RUHR
ECONOMIC PAPERS

Dirk Bethmann
Michael Kvasnicka

A Theory of Child Adoption

RWI #342

Imprint

Ruhr Economic Papers

Published by

Ruhr-Universität Bochum (RUB), Department of Economics
Universitätsstr. 150, 44801 Bochum, Germany

Technische Universität Dortmund, Department of Economic and Social Sciences
Vogelpothsweg 87, 44227 Dortmund, Germany

Universität Duisburg-Essen, Department of Economics
Universitätsstr. 12, 45117 Essen, Germany

Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI)
Hohenzollernstr. 1-3, 45128 Essen, Germany

Editors

Prof. Dr. Thomas K. Bauer
RUB, Department of Economics, Empirical Economics
Phone: +49 (0) 234/3 22 83 41, e-mail: thomas.bauer@rub.de

Prof. Dr. Wolfgang Leininger
Technische Universität Dortmund, Department of Economic and Social Sciences
Economics – Microeconomics
Phone: +49 (0) 231/7 55-3297, email: W.Leininger@wiso.uni-dortmund.de

Prof. Dr. Volker Clausen
University of Duisburg-Essen, Department of Economics
International Economics
Phone: +49 (0) 201/1 83-3655, e-mail: vclausen@vwl.uni-due.de

Prof. Dr. Christoph M. Schmidt
RWI, Phone: +49 (0) 201/81 49-227, e-mail: christoph.schmidt@rwi-essen.de

Editorial Office

Joachim Schmidt
RWI, Phone: +49 (0) 201/81 49-292, e-mail: joachim.schmidt@rwi-essen.de

Ruhr Economic Papers #342

Responsible Editor: Christoph M. Schmidt

ISSN 1864-4872 (online) – ISBN 978-3-86788-395-5

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Bibliografische Informationen der Deutschen Nationalbibliothek

Die Deutsche Bibliothek verzeichnet diese Publikation in der deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über: *http://dnb.d-nb.de* abrufbar.

http://dx.doi.org/10.4419/86788395
ISSN 1864-4872 (online)
ISBN 978-3-86788-395-5

Dirk Bethmann and Michael Kvasnicka[1]

A Theory of Child Adoption

Abstract

Women can bear own children or adopt them. Extending economic theories of fertility, we provide a first theoretical treatment of the demand for adoption. We show that the propensity to adopt a child increases in the degree of own altruism, infertility, relatedness to the child, costs of own child birth, and any adoption-specific monetary return that is received net of the costs of adopting the child. Our model makes several testable predictions which receive empirical support. These include a higher propensity to adopt among infertile adults, relatives, women with high earnings potential, and celebrities.

JEL Classification: J12, J13, D02

Keywords: Adoption; demand for adoption; fertility; children; altruism

June 2012

1 Dirk Bethmann, Otto-von-Guericke-University Magdeburg; Michael Kvasnicka, RWI. *– Our work has benefited from useful comments by Daniel Baumgarten, Sebastian Braun, Redzo Mujcic, and Hendrik Ritter. All remaining errors are our own.* *– All correspondence to Dirk Bethmann, Otto-von-Guericke-University Magdeburg, Faculty of Economics and Management, Postfach 4120, 39016 Magdeburg, Germany, E-mail: dirk.bethmann@ovgu.de.*

1 Introduction

Fertility decisions have been studied extensively by economists, that is, the demand of women and men for own (biological) children. However, children do not have to be sired onself. They can also be adopted. Adoption, in fact, has a long history and adopted children nowadays account for a non-negligible share of minors in industrialized countries.[1] In the US, for instance, 1.6 million children (or 2.5%) under age 18 in the year 2000 have been adopted (U.S. Census Bureau, 2000). Nevertheless, adoption is not beyond controversy, in particular international adoptions and adoptions by celebrities.[2] Economists, however, have paid little attention to adoption and in particular the motives, past and present, that induced householders to demand adopted children.[3]

This paper provides a first theoretical analysis of the demand and motives for adoption. Central to our analysis is the notion that own children and adoptees can be viewed as (imperfect) substitutes whose demands are endogenous and jointly determined. Concerning individual motives for adoption, we show that the propensity to adopt a child increases in the degree of own altruism, infertility, the costs of own child birth, the relatedness (or otherwise founded sympathy) to a child that is orphaned or abandoned, and any adoption-specific monetary return that is received net of the costs of adopting a child.

Our model makes several testable predictions which receive support in the existing empirical literature. These include a higher propensity to adopt among infertile adults, relatives, women with high earnings potential, celebrities, and - historically - users of child labor and slave holders. Heavily mediatized catastrophees also seem to spur the demand for adoptees, as images and reports of desperate children in need cause disutility among potential adopters if they remain aloof of their fate.

[1] Adoption, its use and form, however, has seen considerable change over time. Above all, there has been a shift from (mostly male-biased) adoption to satisfy manpower needs toward adoption that is inspired by children's fate and family creation.

[2] See, for example, the article "Saviours or kidnappers? Amid catastrophe in Haiti, a new controversy about adoptions", published in *The Economist* on 10 February, 2010. Prominent adoptions by celebrities include Angelina Jolie/Brad Pitt and Madonna/Guy Ritchie who adopted several children from Third World countries in the 2000s. These adoptions have been criticized because of the alleged preference shown to these couples because of their celebrity status.

[3] Notable exceptions include Gennetian (1999) and Medoff (1993) which study factors behind the supply of infants relinquished for adoption.

2 The Model

2.1 Preferences and Constraints

Assume that the lifetime utility (W) of a householder depends on her lifetime utility from consumption (U) and her lifetime utility from having children (V):

$$W(C,K) = U(C) + V(K), \tag{1}$$

where C denotes consumption and $K = K_o + K_a$ the number of children in the household.[4] $U(\cdot)$ and $V(\cdot)$ increase at a diminishing rate in their respective arguments. Furthermore, the householder faces the following lifetime budget constraint:

$$I = C + \kappa K, \tag{2}$$

where I is lifetime income and parameter κ the marginal lifetime cost of obtaining (e.g. by birth) and raising (nurturing) a child. C measures the household's standard of living and can be viewed as the opportunity cost of being with children.

The analysis proceeds in two steps. As a benchmark case, we first consider a world without adoption. Then, we allow for apotion. In the world with adoption, we analyse sequentially different motives and constraints on the demand for adoptees.

2.2 No Adoption World

In a world without adoption, children can only be obtained by giving birth. In other words, $K = K_o$ and $K_a = 0$, where K_o denotes the number of own (biological) children and K_a the number of adopted children.

To maximize lifetime utility, the householder has to solve:

$$\{K_o\} = \underset{0 \leq K_o}{\arg\max} \{U(I - \kappa K_o) + V(K_o)\}. \tag{3}$$

Assuming the householder procreates, i.e. $K_o > 0$, her optimal demands for consumption and own children are given by:

$$\kappa \frac{\partial U(I - \kappa K_o)}{\partial C} = \frac{\partial V(K_o)}{\partial K}. \tag{4}$$

[4] We refer to K as a pure quantity only to keep the language simple. K denotes the household's quality adjusted number of children. Given our focus on the choice between own and/or adopted children, the trade-off between quality and quantity of children (cf. Becker and Lewis, 1973, and Becker and Tomes, 1976) is of only minor importance for our analysis. We therefore abstract from this trade-off, assuming it is the same for own and adopted children.

The householder's choices of C and K_o must therefore be such that κ equals the marginal rate of substitution.[5] Her demand for own kids increases in household income (I) and declines in the price (or opportunity cost) of own kids κ.

2.3 Adoption World

Now, and henceforth, assume that adoption is possible. A householder may therefore bear (K_o) and/or adopt (K_a) children. If own and adopted children cost the same ($\kappa = \kappa_o = \kappa_a$) and are perfect substitutes,[6] the relative demands for own and adopted children are indeterminate. In other words, only their summary total or overall demand ($K = K_o + K_a$) can be determined. As in the no-adoption world, this optimal total is given by (4) with K_o replaced by K.

However, this case is of limited interest, as most people have a clear preference for own children. We model this preference by discounting adopted children (in units of own children per adopted child) by the parameter $\alpha \in (0, 1)$ in the householder's utility derived from children (V). The level of α may vary, of course, both across householders and environments. More altruistic householders will have a higher α, as do householders in environments that tend to give more credit than others for "good deeds".[7] If both types of children still cost the same ($\kappa = \kappa_o = \kappa_a$), the householder's maximization problem reads:

$$\{K_o, K_a\} = \underset{0 \leq K_o, K_a}{\arg\max} \{U\left(I - \kappa(K_o + K_a)\right) + V\left(K_o + \alpha K_a\right)\}. \tag{5}$$

Her optimal demands for own and adopted children are therefore given by:

$$\kappa \frac{\partial U(I - \kappa K_o)}{\partial C} = \frac{\partial V(K_o)}{\partial K}, \tag{6}$$

which is identical to (4). In other words, we are back in the no-adoption world. The householder chooses the same number of own children K_o and does not adopt ($K_a = 0$). The reason for this result is simple: adoptees cost the same, but they are valued less by the householder.

[5] If children can only be obtained by birth, κ is the marginal lifetime cost of bearing and rearing a child (cost of nature and nurture).

[6] Although of first-order significance, biological parenthood is but one differentiating factor. Others are the age, race, and state of health of a child (Cabrillo, 1996, p.92).

[7] Note that if α is equal to one, the optimal relative demands for own and adopted children are again indeterminate; and if α is equal to zero, we are back in the no-adoption world. If α is greater than one, however, the householder will demand only adopted children. A householder of the latter type may be termed the "ultimate" altruist, as she willingly (and completely) foregoes procreation to help already born but orphaned or abandoned children as much as household recources (and preferences for own consumption) permit.

Therefore, for the householder to have a positive demand for adopted children, adoptees need to become more attractive, or they must come at a cost advantage. In the following, we explore these two dimensions by extending the above baseline adoption-world model of equations (5) and (6) in several directions.

3 Motives for Adoption

3.1 Infertility

We first consider infertility of the householder as a motive for adoption. Infertility, both complete ($\bar{K}_o = 0$) and partial ($\bar{K}_o > 0$), constitutes a binding constraint for the householder - and hence a motive for adoption - only if her desired number of own offspring (K_o^*), were she altogether unconstrained in her fertility, exceeds the respective reproductive limit. In the following, we confine the analysis to such cases.[8]

If the householder is completely infertile ($\bar{K}_o = 0$), she can only adopt children. Her unrestricted maximization problem (5) hence simplifies to:

$$\{K_a\} = \underset{0 \leq K_a}{\arg\max} \left\{ U\left(I - \kappa K_a\right) + V\left(\alpha K_a\right) \right\}, \tag{7}$$

with first-order condition:

$$\kappa \frac{\partial U(I - \kappa K_a)}{\partial C} = \alpha \frac{\partial V(\alpha K_a)}{\partial K}. \tag{8}$$

The optimal K_a demanded by the householder will generally be positive. Complete infertility therefore provides a strong motive for adoption, even when adoption is very costly (i.e. κ is large) or adoptees are valued much less than own children (α is small).[9]

If the householder is partially infertile ($\bar{K}_o > 0$), she will adopt children only if her demand for children cannot be satisfied by own children. If this is the case, $K_o = \bar{K}_o$ and her optimal demand for adoptees is given by the following generalization of equation (8):

$$\kappa \frac{\partial U\left(I - \kappa(\bar{K}_o + K_a)\right)}{\partial C} = \alpha \frac{\partial V(\bar{K}_o + \alpha K_a)}{\partial K}. \tag{9}$$

[8] Note that $K_o^* < \bar{K}_o$ is a rather trivial case and results in zero adoption. The reason is that own children are strictly prefered to adopted kids ($0 < a < 1$) and both types of kids come at the same cost ($\kappa = \kappa_o = \kappa_a$). The householder will hence always try to satisfy his demand for kids as much as possible by own kids. The case $K_o^* < \bar{K}_o$ is therefore analogue to the problem (5) and its solution (6).

[9] Survey data for the United States supports this view. According to Berry et al. (1996), the majority of adopters resort to adoption because they are infertile. Among couples with difficulties to conceive or carry a pregnancy to term, an estimated 11% to 24% pursuse adoption (Mosher and Bachrach, 1996).

Which factors determine whether a partially infertile householder resorts to adoption? Anything else equal, low costs of children (κ) and a high endowment with economic resources (I) can generate a positive demand for adoptees. What is needed, is that these factors increase a householder's desired demand for children beyond $\bar{K}_o$. A low reproductive capacity ($\bar{K}_o$) tends to work in the same direction. It makes a householder more likely to be supply constrained even at low levels of desired demand.

3.2 High (Opportunity) Costs of Own Child Birth

So far, we have ignored potential differences in the price of own and adopted children ($\kappa = \kappa_o = \kappa_a$). However, their prices may well differ. If so, they can provide a second motive for adoption.

If we allow the costs of own and adopted children to differ, the maximization problem of the householder becomes:

$$\{K_o, K_a\} = \underset{0 \leq K_o, K_a}{\arg\max} \{U\left(I - \kappa_o K_o - \kappa_a K_a\right) + V\left(K_o + \alpha K_a\right)\}, \qquad 0 < \alpha < 1. \tag{10}$$

It is straightforward to show that the demand for adopted and own children in this case depends on how the householder's relative valuation of the two types of children (α) compares to the relative costs she faces in obtaining them (κ_a/κ_o). If $\alpha < \kappa_a/\kappa_o$, no children are adopted (the householder has only own children); if $\alpha > \kappa_a/\kappa_o$, all children are adopted (the householder has no own children); and if $\alpha = \kappa_a/\kappa_o$, the relative demands for own and adopted children are indeterminate (the householder may choose any combination of own and adopted children, as long as $K > 0$).[10]

In other words, householders who face a large κ_o (relative to κ_a) are more likely to adopt. Who are these householders? Recall that prices reflect the lifetime costs of bearing, respectively adopting a child, and raising it. Costs of nurture are unlikely to be much different between the two types of children. However, the costs of "getting" them may be quite different, depending on householder type. For women with high earnings potential, pregnancy and birth (at younger age) can cause career setbacks and substantial earnings losses, costs that are not faced when adopting children (at least not to the same degree). Anything else equal, therefore, we would expect adopting women to be on average older,

[10] Adoption finalization costs are an important factor in this context. In their analysis of an US adoption facilitator, Baccara et al. (2010) find that an increase in adoption finalization costs of $10,000 decreases the aggregate probability of receiving an application for adoption from a prospective adoptive parent from 8.9% to 7%.

more educated, and more likely to live in high income households than women with own children. Aggregate statistics are consistent with this prediction.[11]

3.3 Orphans We Care About

Until now, we also assumed that orphans only affect the utility of a householder if they are adopted. However, this need not be the case. Remaining aloof of children's fate (abstaining from adoption) may well generate disutility for a householder. If such disutility is strong enough, it can provide a third motive for adoption.

To show this point more formally, consider again the baseline adoption-world model of equations (5) and (6). The householder does not adopt and spends all resources on own children and consumption. Denote these optimal choices by K^* and C^*, respectively. Now assume that an unforeseen shock occurs that generates orphans the householder cares about. Denoting by β the monetized disutility of not adopting such an orphan, the householder will adopt the child if:

$$U(C^* - \beta K_a) + V(K^*) < U(C^* - \kappa K_a) + V(K^* + \alpha K_a). \tag{11}$$

Using a first-order Taylor expansion, a sufficient condition for adopting the orphaned child is therefore:

$$(1 - \alpha)\kappa < \beta. \tag{12}$$

In other words, a householder will adopt an orphan that she is emotionally attached to only if the costs of not adopting it (β) outweigh the costs of adopting the child ($(1-\alpha)\kappa$). As is evident from (12), a householder is more likely to adopt such an orphan, the more she values adopted relative to own children, the lower are the marginal costs of children, and the higher is any disutility suffered from not adopting the child.

Which kind of shocks produce orphans that householders are emotionally attached to? The death of a family member that produces an orphaned relative is surely a prime example.[12] Another shock are catastrophees (e.g. natural disasters) that receive extensive media coverage. Images of orphaned children create emotional attachment, which causes disutility if one stays indifferent to their fate.[13]

[11] According to the 2000 US census, the average age of householders in the US with an adopted child (own child) aged under 18 was 43.1 (38.0), the median household income was 56,138 dollars (48,200 dollars), and the share with a graduate or professional school degree was 15.2% (9.7%).

[12] Adoptions among relatives are frequently observed. In 2007, more than four out of ten domestic adoptions in the U.S. were so-called *related adoptions*, which include also step-parent adoptions (see National Council for Adoption, 2011).

[13] A recent example is the pronounced jump in the foreign demand for adoptees from Haiti, following

3.4 Monetary Benefits from Adoption

Adoptees may also generate income for a householder. Although virtually extinct as a motive for adoption in industrialized countries, historically adoptees have often been valued (and demanded) for their manpower services.[14] And in some parts of the world, they still are.

To illustrate this motive for adoption, consider an income generating function $I(K_a)$ that has positive but diminishing marginal returns ($I_{K_aK_a} < 0 < I_{K_a}$) within our baseline adoption-world model of equations (5) and (6). Depending on parameter values and the magnitude of any income generated by an adoptee, the householder may satisfy none, some, or all of her demand for children through adoption. If the householder demands both own and adopted children, their respective numbers satisfy the following condition:

$$\alpha = \frac{\kappa - I_{K_a}}{\kappa} \tag{13}$$

If $\alpha = 0$, adoptees are valued exclusively for their manpower services. This case is analytically equivalent to that of child or slave labor. Our simple model of the demand for adoptees is hence general enough to cover also a historically prime motive for adoption, as well as related demands for unfree (slave) labor. Moreover, it may provide an explanation also for why celebrities tend to adopt more often.[15] For a celebrity, the adoption of a child generates headlines and adds to popularity, which benefits the career and ultimately income.

4 Conclusion

This paper has provided a first theoretical treatment of the demand for adoptees. We have shown that infertility, high opportunity costs of own children, emotional attachment to an orphan's fate, and monetary returns to adoptions can provide a motive for adoption.

the devastating earthquake that struck the country on January 12, 2010. Not always, however, is the law observed in such situations. Concerns about child trafficking led China (after its 2008 earthquake) and Indonesia (after the 2004 tsunami) to suspend all international adoptions.

[14] A prime example in U.S. history is provided by the so-called *Orphan Trains*. Between 1854 and 1929, the Children's Aid Society of New York placed well over 200,000 orphaned or abandoned children from cities on the east coast of the United States to foster homes across the country, frequently on farms. Often, these children were harshly exploitated. See also Lundberg (2000) for an analysis of the auctioning of foster care for destitute and/or orphan children in Sweden during the late nineteenth century.

[15] Forbes' 2009 ranking of the world's ultra famous 100 from film, music, entertainment, sports, and politics hosts seven celebrities who have adopted a child. Six of these are from Hollywood, of which two belong to Hollywood's ten top paid men (George Lucas and Steven Spielberg), and another two to its ten top paid women (Angelina Jolie and Nicole Kidman).

Aggregate evidence on the socio-economic characteristic of adopters is broadly consistent with the predictions of our model.

Embedded within economic theories of fertility, our analysis has also provided two key insights. First, the demand for adoptees is determined jointly with own fertility and consumption decisions. Second, other means of child procurement, such as surrogate mothers, partial adoption or the use of third party assisted reproductive technology, constitute, like adoption, imperfect substitutes for own children. Our model is general enough to deal with these demands for children. Extending our analysis, future research can fruitfully explore these alternative means in greater detail.

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