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Abstract

In the United States child adoption costs vary considerably, ranging from no out-of-pocket expense to $50,000 or more. What are the underlying causes for the variability in child adoption expenses? While cost variability is widely acknowledged, the sources of the differentials have not been systematically examined. This research considers the possibility that adoption cost differentials are determined by adoptive parent preferences for adoptive child characteristics. We administered a detailed survey to a sample of Michigan adoptive families to link adoptive parent characteristics, child characteristics, and adoption-related expenses and subsidies. We then use these data to estimate "hedonic" regressions in which adoption cost is a function of child characteristics. Our findings show that as much as 66 percent of the variation in cost is explained by child characteristics. Adoption costs are lower for older children, special needs children, and children of African descent. To our knowledge, this research is original in its application of hedonic analysis to child adoption decisions. Findings of the study inform policies regarding the transition of children from foster care to adoptive families and may help to determine appropriate subsidies aimed at achieving permanency and improved overall child well-being.

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I. Introduction

Child adoption costs vary considerably, ranging from virtually no out-of-pocket expenses to $50,000 or more. What factors determine the costs of child adoption? Why is there significant variability in child adoption costs? Are adoption costs related to the characteristics of the child being adopted? Are some adoptive parents willing to pay more in order to adopt a child with a particular set of parent-identified characteristics? While child welfare professionals generally acknowledge that some adoptive families have strong preferences for children with certain characteristics, to our knowledge these questions have not been systematically examined using standard economic methods. In fact, the use of the economic framework may seem discordant to a clinician or human service professional.

Economists typically characterize the price of a good or service as being related to the characteristics embodied in that good or service. In a sense, when potential adoptive parents consider child adoption, they must choose an adoptive child and they must choose the mode through which they will experience adoption based on some criteria. For example, in some cases, adoptive parents might make choices based on the physical characteristics of a child. Consequently, if potential adoptive parents have especially strong preferences for certain characteristics, such as a new born child, or a child of a particular race, they may be willing to pay additional costs to obtain a child with that set of characteristics. At the same time, decision makers in human services departments and adoption agencies must recognize this reality, and develop policies/subsidies aimed at placing all children, regardless of characteristics, into loving homes. While it is somewhat unconventional to think of the adoption choice as being made in a “market”,

such a framework may be useful for understanding parental and professional behavior and human services policymaking. Our core hypothesis is that there is a systematic relationship between adoption costs and the adoptive child characteristics as well as other characteristics of the adoption experience. Strong preferences for certain characteristics among some adoptive parents can result in the emergence of cost differentials across different types of adoptable children and adoption experiences in the "adoption market."

Differentials in willingness to pay for various adoptive child characteristics can arise in several ways. Adoptive parents may perceive a higher cost of caring for a child of certain characteristics. For example, caring for a child with special needs may entail significant additional emotional and medical costs. In such a case, there is an economic rationale for a reduced willingness to pay by the potential adoptive parent, and there is a strong rationale for offering subsidies as compensation for these additional costs if the goal is to place such children into a stable home environment. Similarly, a parent may perceive additional psychological/social/emotional costs associated with interracial adoptions or the adoption of an older child, and therefore may be willing to pay a premium to have a child of the same race or of a younger age.

Along these lines, adoptive parents may be willing to pay a premium to protect family privacy in their adoption decision: Adopting a child with significantly different characteristics can make anonymity impossible. An older foster care child may be perceived as a "riskier" adoption, given the past challenges the child may have encountered. Again, this may be perceived as an additional cost or risk to be avoided, and a rationale for wanting to adopt a newborn or infant. Some families may desire to adopt a child internationally, and thus incur additional costs in order to obtain a child

with certain characteristics, or perhaps to experience what economists refer to as a "warm glow" effect (Andreoni, 1990)—a good feeling associated with caring for a child that is perceived to be in great need. Price differentials among children with various sets of characteristics can emerge as adoption agencies may develop programs for prospective adoptive parents who want to adopt a healthy new born to allow them to cover the expenses associated with the birth mother's nutritional and health needs. Other organizations develop programs designed to match orphans in developing countries with parents who desire to adopt internationally. Further, recognizing these differences, policymakers may develop subsidies to encourage the adoption of "low demand" or "difficult-to-place" children.

The objectives of this research are twofold. The first objective is to determine the underlying factors responsible for the significant differentials in the costs associated with adoption. In the United States, employment laws and legal constraints in other markets prevent one from fully acting on preferences regarding characteristics such as age, gender or race. For example, it is illegal to give preferential treatment in the hiring process to workers with certain characteristics that are unrelated to the specific qualifications such as education, training and experience.[1] However, there are no such legal constraints in adoption decisions. In fact, recent legislation encourages the placement of children in homes regardless of race or ethnicity.[2]

The adoption "market" therefore provides a unique opportunity to examine the degree to which adoptive parents' preferences for adoptive child characteristics are

[1] "Affirmative Action: History and Rationale". Clinton Administration's Affirmative Action Review: Report to the President. July 19, 1995. http://clinton2.nara.gov/WH/EOP/OP/html/aa/aa02.html.
[2] The Multiethnic Placement Act of 1994 (MEPA) and the Interethnic Adoption Provisions of 1996 removed legal barriers to interracial adoption (Brooks, *et al*., 1999).

expressed and translate to differences in the costs of adoption. Consequently, a differential in adoption costs will emerge under two conditions: 1) At least some adoptive parents have strong preferences for specific characteristics and are willing and able to pay for those characteristics; and 2) there is a relative shortage of adoptable children who possess such characteristics. This first objective addresses a primary research question that will shed light on adoptive parent preferences related to race/ethnicity and other child characteristics. This research offers a fresh look at an old question: What measurable behavioral responses emerge from our perceptions of race, gender, age, and other human characteristics?

A second objective of this research is to use the cost differential estimates to inform policies regarding the foster care to adoption transition. In recent years, nationwide there are typically more than 100,000 foster care children who are eligible for adoption; only about a third of those are actually adopted. Further, adoption rates are lower for African American children than for Caucasian children, and lower for older children.[3] With the 1980 passage of the Adoption Assistance and Child Welfare Act (AACWA, P.L. 96-272), states began offering adoption subsidies in order to encourage adoption and reduce the length of stay in foster care.

However, states differ considerably in the size of and conditions under which the subsidies are made available. For example, in Michigan the Department of Human Services departments offer pre- and post-adoption subsidies to adoptive parents to cover the costs of adoption and assist in the ongoing care of children adopted through the foster

[3] According to the U.S. Department of Health and Human Services, Children's Bureau, children waiting to be adopted are those whose parents' rights have been terminated and/or with a stated case goal of adoption.

care system.[4] This research provides useful information to human services policymakers in determining and calibrating subsidy amounts. In some cases, the subsidies offered may be larger than is required, leading to inefficient use of limited resources. In other cases, the subsidy may be insufficient. Thus, with regard to pre-adoption supports, children may remain in foster care for an extended period and may even age out of the system.[5] Further, insufficient or misallocated post-adoption subsidies could result in considerable family stress and the inability to access needed physical and mental health services.

In the interests of the child, a key objective is to achieve permanency[6]; adoption is a clear path to permanency and thus improved overall well-being of the child. Further, prolonged periods in foster care may be an inefficient use of public monies as it is very costly to fund a child in foster care. Nationwide, thousands of adoptable children remain in the foster care system. The ultimate policy objective of this research is to provide assistance to human services departments in utilizing limited resources more efficiently, thus helping to achieve permanency and improve the well-being of children who find themselves in the foster care system.

In the next section, we provide a brief review of the most relevant research. In section 3, we discuss our research design and methods, and section 4 presents the survey instrument and data. In section 5, we present our empirical analysis, and section 6 concludes.

[4] For details on Michigan's foster care adoption policies, see http://www.michigan.gov/dhs/0,1607,7-124-5452_7116---,00.html.
[5] Once a foster care child reaches the age of 18, he/she is no longer a ward of the state and is considered an adult.
[6] Permanency refers to the placement of a child into a permanent home.

II. Literature Review

In this section, we present a brief review of several strands of research that are connected to the present research. Specifically, we offer a brief review of the literature on the economics of the household. We also discuss the research using the hedonic approach in a variety of contexts, including wage determination. Last, we consider the limited economic research on child adoption.

If one can place the present study into a particular field, it probably would fall into economics of the household, a field pioneered by Gary Becker. Becker has used the economic approach, the marginal-cost and marginal- benefit framework, to evaluate decision making across the full range of family choices: Marriage, divorce, fertility, and investments in human capital. This work spawned a broad and wide ranging literature that is too expansive to review here, but many of the core elements of this body of research are summarized in *A Treatise on the Family* (Becker, 1991). While this work provides a framework for thinking about important trade-offs associated with fertility decisions and child rearing, it does not explicitly consider adoption decisions or adoption "markets."

There is, however, a limited body of economic research on child adoptions. Perhaps the earliest work conducted by economists is that of Landes and Posner (1978). In this article the authors point to the "shortage" of "white babies" and the "glut" of "black babies" as evidence of disequilibrium in the market for babies. They argued that institutions and regulations prevent differential prices from emerging in the market such that the market for different types of babies would clear. In short, the authors argued that if a more formal market for "baby selling" were allowed, price differentials for babies of

various characteristics would emerge and the market would clear, thereby improving outcomes.

Today, despite various policies designed to place children regardless of race, special needs, and other child characteristics, placement rates differentials still persist. Studies by Barth (1997) and Brooks and James (2003) examine probabilities of a child being adopted based on factors such as race and age. Generally, placement rates in the United States are lower for older, special needs, and African American children.

The work of Argys and Duncan (2008) illustrates how policies can affect adoption decisions. Specifically, they show that a decision on the part of a foster parent to adopt his/her foster child may carry a significant economic consequence: Adoption could mean a significant reduction in financial support the family receives to assist in the care of the child. Importantly, differentials between foster care payments and post-adoption subsidies play a significant role in adoption decisions. That is, post-adoption subsidies that match foster care payment amounts (relative to post-adoption subsidies that are less than the foster care payment) increase the probability of adoption.

Some research has sought to evaluate the costs and benefits to society of adoption through foster care. For example, Hansen (2007) shows that in the U.S. a child who is adopted from foster care is likely to earn $100,000 more over a lifetime than counterparts who "age out" of foster care without a permanent family. Further, she estimates that every adoption from foster care in the U.S. yields a net saving of $350,000 in the child welfare, special education, juvenile justice, and welfare systems (adjusted to 2008 dollars). Her estimates suggest that every dollar spent on the adoption of a child from foster care yields about three dollars in benefits to society.

In another article, Hansen (2008) suggests that the way post-adoption subsidies are offered is insufficient for dealing with the uncertainty/risk introduced when a family adopts a child. For example, one may not know the potential genetic history, or the degree of abuse that may have significant emotional/health repercussions as the child gets older. Hansen argues that insurance should be added as one type of subsidy to alleviate concerns that these potential unknown future costs will be an excessive burden for the adoptive family. Such a mechanism may be more effective and efficient than offering monthly cash assistance sufficient to induce families to enter the adoptive family pool.

As we discuss in detail later, our framework for evaluating adoption costs relies on the hedonic approach. The key insight that emerges from this type of evaluation is that the adoption experience embodies of set of attributes (e.g., child characteristics, the experience of travelling to a foreign country, etc…), and each attribute offers a benefit to the adoptive parent. For this reason, we offer a discussion of how the hedonic analysis approach has been used to evaluate implicit prices of the individual components embodied in a good or service.

As first modeled by Rosen (1974), goods and services consist of bundles of characteristics. Hedonic analysis uses observations on the overall good or service to obtain implicit prices for the individual components of the good or service embodied therein. Hedonic analysis has been used extensively to estimate willingness to pay for product characteristics, evaluate differences in quality of life, assess the willingness to pay for various environmental quality attributes, and determine wage differentials in labor markets.

Hedonic pricing has been used extensively in housing markets to evaluate willingness to pay for characteristics embodied in a home (see for example Palmquist, 1984 and Orford, 2000). Similarly, Ready and Berger (1997) apply the hedonic price model to farmland to estimate the monetary value of external benefits and costs of preserving farmland. Other studies have used the technique to evaluate the monetary effects of poor environmental quality, as related to causal factors such as air pollution, sedimentation, and landfills (Freeman, 1979; Bejranonda, Hitzhusen, and Hite 1999).

The hedonic technique has also been used to evaluate willingness to pay for various product attributes in durable and non-durable goods markets (Berndt, 1990; Anstine, 1997; Stanley and Tschirhart, 1991). For example, Berndt (1990) estimates hedonic price models for the automobile and computer industries.

There is also a large related literature that has examined various forms of discrimination in the labor market. Researchers have studied the role that factors such as race, ethnicity, gender, age, disabilities, obesity, and even beauty play in wage determination. While the scope of this body of research is too expansive to summarize here, this work amply illustrates that decision makers may place value on worker characteristics that are often times unrelated to worker productivity, and this is manifested in differential labor market outcomes.[7]

While much of the research on how preferences are reflected in markets has been conducted by economists, marketing researchers and psychologists have also sought to understand preference formation and influences on decision-making. In the marketing

[7] See Cain (1986) for a review of this literature. For specific examples of this research see: Bertrand and Mullainathan (2004), Blau and Beller (1992), and Borjas and Tienda (1985) [race/ethnicity]; Bloom and Grenier (1992) [linguistic minoities]; Adams (2004) [age]; Baldwin and Johnson (1994); Famulari (1992); Kidd, Sloan, and Ferko (2000) [disabilities]; Carr and Friedman (2005) [obesity]; and Hammermesh and Biddle (1994) [physical attractiveness].

research arena, Hine (1995) provides an excellent summary of research showing the influence of packaging on purchasing decisions. This work shows that in addition to the quality of the product, consumer purchasing decisions are powerfully influenced, either consciously or unconsciously, by the nature of the packaging. Marginal changes to packaging such as the shape of a bottle or the addition of something as minor as a twig of parsley to the image on a can of meat can significantly affect both willingness to pay and volume of sales (Gladwell, 2005).

In the field of psychology, researchers have made important contributions to our understanding of the factors that influence decision making. The work of Bargh, *et al* (1996) uses a technique called "priming" to demonstrate the power that certain words can have on behavior. The idea is that some words within a given culture elicit powerful responses in people because they are loaded with layers of meaning. For example, in the United States the word "Florida" clearly refers to a state, but for many Florida also has strong connotations of "elderly", or "sunny" and "warm". In the context of race, unfortunately for many the term African American may carry with it a set of negative stereotypes that can affect behavior. To illustrate, Steele and Aronson (1995) show how test scores of African American students were dramatically reduced when they were asked to identify race on the exam, relative to African American test takers who were not asked to identify race. The authors suggest that the simple act of race identification was sufficient to "prime" students with negative stereotypes, thus affecting performance.

Greenwald, *et al* (1998) has devised a method of measuring unconscious responses to race, showing that most people in the United States, regardless of ethnicity, have difficulty making positive associations with the term African American. In the

context of adoption decisions, one wonders what stereotypical images, whether conscious or unconscious, are elicited when words such as African American, foster care, and special needs are used to describe a child, and the degree to which those images influence decision making on the part of adoptive parents.[8]

While there are a number of studies from a variety of fields (economics of the household, adoption research, labor markets and discrimination, and hedonic analysis) that inform the current study, to our knowledge researchers have not explicitly considered how the preferences of adoptive parents may be reflected in an "adoption market," which result in a pattern that links adoptive child characteristics to adoption costs. We offer a contribution to the existing research by obtaining specific implicit prices for the various characteristics of the child, thereby informing the range of subsidies that could be made available to adoptive parents to place children into loving homes. The present study also provides new insights on the potential barriers to placement of certain types of children into adoptive homes. We now turn to the presentation of our research design and the methods we use to evaluate the adoption market.

III. Research Design and Methods

We conducted a sample survey of 1,183 adoptive families from a total Michigan population of 8,331 non-relative adoptive families who adopted over the 2007-2009 period. Importantly, the sample includes adoptive families who adopted children through a variety of methods: through private legal services, through private adoption agencies,

[8] Malcolm Gladwell (2005) offers a clear and intuitive discussion of the research on unconscious behavioral responses found in the fields of marketing and psychology.

and through the foster care system. This sample included families involved with special needs adoptions, infant adoptions, and international adoptions.

We developed a survey instrument in order to match parent and child characteristics with detailed information about the full range of adoption-related expenses. Further, our analysis requires that we obtain a representative sample of adoptive children who have been adopted through different agencies and organizations. It should be noted that existing surveys do not provide the full array of information we require for our analysis. For example, although the Adoption and Foster Care Analysis Reporting System (AFCARS) contains extensive survey data, it does not provide detailed information on adoption expenses incurred. Also, AFCARS does not include information about parents who adopted children via methods or programs other than the foster care system.

The survey was designed to obtain detailed information regarding family characteristics, the characteristics of the adopted child, and the various costs incurred in adopting the child. Identifying the full costs of adoption requires a detailed discussion, which we provide later. These data are used to estimate a hedonic price regression in which the sum of all adoption costs (the price variable) is assumed to be a function of the specific characteristics of the child. We hypothesize that variation in adoption costs is systematically related to child characteristics, such as race/ethnicity, gender, age, special needs, and other characteristics.

Specifically, we use the hedonic price technique to determine estimates of the willingness to pay for various adoptive child characteristics. While it is unconventional, and perhaps initially disconcerting, to refer to adoption decisions as being made in the

context of a market, we assert that child adoption decisions are indeed made in the market place. Adoptable children, like goods and services, embody a set of characteristics. Adoptive parents often express their preferences for particular characteristics, and we propose that at least some parents are willing to pay more to adopt a child that embodies a preferable set of characteristics. While many child characteristics are not quantifiable, many are measurable. Our research method is designed to evaluate willingness to pay for these measurable attributes. The hedonic pricing model treats goods and services (in our case an adoptive child) as providing a collection of characteristics. Below, we offer a brief theoretical discussion that is used to guide our empirical analysis.

In the case of adoption decisions, each adoptive parent receives a different benefit (utility) from the child adoption experience. The utility (U) of the adoptive parent is a function of a composite good, Y, the adoptive child experience, A, and taste parameters, T. This relationship is expressed as $U = U(Y, A, T)$. The adoptive child experience includes a number of components. Embodied in A are the specific characteristics of the adoptive child, but there are other considerations. For example, adopting a child internationally often requires travel to a foreign country. The adoptive parent may develop a strong connection with the adoptive child's home country, home city/village, and orphanage. These experiences can be quite different than the experience of adopting a child domestically. Further, with many domestic adoptions there is often a possibility of complications resulting from a birth parent who wishes to resume a relationship with the adopted child. International adoptions are far less likely to develop such complications. For these reasons, some adoptive parents may be willing to pay for an international adoption experience. Conversely, international adoptions may pose a set of

complications for prospective adoptive parents. In our regression analysis we consider these various aspects of the adoption experience.

Utility is maximized subject to a budget constraint, $P_Y*Y + P_A*A = M$, where P_Y represents the price of the composite good Y, P_A represents the cost or "price" of providing for the adoptive child, including the initial costs of adoption[9], and M is family income. Constrained optimization yields a set of demand functions where $A = A(P_Y, P_A, T, M)$. Each adoptive parent has a collection of indifference curves representing his or her trade-off between the different adoption experiences (including preferred child characteristics) that they want; higher indifference curves are associated with higher utility levels and higher willingness to pay for the adoption experience. An adoptive child experience offers a set of characteristics that matches the preferences of the adoptive parent. The offer function for the adoption experience (O) is determined by the price, P_A, a vector of child attributes and other characteristics of the adoption experience, Z, and the benefit of the adoption experience to the parent, π: $O = O(P_A, Z, \pi)$. In this framework, each child adoption has a different set of attributes and thus (potentially) a different cost. Hedonic analysis uses variation in adoptive child characteristics and other adoption experience attributes and adoption costs to generate estimates of implicit costs (or prices) for each of the child attributes.

In the hedonic framework, the market is assumed to be in equilibrium. That is, the adoptive child experience offer function is equal to an adoptive parent's bid function so that the marginal cost of the adoption experience is equal to the marginal valuation of

[9] To simplify, we assume that except for the adoption costs (and subsidies), the costs of raising a healthy child are equal across all children (adopted and non-adopted). Of course, caveats would have to be made in the case of special needs, etc… In some cases, post-adoption subsidies are available to adoptive families to assist in the expense of raising the child. As we discuss later, these subsidies are expressed in net present value terms.

the adoptive parent. Differences among adoptive parents in their desire for different adoption experiences and child attributes, and differences in the types of experiences and adoptive child attributes, result in a heterogeneous adoption market. If the assumptions of the hedonic framework hold true for the child adoption market, the cost (or price) of adopting a child is a function of both the characteristics of the child and the other characteristics of the adoption experience.

To identify the factors preferred by adoptive parents and the range of characteristics that might be considered in an adoption decision, in consultation with adoption specialists, we prepared a comprehensive, four-page hardcopy survey entitled *Questionnaire about Adopting a Child* (which is available upon request from the authors). In the next section, we provide a detailed discussion of the type of information we collected from this survey.

Our statistical analysis is based on the following equation:

$$P_{Ai} = \alpha + \beta(X_i) + \varepsilon_i$$

where P_{Ai} represents the cost (or price) of the adoption of child i, X_i is a set of adoptive child characteristics as previously described, β is the corresponding vector of parameters and α the constant term to be estimated, and ε_i is the error term. The primary objective of this examination is to provide clear estimates of the willingness to pay for various observable adoptive child characteristics.

IV. Survey and Data

The survey is designed to capture three sets of information: 1) characteristics of the adoptive families; 2) detailed characteristics of adoptive parents' most recently

adopted child/children; and 3) the detailed costs of child adoption, including subsidies for pre- and post-adoption. We include a range of questions to capture information about the adoptive family, including age, race, income, education, motivations for adoption, and religious beliefs. Similarly, we include a series of questions to identify both the characteristics of the adoptive child and the adoption experience, including domestic vs. international, foster care vs. other adoption, age, gender, race, ethnicity, skin and eye color, and special needs. It is also critical for our analysis that we fully identify the costs (including tax credits and subsidies) of child adoption. As we discuss later, the survey instrument captured detailed information on costs as well as subsidies.

The survey was administered to a stratified random sample of 1,083 adoptive families who adopted in 2007, 2008, or 2009.[10] The survey was sent by post in June 2010, and a follow-up reminder postcard was sent two weeks later. Table 1 shows the proportion of adoptions that were voluntary release, direct consent, permanent wards, and international adoptions.[11] In total, 1,183 potential respondents were identified by adoption agencies, and surveys were mailed to these individuals. About 100 surveys were returned by the U.S. Postal Service due to wrong address; thus 1,083 families actually received the survey. Of the surveys that were received by adoptive households, 223 families returned the survey (21 percent response rate), yielding 183 useable

[10] The survey sample is a stratified random sample of Michigan adoptive families. The sample is roughly representative of the Michigan adoptive parent population. All of the statistical analyses reported in this paper use the appropriate survey weights, where weights are based on a 2000 census of adoption agencies that provides detailed adoptive child characteristics as well as the types and nature of adoptions. The weights insure that our sample reflects the actual adoptive child population in terms of race/ethnicity, special needs, and international.

[11] To protect the privacy of the participating agencies and adoptive families, the names of participating agencies are omitted. We exclude within-family adoptions (e.g., a grandparent adopting a grandchild) from our sample. Voluntary release refers to the surrender of newborn by parent their parental rights to their newborn child. Direct consent refers to the agreement by a parent, or a person or agency acting in place of a parent, to relinquish a child for adoption and release all rights and duties with respect to that child. Permanent ward refers to children in foster care who become permanent wards of the state.

surveys.[12] A number of families (39) adopted more than one child in their most recent adoption experience. In the hedonic framework, it is appropriate to use the adoptive child as the unit of analysis; thus the total number of observations based on number of adopted children is 237.[13] Given that there were 8,331 children adopted in Michigan between 2007 and 2009, our sample includes 2.2 percent of all adopted children in Michigan over this period.

Summary statistics of child characteristics are shown in Table 2a. The first set of variables includes several measures of adoption costs. The survey was designed to capture a full range of adoption-related expenses: Pre-placement assessment /home study; adoptive parent counseling; travel expenses; attorney fees; fees charged by an international adoption agency; fees charged by international country of origin; court filing fees; opportunity cost of adoptive parent time; and biological parent counseling, medical expenses, living expenses, and travel expenses, etc…, paid for by the adoptive parents. Definitions for the alternative cost measures are provided in Table 2a and other variable definitions are provided in the Appendix Table A.

The first cost variable, Adoption Cost, represents the total out-of-pocket expense, whereas Adoption Cost I is out-of-pocket expenses plus the opportunity cost of the parents' time off to complete the adoption.[14] For the 237 children, the average out-of-pocket expense is $10,704, and Adoption Cost I is $12,787; the opportunity cost of time taken off from work is therefore the difference between the two measures, or $2,083 on

[12] Most of the non-useable surveys were adoptions by family members as noted in the previous footnote.
[13] In some regression estimates, we used the adoption experience (most were single child adoption, but some experiences entailed the adoption of two or more children at once) as the unit of analysis. These estimates, which are available upon request, yielded results that were qualitatively similar to those presented in the paper.
[14] Opportunity cost is calculated for both parents and is equal to the total value of time off from work to attend to adoption-related activities.

average. There is a wide range measured by the standard deviation; some children had zero costs while the maximum cost out of pocket for an adopted child was $50,000. Adoption Cost II is equal to Adoption Cost I minus any pre-adoption subsidies such as federal and state tax credits, employer provided subsidies, and any other sources of pre-adoption subsidies. Finally, Adoption Cost III equals Adoption Cost II minus any post-adoption subsidies received.

Post-adoption subsidies require a more detailed explanation. In Michigan, the Department of Human Services offers adoptive parents the opportunity to receive monthly post-adoption support for children adopted through the foster care system. This subsidy is negotiated at the time of adoption and varies according to the needs of the child. However, the post-adoption subsidy cannot exceed the foster care rate the child received, or would receive, in a family foster care home prior to adoption.[15] To evaluate the subsidies, we must consider the fact that typically an adoptive family will receive a monthly subsidy until the child reaches the age of 18. Thus, we calculate the present value of the stream of payments using a five percent discount rate. The post-adoption subsidy in Michigan can be substantial. While the average present value of the post-adoption is about $43,000, as shown in the "Max" column for present value of annual post-adoption subsidy in Table 2a, the highest value (as reported by the parent) in our sample is $506,935.[16]

Turning to the Adoption Cost III variable, we see that the cost, once the post-adoption subsidy is included, is actually negative. That is, on average the present value

[15] For more details, see "Michigan's Adoption Subsidy Program: Information for Prospective Adoptive Parents" prepared by the State of Michigan Department of Human Services, http://www.michigan.gov/documents/DHS-Pub538_132926_7.pdf.
[16] In this case, the child is one with special needs.

of the post-adoption subsidy is much greater than the out-of-pocket costs incurred by the adoptive parent. In our sample, 49 percent of all adoptive families received a post-adoption subsidy.

Consider now the child characteristics. For those familiar with adoption it is not surprising to see that the racial make-up of adoptive children is quite different than the Michigan population as a whole. Specifically, the percentage of children available for adoption (in our sample and in the population of adoptable children) who are Caucasian is much lower and the percentages of African American and multi-racial children are much higher than the general population. However, the proportions of children who are of Asian or Hispanic descent roughly match the general population in Michigan. We also report skin color as identified by the adoptive parents (very fair or somewhat fair, brown, somewhat dark or very dark) as well as information on special needs. About 45 percent of the sample was categorized as having a special need, with "emotional impairment and behavior condition" as the highest sub-category of special need at approximately 20 percent. A number of children had multiple special needs. Finally, we also included indicator variables for whether the child was adopted by a foster parent and whether the child was an international adoption. Twenty-six percent of children in the sample were adopted by a foster parent[17], and 20 percent of children were adopted internationally.

In Table 2b, we report the same set of statistics as in Table 2a except summary statistics are reported for each racial class: Caucasian, African American, Asian, Hispanic, and Multi-race. These data show remarkable differences in costs across these subsets. Namely, the costs of adopting children of Multi-race and of African American

[17] Also represented in our sample are adoptions through foster care that were by families who were not first foster parents of the adopted child.

descent are much lower relative to the other categories. Adoption costs for Caucasian children are higher than multi-race and African American costs, but substantially lower than Asian and Hispanic child adoption costs. Nearly all Asian and Hispanic adoptions are international, and thus entail substantial travel costs and additional administrative costs. In the context of the hedonic framework, one must ask why adoptive parents are willing to pay a higher cost when a domestic child is available at a lower cost. There are multiple potential explanations. For example, adoptive parents may experience a "warm glow" or good feeling for having adopted internationally. An international adoption experience may offer benefits to the parents in that the parents not only form a new relationship with the child but also with the country from which the child came. Alternatively, a parent may believe that he/she has a better chance at obtaining a child with the preferred characteristics. In any case, in choosing an international adoption the adoptive parent reveals his/her preference; we hope to uncover the implications of these expressed preferences in our analysis.

Table 3 provides the summary statistics for the adoptive parent characteristics. Household income of adoptive parents in this sample is exceptionally high, more than twice the Michigan average. Adoptive parents are also primarily Caucasian, Christian, and highly educated. About 90 percent of respondents reported that they were Caucasian and held Christian beliefs (Catholic, Protestant, or Other Christian), and more than 60 percent held a Bachelor's degree or higher. Almost half of adoptive parents report not being able to have a birth child of their own. In terms of race/ethnicity, our sample is roughly proportional to the nonrelative adoptive parent population in Michigan.

V. Regression Analysis

Relationships between Parent Characteristics and Child Characteristics

To examine the connection between child adoption costs and child characteristics, it first is useful to consider whether child characteristics are correlated with the characteristics of adoptive parents. Are more highly educated adoptive parents more (or less) likely to adopt a special needs child? Similarly, are higher income parents more (or less) likely to adopt children through foster care? Establishing that there is a relationship between adoptive parent characteristics and adoptive child characteristics is a first step in affirming the notion that parents with preferences for certain child characteristics may in fact be willing to incur additional adoption expenses to obtain a child with such characteristics. We therefore estimate a series of regressions in which various child characteristics are used as dependent variables and are functions of parent characteristics. With the exception of the age of the adoptive child, all child characteristic variables are binary (0-1) indicator variables. These regressions are therefore estimated using a Logit estimation procedure.[18] In addition, in the context of adoptive child race/ethnicity, it is important to use a Multinomial Logit so that coefficient estimates can be interpreted relative to a single reference category. In our estimates, the omitted reference category is Caucasian adopted children.

We offer a brief summary of these results, which are found in Table 4, but do not offer a lengthy discussion. These results suggest that adoptive families with higher income are less likely to adopt through foster care, but tend to adopt older children, all else equal. Higher income families are also less likely to adopt African American children, relative to the base category of Caucasian children. Caucasian/White families

[18] Average partial effects are reported in the Logit regressions.

are less inclined to adopt boys, less likely to adopt as a foster parent, and less likely to adopt African American and multi-racial children. Adoptive families who characterize themselves as Christian (Catholic or other Christian faiths) are more likely to adopt an African American/Black child than they are a Caucasian child, all else equal. Interestingly, families in the "other Christian" faith category are also more likely to adopt a multi-racial child than a Caucasian child. Older adoptive parents tend to adopt older and special needs children, relative to their younger counterparts.

Generally, families with higher levels of education are less likely to adopt African American/Black children and more likely to adopt Asian and Hispanic/Latino children. Adoptive parents who have at least one birth child at the time of adoption are more likely to adopt as a foster parent and tend to adopt older children, and are less likely to adopt a Hispanic child. Finally, adoptive parents who indicated an inability to have a child by birth tend to adopt younger children. With this brief summary, it is clear that parents with certain characteristics have tendencies toward or away from certain child characteristics. In some cases, these relationships are somewhat surprising and informative. As we discuss in some detail later, these results can be used to inform marketing efforts and the matching of children with adoptive parents. This sets the stage for the core portion of our analysis—an examination of the relationship between child characteristics and child adoption costs using the hedonic regression approach.

Hedonic Regression Results: Adoption Cost I and Adoption Cost II

Consider first the Adoption Cost I regressions found in columns 1-3, Table 5a. We present these estimates first because this component of total adoption costs (out-of-pocket pre-adoption and adoption expenses plus the opportunity cost of the parents' time

off) is least affected or influenced by human services policy. These costs are therefore most likely to be driven by adoptive parent preferences. As we show later, post-adoption subsidies, when available, are quite large and tend to swamp the pre-adoption costs. Further, while policies regarding post-adoption subsidies allow for larger subsidies for special needs, subsidies for foster care children are largely determined by and constrained to the amount of funds that would have been expended on the child had he/she remained in foster care. Foster care payments are designed to offset the costs of caring for the child and are therefore unrelated to the child's characteristics other than any identified special needs. For these reasons, we anticipate that both the post-adoption subsidy and Adoption Cost III (Adoption Cost II plus the post-adoption subsidy) will be unrelated to race/ethnicity and gender.

All regressions include a gender binary indicator variable equal to one for male and zero for female (Gender), a binary indicator variable equal to one if the adoption included more than one child and zero otherwise (Multi-child), a binary indicator variable equal to one if the child was adopted by a foster care parent (Foster care), a binary indicator variable equal to one if the child was adopted internationally (International), the age of the child (Age), a binary indicator variable equal to one for special needs (Special needs), and a binary indicator equal to one for physical disability (Physical disability).[19] The first column reports results for a regression that includes a series of ethnicity indicator variables (Black/African American, Asian, Hispanic/Latino, and Multi-racial).[20]

[19] Physical disability is a special case of special need: As reported later, domestic children with physical disabilities receive a substantially higher post-adoption subsidy than other special needs children. We also estimated some regressions in which we included other specific types of special needs (emotional or behavioral, learning, and visual or hearing), but these additional variables provided little additional explanatory power to the regressions. This is likely due to the limited sample size.

[20] The omitted category is Caucasian.

The second column reports results for a regression that includes skin color (Brown and Dark) variables but excludes ethnicity variables.[21] Column 3 includes both ethnicity and skin color variables to examine preferences with regard to race and skin color jointly.

Because international adoptions are in many ways distinct from domestic adoptions, we generate a separate set of coefficient estimates for child characteristics for domestic and international adoptions. Specifically, we interact a domestic adoption binary variable (Domestic) with child characteristics, and then we interact International with child characteristics. We expect that implicit values for child characteristics could differ across domestic and international adoptions.

Inspection of the results in Table 5a shows that the regressions explain a substantial amount of variation in costs with the R-square ranging between 0.60 and 0.66, relatively high in the context of cross sectional data. A number of the coefficient estimates are statistically significant. Holding other factors constant, we see that costs of adopting multiple children at the same time are lower. This makes sense in that adoptive parents are able to achieve economies of scale by spreading the fixed costs across the adopted children. The costs of adopting a child as a foster parent are also lower, an indication that the adoptive parents perceive adoption through foster care as riskier in the sense that foster children may have experienced difficult circumstances which result in lasting emotional effects. International adoption costs are substantially higher, indicating that these parents perceive a benefit to adopting internationally. Gender, however, is not a significant determinant of costs.

Consider now the domestic interaction terms. Child age is statistically significant: The costs fall by roughly $350 to $450 for each year older the child is. Ethnicity is also

[21] The omitted category is Very fair or somewhat fair.

important; relative to the adoption of a domestic child of Caucasian descent (the omitted category), adoption costs for African American children are significantly lower, but costs are higher for Asian and Hispanic domestic adoptions. Among domestic children, skin color is not a significant determinant of child adoption costs (see column 2). The coefficient on Special needs is statistically significant, indicating the adoption costs are lower for such children.

Consider now the international interaction terms. Note that there were no children of mixed race who were adopted internationally. Here, age is not a significant determinant of costs. However, both race/ethnicity and skin color emerge as important determinants of costs. Analogous to domestic adoptions, the omitted racial group among international adoptions is Caucasian. Thus, among international adoptions, relative to Caucasian adoptions African and Asian adoptions have a lower cost. Hispanic/Latino adoption costs, however, are similar to Caucasian adoption costs. It is also interesting that adoption costs for children with "dark" skin tone are lower (by some $17,000) than for "fair" children and lower than for children of "brown" skin tone as well (column 2). Last, costs of adopting an international child with a physical disability are positive and significant in one regression, possibly reflecting the "warm glow" value to parents of helping a child in desperate need.

The Total Cost II regressions (costs net of pre-adoption subsidies) presented in Table 5b exhibit the same general pattern as the Adoption Cost I regressions, except the costs are decreased by the pre-adoption subsidies. However, note that for international adoptions the adoption cost disparity between "fair" and "brown" or "dark" skin color is

larger in these estimates than in the Adoption Cost I estimates. We leave it to the reader to peruse Table 5b as we do not discuss these findings any further here.

Generally, we find that child characteristics such as age, race, skin color, and special needs play a role in determining adoption costs. Below, we consider post adoption subsidies and costs net of such subsidies. In these regressions we find that race/ethnicity and skin color are no longer significant predictors.

Hedonic Regression Results: Post-Adoption Subsidy and Adoption Cost III

The regressions in Tables 5a and 5b do not account for the fact that the State of Michigan Department of Human Services offers significant post-adoption subsidies for children adopted through the foster care system. In Table 5c, we present a set of regressions using the post-adoption subsidy as the dependent variable, and in Table 5d we present a set of regressions using Adoption Cost III as the dependent variable (costs net of pre- and post-adoption subsidies). Recall that in many cases the present value of post-adoption subsidies is substantial so that the average value of the Adoption Cost III variable is actually negative; the subsidy far exceeds the costs. Note again that post-adoption subsidies are restricted to domestic foster care adoptions. Also, because adoptive parent income may play a factor in determining the size of the post-adoption subsidy, adoptive parent household income is added as an explanatory variable.[22] Finally, given that many of the adoptions do not qualify for post-adoption subsidies, this dependent variable is left-censored at zero. We therefore use the Tobit procedure (Tobin, 1958). Because none of the international adoptions qualify for a post-adoption subsidy,

[22] However, additional regressions, not shown in this manuscript, indicate that the estimated implicit prices of child characteristics are similar regardless of whether or not adoptive parent income is included in the regressions.

the Tobit estimation does not generate estimates of the international indicator variable interacted with the child characteristics.

The Post-adoption subsidy regressions (Table 5c) exhibit some interesting patterns. First, the evidence here shows that lower income households tend to receive larger post-adoption subsidies; this result suggests that the subsidy program has a progressive nature. Subsidies are significantly higher for multi-child adoptions (typically sibling adoptions), for foster parent adoptions and for special needs children, particularly those with physical disabilities. The average subsidy for a child with a physical disability is roughly $200,000. Last, older children also receive larger subsidies. Note, however, that post-adoption subsidies are unrelated to race/ethnicity or skin color. This is not too surprising given that the subsidies are linked to the costs of caring for a child in foster care, and these costs are set by formulae which are independent of race/ethnicity.

The Post-adoption subsidy regressions set the stage for our last set of regressions (Table 5d), which use Adoption Cost III (costs net of pre- and post-adoption subsidies) as the dependent variable. These regressions, more so than any of the others, represent the full monetary costs (positive or negative) of child adoption. However, the linkage between Adoption Cost III and adoptive parent preferences for child characteristics is weakened by the policies that determine the post-adoption subsidy. In these regressions, we see that Foster parent adoptions exhibit a negative cost (about -$24,000), all else equal. This result is a reflection of the fact that foster care children are eligible for the post-adoption subsidy. One interpretation of this finding is that the availability of the subsidy is a reflection of the potential risks adoptive parents face when adopting through

foster care: foster children may be perceived to be risky in the sense that they often have experienced difficult, sometimes unimaginable circumstances. Caring for such a child may require a special commitment by parents who could face additional costs during the child's period of care. The interaction terms between the domestic indicator variable and child characteristics generates just one significant coefficient: Domestic Asian children in our sample are much more costly to adopt than other children. This result is likely due to the fact that none of the Asian domestic children in our sample were foster care children. Special needs adoptions, particularly those involving children with physical disabilities, receive substantial subsidies. Thus, the total costs are also negative for these adoptions. Turning to the international adoptions, the results are largely driven by the ineligibility of these adoptions for the subsidies. The coefficients on the interaction between the international indicator variable and child characteristics are for the most part statistically insignificant. There is one exception, however; children of darker skin color tend to have lower cost than children with fair skin.

Some general patterns of adoption costs across sets of adoptable children emerge from these results. Focusing on the pre-adoption costs (Adoption Cost I and Adoption Cost II), we see clear linkages between costs and child characteristics such as age and race, and with international adoptions, skin color. The most costly adoptions in terms of cost prior to any post-adoption subsidies are Hispanic/Latino and Caucasian International adoptions. These costs are estimated to be in the $40,000 range. Asian and African international adoptions are substantially less expensive than Caucasian or Hispanic/Latino international adoptions, but still more expensive than domestic adoptions. Among domestic adoptions, the least costly adoption is that of older African

American children in foster care; the predicted out-of-pocket cost of adopting an eleven year old African American special needs child is approximately zero. The most expensive domestic adoptions are for very young non-special needs children of Asian descent.

Turning to the post-adoption subsidy results, as expected the largest subsidies go to families who adopt special needs children. When we account for post-adoption subsidies in defining costs (Adoption Cost III), predicted costs are negative for domestic children regardless of race (except domestic Asian adoptions --no Asian adoptions received a subsidy in this sample). Costs are significantly more negative for special needs children. Interestingly, the costs of adopting domestic children become increasingly negative with age. That is, the largest subsidies tend to go to older children.

VI. Conclusions

This paper uses economic concepts and methods to analyze the adoption experience. Use of the economic framework may pose a challenge to the social service audience as this group may be unfamiliar with such an approach. However, the economic lens clarifies and illuminates a number of aspects of adoption decision making. While we acknowledge that it is difficult to quantify all aspects of decision making, this analysis advances our understanding of some important aspects of adoptive parent choices, emphasizing the link between adoptive parent preferences for child characteristics and adoption costs.

This study offers a first look into the "adoption market" and reveals new information regarding the link between adoptive parent preferences, willingness to pay child adoption costs, and adoptive child characteristics. While the study provides new,

interesting, and potentially policy-relevant information, there are limitations that should explicitly be acknowledged. With 237 observations the sample is small.[23] Though we have used proper weighting techniques typically used with samples, we are cautious to draw definitive conclusions based on this limited sample size. In addition, the sample includes only adoptions in Michigan. Again, one must be careful in drawing inferences to the rest of the nation based on a Michigan sample. Despite these limitations, this research offers insight on relationships between adoptive parent characteristics, willingness to pay for adoption expenses, and child characteristics.

The findings reported here provide new and potentially useful information about adoptive parent behavior interpreted in the context of an "adoption market." Generally, we see that costs are lower for parents who adopt special needs children. Of course, we know that, particularly for special needs children, parents may expend a great deal of emotional as well as other monetary and nonmonetary costs. To some extent the subsidies serve to offset these other costs which we are not able to fully account for in our analysis. The study also reveals differences in adoption costs across adoptive child age as well as race/ethnicity.

Permanency for children, that opportunity for a life-long connection to a loving family, is a central tenet of child welfare policy. When children are unable to be safely maintained with their families and potential efforts to restore the family unit have been unsuccessful or unwarranted, finding a new opportunity for attachment and love is essential for the child's long-term wellbeing. From a societal point of view, placement to

[23] We offer our sincere appreciation to the Michigan Federation for Children and Families and the participating adoption agencies for working with us to develop and administer this survey. Without their trust, participation, and willingness to support this effort, the survey would not have been possible.

such children into a stable family environment often results in reduced long-run social costs of addiction, abuse, crime, and prison associated with adults who lack significant and meaningful social linkages (Hansen, 2007). The present study provides new insights on the potential barriers to placement of certain types of children into adoptive homes. This research can be used by child welfare policymakers as a guide in setting appropriate post-adoption subsidies to encourage timely placement of "hard to place" children into adoptive families. In Michigan, the current policy is such that post-adoption subsidies cannot exceed the foster care payment that child would receive in the foster care system, and the amount is determined on a case by case basis. This approach reduces the moral hazard in adoption (adopting for the financial benefit) but it does not properly price the societal benefit of establishing a permanent attachment for the child. This study provides parameters upon which the social work decision maker can set the subsidy. In this sense, the efficiency of policy practice could be improved: Placement of some children may require a subsidy that is less than what is currently offered to potential adoptive parents, and in other cases the subsidy required might be more. There are many children who remain permanent wards of the state through adulthood because they are never successfully placed into an adoptive family. In some cases, it may be in society's benefit to offer a post-adoption subsidy that exceeds the costs of caring for the child in the foster care system. Adjusting subsidy rates or subsidy type using the willingness to pay for specific child characteristics and differential placement rates as guides could improve overall placement rates.

Further, the composition of subsidies could be modified to increase the pool of potential adoptive parents. As highlighted in the literature review, Hansen (2008)

suggests that the manner in which post-adoption subsidies are offered is insufficient for dealing with the uncertainty/risk introduced when a family adopts a child. She suggests that insurance should be added as one type of subsidy to alleviate concerns that these potential unknown future costs. Such a mechanism may be more effective and efficient than offering monthly cash assistance sufficient to induce families to enter the pool. Indeed too high a subsidy could potentially attract adoptive parents who are motivated more by financial incentives than the desire to develop a relationship with a child in need of a home.

This analysis also provides information on the types of adoptive parents who are more likely to adopt children with various characteristics. This component of the analysis informs recruitment of potential adoptive parents as well as the matching of children with adoptive families. For example, in our sample older adoptive parents are more likely to adopt older children, and those with Christian backgrounds are more likely to adopt African American children. Thus, matching older Christian couples with older African American children might be an effective strategy.

Generally, this paper advances our understanding of how preferences translate to differential costs in the child adoption "market." These findings offer new insights that are of interest to researchers in general as well as to social work policymakers, specifically. Given the demonstrated importance of permanency for the wellbeing of the child and the cost of prolonged and long-term child placement in foster care, as well as the long-run potential societal costs associated with failure to achieve permanency, there is general agreement among social work policymakers that adoption subsidies and other non-monetary incentives/supports are warranted. This research suggests that linking

subsidies more closely to child characteristics based on estimated willingness to pay for such characteristics could significantly improve placement rates and the overall effectiveness of adoption subsidy programs.

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Table 1. Michigan Federation for Children and Families Adoption Agencies Participating in the *Questionnaire about Adopting a Child* Survey Project

Agency	Approximate breakdown of adoptive placements				TOTALS
	Voluntary Release	Direct Consent	Permanent Wards	International	
Agency A	3	57	218	54	**332**
Agency B	5	5	85		**95**
Agency C	34	23			**57**
Agency D			46		**46**
Agency E			167	33	**200**
Agency F			182		**182**
Agency G			55		**55**
Agency H			33		**33**
Agency I		28	22	133	**183**
TOTAL	**42**	**113**	**808**	**220**	**1183**
Surveys coming back with "return to sender" due to wrong address					**100**
Completed Surveys (response rate)					**223 (21%)**
Usable Surveys (# of observations using adopted children as unit of observation)					**185 (237)**
Total Adoptions, 2007-2009					**8,331**

Table2a. Summary Statistics for Child Characteristics (overall sample)

Variables	Obs.	Mean	S.D.	Min	Max
Adoption Cost					
Adoption Cost	237	10,704	12,223	0	50,000
Adoption Cost I	237	12,787	15,180	0	79,521
Adoption Cost II	237	8,359	11,826	-2,000	65,521
Adoption Cost III	237	-14,620	5,1458	-373,782	65,521
Pre-Adoption Tax Credit or Subsidy and Post-Adoption Subsidy					
Pre-adoption federal and/or state tax credits: 0.338*	237	4,117	5,671	0	25,000
Pre-adoption employer-paid benefits: 0.051*	237	795	2,105	0	10,000
Other sources for pre-adoption subsidies: 0.030*	237	419	3,255	0	35,000
Post-adoption support subsidy: 0.494*	237	394	677	0	2,885
Post-adoption medical subsidy: 0.152*	237	33	243	0	3,500
Other sources for post-adoption support: 0.093*	237	41	299	0	3,500
Present value of annual post-adoption subsidy[1]	237	42,699	78,076	0	506,935
Value of time taken off from work					
Opportunity Cost	237	2,420	5,444	0	44,521
Adopted Child Characteristics					
Ethnicity					
Caucasian/White	237	0.439	0.497	0	1
Black/African American	237	0.198	0.400	0	1
Asian	237	0.114	0.318	0	1
Hispanic/Latino	237	0.068	0.251	0	1
Multi-racial	237	0.181	0.386	0	1
Skin Color					
Very fair or somewhat fair	237	0.418	0.494	0	1
Brown	237	0.270	0.445	0	1
Somewhat dark or very dark	237	0.312	0.464	0	1
Age	237	3.496	3.989	0	18
Gender (0=Female; 1=Male)	237	0.473	0.500	0	1
Multi-child	237	1.586	0.901	1	5
Special Needs and Type of Special Needs					
Special needs (1=Yes; 0=No)	237	0.447	0.498	0	1
Physical disability	237	0.042	0.201	0	1
Emotional impairment and behavioral condition	237	0.198	0.400	0	1
Learning disability	237	0.160	0.368	0	1
Visual or hearing impairment	237	0.101	0.302	0	1
Other	237	0.051	0.220	0	1
Foster Parent Adoption[2]					
Foster parent adoption	237	0.257	0.438	0	1
International adoption					
International	237	0.203	0.403	0	1

Notes:

1. Annual post-subsidy is calculated as follows:
   Annual post-subsidy = (post-adoption support subsidy + other subsidies for post-adoption) × 12
2. The child(ren) resided in the licensed foster home prior to the adoption.

* The proportion of children receiving pre-adoption subsidies or post-adoption subsidies (monthly)

Table 2b. Summary Statistics for Child Characteristics (sub-samples by ethnicity)

Ethnicity[1]	1	2	3	4	5
Adoption Cost					
Adoption Cost	9,587	7,911	22,916	22,091	4,552
Adoption Cost I	11,189	8,873	26,077	29,388	6,409
Adoption Cost II	7,402	4,178	18,564	20,496	4,320
Adoption Cost III	-16,884	-21,031	18,564	2,517	-29,349
Pre-Adoption Tax Credit or Subsidy and Post-Adoption Subsidy					
Pre-adoption federal and/or state tax credits	3,610	3,717	6,772	9,175	2,233
Pre-adoption employer-paid benefits	780	1,255	704	1,625	74
Other sources for pre-adoption	175	1,538	241	10	52
Post-adoption support subsidy	452	287	0.000	357	631
Post-adoption medical subsidy	45	69	0.000	0.000	0.000
Other sources for post-adoption subsidies	45	67	0.000	0.000	42
Present value of annual post-subsidy[2]	46,512	37,900	0.000	36,711	67,762
Children receiving pre-adoption tax credit	0.490	0.404	0.630	0.750	0.419
Children receiving pre-adoption subsidy	0.125	0.213	0.185	0.375	0.047
Children receiving other pre-adoption subsidies	0.087	0.085	0.111	0.063	0.116
Children receiving post-adoption support subsidy	0.375	0.319	0.000	0.250	0.512
Children receiving post-adoption medical subsidy	0.048	0.149	0.000	0.000	0.000
Children receiving post-adoption other subsidies	0.029	0.043	0.000	0.000	0.047
Value of time taken off from work					
Opportunity Cost	1,912	1,078	3,606	8,603	2,068
Adopted Child Characteristics					
Skin Color					
Very fair or somewhat fair	0.808	0.106	0.111	0.063	0.140
Brown	0.163	0.191	0.481	0.563	0.372
Somewhat dark or very dark	0.029	0.702	0.407	0.375	0.488
Age	4	3	3	2	4
Gender (0=Female; 1=Male)	0.452	0.532	0.296	0.375	0.605
Multi-child	1.625	1.511	1.185	1.563	1.837
Special Needs and Type of Special Needs					
Special needs (1=Yes; 0=No)	0.519	0.404	0.370	0.250	0.442
Physical disability	0.029	0.021	0.148	0.000	0.047
Emotional impairment and behavioral condition	0.269	0.128	0.000	0.125	0.256
Learning disability	0.240	0.106	0.000	0.063	0.163
Visual or hearing impairment	0.096	0.149	0.000	0.063	0.140
Other	0.077	0.043	0.037	0.000	0.023
Foster Parent Adoption[†]					
Foster parent adoption	0.327	0.255	0.000	0.188	0.279
International adoption					
International	0.115	0.213	0.704	0.438	0.000
Observations	104	47	27	16	43

Notes:

1. 1: Caucasian/White; 2: Black/African American; 3: Asian; 4: Hispanic/Latino; 5: Multi-racial
2. Annual post-subsidy is calculated as follows: Annual post-subsidy = (post-adoption support subsidy + other subsidies for post-adoption) × 12

Table 3. Summary Statistics for Parent Characteristics

Variables	Father		Mother	
	Mean	Std. Dev.	Mean	Std. Dev.
Parents Characteristics				
Age	41	8	39	8
Income	67,887	39,604	42,031	39,775
Ethnicity				
Caucasian/White	0.897	0.305	0.920	0.272
Black/African American	0.046	0.211	0.042	0.202
American Indian/Alaskan Native	0.010	0.101	0.009	0.097
Asian	0.026	0.159	0.009	0.097
Hispanic/Latino	0.000	0.000	0.005	0.069
Multi-racial	0.021	0.142	0.014	0.118
Skin Color				
Very fair or somewhat fair	0.577	0.495	0.746	0.436
Brown	0.340	0.475	0.235	0.425
Somewhat dark or very dark	0.082	0.276	0.019	0.136
Religious Preference				
None	0.062	0.242	0.047	0.212
Christian – Catholic	0.206	0.406	0.188	0.391
Christian – Protestant	0.407	0.493	0.413	0.494
Christian – Other	0.284	0.452	0.319	0.467
Jewish	0	0	0	0
Muslim	0.005	0.072	0	0
Buddhist	0.005	0.072	0	0
Hindu	0.015	0.124	0.009	0.097
Other	0.015	0.124	0.023	0.152
Educational Attainment				
Less than high school	0.010	0.101	0.005	0.069
High school or GED	0.119	0.324	0.047	0.212
Some college or technical school	0.191	0.394	0.216	0.412
Technical training in the armed forces	0.015	0.124	0.005	0.069
Completed Associate's degree	0.067	0.251	0.094	0.292
Completed Bachelor's degree	0.356	0.480	0.366	0.483
Completed Master's degree	0.191	0.394	0.249	0.433
Completed PhD degree	0.052	0.222	0.019	0.136
Value of time taken off from work				
Opportunity cost	1,006	2,582	1,687	4,251
Birth Child	1.067	1.268	1.009	1.259
Inability to have a child	0.469	0.500	0.441	0.498
Observations	194		213	

Note:
1. The percentage of single-father families and single-mother families is 1.4% and 10.9%, respectively.

Table4. Results for Child Characteristics Regressions

Specification	(1) Logit	(2) Logit	(3) OLS	(4)Logit	(5) Logit	(6) Multinomial Logit			
Dependent Var.	Gender	Foster Parent Adoption	Age	Special Needs	Int'l	Black/ African American	Asian	Hispanic/ Latino	Multi-racial
Household Income ($1,000)	0.0010	-0.0012*	0.0134***	0.0001	0.0008	-0.0097**	-0.0014	0.0036	0.0008
	(0.0007)	(0.0007)	(0.0042)	(0.0007)	(0.0006)	(0.0049)	(0.0044)	(0.0046)	(0.0037)
Family:	-0.2982**	-0.2861*	1.1244	0.0824	5.11E-08	-2.1895**	0.4584	-1.0068	-1.7005***
Caucasian/White	(0.1219)	(0.1522)	(1.3095)	(0.1115)	(5.28E-08)	(0.8806)	(1.2045)	(0.9984)	(0.6627)
Family Religion:	-0.1389	0.0617	1.1648	-0.1547	7.07E-09	2.7624**	0.3988	-1.4155	-0.0356
Catholic	(0.1681)	(0.1129)	(1.0702)	(0.1393)	(9.89E-09)	(1.2701)	(1.0206)	(1.0739)	(1.1270)
Family Religion:	-0.0342	0.0024	-0.3072	0.0147	-5.47E-10	5.0316***	0.9853	-0.8506	1.7035**
Christian	(0.1343)	(0.1152)	(0.8783)	(0.1109)	(2/75E-09)	(1.0116)	(0.9124)	(0.7159)	(0.7222)
Family: Age	-0.0028	0.0047	0.1075*	0.0156***	-0.0045	-0.0264	0.0228	0.0239	-0.0343
	(0.0045)	(0.0056)	(0.0547)	(0.0059)	(0.0054)	(0.0397)	(0.0326)	(0.0363)	(0.0410)
Family:	0.1101	-0.2098	-0.0064	0.1540	0.0190	-2.8018***	10.4747***	12.4151***	0.1809
Education I	(0.1573)	(0.2189)	(1.4564)	(0.1369)	(0.0212)	(0.9940)	(1.3687)	(1.2591)	(1.5481)
Family:	0.2091*	-0.2142	0.1626	0.1355	0.0434	-4.3890***	12.1579***	11.4772***	-0.5452
Education II	(0.1090)	(0.2359)	(1.3286)	(0.1480)	(0.0385)	(1.0999)	(1.1782)	(1.2265)	(1.6471)
Family:	0.1729	-0.1187	-0.7688	-0.0373	0.0687	-2.9380**	13.7691***	11.4094***	0.9032
Education III	(0.1305)	(0.2345)	(1.2788)	(0.1790)	(0.0641)	(1.2428)	(1.2695)	(1.1991)	(1.6864)
Single Parent	-0.0606	-0.3397	1.6309	0.0627	5.82E-09	0.1659	0.1858	-1.8363	0.1869
	(0.1403)	(0.2444)	(1.1901)	(0.1381)	(8.62E-09)	(1.0418)	(1.1502)	(1.6311)	(1.0872)
Birth Child	0.0108	0.0667*	0.6376**	-0.0068	0.0705*	-0.1539	0.0615	-0.7237**	-0.2829
	(0.0358)	(0.0400)	(0.3205)	(0.0373)	(0.0304)	(0.2565)	(0.2657)	(0.3434)	(0.2631)
Inability	-0.0701	-0.0560	-2.3699***	-0.1461	-6.57E-10	-0.9166	-0.1685	-0.5878	-0.2329
to have a child	(0.0897)	(0.1036)	(0.6500)	(0.0915)	(1.99E-09)	(0.6922)	(0.6501)	(0.7152)	(0.6174)
Observation	219	219	219	219	219	219	219	219	219

Notes:

1. The coefficients in the Logit estimations represent average partial effects. Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%
2. Education I: some college or technical school or technical training in the armed forces or completed associate's degree; Education II: Completed Bachelor's degree; Education III: completed master's degree or completed PhD degree.

Table5a. Results for Adoption Cost I Regressions

Specification	(1) OLS	(2) OLS	(3) OLS
Dep. Var.	Adoption Cost I	Adoption Cost I	Adoption Cost I
Gender	1,413	523	1,157
	(1135)	(1309)	(1182)
Multi-child	-2,719	-2,639	-2,801
	(956)***	(1,053)**	(968)***
Foster parent adoption	-4,953	-5,811	-4,931
	(1,342)***	(1,556)***	(1,374)***
International	22,469	27,808	25,762
	(4,898)***	(5,445)***	(5,176)***
Interaction Terms: (Child Characteristics) × (Domestic Adoption Binary (0-1) Indicator)			
Age	-436	-373	-416
	(129.0339)***	(160.0862)**	(131.3733)***
Black/ African American	-3,989		-3,231
	(1,672)**		(1,824)*
Asian	19,182		19,985
	(5,078)***		(5,012)***
Hispanic/Latino	9,553		10,510
	(5,653)*		(5,711)*
Multi-racial	-569		268
	(2814)		(2917)
Brown		-738	-1,355
		(2550)	(1966)
Dark		-2,785	-1,093
		(1846)	(2063)
Special needs	-2,794	-3,322	-2,693
	(1,655)*	(1,750)*	(1660)
Physical disability	-2,530	1,886	-2,715
	(2068)	(4452)	(2277)
Interaction Terms: (Child Characteristics) × (International Adoption Binary (0-1) Indicator)			
Age	8	-388	-175
	(658)	(561)	(632)
Black/ African	-12,641		-5,409
	(5,034)**		(8269)
Asian	-11,450		-5,339
	(5,186)**		(7587)
Hispanic/Latino	3,686		7,472
	(7964)		(9406)
Brown		-9,546	-5,512
		(5,001)*	(7355)
Dark		-16,985	-10,917
		(5,084)***	(8721)
Special needs	1,429	-3,730	-1,483
	(3395)	(4095)	(4372)
Physical disability	6,909	8,542	8,134
	(4964)	(4,397)*	(4938)
Constant	16,505	17,134	16,869
	(2,038)***	(2,261)***	(2,150)***
No. of Observation	237	237	237
R-Squared	0.65	0.60	0.66

Note: Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table5b. Results for Adoption Cost II Regressions

Specification	(1) OLS	(2) OLS	(3) OLS
Dep. Var.	Adoption Cost II	Adoption Cost II	Adoption Cost II
Gender	905	-114	465
	(979)	(1050)	(982)
Multi-child	-2,047	-1,941	-2,012
	(721)***	(788)**	(696)***
Foster parent adoption	-3,152	-3,931	-3,173
	(1,149)***	(1,244)***	(1,158)***
International	21,954	26,635	25,059
	(4,971)***	(4,356)***	(3,753)***
Interaction Terms: (Child Characteristics) × (Domestic Adoption Binary (0-1) Indicator)			
Age	-212	-161	-197
	(100)**	(121)	(100)**
Black/ African American	-3,252		-2,338
	(1,439)**		(1,287)*
Asian	15,821		16,634
	(3,389)***		(3,220)***
Hispanic/Latino	8,245		9,232
	(4,799)*		(4,829)*
Multi-racial	371		1,303
	(2343)		(2346)
Brown		-554	-1,322
		(2009)	(1489)
Dark		-2,363	-1,328
		(1551)	(1456)
Special needs	-347	-785	-248
	(1339)	(1436)	(1354)
Physical disability	-2,229	1,554	-2,258
	(1586)	(3169)	(1782)
Interaction Terms: (Child Characteristics) × (International Adoption Binary (0-1) Indicator)			
Age	5	-332	-17
	(526)	(393)	(469)
Black/ African	-17,149		-7,275
	(4,867)***		(5222)
Asian	-11,103		-1,589
	(3,248)***		(4243)
Hispanic/Latino	-2,137		7,412
	(7803)		(7747)
Brown		-16,219	-13,144
		(4,023)***	(4,471)***
Dark		-17,733	-12,065
		(4,158)***	(5,272)**
Special needs	-615	-3,751	-2,814
	(3354)	(3708)	(3092)
Physical disability	4,552	6,995	5,395
	(2,645)*	(2,837)**	(2,270)**
Constant	9,651	10,415	9,947
	(1,709)***	(1,842)***	(1,793)***
No. of Observation	237	237	237
R-Squared	0.57	0.52	0.59

Note: Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table5c. Results for Post-Adoption Subsidy

Specification	(1) Tobit	(2) Tobit	(3) Tobit
Dep. Var.	Post-Subsidy	Post-Subsidy	Post-Subsidy
Household Income	-0.451	-0.4744	-0.4483
	(0.1244)***	(0.1422)***	(0.1213)***
Gender	25,620	31,115	26,167
	(18705)	(18843)	(18197)
Multi-child	57,486	59,667	56,625
	(8,814)***	(10,490)***	(9,833)***
Foster parent adoption	51,337	60,643	51,787
	(25,119)**	(26,427)**	(25,232)**
Interaction Terms: (Child Characteristics) × (Domestic Adoption Binary (0-1) Indicator)			
Age	5,793	5,558	6,039
	(3,309)*	(3,267)*	(3,296)*
Black/ African American	-7,849		1,267
	(26041)		(30747)
Asian			
Hispanic/Latino	28,879		40,711
	(44262)		(54003)
Multi-racial	8,704		18,576
	(25273)		(35488)
Brown		-18,557	-14,877
		(30298)	(36301)
Dark		-11,845	-13,901
		(27704)	(33919)
Special needs	45,131	47,555	45,660
	(24,154)*	(24,688)*	(23,720)*
Physical disability	232,000	184,985	229,495
	(52,259)***	(59,349)***	(53,950)***
Constant	-139,948	-146,009	-137,754
	(36,384)***	(43,233)***	(38,574)***
No. of Observation	237	237	237

Note: Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table5d. Results for Adoption Cost III Regressions

Specification: Dep. Var.	(1) OLS: Adoption Cost III	(2) OLS: Adoption Cost III	(3) OLS: Adoption Cost III
Gender	-4,496	-7,679	-4,887
	(5615)	(5982)	(5710)
Multi-child	-3,592	-3,891	-3,109
	(3501)	(3807)	(3739)
Foster parent adoption	-23,836	-27,902	-23,836
	(10,321)**	(12,034)**	(10,512)**
International	30,171	32,879	33,065
	(8,099)***	(8,471)***	(8,351)***
Household Income	0.1306	0.1538	0.1283
	(0.0585)**	(0.0590)***	(0.0580)**
Interaction Terms: (Child Characteristics) × (Domestic Adoption Binary (0-1) Indicator)			
Age	-1,314	-1,131	-1,433
	(1062)	(1101)	(1080)
Black/ African American	-3,570		-9,684
	(10102)		(12788)
Asian	103,282		97,481
	(43,289)**		(43,833)**
Hispanic/Latino	-6,902		-13,337
	(17504)		(21900)
Multi-racial	-661		-6,748
	(10469)		(16960)
Brown		8,581	7,882
		(11056)	(14934)
Dark		2,552	9,000
		(11290)	(15097)
Special needs	-10,326	-12,590	-10,649
	(6787)	(6,413)*	(6792)
Physical disability	-164,839	-143,480	-163,855
	(48,685)***	(55,500)**	(49,328)***
Interaction Terms: (Child Characteristics) × (International Adoption Binary (0-1) Indicator)			
Age	-879	-1,017	-846
	(745)	(668)	(724)
Black/ African	-9,952		-3,550
	(7139)		(7126)
Asian	-8,393		-1,735
	(5651)		(6826)
Hispanic/Latino	-6,272		1,224
	(7931)		(8417)
Brown		-11,913	-10,118
		(7,170)*	(7692)
Dark		-9,516	-7,271
		(7545)	(8624)
Special needs	-2,755	-5,169	-3,807
	(4646)	(4531)	(5031)
Physical disability	791	878	1,320
	(5456)	(7718)	(6390)
Constant	-7,088	-7,674	-8,356
	(9862)	(12307)	(11104)
No. of Observation	237	237	237
R-squared	0.57	0.52	0.57

Note: Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A. Variable Definitions

Variables	Variable Definitions
Adoption Costs	
Adoption Cost	Total adoption costs out of pocket
Adoption Cost I	Total Cost including parents' opportunity costs[1]
Adoption Cost II	Total Cost I described above plus pre-adoption subsidies[2]
Adoption Cost III	Total Cost II described above plus the present value of the stream of post-adoption financial assistance[3]
Pre-Adoption Tax Credit or Subsidy and Post-Adoption Subsidy	
Pre-adoption federal and/or state tax credits	Pre-adoption federal and/or state tax credits
Pre-adoption employer-paid benefits	Pre-adoption employer-paid benefits
Other sources for pre-adoption subsidies	Other sources for pre-adoption
Post-adoption support subsidy	Monthly post-adoption support subsidy
Post-adoption medical subsidy	Monthly post-adoption medical subsidy
Other sources for post-adoption subsidies	Other sources for monthly post-adoption subsidies
Present value of annual post-subsidy	Present value of the stream of annual post-subsidy payments[4]
Adopted Child Characteristics	
Ethnicity	
Caucasian/White	Caucasian/White (1=Yes; 0=No)
Black/African American	Black/African American (1=Yes; 0=No)
Asian	Asian (1=Yes; 0=No)
Hispanic/Latino	Hispanic/Latino (1=Yes; 0=No)
Multi0racial or Undetermined	Multi Racial or Undetermined (1=Yes; 0=No)
Skin Color	
Very fair or somewhat fair	Very fair or somewhat fair (1=Yes; 0=No)
Brown	Brown (1=Yes; 0=No)
Somewhat dark or very dark	Somewhat dark or very dark (1=Yes; 0=No)
Age	Age
Gender	Gender (0=Female; 1=Male)
Multi-child	The number of child who adopted in a sibling group.

(*Appendix Table A continued*)

Variables	Variable Definitions
Special Needs and Type of Special Needs	
Special needs	Special needs (1=Yes; 0=No)
Physical disability	Physical disability (1=Yes; 0=No)
Emotional impairment and behavioral condition	Emotional impairment and behavioral condition (1=Yes; 0=No)
Learning disability	Learning disability (1=Yes; 0=No)
Visual or hearing impairment	Visual or hearing impairment (1=Yes; 0=No)
Other	Other (1=Yes; 0=No)
International adoption	
International	International adoption (1=Yes; 0=No)
Foster Parent Adoption	
Foster Parent Adoption	Adoption includes all children who were adopted by the licensed foster parent with whom the child resided prior to adoption (1=Yes; 0=No)
Value of time taken off from work[5]	
Opportunity cost	A father's value of time taken off from work plus a mother's value of time taken off from work

Notes:
1. Imputed value of time taken off from work
2. Approximate amount offset by federal and/or state tax credits, employer-paid benefits, and other sources of pre-adoption subsidies.
3. Post-adoption subsidies and other post-adoption support.
4. Present value of stream of annual post-adoption subsidies using a five percent discount rate. Annual post-subsidy = (post-adoption support subsidy + other subsidies for post-adoption support) × 12)
5. The number of paid leave days used × annual income divided by 365.