ethnic group	1_____	2_____	3_____	4_____	5

U. Getting the right education or training	1_____2_____3_____4_____5
V. A person's gender, that is whether they are male or female	1_____2_____3_____4_____5

21. In your opinion, do most poor people in the US have a chance of escaping from poverty, or is there very little chance of escaping?

1_____2_____3_____4_____5

Very little chance of escaping — Very high chance of escaping

22. Do you agree or disagree with the statement: "The way things are in America right now, people like me and my family has a good chance of improving our standard of living over the next ten years."

1_____2_____3_____4_____5

Strongly disagree — Strongly agree

23. Which of the following groups do you think should have the greatest responsibility and the least responsibility for helping the poor?

GREATEST responsibility (Please check ONE)		**LEAST responsibility (Please check ONE)**
O	Churches	O
O	Private charities (community service organizations)	O
O	Federal government	O
O	State/local government	O
O	Families and relatives of poor people	O
O	Poor themselves	O

24. **[TAX version]** Do you feel you are asked to pay more than you should in federal taxes, about the right amount, or less than you should? What about poor people? What about rich people?

[CREDIT version] Do you feel poor people are asked to pay more than they should in federal taxes, about the right amount, or less than they should? How about rich people?

D. My household

- ☐ I am paying more than I should
- ☐ I am paying about the right amount
- ☐ I am paying less than I should
- ☐ Don't know/Not sure

E. Poor people

- ☐ They are paying more than they should
- ☐ They are paying about the right amount
- ☐ They are paying less than they should
- ☐ Don't know/Not sure

F. Rich people

- ☐ They are paying more than they should
- ☐ They are paying about the right amount
- ☐ They are paying less than they should
- ☐ Don't know/Not sure

25. Do you think the government should make it more difficult for people to buy a hand gun than it is now, make it easier for people to buy a hand gun, or keep these rules about the same as they are now?

- ☐ More difficult
- ☐ Make it easier
- ☐ Keep these rules about the same
- ☐ Don't know/ Not Sure

26. Please check the opinion about abortion on the list below that best agrees with your view.

- ☐ By law, abortion should never be permitted.
- ☐ The law should permit abortion only in case of rape, incest or when the woman's life is in danger.
- ☐ By law, a woman should always be able to obtain an abortion as a matter of personal choice.
- ☐ Don't know/ Not Sure

27. Here is a list of the political views that people might hold. Which one describes your political views the best?

- ☐ Extremely liberal
- ☐ Liberal
- ☐ Slightly liberal
- ☐ Moderate; middle of the road
- ☐ Slightly conservative
- ☐ Conservative
- ☐ Extremely Conservative
- ☐ Libertarian

This is the end of the survey. Thank you very much for your participation.

APPENDIX C

COUNTRY SURVEY INSTRUMENT

SOCIAL SURVEY

Thank you for agreeing to participate in this survey. We are going to ask you questions about your thoughts on some social issues. There are no right or wrong answers to the questions in this survey. We really want to know what you think.

[CONSENT SCREEN 1]

Study Purpose

You are one of about 1500 people in the United States who are being asked to take this survey to help us understand opinions on social issues.

Study Duration

This survey has two parts. It will take about 10-15 minutes to complete the first part. You cannot start the second part of the survey until at least 24 hours after you have completed the first part. You must finish the second part within 10 days of starting the first part. The survey will take about 30 minutes to complete in total.

Study Details

The University of North Carolina at Chapel Hill (UNC) is doing this study for a foundation. UNC has contracted with Knowledge Networks (KN) to collect data. If you have questions about this survey, please contact Panel Relations at 800-782-6899 and someone will direct your questions to the appropriate person at UNC.

[CONSENT SCREEN 2]

Possible Risks or Discomforts

If any questions make you uncomfortable, you do not need to answer them.

KN will protect your responses under its Privacy Policy. UNC will receive your survey responses without any personal identifiers. UNC also will make every effort to protect your responses. There is a potential risk of disclosure of the survey data, but the data could not be directly tied to you.

Benefits

There are no direct benefits to you from participating in this study. However, your responses are very important to us.

[CONSENT SCREEN 3]

Confidentiality

Many steps have been taken to protect your information. KN will report only your responses to UNC, not your name. If the results of this study are presented at scientific meetings or published in scientific journals, no information will be included that could identify you or your responses personally.

The Institutional Review Board (IRB) at UNC has reviewed this research. An IRB is a group of people who make sure that the rights of participants in research are protected. The IRB may check records of your activity in this research to see if proper procedures were followed.

Your Rights

Your decision to take part in this research study is completely voluntary. You can refuse to answer any question or stop at any point after you begin the survey and still receive your KN points for participating in the survey.

[PROMPT IF SKIP]
[CONSENT SCREEN 4]

If you have read the previous screens and agree to participate, please click the Yes button, if not, click the No button.

☐ Yes, I agree to participate.

☐ No, I do not agree to participate.

[IF CONSENT= NO OR SKIP]

Thank you for your consideration. You have exited the survey.

[PROMPT IF SKIP]

1.

A. Here is a list of problems you may be concerned about. What do you think is the most important and least important concern for the country among the items listed below?

[SHOW ITEMS NOT SELECTED IN Q1A]

B. Of the remaining concerns, what do you think is the most important and least important concern for the country among the items listed below?

MOST Important (Please check ONE)		**LEAST Important (Please check ONE)**
	Crime	
	Education	
	Energy	
	Environment	
	Federal budget deficit	
	Health care	
	Homeland Security	
	Housing	
	Illegal Immigration	
	Poverty	
	Unemployment	

PREFERENCES FOR MOVING TO ANOTHER COUNTRY

Suppose that for some reason you and your family had to move to another country. Suppose also that you could choose between two English-speaking countries. We want you to assume that you pay the same amount of taxes as you pay now, and you would have the same level of household income as you now have in the U.S. However, the cost of living and the environmental, social, and health conditions are different in the two countries. Here are the features of these two imaginary countries that we will ask you to think about:

- Environmental quality
- Childhood poverty
- Health care
- Cost of living

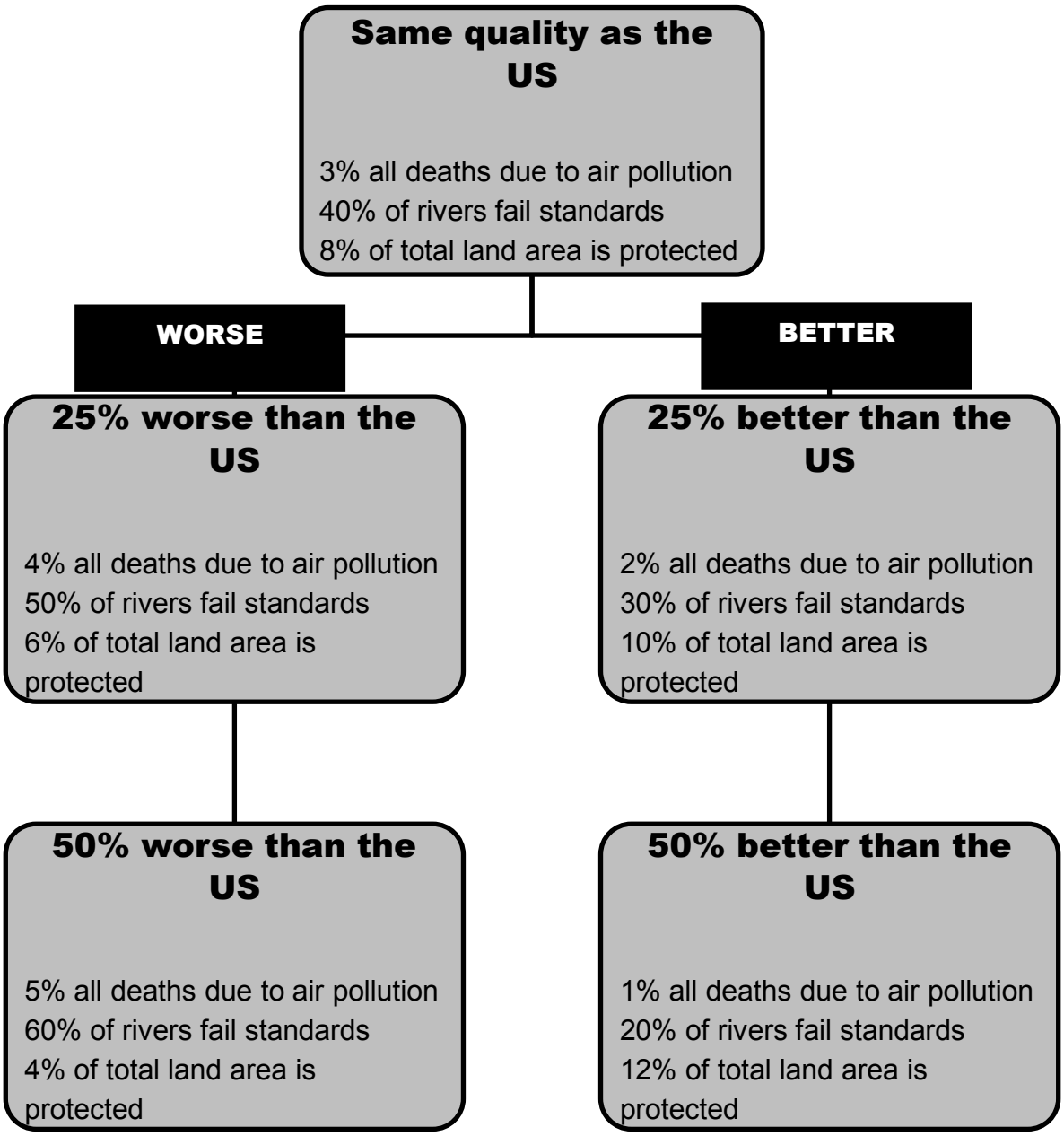
These two countries are similar to the US in all other aspects. Then we will ask you which of the two countries you would rather live in.

Country Feature: Environmental Quality

You may want to consider environmental quality in thinking about which country you would want to live in. Here are some measures of environmental quality in the US:

Environmental quality in the US	**What does this mean?**
3% of all deaths are caused by air pollution.	Air pollution can cause lung and heart problems, such as asthma and heart attacks. As a result, some people die sooner than they would if air pollution levels were lower.
About 40% of rivers do not meet water-quality standards for fishing and swimming.	Low water quality affects people's health if they eat fish caught in polluted rivers or if they swim in these rivers.
About 8% of total land area is protected.	Protected lands provide many services for outdoor activities such as fishing, hiking, and educational programs. They also protect rare plants and animals.

Questions later in this survey will ask you to compare countries with different levels of environmental quality. The levels of environmental quality are defined relative to the current environmental quality in the US:



2. Within the last year, about how many days did you or your family avoid some outdoor activity because of air pollution?

   ☐ None

   ☐ 1-2 days

   ☐ 2-5 days

   ☐ 5-10 days

   ☐ 10-20 days

   ☐ More than 20 days

3. Within the last 5 years, how many <u>different</u> national or state parks have you visited?

   ☐ None

   ☐ 1-2 parks

   ☐ 3-5 parks

   ☐ 6-10 parks

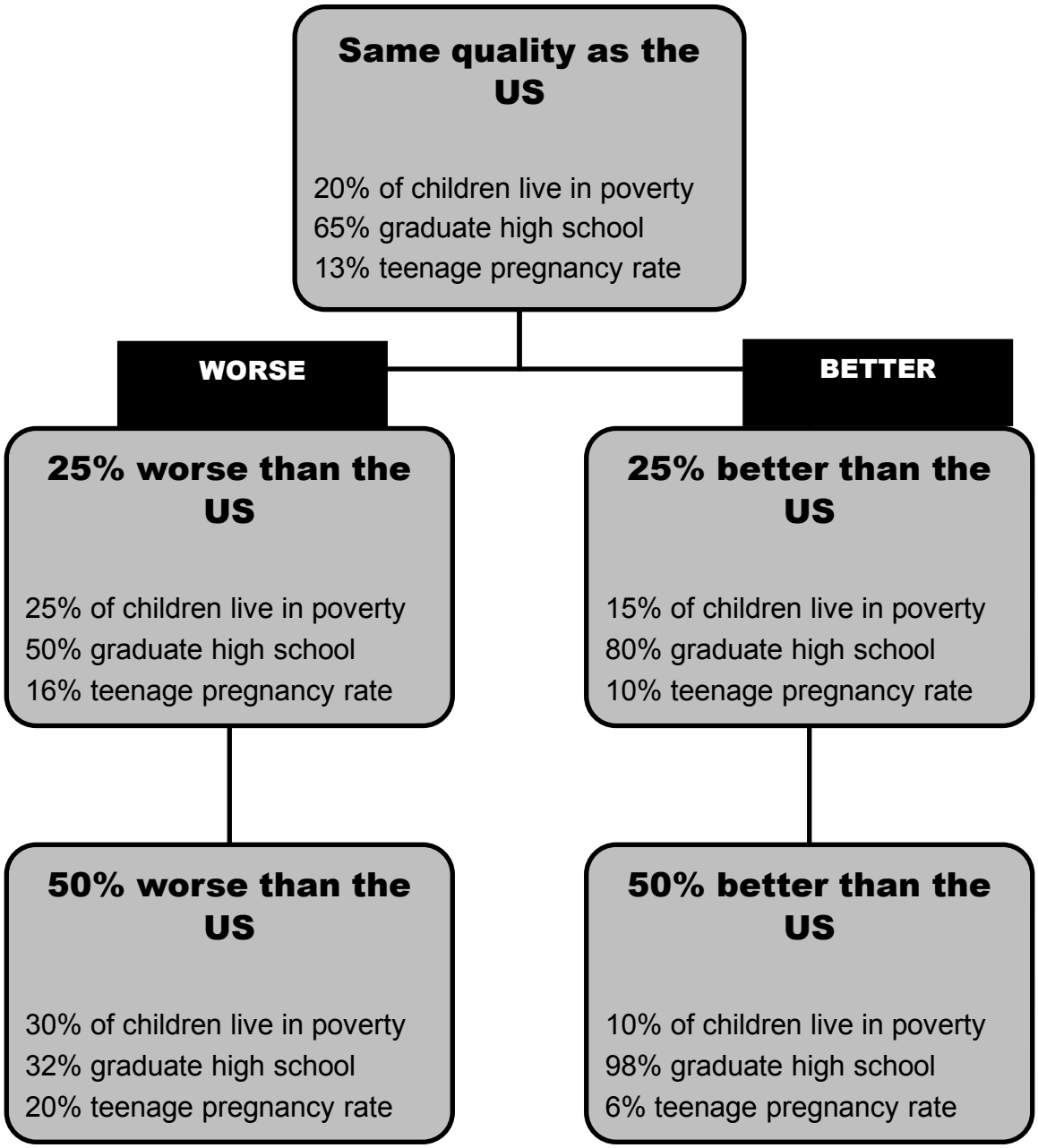
   ☐ More than 10 parks

Country Feature: Childhood Poverty

You may want to consider how much childhood poverty there is in thinking about which country you would want to live in. Here are some measures of childhood poverty in the US:

Poverty in the US	**What does this mean?**
About 20% of children live in poverty.	About one in five children in the US lives in a family with income less than the poverty level of $27,000 for a household of five. Most of these children will be poor as adults.
The high school graduation rate of teenagers living in poverty is about 65%.	The national high school graduation rate is 80%, higher than the rate for the teens living in poverty. Children living in poverty are more likely to drop out of high school, be unemployed, and commit crimes.
The pregnancy rate among poor teenage girls is about 13%.	The national teen pregnancy rate is 7%, much lower than the rate for teens living in poverty. Children born to teen mothers are more likely to experience family conflict, bad role models, and low income as adults.

Questions later in this survey will ask you to compare countries with different levels of childhood poverty. The levels of childhood poverty are defined relative to the current poverty levels in the US:



4. What has been your own experience with poverty? (Please check all that apply)

- ☐ I am not poor now and have never lived in poverty.
- ☐ I grew up in a family in poverty, and my family is still poor.
- ☐ I have been poor in the past, but am not poor now.
- ☐ I was not poor in the past, but am poor now.
- ☐ Members of my family have experienced poverty, but I have not.
- ☐ Families in my neighborhood have experienced poverty.
- ☐ I am not poor now, but I feel like I could easily fall into poverty. I live paycheck to paycheck.
- ☐ None of the above. **[If chose this option, cannot choose the above options.]**

5. What do you think the rate of childhood poverty is in your area, compared to the national average?

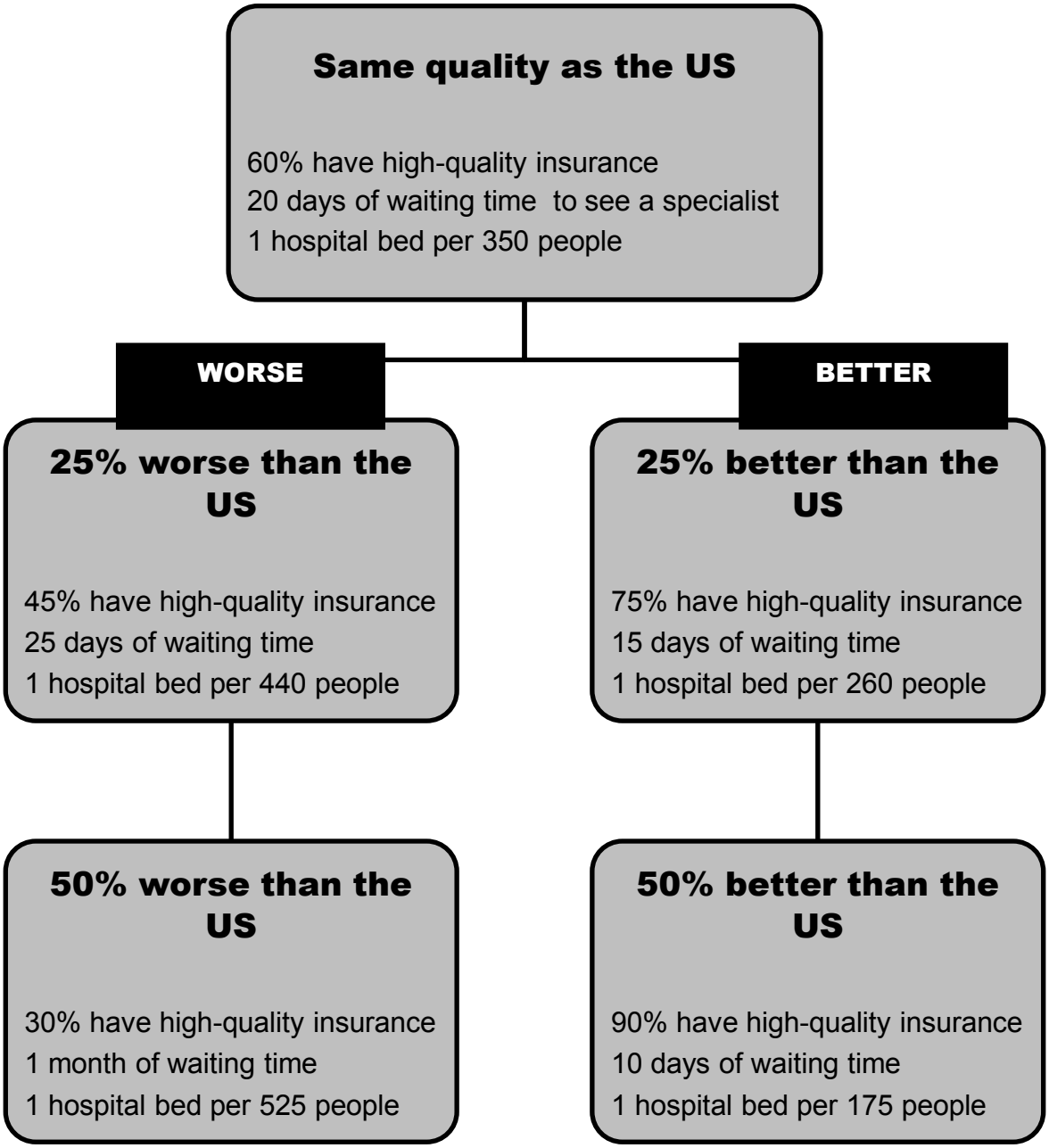
- ☐ Much higher
- ☐ Somewhat higher
- ☐ About the same
- ☐ Somewhat lower
- ☐ Much lower

Country Feature: Health Care

You may want to consider access to affordable, high-quality health care in thinking about which country you would want to live in. Here are some measures of health care in the US:

Health care in the US	**What does this mean?**
About 60% of people have high-quality health insurance with affordable co-payments.	People without good health insurance might have to pay out of their own income or savings to cover the cost of their treatment, put off treatment until their condition gets worse, or do without treatment.
The average waiting time to see a specialist is about 20 days.	When there are too few specialists in an area, people have to wait to get treatment. During that time their condition could get worse and become more difficult to treat.
The average number of hospital beds is 1 per 350 people in the general population.	When there are too few hospital beds in an area, some people have to wait to get an operation or other treatment in hospitals. During that time their condition could get worse and become more difficult to treat.

Questions later in this survey will ask you to compare countries with different levels of access to health care. The levels of health-care quality are defined relative to the current health-care quality in the US:



6. How would you rate your current health insurance coverage?

- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ I do not have a health insurance coverage now

7. What is the longest you have had to wait to see a specialist?

- ☐ No more than a few days
- ☐ About 1 week
- ☐ About 2 weeks
- ☐ About 3 weeks
- ☐ About 1 month
- ☐ About 2 months
- ☐ About 3 months
- ☐ More than 3 months
- ☐ Not applicable

Country Feature: Cost of Living

You may want to consider the annual or monthly cost of living in thinking about which country you would want to live in. An increase in the cost of living means that you would have less money to spend after buying the goods and services you do now. A decrease in the cost of living means that you would have more money to spend after buying the goods and services you do now.

Questions later in this survey will ask you to think about the cost of living in the two countries compared to your current cost of living in the US. You may be asked to assume that the cost of living would be higher or lower than now, or the same as now.

If the cost of living decreases, you will have more money to spend than you do now. If the cost of living increases, you will have less money to spend than you do now.

8. How many times have you moved to a different town or city in your lifetime?

- ☐ Never moved
- ☐ 1-2 times
- ☐ 3-5 times
- ☐ 6-10 times
- ☐ More than 10 times

[IF Q8~=1 OR SKIP]

9. [If not "never moved"] The last time you moved, how important were each of these factors in deciding where you chose to live?

	Very Important	Somewhat Important	Not Important
A. Schools			
B. Health services			
C. Air quality			
D. Crime rate			
E. Housing prices			
F. Cost of living			

Later in the survey, we will ask you to compare two possible countries. For each pair of countries, we need you to tell us which country (Country A or Country B) you would choose to live in *if these were the only two alternatives available*. We will show you an example of a choice question in the next screen.

When you make your decision about which of the two alternative countries (A or B) to choose, consider carefully the cost of living in each country. For example, in the sample question below, consider the two alternative countries below.

Country Feature	Current US Levels	Country A	Country B
Environmental Quality	• 3% of all deaths due to air pollution • 40% of rivers fail standards • 8% of total land is protected	25% **better** than the US	25% **worse** than the US
Childhood Poverty	• 20% of children live in poverty • 65% graduate high school • 13% teenage pregnancy rate	50% **worse** than the US	50% **better** than the US
Health Care	• 60% have high-quality health insurance • 20 days of waiting time to see a specialist • 1 hospital bed per 350 people	Same as the US	Same as the US
Cost of Living		You would have $5,000 **more** per year to spend ($420 **more** per month)	You would have $5,000 **less** per year to spend ($420 **less** per month)

In the example above, we want you to assume that:

- In Country A, you would have $5,000 per year **more to spend after you buy the goods and services you do now.** This corresponds to $420 more to spend each month.
- In Country B, you would have $5,000 per year **less to spend after you buy the goods and services you do now.** This corresponds to $420 **less to spend** each month.

Of course your quality of life depends not only on the cost of living, but also on the environmental quality, childhood poverty and health care in the two countries. The two countries are better in some respects and worse in others.

Country A would have 25% better environmental quality than the US today; but the childhood poverty would be 50% worse than the US today.

Country B would have 50% better childhood poverty than the US today; but the environmental quality would be 25% worse than in the US today.

Considering the different quality of life in Country A and Country B, and the different cost of living, we want to know which country you would choose.

Now we'd like you to look at the country-choice questions. We do NOT want you to answer these questions at this time. We would like to give you some time to think about your preferences for choosing between two countries with different environmental quality, childhood poverty, quality of health care and cost of living.

We will ask you to answer these questions when you return to the survey next time. You may want to discuss these questions with other people to help you decide how to answer. Please feel free to do that.

We are interested in how you feel about these choices for your own family. There are no right or wrong answers.

When you consider which country you would like to live in, please assume that everything about the two countries is the same except cost of living, environmental quality, childhood poverty, and quality of health care.

Please also assume that you will be paying the same amount of taxes you are paying now, and your household income will not change when you think about moving to a different country, but the cost of living may change.

Please think about the following question. You will be asked to answer it later.

If these were the only two alternatives, which country would you choose to live in?

Country Feature	Current US Levels	Country A	Country B
Environmental Quality	• 3% of all deaths due to air pollution • 40% of rivers fail standards • 8% of total land is protected		
Childhood Poverty	• 20% of children live in poverty • 65% graduate high school • 13% teenage pregnancy rate		
Health Care	• 60% have high-quality health insurance • 20 days of waiting time to see a specialist • 1 hospital bed per 350 people		
Cost of Living			

Which country would you choose? ☐ ☐

[At the end of trade-off questions]

We request that you return to the second part of this survey after 24 hours but before 10 days from now (i.e., between [TIME, Pacific on DATE] Pacific time and [TIME, Pacific on DATE] Pacific time) to answer the questions about your choice between two countries, and complete the rest of the questionnaire.

We had one big problem in the past in this type of surveys. Some respondents did not return to the second part of the survey. This is a big problem for us since if someone does not return to the second part to complete the survey, we cannot use the information he or she provided in the first part, either. This means that the time these respondents spent on the first part was wasted. Please help our study by returning to complete the second part of the survey within the given time period.

You will receive 5,000 points after you complete the second part of this survey.

[CREATE DOV_TRANSTIME1: RECORD DATE AND TIME WHEN FIRST REACHED THE TRANSITION SCREEN ABOVE]

[SECOND PART OF THE SURVEY]

Thank you for returning to finish this second part of the survey.

In the next 8 questions, we will ask you to compare two possible countries. For each pair of countries, please tell us which country (Country A or Country B) you would choose to live in *if these were the only two alternatives available*.

You may access to the information on the country features (environmental quality, childhood poverty, quality of health care and cost of living) by clicking <here>. Please assume that everything else about the two countries is the same.

Please also assume that you will be paying the same amount of taxes you are paying now, and your household income will not change when you think about moving to a different country, but the cost of living may change.

Remember, we are interested in how you feel about these choices for your own family. There are no right or wrong answers.

Before you tell us which country you prefer in the following questions, we want you to help us with a problem we have had in studies like this one. Of course, you really don't have to move to a different country. But we are asking you to think about what you would do if you really had to make a decision like this.

People sometimes find it hard to do this in our studies. They give different answers to survey questions than they actually would do in a real situation. For example, because it may be hard to think about moving to a different country, in the survey you might just pick the country that has better health care or the country that has lower childhood poverty. In a real decision you probably would think hard about any increase in the cost of living, and whether the value of better environment, poverty, and health care would be worth the increase in the cost of living.

Please consider the country alternatives very carefully, and make a decision as if your family would really have to live in one of the two countries with the quality of life and cost of living listed.

Please consider your actual household income and any increase in cost of living before making a decision. Some people tend to make a decision without considering whether they can afford the increased cost of living.

If you don't answer the questions as if you were making real decisions, our study results will be wrong. Please help us measure your opinions correctly by answering each question as if it were a real decision before deciding which one of the two alternative countries you would choose.

Also please remember that we asked you to pretend that you have to move to another country. So, please do not consider where you live now; but compare Country A and Country B to each other.

Please think carefully about your choices because the results of this survey will likely be shared with national media and may influence public policy discussions in the US.

Your opinion matters to us!

If these were the only two alternatives, which country would you choose to live in?

Country Feature	Current US Levels	Country A	Country B
Environmental Quality	• 3% of all deaths due to air pollution • 40% of rivers fail standards • 8% of total land is protected		
Childhood Poverty	• 20% of children live in poverty • 65% graduate high school • 13% teenage pregnancy rate		
Health Care	• 60% have high-quality health insurance • 20 days of waiting time to see a specialist • 1 hospital bed per 350 people		
Cost of Living			

Which country would you choose? ☐ ☐

[SHOW ONLY AFTER "POLICY" QUESTION IN THE DESIGN]
[NUMER BOX 0-100]
[AUTOMATICALLY UPDATE SUM]
[DO NOT ALLOW TO PROCEED UNTIL SUM IS 100]
[SHOW POLICY QUESTION AGAIN WITH ANSWERS SELECTED AND GREYED OUT]

10. What percent of Americans do you think would choose to move to each country in the question above?

	Percent vote
Country A	_____%
Country B	_____%
	100 %

11. Have you ever lived in a foreign country for more than one year?

- ☐ Yes
- ☐ No

[IF Q11=NO OR SKIP]

12. [If answered NO to #11] Have you ever seriously considered moving to a foreign country to live for more than one year?

- ☐ Yes
- ☐ No

13. About how many foreign countries have you visited in your lifetime?

- ☐ None
- ☐ 1-2
- ☐ 3-5
- ☐ More than 5

16. Between the first time I logged off of the survey (the end of the first session) and when I logged on to complete the survey today:[Please check all that apply]

- ☐ I thought about what was important about moving to a different country.
- ☐ I discussed what was important about moving to a different country with someone else.
- ☐ I read some additional information about environmental quality, childhood poverty, quality of life, or cost of living.
- ☐ I did not think about this survey at all.

[NUMBER BOX 0-999 FOR MINUTES]
[IF Q16=1,2,3]

17. About how much time did you spend thinking and/or discussing about moving to a different country?

TOTAL NUMBER OF MINUTES: _____

[IF Q16=2, 3]

18. [IF YES TO DISCUSSED] Whom did you talk to? Please check all that apply.

- ☐ My spouse/partner
- ☐ My children
- ☐ My parents
- ☐ My friends
- ☐ Others (please specify) _____

[IF Q16=4]

19. [IF YES TO READ] Where did you find the information you read?

- ☐ Websites/Internet
- ☐ Books
- ☐ Newspapers or magazines
- ☐ Brochures or pamphlets
- ☐ Other (please specify) : _____

Now we will ask you some questions to learn your opinion about the current state of things in the US.

20. Some people in the United States have better jobs and higher incomes than others. The table below lists some of possible reasons for these differences in people's incomes and jobs. Using a 1–5 scale, where '1' means not at all important and '5' means extremely important, please tell us how important each reason is for why some people have better jobs and higher incomes than others.

	Not at all important	**Extremely important**
W. Willingness to take risks	1_____2_____3_____4_____5	
X. Money inherited from families	1_____2_____3_____4_____5	
Y. Hard work and initiative	1_____2_____3_____4_____5	
Z. Ability or talent that a person is born with	1_____2_____3_____4_____5	
AA. Taking advantage of others to get ahead	1_____2_____3_____4_____5	
BB. Good luck, being in the right place at the right time	1_____2_____3_____4_____5	
CC. Physical appearance and good looks	1_____2_____3_____4_____5	
DD. Connections and knowing the right people	1_____2_____3_____4_____5	
EE. Being a member of a particular race or ethnic group	1_____2_____3_____4_____5	
FF. Getting the right education or training	1_____2_____3_____4_____5	

GG. A person's gender, that is whether they are male or female	1_____2_____3_____4_____5

21. In your opinion, do most poor people in the US have a chance of escaping from poverty, or is there very little chance of escaping?

1_____2_____3_____4_____5

Very little chance of escaping	Very high chance of escaping

22. Do you agree or disagree with the statement: “The way things are in America right now, people like me and my family have a good chance of improving our standard of living over the next ten years.”

1_____2_____3_____4_____5

Strongly Disagree	Strongly agree

23. Which of the following groups do you think should have the greatest responsibility and the least responsibility for helping the poor?

GREATEST responsibility (Please check ONE)		**LEAST responsibility (Please check ONE)**
O	Churches	O
O	Private charities (community service organizations)	O
O	Federal government	O
O	State/local government	O
O	Families and relatives of poor people	O
O	Poor themselves	O

24. Do you feel you are asked to pay more than you should in federal income taxes, about the right amount, or less than you should? What about poor people? What about rich people?

G. My household

- ☐ I am paying more than I should
- ☐ I am paying about the right amount
- ☐ I am paying less than I should
- ☐ Don't know/Not sure

H. Poor people

- ☐ They are paying more than they should
- ☐ They are paying about the right amount
- ☐ They are paying less than they should
- ☐ Don't know/Not sure

I. Rich people

- ☐ They are paying more than they should
- ☐ They are paying about the right amount
- ☐ They are paying less than they should
- ☐ Don't know/Not sure

25. Do you think the government should make it more difficult for people to buy a hand gun than it is now, make it easier for people to buy a hand gun, or keep these rules about the same as they are now?

- ☐ More difficult
- ☐ Make it easier
- ☐ Keep these rules about the same
- ☐ Don't know/ Not Sure

26. Please check the opinion about abortion on the list below that best agrees with your view.

- ☐ By law, abortion should never be permitted.
- ☐ The law should permit abortion only in case of rape, incest or when the woman's life is in danger.
- ☐ By law, a woman should always be able to obtain an abortion as a matter of personal choice.
- ☐ Don't know/ Not Sure

27. Here is a list of the political views that people might hold. Which one describes your political views the best?

- ☐ Extremely liberal
- ☐ Liberal
- ☐ Slightly liberal
- ☐ Moderate; middle of the road
- ☐ Slightly conservative
- ☐ Conservative
- ☐ Extremely Conservative
- ☐ Libertarian

This is the end of the survey. Thank you very much for your participation.

APPENDIX D

INTERNAL VALIDITY

The following items were investigated to check the internal validity of the data in this research.

- No variation
- Transitivity test
- Insensitivity to the cost attribute
- Dominating on the cost attribute
- Scope test
- Income effect

No Variation

The data were checked for subjects whose answers to the trade-off questions in the budget and country surveys showed no variation. These subjects always picked either Alternative A or Alternative B in all of the trade-off questions. In total, the answers of 31 (1.5%) and 13 (1.3%) subjects to the budget and country trade-off questions, respectively, showed no variation.

A binomial-probit model was estimated to investigate which subjects were likely to show no variation in their responses. The dependent variable was 1 if a subject's answers to the trade-off questions showed no variation (as described above, 0 otherwise). The independent variables were individual-specific covariates. The estimates showed that subjects with a college degree were less likely to show no variation in their answers, and that subjects who indicated that "federal government" should be the group most responsible for helping the poor and subjects who were non-attendant to the cost attribute were more likely to show no variation in the budget survey (Table D.1). In the country survey, white subjects were less likely to show no variation; and older subjects, subjects who indicated

that “federal government” should be the group most responsible for helping the poor, and subjects who indicated “poor themselves” should be the group most responsible for helping the poor were more likely to show no variation in their responses. Subjects whose answers to the trade-off questions showed no variation also failed the transitivity test, and were omitted from the final analysis. These subjects were very likely to go through the survey without paying particular attention to the questions.

Transitivity Test

Transitivity is a fundamental axiom of utility theory and is required for valid welfare estimation (Just et al., 2004). Transitivity assumes that if subjects choose Alternative A over Alternative B in one choice set, and Alternative B over Alternative C in another choice set, they will pick Alternative A over C in a third choice set. Two extra trade-off questions were created (in addition to one trade-off question chosen from the design) to construct a transitivity test for each block in the DCE surveys. In the budget and country surveys, 195 (9.6%) and 93 (9.2%) subjects failed the transitivity test, respectively. This rate is much lower than the failure rates for internal validity test results in similar studies (Ryan & San Miguel, 2000; Ryan & Bate, 2001; Özdemir et al., 2010).

A binary-probit model was estimated to investigate which subjects were likely to fail the transitivity test. The dependent variable was 1 if a subject failed the transitivity test and 0 otherwise. Subjects with a college degree were less likely to fail the transitivity test in the budget survey, while subjects who were non-attendant to the cost attribute were more likely to fail the test (Table D.2). No significant correlation was observed for transitivity-test failure in the country survey.

I investigated whether subjects who failed the transitivity test had different preferences for the cost attribute than those who did not fail the test. Their preferences for the cost attribute were not found to be significantly different than the others in the preliminary analysis. Therefore, these subjects were kept in the final analysis.

Insensitivity to the Cost Attribute

Subjects' preferences were also tested for insensitivity to the cost attribute. In the CV survey, around 1% supported funding the early-childhood program when the tax level was more than 5% of their annual household income. These subjects were eliminated from the subsequent analysis, as is commonly practiced (Diamond & Hausman, 1994).

In the budget survey, likely non-attendance to the cost attribute was investigated following the method developed by Scarpa and colleagues (Scarpa et al., 2009). The attribute non-attendance was identified by using an equality-constrained latent-class analysis that estimated the probability of membership in a latent class with zero utility on the cost attribute. The other attributes with non-zero utility weights were considered to be constant across the latent classes.

The latent-class model was estimated with five latent classes. The first latent class comprised subjects who simultaneously considered all of the attributes. The second, third, and fourth latent classes comprised subjects who ignored one of the non-cost attributes, and the fifth comprised subjects who ignored the cost attribute. An individual was considered to be non-attendant to the cost attribute if his or her probability of class membership in the fifth latent class was highest and greater than 0.5.

Respectively, 709 (35%) and 329 (33%) of the subjects were classified as likely to be non-attendant to the cost attribute in the budget and country surveys. A binomial-probit model was estimated to investigate which subjects were likely to be non-attendant. The dependent variable was 1 if a subject was identified as non-attendant to the cost, based on the above criteria, and 0 otherwise. Liberals, subjects who indicated "federal government" should be the group most responsible for helping the poor, and subjects who failed the transitivity test were more likely to be non-attendant; subjects who indicated that "poor themselves" should be the group most responsible for helping the poor were less likely to be non-attendant to the tax attribute in the budget survey (Table D.3). Income was positively

associated with non-attendance to cost; subjects who indicated that “poor themselves” should be the group most responsible for helping the poor were less likely to be non-attendant to the cost attribute in the country survey.

Table D.4 shows findings from a list of DCE studies that investigated likely non-attendance. Although there are a handful of studies on this topic in the literature, this is not an inclusive list but rather a collection generated by a quick search. The table presents the percentage of the sample that was likely to be non-attendant to the cost attribute in these studies. Non-attendance, which seems to have been a problem not only for environmental and health-care goods but also for private goods, has been observed in studies conducted in a variety of countries. The non-attendance rate in this study lies somewhere in the middle of the range that has been reported in the literature.

Following suggestions from the literature (Lancsar & Louviere, 2006), I controlled for these preferences instead of dropping these subjects. Interaction terms between the cost variables (C_{inc} and C_{dec}) and a dummy variable indicating likely non-attendance to the cost (D_{nonatt}) were included such that the utility function can be summarized as:

$$V = \beta' X + \mu C_{inc} + \breve{\mu} C_{dec} + \mu_1 C_{inc} D_{nonatt} + \breve{\mu}_1 C_{dec} D_{nonatt} \quad \text{(D1)}$$

where X denotes a vector of all non-monetary attributes, β is a vector of non-monetary attribute parameters, and μ indicates the cost-related parameters. The cost-increase ($\mu + \mu_1$) and the cost-decrease ($\breve{\mu} + \breve{\mu}_1$) parameters for subjects who were non-attendant to the cost equal zero. The main-effects cost-increase parameter (μ) was used to calculate the marginal utility of income. For example, WTP for a 50% increase in the early-childhood program was calculated as:

$$WTP = \frac{50 * \beta^{child}}{-\mu} \quad \text{(D2)}$$

where β^{child} indicates the parameter for increases in the early-childhood program. This method of calculating WTP used the mean parameter β for all subjects (excluding subjects

with no variation) for non-monetary attributes and the mean parameter μ for the subjects, excluding those who were likely non-attendant to the cost attribute (and subjects with no variation) for cost increase. This method benefited from information about the preferences of these subjects (who were non-attendant to the cost attribute) for the non-monetary attributes while preventing the cost-parameter estimates from being very low, which would have led to very high WTP values.

Table D.5 shows the WTP values for the early-childhood program in the budget survey for the controlled (with interactions) and uncontrolled (no interactions) estimates. The WTP values from the controlled model for moderates and liberals were much smaller than the values from the uncontrolled model. While the program-increase parameter was not significant for conservatives in the controlled model, it was significantly negative in the uncontrolled model. Controlling for likely non-attendance pulled down the upward bias and provided reasonable estimates. The results for the other attributes in the budget survey and for the attributes in the country survey were very similar.

As an alternative method, I also investigated whether a marginal-utility-of-income (MUM) function could be generated as a function of individual-specific characteristics, excluding social ideology (which was correlated with likely non-attendance) in the budget survey. The mean MUM was about the same for the whole sample and for subjects who were non-attendant to the cost attribute. While the MUM was very robust with various specifications of the function, the variations among the subjects were so small that it did not affect WTP values.

Dominating on the Cost Attribute

Preferences were investigated for whether subjects dominated on the cost attribute. Dominance on the cost attribute was used as an indicator of scenario rejection, especially for the tax attribute in the budget survey. A participant was considered as dominating on the

cost attribute if he or she chose the alternative with the lower level of cost increase or higher level of cost reduction in all of the trade-off questions.

Only 1% of subjects who completed the budget survey dominated on the tax attribute, whereas 10% of subjects who completed the country survey dominated on the cost-of-living attribute. A binomial-probit model was estimated to investigate who was likely to dominate on the cost attribute. The dependent variable was 1 if a subject dominated on the cost attribute as defined above, and 0 otherwise. Male subjects, liberals, subjects who indicated that “federal government” should be the group most responsible for helping the poor, and subjects in the “tax-credit” version were more likely to dominate on the tax attribute in the budget survey (Table D.6). Conservatives were more likely to dominate on the cost attribute in the country survey at the 10% significance level. The low level of dominance on the tax attribute in the budget survey indicates that possible tax-protest votes were eliminated. Perhaps the higher level of dominance on the cost-of-living attribute is not surprising, as this attribute was indexed to household income in the country survey.

Scope Test

A between-sample scope test was constructed on the number of children targeted for the early-childhood program in the CV survey. The small-program option targeted only the beneficiaries of the current government programs, which comprised about 18% of children in poverty under the age of 6 in a federal-level program. The large-program option targeted 90% of children in poverty under the age of 6. The scope test investigated whether WTP for a large program was higher than WTP for a small program. The dummy variable for the small program was not statistically significant in the parametric analysis of the CV data, which indicated that the survey did not pass the scope test. Paper 1 contains additional discussion on this finding.

Income Effects

I also investigated whether subjects' incomes were significantly correlated with their preferences. Income was significantly correlated with supporting the early-childhood program in the CV data at the 1% significance level. An interaction variable was created between the cost attribute and the household income to investigate the income effects in the DCE data. The income interaction variable was significant at the 5% level in the budget survey but was not significant in the country survey. However, the bid levels for the cost-of-living attribute in the country survey were indexed to a subject's annual household income. For this reason, the cost levels in this survey have already been adjusted for income.

Table D.1 Binomial -Probit Model Estimates for No Variation

	Budget Survey			Country Survey		
	Coefficient	***Stand. Error***	***P value***	***Coefficient***	***Stand. Error***	***P value***
Income	1.07E-06	2.59E-06	0.678	-6.81E-06	4.11E-06	0.098
College degree	-0.574	0.275	0.037	0.279	0.402	0.487
White	-0.084	0.198	0.669	-0.860	0.239	0.000
Male	-0.025	0.184	0.893	-0.356	0.277	0.198
Age	0.002	0.006	0.725	-0.017	0.007	0.014
Social ideology	-0.018	0.087	0.834	-0.129	0.187	0.489
Federal government †	0.487	0.212	0.022	4.451	0.465	0.000
Poor themselves †	0.214	0.200	0.284	4.551	0.450	0.000
Non-attendant to cost	0.338	0.145	0.020	0.074	0.347	0.831
Credit version	0.288	0.334	0.388	*NA*[¥]		
Version 2	0.383	0.228	0.093	*NA*		
Version 4	0.390	0.227	0.085	*NA*		
Constant	-2.927	0.422	0.000	-5.238	0.609	0.000
N of observations	*1712*			*826*		
Log Likelihood	*-94*			*-22*		
Degrees of freedom	*12*			*9*		

† These are the categories for the question on who should be the most responsible group for helping the poor.

¥ NA denotes “not applicable”.

Table D.2 Binomial-Probit Model Estimates for Failing Transitivity Test

	Budget Survey			Country Survey		
	Coefficient	***Stand. Error***	***P value***	***Coefficient***	***Stand. Error***	***P value***
Income	-3.57E-07	1.03E-06	0.727	-6.25E-07	1.47E-06	0.671
BS degree	-0.220	0.103	0.032	0.012	0.134	0.926
White	-0.064	0.103	0.534	-0.118	0.140	0.398
Male	0.024	0.089	0.784	-0.109	0.118	0.357
Age	-0.003	0.003	0.352	-0.001	0.004	0.841
Social ideology	-0.018	0.047	0.701	-0.094	0.067	0.160
Federal government †	0.205	0.114	0.073	-0.064	0.163	0.693
Poor themselves †	0.089	0.102	0.386	-0.018	0.150	0.904
Non-attendant to cost	0.213	0.092	0.021	*NA*[¥]		
Credit	-0.023	0.213	0.912	*NA*		
Version 2	-0.055	0.123	0.653	*NA*		
Version 3	-0.189	0.133	0.154	*NA*		
Version 4	0.046	0.123	0.707	*NA*		
Constant	-1.216	0.200	0.000	-1.161	0.278	0.000
N of observations	*1708*			*824*		
Log Likelihood	*-490*			*-240*		
Degrees of freedom	*13*			*9*		

† These are the categories for the question on who should be the most responsible group for helping the poor.

¥ NA denotes “not applicable”.

Table D.3 Binomial-Probit Model Estimates for Likely Non-Attendance to the Cost Attribute

	Budget Survey			Country Survey		
	Coefficient	***Stand. Error***	***P value***	***Coefficient***	***Stand. Error***	***P value***
Income	8.00E-07	7.24E-07	0.269	4.13E-06	1.03E-06	0.000
BS degree	0.010	0.073	0.888	-0.053	0.105	0.611
White	-0.081	0.079	0.305	-0.073	0.109	0.503
Male	0.011	0.065	0.866	-0.123	0.093	0.185
Age	0.000	0.002	0.933	-0.002	0.003	0.508
Social ideology	0.312	0.036	0.000	0.024	0.049	0.619
Federal government †	0.188	0.085	0.027	0.061	0.117	0.603
Poor themselves †	-0.228	0.075	0.002	-0.293	0.111	0.009
Failed transitivity test	0.237	0.121	0.051	0.145	0.166	0.381
No variation	0.274	0.298	0.359	-0.463	0.661	0.484
Credit	0.020	0.167	0.903	*NA*[¥]		
Version 2	0.007	0.090	0.934	*NA*		
Version 3	-0.141	0.094	0.137	*NA*		
Version 4	0.090	0.093	0.337	*NA*		
Constant	-0.392	0.152	0.010	-0.445	0.192	0.020
N of observations	*1708*			*824*		
Log Likelihood	*-1030*			*-507*		
Degrees of freedom	*14*			*10*		

† These are the categories for the question on who should be the most responsible group for helping the poor.

¥ NA denotes “not applicable”.

Table D.4 Likely Non-attendance Findings in other DCE Studies

Study	Commodity	% Non-attendance to the cost attribute
(Hensher & Greene, 2010)	Preferences of car drivers for routes in Australia	4-5%
(Hensher, 2008)	Commuter car trip in Australia	5 to 30% depending on the model
(Scarpa et al., 2009)	Rural landscape in Ireland (payment vehicle: income and value added tax)	80 to 90% depending on the model
Scarpa, R., Notaro, S. and Raffelli, R. (unpublished)	Alpine grazing areas in Italy (payment vehicle: access fee)	40 to 80%
(D. Campbell, 2008)	Endangered fish species conservation in Ireland (payment vehicle: income and value added tax)	70%
(Gilbride et al., 2006)	Marketable goods, brand choice	57%
(Lagarde, 2012)	Preferences of healthcare providers for clinical guidelines in Ghana (payment vehicle: bonus)	22%
(Puckett & Hensher, 2008)	Road freight	5%
(Poulos et al., 2012)	Household water treatment products in India	74% for cost + one more attribute

Table D.5 By Ideology: Budget Survey Mean Annual WTP (standard errors in parenthesis) per Household, Controlled and Uncontrolled Estimates for Likely Non-Attendance

	Moderates	Liberals	Conservatives
Early Childhood Program, Controlled			
50% decrease/Enrolling 210,000 children	$143 (15)	$225 (21)	$74 (16)
50% increase/Enrolling 640,000 children	$0	$70 (16)	$0
50% increase/Enrolling 640,000 children for Subjects with Experience	$87 (20)	$139 (24)	$57 (22)
Early Childhood Program, Uncontrolled			
50% decrease/Enrolling 210,000 children	$960 (93)	$1,336 (113)	$442 (98)
50% increase/Enrolling 640,000 children	$0	$313 (96)	-$372 (93)
50% increase/Enrolling 640,000 children for Subjects with Experience	$306 (138)	$740 (149)	$0

Table D.6 Binomial-Probit Model Estimates for Dominating on the Cost Attribute

	Budget Survey			Country Survey		
	Coefficient	***Stand. Error***	***P value***	***Coefficient***	***Stand. Error***	***P value***
Income	3.20E-06	1.97E-06	0.106	1.30E-06	1.25E-06	0.299
College degree	0.055	0.206	0.789	0.079	0.137	0.566
White	0.187	0.246	0.447	0.130	0.153	0.397
Male	0.630	0.195	0.001	-0.065	0.125	0.604
Age	0.001	0.005	0.884	-0.002	0.004	0.649
Social ideology	0.498	0.139	0.000	-0.125	0.068	0.068
Federal government †	0.638	0.252	0.011	0.070	0.160	0.662
Poor themselves †	0.011	0.281	0.968	0.152	0.143	0.286
Credit version	1.001	0.414	0.016	*NA*[¥]		
Version 2	0.182	0.360	0.613	*NA*		
Version 3	0.698	0.333	0.036	*NA*		
Version 4	0.647	0.317	0.041	*NA*		
Constant	-4.175	0.508	0.000	-1.498	0.229	0.000
N of observations	*1712*			*826*		
Log Likelihood	*-84*			*-256*		
Degrees of freedom	*12*			*8*		

† These are the categories for the question on who should be the most responsible group for helping the poor.

¥ NA denotes “not applicable”.

APPENDIX E

MODEL ESTIMATION

The estimation of the DCE data depends on the random utility theory. The random utility model is based on the idea that even if the subjects know their utility, the researcher cannot observe the utility or preferences of subjects perfectly. The utility function, therefore, consists of observable (*V*) and non-observable random elements (*ε*):

$$U_i = V_i(P, X, M_i, Z_i) + \varepsilon_i \tag{E1}$$

where U_i is individual *i*'s utility; $V_i(.)$ is the non-random part of the utility function; *P* is a vector of prices; *X* is the good of interest; M_i is individual *i*'s income and Z_i is a vector of personal characteristics. Omitting the price and individual-characteristics vectors for simplicity, if a CV scenario offers an improvement in *X* from X^0 to X^1, holding everything else constant, then:

$$V_i(X^1, M_i) + \varepsilon_i^1 \geq V_i(X^0, M_i) + \varepsilon_i^0 \tag{E2}$$

Assuming that utility is linear in parameters and the error terms are identically and independently distributed (IID), this model can be estimated using either a binomial probit or logit model.

When individuals are offered several alternatives with varying attributes, individual *i*'s indirect utility is expressed as the following equation:

$$U_{ij} = \beta' X_{ij} + \varepsilon_{ij} \tag{E3}$$

where U_{ii} is individual *i*'s utility for alternative *j*, X_{ij} is a vector of attribute levels for alternative *j*; β is a vector of attribute parameters and ε_{ij} is a random disturbance term. Assuming the disturbance term follows a type I extreme-value error structure, the probability that individual *i* selects alternative *j* is the standard conditional-logit expression:

$$P[y_i = j] = \frac{exp(\beta' X_{ij})}{\sum_{k=1}^{J} exp(\beta' X_{ik})} \tag{E4}$$

where *J* is the number of alternatives in a choice set. The probability that an alternative will be selected is the ratio of the exponentiated utility that an alternative provides, relative to the exponentiated sum of the utilities that each alternative in the choice set provides. Since conditional-logit models are subject to certain limitations, Revelt and Train have proposed using random-parameter or mixed-logit models (Revelt & Train, 1998). Mixed-logit models are not subject to the assumption of independence of irrelevant alternatives, accommodate correlations among panel observations, and account for unobserved heterogeneity in tastes across subjects. In a mixed-logit model, the probability of selecting alternative *j* characterized by *k* attributes will be:

$$P[y_{nt} = j] = \frac{exp(\beta_i' X_{ij})}{\sum_{k=1}^{J} exp(\beta_i' X_{ij})} \tag{E5}$$

$$\beta_{ik} = \beta_k + \sigma_k v_{ik} \tag{E6}$$

where β_k is the population mean of the parameters, v_{ik} is the individual-specific heterogeneity and σ_k is the standard deviation of the distribution of β_{ik} around β_k. In contrast to conditional logit, the stochastic part of utility is allowed to be correlated among alternatives and across the sequence of choices. McFadden and Train show that any random-utility maximization model can be approximated by some mixed-logit specification (McFadden & Train, 2000). For the mixed-logit estimations 500 Halton draws were used. All non-monetary variables were specified as normally distributed[34]. The cost parameters were assumed to be nonrandom.

Two linear variables were created for each attribute; one for increases and the other for reductions. Omitting the individual-specific *i* for simplicity, the empirical models of the budget and country data in chapters 2 and 3 were defined as the following:

$$V = \propto^k X_{dec}^k + \beta^k X_{inc}^k + \mu Cost_{inc} + \breve{\mu} Cost_{dec} \tag{E7}$$

[34] Assuming triangular distribution for all parameters produced very similar results.

where *k* indicates a government program in the budget survey, and a quality-of-life attribute in the country survey. The marginal WTP was calculated by dividing a non-monetary attribute by the estimate of the cost-increase parameter. For example, WTP for a 50% increase in the early-childhood program was calculated as the following:

$$WTP = \frac{50 * \beta^{child}}{-\mu} \tag{E8}$$

where β^{child} indicates the parameter for increases in the early-childhood program.

APPENDIX F

DESCRIPTIVE STATISTICS ON THE COMMON QUESTIONS IN ALL THREE SURVEYS

Table F.1 Demographic Information

Category	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783[†]
Gender				0.000
Male	61	50	46	53
Female	39	50	54	47
Age, mean (SD), years	54 (16)	52 (16)	51 (16)	52 (16)
Marital status				
Married	72	57	52	60
Widowed	5	6	4	5
Divorced/separated	9	14	14	12
Single	11	16	21	16
Living with partner	3	7	9	7
Race/ethnicity				
White	86	75	71	77
Hispanic	5	8	11	8
African-American	4	11	12	9
2 or more races	3	3	3	3
Other	2	3	3	3
Highest education				
Less than high school graduate	7	10	6	8
High school or equivalent (e.g., GED)	31	30	19	27
Some college	32	33	27	31
Bachelor's or graduate degree (e.g., BA, BS)	30	27	48	34
Employment, %				
Paid employee	44	48	50	48
Self employed	10	6	7	7
Temporary layoff from a job	<1	1	1	1
Looking for work	6	8	8	7
Retired	27	23	22	24
Disabled	5	9	6	7
Other	8	6	6	6

Category	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783[†]
Household Income[1], mean (SD), $	69K (45K)	65K (47K)	75K (53K)	71K (49K)
Household size, mean (SD)	2.7 (1.4)	2.6 (1.4)	2.6 (1.4)	2.6 (1.4)
1 child between 0-5	12	11	11	11
2 or more children between 0-5	2	2	2	2

[†] The sum of the number of subjects in each ideological group does not add to 4783 because some subjects did not answer the questions on ideology and so were not designated into any ideological group.

[1]Liberals had significantly different income than others at the 5% level.

Table F.2 Most Important Social Priority

Issue	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783
Crime	4.2	5.7	3.9	4.8
Education	4.5	9.7	12.7	9.1
Energy	1.1	1.7	1.7	1.6
Environment	0.5	2.0	4.6	2.3
Federal budget deficit	44.8	23.7	13.9	27.3
Health care	5.6	10.7	14.8	10.3
Homeland security	3.9	4.8	2.3	3.9
Housing	0.4	0.6	0.6	0.6
Illegal immigration	6.9	6.0	2.3	5.1
Poverty	2.1	5.4	7.1	4.9
Unemployment	26.0	29.7	36.0	30.2

Table F.3 Least Important Social Priority

Issue	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783
Crime	4.0	5.3	7.6	5.6
Education	6.3	3.8	2.0	4.0
Energy	8.4	9.9	6.7	8.6
Environment	32.3	14.3	7.5	17.9
Federal budget deficit	1.5	5.0	8.2	4.8
Health care	5.0	2.1	0.8	2.6
Homeland security	4.2	5.0	7.6	5.6
Housing	18.8	21.5	16.0	19.0
Illegal immigration	8.9	23.5	38.9	23.4
Poverty	8.4	7.0	3.1	6.3
Unemployment	1.9	2.6	1.6	2.1

Table F.4 Perceived Local Childhood Poverty Rate, CV and Country Surveys

Question: "What do you think the rate of childhood poverty is in your area, compared to the national average?"	Conservatives N=792	Moderates N=1049	Liberals N=731	All N=2722†
Much higher	4	5	7	5
Somewhat higher	15	18	20	17
About the same	31	34	27	31
Somewhat lower	34	31	32	32
Much lower	16	12	14	14

† This question was not asked in the budget survey.

Table F.5 Participation to Government Early-childhood Program, CV and Budget Surveys

Question: "Has any of your children or a family member's child participated government early-childhood program?"	Conservatives N=949	Moderates N=1291	Liberals N=898	All N=3308†
Yes	13	17	16	15
No	77	71	74	74
Don't know/not sure	9	11	10	10

† This question was not asked in the country survey and in version CFJ in the budget survey because this version excluded the early-childhood program.

Table F.6 Subjects' Experience with Poverty

Question: "What has been your own experience with poverty? (Check all that apply)"	Conservatives N=1242	Moderates N=1687	Liberals N=1163	All N=4318†
I am not poor now and have never lived in poverty	30	27	33	30
I grew up in a family in poverty and my family is still poor	5	10	6	7
I have been poor in the past, but I am not poor now.	27	22	24	24
I was not poor in the past, but am poor now.	4	6	5	5
Members of my family have experienced poverty, but I have not	11	9	10	10
Families in my neighborhood have experienced poverty	11	12	15	12
I am not poor now, but I feel like I could easily fall into poverty. I live pay check to pay check	24	31	26	27
None of the above	10	9	11	10

† This question was not asked in version CFJ in the budget survey because this version excluded the early-childhood program.

Table F.7 Reasons for Better Jobs and Income, Mean (SD)

Reason	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783
Willingness to take risks	3.37 (1.01)	3.10 (0.96)	2.93 (0.93)	3.13 (0.99)
Money inherited from families[1]	2.75 (1.22)	2.93 (1.23)	3.14 (1.26)	2.93 (1.24)
Hard work and initiative	4.34 (0.84)	4.08 (0.91)	3.93 (0.93)	4.12 (0.91)
Ability or talent that a person is born with[1]	3.34 (0.99)	3.31 (0.98)	3.21 (0.98)	3.29 (0.98)
Taking advantage of others to get ahead[2]	2.04 (1.19)	2.18 (1.19)	2.22 (1.19)	2.15 (1.19)
Good luck, being in the right place at the right time	2.78 (1.06)	2.92 (1.08)	2.99 (1.07)	2.90 (1.07)
Physical appearance and good looks[1]	2.97 (1.05)	3.00 (1.04)	2.88 (1.03)	2.95 (1.04)
Connections and knowing the right people	3.47 (1.04)	3.56 (1.02)	3.68 (1.04)	3.57 (1.04)
Being a member of a particular race or ethnic group[2]	2.25 (1.17)	2.40 (1.14)	2.47 (1.04)	2.38 (1.15)
Getting the right education or training	3.92 (0.96)	4.08 (0.92)	4.19 (0.85)	4.07 (0.92)
A person's gender, that is whether they are male or female[2]	2.20 (1.10)	2.34 (1.08)	2.38 (1.07)	2.31 (1.08)

[1]Significantly different between conservatives and liberals, and between moderates and liberals at the 5% level.

[2] Significantly different between conservatives and moderates, and between conservatives and liberals at the 5% level.

Table F.8 Chance of Social Mobility

	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783
Chance of escaping poverty for the poor (1:very little, 5: very high chance)	3.32 (1.04)	2.94 (0.97)	2.72 (0.93)	2.99 (1.01)
My family has a good chance of improving our standard of living (1:strongly disagree, 5:strongly agree)	2.83 (1.15)	2.93 (1.03)	3.08 (1.01)	2.95 1.07)

Table F.9 Greatest Responsibility to Help the Poor

Question: "Group who should have the greatest and the least responsibility to help the poor?"	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783
Churches	15	7	4	9
Private charities	15	11	10	12
Federal government	10	23	37	23
State/local government	7	13	14	12
Families and relatives of poor	13	11	7	10
Poor themselves	40	35	28	34

Table F.10 Least Responsibility to Help the Poor

Question: "Group who should have the greatest and the least responsibility to help the poor?"	Conservatives N=1386	Moderates N=1866	Liberals N=1283	All N=4783
Churches	7	15	20	14
Private charities	4	9	9	8
Federal government	59	31	18	36
State/local government	9	8	6	7
Families and relatives of poor	9	15	24	16
Poor themselves	12	22	22	19

Table F.11 Opinion on Federal Income Tax

Category	Conservatives N=426	Moderates N=541	Liberals N=409	All N=4783
My household				
Paying more than I should	46	34	26	35
Paying about the right amount	43	49	57	49
Paying less than I should	3	3	6	4
Don't know/not sure	6	9	8	8
Poor people				
Paying more than they should	18	30	40	29
Paying about the right amount	25	29	29	27
Paying less than they should	34	15	7	19
Don't know/not sure	23	26	24	25
Rich people				
Paying more than they should	20	5	2	9
Paying about the right amount	34	15	5	18
Paying less than they should	39	72	88	66
Don't know/not sure	8	8	5	7

APPENDIX G

DESCRIPTIVE STATISTICS ON THE CV SURVEY

Table G.1 Information on Survey Versions (n=1712)

Category	Number of Subjects	Percentage of Subjects
Federal Program	885	52
Scope 1	426	25
Scope 2	459	27
State Program	827	48
Scope 1	410	24
Scope 2	417	24

Table G.2 Demographic Information (n=1712)

Category	Number of Subjects	Percentage of Subjects
Gender		
Male	925	54
Female	787	46
Age, mean (SD), years	53 (16)	n/a
Marital status		
Married	1027	60
Widowed	93	5
Divorced/separated	199	12
Single	280	16
Living with partner	113	7
Race/ethnicity		
White	1333	78
Hispanic	130	7
African-American	151	9
2 or more races	50	3
Other	48	3
Highest education		
Less than high school graduate	130	8
High school or equivalent (e.g., GED)	470	27
Some college	522	31
Bachelor's or graduate degree (e.g., BA, BS)	590	34
Employment, %		
Paid employee	798	46
Self employed	126	7
Temporary layoff from a job	12	1
Looking for work	131	8
Retired	425	25
Disabled	119	7
Other	101	6
Household Income, mean (SD), $	69K (49K)	n/a
Household size, mean (SD)	2.6 (1.4)	n/a
1 child between 0-5	192	11
2 or more children between 0-5	35	2

Table G.3 Ranking of Social Priorities (n=1712)

Issue	% of Most Important Votes	% of Second-Most Important Votes	% of Least Important Votes	% of Second-Least Important Votes
Crime	5	5	6	7
Education	8	11	4	5
Energy	2	5	8	13
Environment	2	3	18	16
Federal budget deficit	26	17	5	5
Health care	10	15	3	4
Homeland security	3	8	6	8
Housing	<1	1	19	18
Illegal immigration	5	9	23	14
Poverty	5	8	6	9
Unemployment	33	18	2	2
Missing	0.06	0.12	0.12	0.36

Table G.4 Perceived Local Childhood Poverty Rate (n=1712)

Question: "What do you think the rate of childhood poverty is in your area, compared to the national average?"	Number of Subjects	Percentage of Subjects
Much higher	98	6
Somewhat higher	310	18
About the same	536	31
Somewhat lower	559	33
Much lower	207	12
Missing	2	0.12

Table G.5 Subjects' Experience with Poverty (n=1712)

Question: "What has been your own experience with poverty? (Check all that apply)"	Number of Subjects	Percentage of Subjects
I am not poor now and have never lived in poverty	506	30
I grew up in a family in poverty and my family is still poor	193	11
I have been poor in the past, but I am not poor now.	430	25
I was not poor in the past, but am poor now.	81	5
Members of my family have experienced poverty, but I have not	142	8
Families in my neighborhood have experienced poverty	214	13
I am not poor now, but I feel like I could easily fall into poverty. I live pay check to pay check	428	25
None of the above	160	9
Missing	9	1

Table G.6 Opinion on Government Early-childhood Programs (n=1712)

Question: "What is your opinion about the current government early-childhood programs such as Head Start? (Check all that apply)"	Number of Subjects	Percentage of Subjects
I do NOT know much about these programs	648	38
I do NOT think Head Start is successful	193	11
I think programs like Head Start can help children stay out of trouble	617	36
I think programs like Head Start can help children break out of poverty	579	34
I do NOT think programs like Head Start can help children break out of poverty	177	10
I think the government is wasting money on early childhood interventions	88	5
I think it is NOT the government's job to fund these programs	154	9
I think the extended family should help with early child care	323	19
Missing	6	<1

Table G.7 Participation to Government Early-childhood Program (n=1712)

Question: "Has any of your children or a family member's child participated government early-childhood program?"	Number of Subjects	Percentage of Subjects
Yes	247	14
No	1314	77
Don't know/not sure	146	9
Missing	5	<1

Table G.8 Heckman Video (n=1712)

Question: "Did you watch the video on the previous screen?"	Number of Subjects	Percentage of Subjects
Yes	1625	95
No	9	<1
I tried, but I could not	77	4
Missing	1	<1

Table G.9 Reason for Investing on Early Childhood (n=1625)

Question: Why does Prof. Heckman think America should invest in early childhood development?"	Number of Subjects	Percentage of Subjects
America has a large number of poor children	89	6
Children in early ages are neglected in America	58	4
Early childhood programs are good investments	1413	87
Don't know/Not sure	60	4
Missing	5	<1

Table G.10 Funding Source and Likelihood of Success (n=1712)

Question: How likely do you think it is that *intensive* early childhood development programs like the ones Prof. Heckman studied really can help children break out of poverty if they are funded by each of the sources listed below?"	Number of Subjects	Percentage of Subjects
The federal government		
Very unlikely	221	13
Somewhat unlikely	235	14
Neutral	362	21
Somewhat likely	631	37
Very likely	247	14
Missing	16	1
The state government		
Very unlikely	111	7
Somewhat unlikely	244	14
Neutral	392	23
Somewhat likely	722	42
Very likely	223	13
Missing	20	1
Private charities or local government		
Very unlikely	72	4
Somewhat unlikely	133	8
Neutral	361	21
Somewhat likely	750	44
Very likely	372	22
Missing	24	1

Table G.11 Time-to-think Related Questions (n=1712)

Category	Number of Subjects	Percentage of Subjects
Activity (check all that apply)		
I thought about whether willing to pay	1030	60
I discussed about whether willing to pay	290	17
I read about early-childhood programs	87	5
I read about current government programs	94	5
I did not think about this survey at all	507	30
Missing	10	1
(If discussed) Whom subjects talked to (check all that apply)		
Spouse/partner	201	12
Children	39	2
Parents	34	2
Friends	86	5
Other	29	2
(If read) What subjects read (check all that apply)		
Websites/internet	114	7
Books	5	<1
Newspapers or magazines	27	2
Brochures and pamphlets	26	2
Other	23	1
Time spent thinking or discussing, mean (SD)	36 min (45 min)	
Time between the first and second part, mean (SD)	58 rs 58 min (35 hrs 54 min)	

Table G.12 Reasons for Better Jobs and Income (n=1712)

Reason	Mean (SD)
Willingness to take risks	3.08 (1.0)
Money inherited from families	2.88 (1.25)
Hard work and initiative	4.11 (0.91)
Ability or talent that a person is born with	3.26 (0.99)
Taking advantage of others to get ahead	2.15 (1.20)
Good luck, being in the right place at the right time	2.83 (1.08)
Physical appearance and good looks	2.87 (1.05)
Connections and knowing the right people	3.50 (1.05)
Being a member of a particular race or ethnic group	2.35 (1.16)
Getting the right education or training	4.06 (0.92)
A person's gender, that is whether they are male or female	2.27 1.07)

Table G.13 Poverty Related Questions (n=1712)

	Mean (SD)
Chance of escaping poverty for the poor (1:very little, 5: very high chance)	3.0 (1.0)
My family has a good chance of improving our standard of living (1:strongly disagree, 5:strongly agree)	2.9 (1.0)

Table G.14 Responsibility to Help the Poor (n=1712)

Question: "Group who should have the greatest and the least responsibility to help the poor?"	Greatest responsibility N (%)	Least responsibility N (%))
Churches	137 (8)	256 (15)
Private charities	233 (14)	134 (8)
Federal government	361 (21)	601 (35)
State/local government	191 (11)	121 (7)
Families and relatives of poor	192 (11)	284 (17)
Poor themselves	595 (35)	307 (18)
Missing	3 (<1)	9 (<1)

Table G.15 Federal Income Tax (n=1712)

Category	Number of Subjects	Percentage of Subjects
My household		
Paying more than I should	620	36
Paying about the right amount	886	52
Paying less than I should	63	4
Don’t know/not sure	132	8
Poor people		
Paying more than they should	496	29
Paying about the right amount	466	27
Paying less than they should	326	19
Don’t know/not sure	414	24
Rich people		
Paying more than they should	158	9
Paying about the right amount	295	17
Paying less than they should	1149	67
Don’t know/not sure	104	6

Table G.16 Political Perspective (n=1712)

Category	Number of Subjects	Percentage of Subjects
Government policy on buying a handgun		
More difficult	715	42
Make it easier	164	10
Keep these rules about the same	708	41
Don't know/not sure	118	7
Missing	7	<1
Abortion		
By law, abortion should never be permitted	212	12
The law should permit abortion only in case of rape, incest or when the woman's life is in danger	535	31
By law, a woman should always be able to obtain an abortion as a matter of personal choice	847	50
Don't know/not sure	107	6
Missing	11	<1
Political perspective		
Extremely liberal	49	3
Liberal	221	13
Slightly liberal	154	9
Moderate, middle of the road	522	30
Slightly conservative	228	13
Conservative	408	24
Extremely conservative	79	5
Libertarian	37	3
Missing	14	1

Table G.17 Contingent Valuation Question: Vote in support of the early-childhood program and pay tax increase

Bid Level	Total Number of Subjects	Subjects Who Voted "Yes"
Federal Program, Small scale		
$10	61	34
$25	67	40
$50	60	20
$100	56	22
$300	61	27
$1,000	67	16
$2,000	52	8
Federal Program, Big scale		
$10	77	41
$25	56	33
$50	59	35
$100	59	24
$300	74	27
$1,000	56	17
$2,000	71	12
State Program, Small scale		
$10	58	41
$25	56	33
$50	55	35
$100	61	29
$300	60	18
$1,000	61	11
$2,000	56	6
State Program, Big scale		
$10	56	35
$25	65	36
$50	58	29
$100	65	37
$300	54	16
$1,000	65	14
$2,000	52	4

[†] This statistics excluded the following subjects: 1) Subjects who did not indicate that they were "certain" or "very certain" of their answer to this question, 2) Subjects who said "yes" to a tax increase that was higher than 5% of subjects' annual household income.

Table G.18 Certainty on Voting "FOR" (n=861)

Question: "How certain are you that you would want your representative to vote in favor of increased taxes for households like yours to fund the new *intensive* early-childhood development program?	Federal	State
Very uncertain	7 (2)	7 (2)
Uncertain	14 (3)	9 (2)
Not sure	53 (12)	55 (13)
Certain	227 (52)	212 (50)
Very certain	138 (31)	137 (33)
Missing	1 (<1)	1 (<1)

Table G.19 Reason for Voting "FOR" (n=861)

Question: "What are the most important and least important reasons that you said you would want your representative vote in support of funding?"	Most important	Least important
I want to stop the cycle of parents passing on a culture of poverty to their children	395 (46)	30 (4)
The future of the economy depends on a well-trained labor force	144 (17)	38 (4)
It is possible that members of my family will be poor in the future and will need these programs	17 (2)	200 (23)
I want to improve the lives of poor children as soon as possible	92 (11)	24 (3)
Members of my family can benefit from these programs	20 (2)	331 (38)
These programs will reduce crime rates which affect us all	52 (6)	27 (3)
Paying for these programs now will mean lower taxes for me in the future because fewer people will be in prisons and more people will be paying taxes	125 (14)	123 (14)
Other	16 (2)	84 (10)
Missing	0 (0)	3 (<1)

Table G.20 Reason for Voting "AGAINST" (n=835)

Question: "What are the most important and least important reasons that you said you would want your representative vote against funding?"	Most important	Least important
There are more important priorities for my tax dollars	61 (7)	84 (10)
I am against any new taxes	119 (14)	85 (10)
I cannot afford the tax increase	236 (28)	125 (15)
I think other government programs should be reduced to pay for programs to reduce childhood poverty	114 (14)	55 (7)
I do not think the new early childhood development program would help reducing childhood poverty in the US/state	39 (5)	81 (10)
I do not think the new early childhood development program is any better than the current early childhood programs like Head Start	33 (4)	90 (11)
I do not think it is government's job to fund these programs	49 (6)	82 (10)
I do not think the government should be involved with the care of very young children; this is the family's responsibility.	103 (12)	95 (11)
The government should first fix the ineffective current programs like Head Start before investing in more children (only for scope 2)	48 (6)	41 (5)
Other	32 (4)	95 (11)
Missing	1 (<1)	2 (<1)

APPENDIX H

DESCRIPTIVE STATISTICS ON THE BUDGET SURVEY

Table H.1 Information on Survey Versions

Category	Number of Subjects	Percentage of Subjects
Tax versus Credit		
Tax version	1920	93
Credit version	141	7
Program Version		
Version 1	503	24
Version 2	624	30
Version 3	469	23
Version 4	465	23

Table H.2 Demographic Information (n=2061)

Category	Number of Subjects	Percentage of Subjects
Gender		
Male	1061	51
Female	1000	49
Age, mean (SD), years	52(16)	n/a
Marital status		
Married	1237	60
Widowed	99	5
Divorced/separated	261	13
Single	332	16
Living with partner	132	6
Race/ethnicity		
White	1576	76
Hispanic	180	9
African-American	191	9
2 or more races	61	3
Other	53	3
Highest education		
Less than high school graduate	166	8
High school or equivalent (e.g., GED)	552	27
Some college	621	30
Bachelor's or graduate degree (e.g., BA, BS)	722	35
Employment, %		
Paid employee	994	48
Self employed	156	8
Temporary layoff from a job	20	1
Looking for work	135	7
Retired	474	23
Disabled	140	7
Other	142	7
Household Income, mean (SD), $	72K (49K)	n/a
Household size, mean (SD)	2.7 (1.5)	n/a
1 child between 0-5	940	11
2 or more children between 0-5	39	2

Table H.3 Ranking of Social Priorities (n=2061)

Issue	% of Most Important Votes	% of Second-Most Important Votes	% of Least Important Votes	% of Second-Least Important Votes
Crime	4	4	6	9
Education	10	10	4	4
Energy	1	5	9	11
Environment	2	3	18	14
Federal budget deficit	28	16	4	5
Health care	11	15	2	4
Homeland security	4	7	6	7
Housing	1	2	20	20
Illegal immigration	5	7	23	14
Poverty	5	7	6	9
Unemployment	29	24	2	2
Missing	0	0	0.1	1

Table H.4 Subjects' Experience with Poverty (n=1596)

Question: "What has been your own experience with poverty? (Check all that apply)"	Number of Subjects	Percentage of Subjects
I am not poor now and have never lived in poverty	454	28
I grew up in a family in poverty and my family is still poor	123	8
I have been poor in the past, but I am not poor now.	337	21
I was not poor in the past, but am poor now.	76	5
Members of my family have experienced poverty, but I have not	185	12
Families in my neighborhood have experienced poverty	204	13
I am not poor now, but I feel like I could easily fall into poverty. I live pay check to pay check	500	31
None of the above	169	11
Missing	19	1

Table H.5 Participation to Government Early-childhood Program (n=1596)

Question: "Has any of your children or a family member's child participated government early-childhood program?"	Number of Subjects	Percentage of Subjects
Yes	256	16
No	1125	71
Don't know/not sure	195	12
Missing	20	1

Table H.6 Had Food Poisoning (n=1592)

Question: "Within the last 5 years, have you or someone in your household had food poisoning?"	Number of Subjects	Percentage of Subjects
Yes	286	18
No	1082	68
Not sure	206	13
Missing	18	1

Table H.7 Chance of Getting Food Poisoning (n=1592)

Question: "How likely do you think is your chance of getting food poisoning sometime during the next 12 months?"	Number of Subjects	Percentage of Subjects
Not likely at all	368	23
Somewhat unlikely	533	34
Neutral	437	27
Somewhat likely	198	12
Very likely	29	2
Missing	27	2

Table H.8 Lost a Job within the Last Three Years (n=1437)

Question: "Have you or a member of your household lost a job within the last three years?"	Number of Subjects	Percentage of Subjects
Yes	375	26
No	1060	74
Missing	2	0.1

Table H.9 Participated Job-training Program (n=375)

Question [If YES to Table 8]: "Have you or a family member participated in any government job-training program?"	Number of Subjects
Yes	40
No	332

Table H.10 Type of Training (n=40)

Question [If YES to Table 9]: "What kind of training did you or your family member receive?"	Number of Subjects
Computer skills	19
Communication skills	10
Skills for green jobs	3
Management/administrative skills	7
Sales skills	5
Job interview skills	14
Skills for operation of heavy equipment	3
Other	9

Table H.11 Received Help After a Natural Disaster (n=1558)

Question: "Have you, a relative, or friend ever had to stay in a relief shelter or temporary housing, or received help because of a disaster, such as tornado, earthquake, hurricane, or flood?"	Number of Subjects	Percentage of Subjects
Yes	157	10
No	1384	89
Missing	17	1

Table H.12 Chance of a Large Natural Disaster (n=1558)

Question: "In your opinion, how likely is it that a large natural disaster would affect your area in the next ten years?"	Number of Subjects	Percentage of Subjects
Not likely at all	166	11
Somewhat unlikely	444	29
Neutral	332	21
Somewhat likely	438	28
Very likely	158	10
Missing	20	1

Table H.13 Likelihood of Successful Program Outcomes

Question: "How well do you think the government programs described in this survey actually work in producing successful outcomes?"	Number of Subjects	Percentage of Subjects
The intensive early-childhood development program in helping children break out of poverty when they become adults (n=1596)		
1 Does not work at all	149	9
2	332	21
3	411	26
4	384	24
5 Works very well	143	9
Don't know/ not sure	173	11
The food-safety monitoring program in reducing cases of food poisoning (n=1592)		
1 Does not work at all	65	4
2	237	15
3	495	31
4	460	29
5 Works very well	174	11
Don't know/ not sure	157	10
The job-training programs helping unemployed people find jobs (n=1437)		
1 Does not work at all	117	8
2	309	22
3	444	31
4	320	22
5 Works very well	122	8
Don't know/ not sure	122	8
The disaster-relief program in assisting households for their damaged property (n=1558)		
1 Does not work at all	66	4
2	246	16
3	486	31
4	452	29
5 Works very well	182	12
Don't know/ not sure	122	8

Table H.14 Time-to-think Related Questions

Category	Number of Subjects	Percentage of Subjects
Activity (check all that apply) (n=2061)		
I thought about which social programs are important	1262	61
I discussed which social programs are important with someone else	281	14
I read some additional information about social programs	176	9
I did not think about this survey at all	618	30
(If discussed) Whom subjects talked to (n=281)		
Spouse/partner	172	8
Children	36	2
Parents	40	2
Friends	128	6
Other	30	1
(If read) What subjects read (n=176)		
Websites/internet	133	6
Books	12	1
Newspapers or magazines	72	3
Brochures and pamphlets	19	1
Other	19	1
Time spent thinking or discussing, mean (SD)	44 min (43 min)	
Time interval between the first and second part, mean (SD)	2 days 23hrs 17min (1day 20hrs 4min)	

Table H.15 Reasons for Better Jobs and Income (n=2061)

Reason	Mean (SD)
Willingness to take risks	3.11 (0.98)
Money inherited from families	2.94 (1.24)
Hard work and initiative	4.10 (0.91)
Ability or talent that a person is born with	3.26 (0.97)
Taking advantage of others to get ahead	2.14 (1.16)
Good luck, being in the right place at the right time	2.91 (1.06)
Physical appearance and good looks	3.01 (1.03)
Connections and knowing the right people	3.61 (1.01)
Being a member of a particular race or ethnic group	2.40 (1.16)
Getting the right education or training	4.06 (0.92)
A person's gender, that is whether they are male or female	2.33 1.07)

Table H.16 Poverty Related Questions (n=2061)

	Mean (SD)
Chance of escaping poverty for the poor (1:very little, 5: very high chance)	2.93 (1.02)
My family has a good chance of improving our standard of living (1:strongly disagree, 5:strongly agree)	2.90 1.08)

Table H.17 Responsibility to Help the Poor (n=2061)

Question: "Group who should have the greatest and the least responsibility to help the poor?"	Greatest responsibility N (%)	Least responsibility N (%))
Churches	190 (9)	272 (13)
Private charities	247 (12)	165 (8)
Federal government	448 (22)	754 (37)
State/local government	253 (12)	154 (7)
Families and relatives of poor	205 (10)	317 (15)
Poor themselves	717 (35)	391 (19)
Missing	1 (<1)	8 (<1)

Table H.18 Federal Income Tax (n=2061)

Category	Number of Subjects	Percentage of Subjects
My household		
Paying more than I should	711	37
Paying about the right amount	966	50
Paying less than I should	88	5
Don’t know/not sure	148	8
Poor people		
Paying more than they should	597	29
Paying about the right amount	585	28
Paying less than they should	377	18
Don’t know/not sure	495	24
Rich people		
Paying more than they should	182	9
Paying about the right amount	375	18
Paying less than they should	1337	65
Don’t know/not sure	162	8

Table H.19 Political Perspective (n=2061)

Category	Number of Subjects	Percentage of Subjects
Government policy on buying a handgun		
More difficult	874	42
Make it easier	191	9
Keep these rules about the same	872	42
Don't know/not sure	120	6
Missing	4	<1
Abortion		
By law, abortion should never be permitted	228	11
The law should permit abortion only in case of rape, incest or when the woman's life is in danger	677	33
By law, a woman should always be able to obtain an abortion as a matter of personal choice	1026	50
Don't know/not sure	125	6
Missing	5	<1
Political perspective		
Extremely liberal	55	3
Liberal	247	12
Slightly liberal	227	11
Moderate, middle of the road	632	31
Slightly conservative	262	13
Conservative	501	24
Extremely conservative	84	4
Libertarian	42	2
Missing	11	1

Table H.20 Policy Trade-off Question: Chose the budget alternative with 50% increase in the early-childhood program with tax increase

Bid Level	Total Number of Subjects	Subjects Who Chose 50% increase in program with tax increase
Tax Version		
$10	222	160
$25	214	131
$50	193	100
$100	211	104
$300	203	71
$1,000	198	39
$2,000	192	21
Tax Version, Subjects insensitive to the cost attribute were dropped		
$10	149	96
$25	147	76
$50	134	56
$100	137	49
$300	136	30
$1,000	127	11
$2,000	121	7

† This statistics excluded the following subjects: 1) Subjects who had no variation in their answers to the trade-off questions, 2) Subjects who chose a budget alternative with a tax increase that was higher than 5% of subjects' annual household income.

Table H.21 Inferred Valuation Question

Category	Mean (SD)	Median
Alternative A (Status quo)	63% (22%)	65%
Alternative B (with 50% increase in poverty program and increase in tax)	37% (22%)	35%

APPENDIX I

DESCRIPTIVE STATISTICS ON THE COUNTRYSURVEY

Table I.1 Demographic Information (n=1010)

Category	Number of Subjects	Percentage of Subjects
Gender		
Male	527	52
Female	483	48
Age, mean (SD), years	52(16)	n/a
Marital status		
Married	585	58
Widowed	48	5
Divorced/separated	137	13
Single	169	17
Living with partner	71	7
Race/ethnicity		
White	775	77
Hispanic	91	8
African-American	34	9
2 or more races	79	3
Other	31	3
Highest education		
Less than high school graduate	81	8
High school or equivalent (e.g., GED)	277	27
Some college	322	32
Bachelor's or graduate degree (e.g., BA, BS)	330	33
Employment, %		
Paid employee	488	48
Self employed	67	7
Temporary layoff from a job	6	1
Looking for work	75	7
Retired	242	24
Disabled	71	7
Other	61	6
Household Income, mean (SD), $	71K (48K)	n/a
Household size, mean (SD)	2.6(1.3)	n/a

Category	Number of Subjects	Percentage of Subjects
1 child between 0-5	119	12
2 children between 0-5	20	2

Table I.2 Ranking of Social Priorities (n=1010)

Issue	% of Most Important Votes	% of Second-Most Important Votes	% of Least Important Votes	% of Second-Least Important Votes
Crime	6	5	5	6
Education	9	10	4	6
Energy	2	5	9	12
Environment	3	2	18	17
Federal budget deficit	27	17	5	5
Health care	8	17	3	3
Homeland security	4	7	4	8
Housing	1	1	17	20
Illegal immigration	5	6	25	13
Poverty	5	8	7	7
Unemployment	29	21	2	2
Missing	<1	<1	<1	<1

Table I.3 Avoid Outdoor Activity due to Air Pollution (n=1010)

Question: "Within the last year, about how many days did you or your family avoid some outdoor activity because of air pollution?"	Number of Subjects	Percentage of Subjects
None	869	86
1-2 days	56	6
2-5 days	41	4
5-10 days	22	2
10-20 days	12	1
More than 20 days	9	1
Missing	1	<1

Table I.4 Visiting National or State Parks (n=1010)

Question: "Within the last 5 years, how many different national or state parks have you visited?"	Number of Subjects	Percentage of Subjects
None	269	27
1-2 parks	383	38
3-5 parks	235	23
6-10 parks	87	9
More than 10 parks	30	3
Missing	6	<1

Table I.6 Subjects' Experience with Poverty (n=1010)

Question: "What has been your own experience with poverty? (Check all that apply)"	Number of Subjects	Percentage of Subjects
I am not poor now and have never lived in poverty	330	33
I grew up in a family in poverty and my family is still poor	65	6
I have been poor in the past, but I am not poor now.	250	25
I was not poor in the past, but am poor now.	55	5
Members of my family have experienced poverty, but I have not	106	11
Families in my neighborhood have experienced poverty	118	12
I am not poor now, but I feel like I could easily fall into poverty. I live pay check to pay check	252	25
None of the above	99	10
Missing	1	<1

Table I.7 Perceived Local Childhood Poverty Rate (n=1010)

Question: "What do you think the rate of childhood poverty is in your area, compared to the national average?"	Number of Subjects	Percentage of Subjects
Much higher	48	5
Somewhat higher	163	16
About the same	319	32
Somewhat lower	319	32
Much lower	159	15
Missing	2	<1

Table I.8 Quality of Health Insurance (n=1010)

Question: "How would you rate your current health insurance coverage?"	Number of Subjects	Percentage of Subjects
Good	616	61
Fair	246	24
Poor	44	4
Don't have insurance now	103	10
Missing	1	<1

Table I.9 Wait Time to See a Specialist (n=1010)

Question: "What is the longest you have had to wait to see a specialist?"	Number of Subjects	Percentage of Subjects
No more than a few days	157	16
About 1 week	152	15
About 2 weeks	198	20
About 3 weeks	104	10
About 1 month	123	12
About 2 months	62	6
About 3 months	22	2
More than 3 months	31	3
Not applicable	158	16
Missing	3	<1

Table I.10 Number of Moves (n=1010)

Question: "How many times have you moved to a different town or city in your lifetime?"	Number of Subjects	Percentage of Subjects
Never moved	117	12
1-2 times	268	26
3-5 times	320	32
6-10 times	198	20
More than 10 times	101	10
Missing	6	<1

Table I.11 Important Factors when Moving (n=1010)

Factor	Mean (SD)
Schools	1.92 (0.88)
Health services	1.90 (0.77)
Air quality	1.82 (0.76)
Crime rate	2.33 (0.74)
Housing prices	2.50 (0.69)
Cost of living	2.34 0.71)

Table I.12 Lived in a Foreign Country (n=1010)

Question: "Have you ever lived in a foreign country for more than one year?"	Number of Subjects	Percentage of Subjects
Yes	135	13
No	874	87
Missing	1	<1

Table I.13 Considered Moving to a Foreign Country (n=1010)

Question: "Have you ever seriously considered moving to a foreign country to live for more than one year?"	Number of Subjects	Percentage of Subjects
Yes	186	18
No	685	68
Not applicable	135	13
Missing	4	<1

Table I.14 Visited a Foreign Country (n=1010)

Question: "About how many foreign countries have you visited in your lifetime?"	Number of Subjects	Percentage of Subjects
None	248	25
1-2	350	35
3-5	169	17
More than 5	241	24
Missing	2	<1

Table I.15 Time-to-think Related Questions

Category	Number of Subjects	Percentage of Subjects
Activity (check all that apply) (n=1010)		
I thought about what was important about moving to a different country	568	56
I discussed what was important about moving to a different country with someone else	144	14
I read some additional information about environmental quality, childhood poverty, health care, or cost of living	74	7
I did not think about this survey at all	357	35
(If discussed) Whom subjects talked to		
Spouse/partner	107	11
Children	18	2
Parents	18	2
Friends	55	5
Other	5	<1
(If read) What subjects read		
Websites	56	6
Books	10	1
Newspapers or magazines	23	2
Brochures and pamphlets	2	<1
Other	9	1
Time spent thinking or discussing, mean (SD)	45 min (60 min)	
Time interval between the first and second part, mean (SD)	2 days 23hrs 18min (1day 20hrs 14min)	

Table I.16 Reasons for Better Jobs and Income (n=1010)

Reason	Mean (SD)
Willingness to take risks	3.25 (0.96)
Money inherited from families	3.02 (1.23)
Hard work and initiative	4.11 (0.91)
Ability or talent that a person is born with	3.39 (0.98)
Taking advantage of others to get ahead	2.18 (1.23)
Good luck, being in the right place at the right time	3.00 (1.06)
Physical appearance and good looks	3.00 (1.01)
Connections and knowing the right people	3.62 (1.04)
Being a member of a particular race or ethnic group	2.39 (1.15)
Getting the right education or training	4.05 (0.93)
A person's gender, that is whether they are male or female	2.38 1.12)

Table I.17 Poverty Related Questions (n=1010)

	Mean (SD)
Chance of escaping poverty for the poor (1:very little, 5: very high chance)	3.03 (1.01)
My family has a good chance of improving our standard of living (1:strongly disagree, 5:strongly agree)	3.04 1.06)

Table I.18 Responsibility to Help the Poor (n=1010)

Question: "Group who should have the greatest and the least responsibility to help the poor?"	Greatest responsibility N (%)	Least responsibility N (%))
Churches	90 (9)	139 (14)
Private charities	100 (10)	77 (8)
Federal government	274 (27)	348 (34)
State/local government	108 (11)	80 (8)
Families and relatives of poor	97 (9)	154 (15)
Poor themselves	340 (34)	211 (21)
Missing	1 (<1)	1 (<1)

Table I.19 Federal Income Tax (n=1010)

Category	Number of Subjects	Percentage of Subjects
My household		
Paying more than I should	366	36
Paying about the right amount	501	50
Paying less than I should	33	3
Don’t know/not sure	103	10
Poor people		
Paying more than they should	302	30
Paying about the right amount	255	25
Paying less than they should	182	18
Don’t know/not sure	265	26
Rich people		
Paying more than they should	79	8
Paying about the right amount	184	18
Paying less than they should	653	65
Don’t know/not sure	91	9

Table I.20 Political Perspective (n=1010)

Category	Number of Subjects	Percentage of Subjects
Government policy on buying a handgun		
More difficult	448	44
Make it easier	89	9
Keep these rules about the same	406	40
Don't know/not sure	65	6
Abortion		
By law, abortion should never be permitted	120	12
The law should permit abortion only in case of rape, incest or when the woman's life is in danger	331	33
By law, a woman should always be able to obtain an abortion as a matter of personal choice	486	48
Don't know/not sure	68	7
Political perspective		
Extremely liberal	17	2
Liberal	109	11
Slightly liberal	113	11
Moderate, middle of the road	336	33
Slightly conservative	118	12
Conservative	239	24
Extremely conservative	47	5
Libertarian	21	2

Table I.21 Policy Trade-off Question: Chose the country with 50% lower poverty with higher cost of living†

Bid Level	Total Number of Subjects	Subjects Who Chose 50% lower poverty with higher cost of living
$50	138	98
$100	138	96
$300	147	84
$1,000	147	71
$2,000	142	46
$5,000	130	26
$10,000	155	34

† This statistics excluded the following subjects: 1) Subjects who had no variation in their answers to the trade-off questions, 2) Subjects who chose a country with a cost of living increase that was higher than 5% of subjects' annual household income.

Table I.22 Inferred Valuation Question

Category	Mean (SD)	Median
Country A (Same as the US)	58% (25%)	60%
Country B (with 50% lower poverty and increase in cost of living)	42% (25%)	40%

APPENDIX J

FACTOR ANALYSIS

Factor analysis was used to reduce the number of explanatory variables. Principal component analysis, which assumes no unique factors, was used to analyze the correlation matrix. The factor analysis was performed on 11 attitudinal questions on why some people have better jobs and higher incomes than others, 2 questions on the chances of social mobility, and 3 questions on ideology (gun control, abortion and self-identification of ideology). Table J.1 shows that five factors were sufficient because they had eigenvalues higher than 1.

Table J.2 shows the rotated factor loadings for five factors after using varimax rotation. The bold estimates indicate the highest factor loading for each covariate.

Table J.3 shows the covariates that were highly correlated with each factor, and the labels assigned to each factor based on the correlated covariates. For example, factor 3 was called “social ideology” since it was highly correlated with questions on gun control, abortion and self-identified political ideology. This analysis provided factor scores for each person for these 5 factors. For example, a high positive score for social ideology indicated being a liberal, whereas a highly negative score indicated being a conservative.

Table J.1 Factor Analysis, Using the Principal-Component Analysis

FACTORS	Eigenvalue	Difference	Proportion	Cumulative
Factor 1	3.529	1.380	0.221	0.221
Factor 2	2.149	0.644	0.134	0.355
Factor 3	1.505	0.333	0.094	0.449
Factor 4	1.171	0.127	0.073	0.522
Factor 5	1.045	0.201	0.065	0.587
Factor 6	0.844	0.014	0.053	0.640
Factor 7	0.830	0.084	0.052	0.692
Factor 8	0.746	0.046	0.047	0.739
Factor 9	0.700	0.104	0.044	0.782
Factor 10	0.596	0.028	0.037	0.820
Factor 11	0.568	0.042	0.036	0.855
Factor 12	0.525	0.023	0.033	0.888
Factor 13	0.502	0.029	0.031	0.919
Factor 14	0.473	0.031	0.030	0.949
Factor 15	0.442	0.065	0.028	0.977
Factor 16	0.376	.	0.024	1.000
LR test: independent vs. saturated: chi2(120) = 1.3e+04 Prob>chi2 = 0.000				

Table J.2 Rotated Factor Loadings

COVARITES	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Attitudinal questions[¥] (Not at all important to extremely important)					
Willingness to take risks	**0.405**	-0.170	-0.218	0.317	0.298
Money inherited	**0.564**	0.252	0.136	-0.131	-0.079
Hard work and initiative	-0.021	-0.204	-0.200	**0.763**	0.164
Ability or talent born with	0.398	0.090	-0.048	**0.512**	0.005
Taking advantage of others to get ahead	**0.579**	0.341	0.056	-0.344	-0.024
Good luck	**0.757**	0.119	0.079	-0.017	-0.064
Physical appearance and good looks	**0.478**	**0.451**	-0.060	0.160	-0.017
Connections and knowing the right people	**0.651**	0.361	0.088	0.107	-0.108
Race or ethnicity	0.211	**0.813**	0.075	-0.041	-0.035
Education or training	-0.082	0.163	0.140	**0.762**	0.015
A person's gender	0.134	**0.835**	0.061	-0.007	-0.033
Social mobility questions (less likely to more likely)					
Chance of escaping from poverty for the poor	-0.071	-0.112	-0.276	0.077	**0.756**
Chance of improving the standard of living for my household	-0.045	0.023	0.123	0.063	**0.860**
Political ideology questions (conservative to liberal)					
Gun control	-0.102	0.186	**0.662**	0.113	-0.016
Abortion	0.203	-0.117	**0.694**	-0.022	-0.032
Self-identified political ideology	0.059	0.111	**0.802**	-0.119	-0.039

[¥] This question asks how important each category is for why some people have better jobs and higher incomes than others.

Table J.3 Covariates Associated with and Labels for Each Factor

Factors	Covariates Associated with the Factor
Factor 1: Wealth because of luck	Willingness to take risks, money inherited, taking advantage of others to get ahead, good luck, physical appearance and good looks
Factor 2: Wealth because of bias	Physical appearance and good looks, race or ethnicity and a person's gender
Factor 3: Social ideology	Gun control, abortion and self-identified political ideology
Factor 4: Wealth because of hard work and intelligence	Hard work and initiative, ability or talent born with and education or training
Factor 5: Chance of social mobility	Chance of escaping from poverty for the poor, chance of improving the standard of living for my household

APPENDIX K

ESTIMATES

Table K.1 Budget Survey Mixed-Logit Parameter Estimates and Standard Deviations (standard errors in parenthesis)

	Moderates	Liberals	Conservatives	Main-Effects
	Parameter (St. Error)	Parameter (St. Error)	Parameter (St. Error)	St. Deviation (St. Error)
Early childhood				
Decrease	-0.031*** (0.003)	-0.049*** (0.004)	-0.016*** (0.003)	0.038*** (0.003)
Increase	0.004 (0.003)	0.015*** (0.003)	-0.003 (0.003)	0.024*** (0.003)
Increase (for Subjects with Experience)	0.019*** (0.004)	0.030*** (0.005)	0.012** (0.005)	*NA*
Food safety				
Decrease	-0.015*** (0.002)	-0.027*** (0.003)	-0.015*** (0.002)	0.028*** (0.003)
Increase	0.002 (0.002)		-0.005* (0.003)	0.016*** (0.003)
Job training				
Decrease	-0.026*** (0.002)	-0.026*** (0.002)	-0.010*** (0.003)	0.033*** (0.003)
Increase	0.007*** (0.002)			0.021*** (0.003)
Disaster relief				
Decrease	-0.019*** (0.002)		-0.010*** (0.003)	0.024*** (0.003)
Increase	0.006*** (0.002)		-0.003 (0.003)	0.018*** (0.003)
Taxes (non-random)				
Higher	-10.799*** (0.446)			NA
Lower	0.205*** (0.047)	0.003 (0.061)	0.569*** (0.053)	NA

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

Table K.1 Budget Survey Mixed-Logit Parameter Estimates, continued

	Main-Effects	
	Parameter (St. Error)	**St. Deviation (St. Error)**
Interactions		
Child_inc * Food_inc	4.54E-04*** (8.72E-05)	*NA*
Job_inc * Disaster_inc	3.17E-04*** (9.28E-05)	*NA*
Scale		
Version 2	-0.077*** (0.029)	0.015 (0.454)
Version 3	0.020 (0.031)	0.132 (0.102)
Version 4	-0.038 (0.031)	0.023 (0.301)
Non-attendant to the cost attribute		
Higher	10.467*** (0.445)	*NA*
Lower	-0.481*** (0.063)	*NA*
N of observations	1896	
Log Likelihood	-6052.083	
Degrees of freedom	42	

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

Table K.2 Country Survey Mixed-Logit Parameter Estimates and Standard Deviations

	Beta		Standard Deviation	
	Coefficient	**St. Error**	**Coefficient**	**St. Error**
Childhood poverty				
Worse	-0.035***	0.002	0.022***	0.003
Worse for Conservatives	-0.024***	0.003		
Better	-0.001	0.002	0.017***	0.004
Environmental quality				
Worse	-0.031***	0.002	0.027***	0.003
Worse for Conservatives	-0.021***	0.004		
Better	0.001	0.002	0.016***	0.003
Health care				
Worse	-0.043***	0.003	0.034***	0.003
Better	0.006***	0.002	0.016***	0.004
Cost of living				
Higher	-0.583***	0.032		
Lower	0.072***	0.008		
Non-attendant to the cost attribute				
Higher	0.586***	0.032		
Lower	-0.058***	0.010		
N of observations	*997*			
Log Likelihood	*-3270.586*			
Degrees of freedom	*18*			

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

APPENDIX L

SIMPLE MODEL ESTIMATES

CV Survey

Table L.1 presents the mean annual WTP based on the parametric and nonparametric estimates, while Table L.2 presents these values for each ideological group. The mean WTP values from the nonparametric estimates were much higher than those from the parametric estimates. The mean WTP values from the nonparametric estimates were higher for the federal program than state programs, but this was not necessarily the case for the values from the parametric estimates. They were also slightly smaller for a small-scale program than for a large-scale program at the federal level, but the reverse was the case at state-level programs.

Liberals had the highest mean WTP values for each type of program while conservatives had the lowest mean WTP values, except for the big-scale state programs where moderates had the lowest mean WTP (Table L.2). The range of the mean WTP values based on the parametric analysis was narrower for different types of programs than the range of the mean Turnbull WTP values. This might be due to the fact that the parametric analysis control for other socio-economic characteristics as well. Based on the non-parametric estimators, all ideological groups had positive WTP for the early-childhood program unlike the results from the parametric analysis where conservatives had negative mean WTP. The negative WTP values can be explained by two reasons: 1) distributional assumptions in the binomial-probit model, and 2) the bid distribution in the CV survey was out of range for conservatives in the sample. Negative WTP in this context indicates that conservatives were not willing to pay for the early-childhood program.

Budget Survey

Table L.3 presents the conditional-logit estimates of symmetric, asymmetric and categorical models, respectively, for the budget survey before controlling for non-attendance

to the cost attribute. The parameter estimates were all significant and positive for the programs and negative for tax in the symmetric model which indicates that utility was positively correlated with program increases and tax reductions, and negatively with program decreases and tax increases. The parameter estimates for program decreases were significantly negative based on the asymmetric and categorical models. The parameter estimates for program increases were either not significant or significantly positive, except for increases in food-safety program, which has a significantly negative sign. The tax parameter was significantly negative for increases and significantly positive for reductions based on the asymmetric and categorical models. The main difference between the models where non-attendance to the cost attribute was uncontrolled (Table L.3) and controlled (Table L.4) was that the parameter estimates for increases in 3 programs became significantly positive in the controlled model.

All of the mean WTP values based on the symmetric model, and WTP values for 50% program decreases based on the asymmetric and categorical models were smaller based on the controlled models than the corresponding uncontrolled models (Table L.5). The WTP values were significantly positive for 50% increases in programs, except for the food-safety program based on the controlled model, while subjects were not willing to pay for program increases based on the uncontrolled models.

The attributes were interacted with ideology, and Table L.6 presents the asymmetric model estimates for each ideological group. The parameter estimates for program reductions were significantly negative for ideological groups, but preferences for program increases varied by ideology. The parameter estimates for program increases were significantly positive for moderates and liberals, while the parameter estimate is significant for conservatives only for increases in the job-training program.

Table L.7 presents the model estimates investigating nonlinearity of the variables. The square of each variable in Table L.4 was included for the symmetric and asymmetric

models. The parameter estimates were all significant in the symmetric model. In the asymmetric model, however, the parameter estimates for program decreases were significantly negative, but only the parameter estimate for increases in the early-childhood program was significant. Two of the parameter estimates for program increases became insignificant when their squares were included in the model. All the squared variables had significantly negative parameter estimates in the symmetric model, which indicates that the utility for programs and taxes are changing at a decreasing rate. However, among the squared variables in the asymmetric model, only the parameter estimates associated with the decrease in job-training program and increases in taxes were significant. The utility function for reductions in the job-training program decreases at an increasing rate and the utility function for increases in taxes decreases at a decreasing rate.

Country Survey

Table L.8 presents the conditional-logit estimates of the symmetric, asymmetric and categorical models, respectively, for the country survey before controlling for non-attendance to the cost attribute. The parameter estimates were all significant and positive for the quality-of-life attributes and negative for cost-of-living in the symmetric model which indicates that utility was positively correlated with quality-of-life improvements and cost-of-living reductions, and negatively with quality-of-life deterioration and cost-of-living increases. The parameter estimates for deterioration in the quality-of-life attributes were significantly negative based on the asymmetric and categorical models. However, the parameter estimates for improvements in the quality-of-life attributes significantly negative for childhood poverty and environmental quality in the asymmetric model, and only for childhood poverty in the categorical model. Improvements in access to health care was not significantly different than zero in the asymmetric model. The only improvement that subjects significantly value was for a 25% improvement in health care in the categorical model. The cost-of-living parameter was significantly negative for increases and significantly positive for

reductions. In the models where non-attendance to the cost attribute was controlled (Table L.9), the parameter estimates for improvements in childhood poverty and environmental quality became insignificant, and estimates for improvements in health care became significantly positive.

All of the mean WTP values based on the symmetric model, and WTP values for 50% deterioration in quality-of-life attributes based on the asymmetric and categorical models were smaller based on the controlled models than the corresponding uncontrolled models (Table L.10). Subjects only valued improvements in health care based on the controlled models.

Table L.11 presents the asymmetric model estimates for each ideological group. The parameter estimates for deterioration in quality-of-life attributes were significantly negative for ideological groups, but preferences for improvements varied by ideology. The parameter estimate for improvements in health care was significantly positive for moderates and liberals, while conservatives did not value any improvements.

Table L.12 presents the model estimates investigating nonlinearity of the variables in the country survey by including the square of each variable in the symmetric and asymmetric models. The parameter estimates associated with squared variables were all significant in the symmetric model while they were only significant for the cost-of-living in the asymmetric model. The utility function for increases in cost-of-living decreases at a decreasing rate, and the utility function for reductions in cost-of-living increases at a decreasing rate.

Overall the categorical and asymmetric models fit the budget and country data better than the symmetric model with smaller (in magnitude) log-likelihood and AIC. These models also denoted preference asymmetry between increases and decreases from the status quo. Controlling for non-attendance to the cost attribute produced parameter estimates closer to expectations and more reasonable WTP estimates. The models with square of variables

indicate that preference asymmetry persisted even after controlling for nonlinearity. Overall the pattern of the estimates and WTP values from the conditional-logit models were parallel to the results from the mixed-logit model estimates for both the budget and country surveys.

Table L.1 CV Survey Mean Annual WTP Values per Household from the Nonparametric and Parametric Estimates

	Turnbull Estimator (standard errors in parenthesis)	Kristom Estimator	Parametric Estimates (standard errors in parenthesis)
Federal program – Small scale	$402 (58)	$522	$203 (76)
Federal program – Big scale	$497 (63)	$599	$188 (75)
State program – Small scale	$345 (55)	$449	$211 (78)
State program – Big scale	$330 (52)	$460	$195 (77)

Table L.2 CV Survey Mean Annual WTP Values per Household (standard errors in parenthesis) by Ideology

	Turnbull Estimator			Parametric Estimates		
	Moderate	Liberal	Conservative	Moderate	Liberal	Conservative
Federal program – Small scale	$314 (80)	$715 (136)	$183 (51)	$240 (92)	$755 (103)	-$375 (114)
Federal program – Big scale	$422 (102)	$742 (116)	$149 (59)	$224 (91)	$739 (102)	-$390 (113)
State program – Small scale	$299 (82)	$673 (146)	$104 (36)	$261 (117)	$776 (125)	-$354 (135)
State program – Big scale	$92 (15)	$510 (105)	$156 (76)	$246 (115)	$761 (122)	-$369 (132)

Table L.3 Budget Survey Conditional-Logit Parameter Estimates of the Symmetric Linear, Asymmetric Linear and Categorical Models, Not controlled for Non-Attendance to the Cost Attribute

	Symmetric Linear		Asymmetric Linear		Categorical	
	Coef.	*T Ratio*	*Coef.*	*T Ratio*	*Coef.*	*T Ratio*
Early childhood	0.008	19.578				
Decrease			-0.015	-17.570		
Increase			0.001	1.291		
50% decrease					-0.729	-15.992
25% decrease					-0.438	-10.017
25% increase					0.134	3.000
50% increase					0.049	1.058
Food safety	0.004	10.218				
Decrease			-0.011	-12.266		
Increase			-0.003	-3.702		
50% decrease					-0.525	-11.608
25% decrease					-0.277	-6.369
25% increase					-0.022	-0.484
50% increase					-0.162	-3.488
Job training	0.006	14.296				
Decrease			-0.011	-12.049		
Increase			0.001	0.691		
50% decrease					-0.482	-10.469
25% decrease					-0.386	-8.623
25% increase					0.109	2.420
50% increase					-0.007	-0.149
Disaster relief	0.004	9.211				
Decrease			-0.008	-8.996		
Increase			-0.001	-1.422		
50% decrease						

25% decrease					-0.360	-7.884
25% increase					-0.194	-4.392
50% increase					0.104	2.288
Taxes	-0.429	-32.730				
Increase			-0.993	-35.587	-0.998	-35.761
Decrease			0.097	5.238	0.109	5.829
Version						
Version 2	-0.040	-2.227	-0.037	-1.926	-0.041	-2.146
Version 3	0.020	1.073	0.023	1.157	0.018	0.886
Version 4	-0.014	-0.735	-0.011	-0.574	-0.013	-0.668
N of subjects	*1896*		*1896*		*1896*	
Log Likelihood	*-8393*		*-7769*		*-7742*	
AIC	*1.27*		*1.18*		*1.17*	

Table L.4 Budget Survey Conditional-Logit Parameter Estimates of the Symmetric Linear, Asymmetric Linear and Categorical Models, Controlled for Non-Attendance to the Cost Attribute

	Symmetric Linear		Asymmetric Linear		Categorical	
	Coef.	**T Ratio**	**Coef.**	**T Ratio**	**Coef.**	**T Ratio**
Early childhood	0.009	21.016				
Decrease			-0.018	-18.956		
Increase			0.007	7.315		
50% decrease					-0.895	-17.860
25% decrease					-0.529	-11.216
25% increase					0.177	3.626
50% increase					0.348	6.627
Food safety	0.005	10.607				
Decrease			-0.011	-11.996		
Increase			0.002	2.331		
50% decrease					-0.584	-11.825
25% decrease					-0.310	-6.670
25% increase					0.016	0.333
50% increase					0.115	2.194
Job training	0.007	15.125				
Decrease			-0.012	-12.542		
Increase			0.006	6.054		
50% decrease					-0.598	-11.792
25% decrease					-0.477	-9.918
25% increase					0.094	1.897
50% increase					0.263	4.913
Disaster relief	0.004	10.299				
Decrease			-0.009	-9.116		
Increase			0.005	4.567		
50% decrease					-0.439	-8.759

25% decrease					-0.260	-5.474
25% increase					0.128	2.612
50% increase					0.203	3.809
Taxes	-0.792	-40.115				
Higher			-7.297	-30.167	-7.328	-29.961
Lower			0.199	8.042	0.193	7.732
Non-attendant to cost attribute						
Increase			7.130	29.293	7.157	29.070
Decrease			-0.373	-9.338	-0.360	-8.976
Version						
Version 2	-0.048	-2.587	-0.053	-2.562	-0.054	-2.594
Version 3	0.013	0.678	0.014	0.641	0.015	0.674
Version 4	-0.019	-0.964	-0.026	-1.211	-0.024	-1.114
N of subjects	*1896*		*1896*		*1896*	
Log Likelihood	*-7877*		*-6521*		*-6510*	
AIC	*1.19*		*0.99*		*0.99*	

Table L.5 Budget Survey Mean Annual WTP per Household from the Conditional-Logit Parameter Estimates, Controlled for Non-Attendance to the Cost Attribute

	Uncontrolled		Controlled	
	WTP	**T Ratio**	**WTP**	**T Ratio**
Symmetric Linear Model				
Early childhood	$959	18.92	$587	20.96
Food safety	$493	10.30	$290	10.72
Job training	$704	14.18	$424	15.22
Disaster relief	$444	9.32	$283	10.47
Asymmetric Linear Model				
Early childhood				
50% decrease	$780	15.75	$126	16.82
50% increase	$57	1.30	$50	7.43
Food safety				
50% decrease	$537	-11.57	$78	11.29
50% increase	-$165	-3.65	$16	2.36
Job training				
50% decrease	$538	11.32	$84	11.78
50% increase	$31	0.69	$42	6.17
Disaster relief				
50% decrease	$399	8.69	$60	8.80
50% increase	-$64	-1.42	$32	4.64
Categorical Model				
Early childhood				
50% decrease	$731	14.58	$122	16.17
50% increase	$49	1.06	$48	6.71
Food safety				
50% decrease	$526	11.02	$80	11.19
50% increase	-$163	-3.45	$16	2.22
Job training				

50% decrease	$483	9.96	$82	11.23
50% increase	-$7	-0.15	$36	4.99
Disaster relief				
50% decrease	$361	7.67	$60	8.52
50% increase	-$69	-1.46	$28	3.86

Table L.6 By Ideology: Budget Survey Conditional-Logit Parameter Estimates and Mean Annual WTP per Household from the Asymmetric Linear Model, Controlled for Non-Attendance to the Cost Attribute

	Moderate / Main-Effects		Liberal		Conservative	
	Coef.	***T Ratio***	***Coef.***	***T Ratio***	***Coef.***	***T Ratio***
Early childhood						
Decrease	-0.019	-12.125	-0.029	-15.168	-0.010	-6.021
Increase	0.006	3.979	0.013	6.975	0.003	1.655
Food safety						
Decrease	-0.009	-6.023	-0.017	-9.169	-0.011	-6.317
Increase	0.004	2.322	0.003	1.709	0.000	-0.208
Job training						
Decrease	-0.014	-9.017	-0.019	-9.765	-0.006	-3.756
Increase	0.007	4.146	0.008	4.391	0.004	2.018
Disaster relief						
Decrease	-0.008	-5.366	-0.013	-7.118	-0.007	-3.876
Increase	0.006	3.950	0.007	3.579	0.000	0.031
Taxes						
Increase	-7.279	-29.165	-7.223	-28.722	-7.162	-28.626
Decrease	0.117	3.323	-7.367	-29.021	-7.042	-27.965
Non-attendant to cost attribute						
Increase	7.054	28.515				
Decrease	-0.313	-7.570				
Version						
Version 2	-0.055	-2.620				
Version 3	0.015	0.669				
Version 4	-0.026	-1.207				
N of subjects	*1896*					
Log Likelihood	*-6373*					

AIC	*0.97*					
	Mean WTP	**T ratio**	**Mean WTP**	**T ratio**	**Mean WTP**	**T ratio**
Early childhood						
50% Decrease	$128	11.44	$204	13.77	$71	5.93
50% Increase	$43	4.01	$88	6.93	$21	1.67
Food safety						
50% Decrease	$63	5.93	$117	8.81	$74	6.17
50% Increase	$25	2.34	$21	1.72	-$3	-0.21
Job training						
50% Decrease	$96	8.73	$131	9.34	$44	3.72
50% Increase	$45	4.18	$58	4.41	$26	2.03
Disaster relief						
50% Decrease	$57	5.29	$93	6.94	$46	3.85
50% Increase	$43	3.99	$46	3.59	$0	0.03

Table L.7 Budget Survey Conditional-Logit Parameter Estimates of the Symmetric Nonlinear and Asymmetric Nonlinear Models, Controlled for Non-Attendance to the Cost Attribute

	Symmetric Nonlinear		Asymmetric Nonlinear	
	Coef.	***T Ratio***	***Coef.***	***T Ratio***
Early childhood	0.010	20.343		
Childhood^2	-1.43E-04	-9.906		
Decrease			-0.024	-7.197
Increase			0.007	1.961
Decrease^2			1.30E-04	1.970
Increase^2			-1.07E-05	-0.153
Food safety	0.004	9.537		
Food^2	-1.49E-04	-10.284		
Decrease			-0.013	-3.907
Increase			-0.001	-0.356
Decrease^2			2.89E-05	0.439
Increase^2			6.11E-05	0.878
Job training	0.007	14.181		
Job^2	-1.14E-04	-7.728		
Decrease			-0.026	-7.579
Increase			0.002	0.560
Decrease^2			2.84E-04	4.224
Increase^2			5.57E-05	0.782
Disaster relief	0.004	9.242		
Disaster^2	-1.04E-04	-7.071		
Decrease			-0.012	-3.552
Increase			0.006	1.716
Decrease^2			6.55E-05	0.982
Increase^2			-5.26E-05	-0.745
Taxes	-1.059	-40.904		

Taxes^2	-0.266	-26.503		
Increase			-7.036	-27.188
Decrease			0.482	2.608
Increase^2			-0.431	-3.340
Decrease^2			-0.142	-1.572
Non-attendant to cost attribute	1.073	32.743		
Increase			7.750	24.978
Decrease			-0.339	-8.341
Version				
Version 2	-0.040	-1.995	-0.050	-2.393
Version 3	0.021	1.012	0.019	0.859
Version 4	-0.009	-0.409	-0.020	-0.919
N of subjects	*1896*		*1896*	
Log Likelihood	*-7154*		*-6504*	
AIC	*1.08*		*0.99*	

Table L.8 Country Survey Conditional-Logit Parameter Estimates of the Symmetric Linear, Asymmetric Linear and Categorical Models, Not controlled for Non-Attendance to the Cost Attribute

	Symmetric Linear		Asymmetric Linear		Categorical	
	Coef.	*T Ratio*	*Coef.*	*T Ratio*	*Coef.*	*T Ratio*
Childhood poverty	0.008	15.512				
Decrease			-0.018	-16.596		
Increase			-0.003	-2.483		
50% decrease					-0.922	-16.276
25% decrease					-0.519	-9.574
25% increase					-0.149	-2.507
50% increase					-0.150	-2.620
Environmental quality	0.007	13.104				
Decrease			-0.017	-15.701		
Increase			-0.002	-2.229		
50% decrease					-0.892	-15.568
25% decrease					-0.355	-6.310
25% increase					-0.070	-1.333
50% increase					-0.072	-1.296
Health care	0.012	22.063				
Decrease			-0.026	-21.094		
Increase			0.001	0.919		
50% decrease					-1.254	-19.738
25% decrease					-0.566	-10.392
25% increase					0.163	3.110
50% increase					0.042	0.739
Cost of living	-0.050	-21.719				
Increase			-0.089	-19.114	-0.089	-19.056
Decrease			0.031	9.446	0.031	9.224

N of subjects	*997*		*997*		*997*	
Log Likelihood	*-4274*		*-3962*		*-3954*	
AIC	*1.23*		*1.14*		*1.14*	

Table L.9 Country Survey Conditional-Logit Parameter Estimates of the Symmetric Linear, Asymmetric Linear and Categorical Models, Controlled for Non-Attendance to the Cost Attribute

	Symmetric Linear		Asymmetric Linear		Categorical	
	Coef.	*T Ratio*	*Coef.*	*T Ratio*	*Coef.*	*T Ratio*
Childhood poverty	0.009	16.536				
Decrease			-0.021	-17.613		
Increase			-0.001	-0.605		
50% decrease					-1.064	-16.966
25% decrease					-0.572	-9.939
25% increase					-0.077	-1.170
50% increase					-0.035	-0.552
Environmental quality	0.007	13.288				
Decrease			-0.019	-15.668		
Increase			0.000	-0.042		
50% decrease					-0.947	-15.220
25% decrease					-0.428	-6.988
25% increase					0.009	0.158
50% increase					0.005	0.087
Health care	0.013	23.179				
Decrease			-0.028	-20.879		
Increase			0.005	3.901		
50% decrease					-1.386	-19.889
25% decrease					-0.615	-10.451
25% increase					0.200	3.565
50% increase					0.245	3.791
Cost of living	-0.105	-26.613				
Increase			-0.433	-21.967	-0.433	-21.816
Decrease			0.044	9.234	0.043	8.981
Non-attendant to cost attribute	0.103	21.690				

Increase			0.436	21.588	0.436	21.427
Decrease			-0.035	-5.271	-0.034	-5.125
N of subjects	*997*		*997*		*997*	
Log Likelihood	*-4001*		*-3392*		*-3390*	
AIC	*1.15*		*0.98*		*0.98*	

Table L.10 Country Survey Mean Annual WTP per Household from the Conditional-Logit Parameter Estimates, Controlled for Non-Attendance to the Cost Attribute

	Uncontrolled		Controlled	
	WTP	**T Ratio**	**WTP**	**T Ratio**
Symmetric Linear Model				
Childhood poverty	$8,117	13.70	$4,308	15.59
Environmental quality	$6,862	12.12	$3,428	12.78
Health care	$12,189	19.50	$6,340	21.53
Asymmetric Linear Model				
Childhood poverty				
50% decrease	$10,052	12.59	$2,436	14.60
50% increase	-$1,517	-2.45	-$84	-0.60
Environmental quality				
50% decrease	$9,728	11.93	$2,171	13.06
50% increase	-$1,281	-2.18	-6	-0.04
Health Care				
50% decrease	$14,393	14.55	$3,221	15.61
50% increase	$555	0.92	$547	3.99
Categorical Model				
Childhood poverty				
50% decrease	$10,326	12.35	$2,459	14.18
50% increase	-$1,682	-2.58	-$81	-0.55
Environmental quality				
50% decrease	$9,989	11.90	$2,188	12.81
50% increase	-$807	-1.28	$13	0.09
Health Care				
50% decrease	$14,050	14.17	$3,202	15.34
50% increase	$470	0.74	$566	3.88

Table L.11 By Ideology: Country Survey Conditional-Logit Parameter Estimates and Mean Annual WTP per Household from the Asymmetric Linear Model, Controlled for Non-Attendance to the Cost Attribute

	Moderate / Main-Effects		Liberal		Conservative	
	Coef.	***T Ratio***	***Coef.***	***T Ratio***	***Coef.***	***T Ratio***
Childhood poverty						
Decrease	-0.024	-12.117	-0.025	-11.137	-0.015	-7.263
Increase	-0.001	-0.419	0.000	-0.202	0.000	-0.191
Environmental quality						
Decrease	-0.021	-10.920	-0.023	-9.832	-0.013	-6.356
Increase	0.000	0.046	0.001	0.270	-0.001	-0.336
Health care						
Decrease	-0.029	-13.596	-0.026	-10.383	-0.029	-12.289
Increase	0.005	2.580	0.008	3.723	0.001	0.384
Cost of living						
Increase	-0.436	-20.893	-0.442	-20.866	-0.428	-20.259
Decrease	0.045	6.403	0.041	6.037	0.045	6.658
Non-attendant to cost attribute						
Increase	0.439	21.600				
Decrease	-0.034	-5.108				
N of subjects	*997*					
Log Likelihood	*-3375*					
AIC	*0.98*					
	Mean WTP	**T ratio**	**Mean WTP**	**T ratio**	**Mean WTP**	**T ratio**
Childhood poverty						
50% Decrease	$2,835	9.96	$1,743	6.92	$1,711	6.86
50% Increase	-$51	-0.20	-$48	-0.19	-$48	-0.19
Food safety						

50% Decrease	$2,567	8.77	$1,555	6.08	$1,527	6.01
50% Increase	$65	0.27	-$79	-0.34	-$77	-0.34
Environmental quality						
50% Decrease	$2,944	9.04	$3,376	10.62	$3,314	10.10
50% Increase	$953	3.72	$94	0.39	$93	0.39
Health care	$2,835	9.96	$1,743	6.92	$1,711	6.86
50% Decrease	-$51	-0.20	-$48	-0.19	-$48	-0.19
50% Increase						

Table L.12 Country Survey Conditional-Logit Parameter Estimates of the Symmetric Nonlinear and Asymmetric Nonlinear Models, Controlled for Non-Attendance to the Cost Attribute

	Symmetric Nonlinear		Asymmetric Nonlinear	
	Coef.	***T Ratio***	***Coef.***	***T Ratio***
Childhood poverty	0.010	16.307		
Poverty^2	-2.04E-04	-11.377		
Decrease			-0.023	-5.622
Increase			-0.004	-0.765
Decrease^2			0.000	0.507
Increase^2			0.000	0.724
Environmental quality	0.008	14.332		
Environment^2	-2.11E-04	-11.977		
Decrease			-0.016	-3.600
Increase			0.001	0.226
Decrease^2			0.000	-0.686
Increase^2			0.000	-0.296
Health Care	0.015	24.349		
Health^2	-2.69E-04	-14.253		
Decrease			-0.022	-5.277
Increase			0.011	2.774
Decrease^2			0.000	-1.416
Increase^2			0.000	-1.678
Cost of living	-0.128	-28.468		
Cost^2	-0.001	-9.107		
Increase			-0.416	-20.507
Decrease			0.074	8.220
Increase^2			-0.001	-3.115
Decrease^2			-0.001	-4.079
Non-attendant to cost attribute	0.126	23.214		

Increase			0.460	20.773
Decrease			-0.028	-4.179
N of subjects	*997*		*997*	
Log Likelihood	*-3663*		*-3378*	
AIC	*1.05*		*0.98*	

APPENDIX M

ESTIMATES FOR EACH VERSION

Table M.1 Mixed-Logit Random-Parameter Estimates and Standard Errors for Each Version

	Version CFJ		Version CFD		Version CJD		Version FJD	
	Coef.	***St. Error***	***Coef.***	***St. Error***	***Coef.***	***St. Error***	***Coef.***	***St. Error***
Early childhood								
decrease	-0.029***	0.003	-0.041***	0.004	-0.022***	0.004	*NA*	
increase	0.009***	0.003	0.009***	0.003	0.005	0.003	*NA*	
Food safety								
decrease	-0.016***	0.003	-0.021***	0.003	*NA*		-0.022***	0.003
increase	-0.001	0.003	-0.001	0.003	*NA*		0.007***	0.002
Job training								
decrease	-0.018***	0.003	*NA*		-0.016***	0.004	-0.029***	0.004
increase	0.007**	0.003	*NA*		0.005	0.003	0.007**	0.003
Disaster relief								
decrease	*NA*[¥]		-0.019***	0.003	-0.015***	0.003	-0.016***	0.003
increase	*NA*		0.011***	0.003	-0.002	0.004	0.006**	0.003
Tax								
increase	-10.648***	0.836	-11.000***	0.914	-10.802***	0.915	-11.680***	0.961
decrease	0.163**	0.075	0.366***	0.083	0.294***	0.077	0.467***	0.093
Non-attendant to cost								
increase	10.259***	0.830	10.712***	0.913	10.586***	0.911	11.379***	0.953
decrease	-0.530***	0.126	-0.660***	0.138	-0.688***	0.132	-0.560***	0.136
Cross-Effects								
Poverty inc * Food inc	5.74E-04***	1.4E-04	*NA*		*NA*		*NA*	
Job dec * Disaster dec	*NA*		*NA*		1.03E-04	1.4E-04	*NA*	
Job inc * Disaster inc	*NA*		*NA*		5.50E-04***	1.7E-04	*NA*	
N of subjects	*490*		*498*		*461*		*447*	
Log Likelihood	*-1588*		*-1594*		*-1482*		*-1467*	

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

[¥] NA denotes “not applicable”.

Table M.2 Mixed-Logit Random-Parameter Estimates and Standard Deviations (standard errors are in parenthesis) for the Controlled and Uncontrolled Models

	Controlled		Uncontrolled	
	Parameter (St. Error)	***St. Deviation (St. Error)***	***Parameter (St. Error)***	***St. Deviation (St. Error)***
Early childhood				
decrease	-0.031*** (0.002)	0.043*** (0.003)	-0.028*** (0.002)	0.041*** (0.002)
increase	0.007*** (0.002)	0.028*** (0.003)	-0.001 (0.002)	0.030*** (0.002)
Food safety				
decrease	-0.018*** (0.002)	0.028*** (0.003)	-0.017*** (0.002)	0.026*** (0.002)
increase	-0.00004 (0.002)	0.016*** (0.003)	-0.008 (0.002)	0.021*** (0.002)
Job training				
decrease	-0.021*** (0.002)	0.034*** (0.003)	-0.019*** (0.002)	0.033*** (0.002)
increase	0.006*** (0.002)	0.022*** (0.003)	-0.002 (0.002)	0.025*** (0.002)
Disaster relief				
decrease	-0.016*** (0.002)	0.026*** (0.003)	-0.014*** (0.002)	0.024*** (0.002)
increase	0.004** (0.002)	0.018*** (0.003)	0.005** (0.002)	0.020*** (0.003)
Tax				
increase	-11.078*** (0.469)	*NA*[¥]	-1.531*** (0.051)	*NA*[¥]
decrease	0.323*** (0.041)	*NA*	0.132*** (0.031)	*NA*
Non-attendant to cost				
increase	10.749*** (0.464)	*NA*	*NA*	*NA*
decrease	0.592*** (0.068)	*NA*	*NA*	*NA*
Interactions				
Child_inc * Food_inc	4.82E-04*** (9.05E-05)	*NA*	2.46E-04*** (7.66E-05)	*NA*
Job_inc * Disaster_inc	3.58E-04*** (9.05E-05)	*NA*	2.11E-04*** (7.63E-05)	*NA*
Scale				
Version CFD	-0.075*** (0.028)	0.025 (0.097)	-0.051** (0.026)	0.014 (0.072)
Version CJD	0.024 (0.031)	0.131 (0.105)	0.033 (0.027)	0.046 (0.107)
Version FJD	-0.039 (0.028)	0.017 (0.074)	-0.021 (0.026)	0.019 (0.050)

N of subjects	*1896*		*1896*	
Log Likelihood	*-6166*		*-7296*	
AIC criterion	*0.936*		*1.107*	

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

[¥] NA denotes “not applicable”.

Table M.3 By Ideology: Mixed-Logit Random-Parameter Estimates and Standard Deviations (standard errors are in parenthesis)

	Moderates	Liberals	Conservatives	Main-Effects
	Parameter (St. Error)	***Parameter (St. Error)***	***Parameter (St. Error)***	***St. Deviation (St. Error)***
Early childhood				
Decrease	-0.031*** (0.003)	-0.049*** (0.004)	-0.016*** (0.003)	0.038*** (0.003)
Increase	0.004 (0.003)	0.015*** (0.003)	-0.003 (0.003)	0.024*** (0.003)
Increase (for Subjects with Experience)	0.019*** (0.004)	0.030*** (0.005)	0.012** (0.005)	*NA*[¥]
Food safety				
Decrease	-0.015*** (0.002)	-0.027*** (0.003)	-0.015*** (0.002)	0.028*** (0.003)
Increase	0.002 (0.002)		-0.005* (0.003)	0.016*** (0.003)
Job training				
Decrease	-0.026*** (0.002)	-0.026*** (0.002)	-0.010*** (0.003)	0.033*** (0.003)
Increase	0.007*** (0.002)			0.021*** (0.003)
Disaster relief				
Decrease	-0.019*** (0.002)		-0.010*** (0.003)	0.024*** (0.003)
Increase	0.006*** (0.002)		-0.003 (0.003)	0.018*** (0.003)
Taxes (non-random)				
Increase	-10.799*** (0.446)			*NA*
Decrease	0.205*** (0.047)	0.003 (0.061)	0.569*** (0.053)	*NA*

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

[¥] NA denotes “not applicable”.

Table M.3 Ideology: Mixed-Logit Random-Parameter Estimates and Standard Deviations (standard errors are in parenthesis), continued

	Main-Effects	
	Parameter (St. Error)	***St. Deviation (St. Error)***
Interactions		
Child_inc * Food_inc	4.54E-04*** (8.72E-05)	*NA*[¥]
Job_inc * Disaster_inc	3.17E-04*** (9.28E-05)	*NA*
Scale		
Version CFD	-0.077*** (0.029)	0.015 (0.454)
Version CJD	0.020 (0.031)	0.132 (0.102)
Version FJD	-0.038 (0.031)	0.023 (0.301)
Non-attendant to the cost attribute		
Increase	10.467*** (0.445)	*NA*
Decrease	-0.481*** (0.063)	*NA*
N of observations	*1896*	
Log Likelihood	*-6052.083*	
AIC criterion	*0.921*	
Degrees of freedom	*42*	

* indicates statistical significance at the 10% level, ** indicates at the 5% level, and *** indicates at the 1% level

[¥] NA denotes “not applicable”.

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