
Article

Trading-Off Reproductive Technology and Adoption: Does Subsidizing IVF Decrease Adoption Rates and Should It Matter?

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INTRODUCTION

For those who have difficulty conceiving through natural reproduction, using assisted reproductive technology to have genetically related children is a very expensive proposition. In particular, the average cost per cycle of in vitro fertilization (IVF) in the United States is \$12,400,¹ and it has been estimated that actually producing a live birth through IVF would cost an individual (on average) between \$66,667 and \$114,286.² No more than a fifth of employer-sponsored insurance plans cover IVF,³ so in the absence of state intervention most individuals would be forced to cover these high costs out of pocket. For many people, therefore, economic realities place this technology out of reach.

Given these high costs, should states take steps to improve access to reproductive technologies for those who have difficulty conceiving through natural reproduction? Should they do so

1. DEBORAH SPAR, *THE BABY BUSINESS* 213 tbl.7-2 (2006).

2. *Id.* (citing Peter Neumann et al., *The Cost of a Successful Delivery with In Vitro Fertilization*, 331 *NEW ENG. J. MED.* 239, 239-43 (1994)).

3. Janet L. Dolgin, *The Evolution of the "Patient": Shifts in Attitudes About Consent, Genetic Information, and Commercialization in Health Care*, 34 *HOFSTRA L. REV.* 137, 175 n.216 (2005).

even if the intervention decreases adoptions domestically or internationally? A number of states have attempted to improve access to IVF through their regulatory powers over insurance, making IVF a mandated benefit such that health insurers are required to cover IVF in their plans, thus cross-subsidizing the costs across all insured individuals in the state. These states have apparently done so without concern over the possible effects on adoption. While most scholars have also unabashedly favored these mandates and their expansion, a few have expressed concerns about the mandates' effects on adoption and have assumed (intuitively enough) that making IVF more widely available will diminish adoptions; that is, they have assumed that there is a tradeoff between helping individuals conceive and helping children waiting to be adopted. We call this the "substitution theory."

To help understand whether possible effects on adoption provide valid reasons to oppose these mandates, this Article offers the first empirical and normative examination of the substitution theory.

It proceeds as follows. Part I provides brief background on adoption and reproductive technology usage in contemporary America. Part II turns to the normative question of whether states ought to improve access to reproductive technologies, and describes the main mechanism that some states have used to do so—state-level insurance mandates. We first establish why a number of different moral theories offer a *prima facie* case for the state to improve access to these technologies. We then briefly discuss a number of objections (economic, religious, safety, etc.) to the mandates before setting out the particular concern that is our focus: the objection that improving reproductive technology access through state-level insurance mandates leads to a diminution in adoptions. That claim has both an empirical premise, that this effect actually occurs, and a normative premise, that the effect is a good reason to oppose these mandates. The remainder of Part II clarifies this argument and challenges some of its normative assumptions.

In Part III, we shift focus to examine the empirical premise behind the substitution theory—that the introduction of these mandates is associated with a diminution in adoptions—through an econometric analysis. We set out our study design including descriptions of the state-level mandates, the CDC data-set we use to measure IVF utilization, and the multiple da-

ta-sets we use to measure domestic (public and private) and international adoptions by U.S. citizens by state. We take advantage of state-level variation in whether a state has an insurance mandate, when the mandate was introduced, and what the mandate requires (complete coverage, partial coverage, a mandate to “offer,” or a mandate that excludes IVF) to fashion a three-part empirical strategy. First, we use a differences-in-differences methodology to examine the effect of the introduction of these mandates on IVF utilization. Second, we use the same methodology to study the effect of these mandates on adoption. Finally, we conduct ordinary least squares and two-stage least squares analyses to study the effect of IVF utilization directly on adoption rates, which we interpret as causal, assuming that the introduction of these mandates are exogenous to adoption rates.

We then present our results and interpret them. This Part includes a discussion of several robustness checks, limitations of our study, and implications for the policy question. We do not find strong evidence that increased access to IVF through state-level insurance mandates decreases domestic or international adoptions. We also discuss the implications of this result for the normative and policy questions. Finally, a brief conclusion summarizes the work and plots directions for future study. Two web-appendices⁴ reanalyze the econometric results, first through slightly different classification of insurance mandates, then through a cross-sectional rather than differences-in-differences methodology.

This project, an attempt to better understand the relationship between improved access to reproductive technologies and adoption in contemporary America, is important on a number of levels: it helps states better understand the tangible question of whether these mandates are justifiable, it helps adoption advocates determine whether they have something to fear from expanded access to reproductive technologies such that they ought to mobilize resources to oppose it, it helps elucidate some of the under-theorized normative claims about the state’s duty to promote adoption versus genetic reproduction, and it helps us better understand the extent to which cost subsidies can affect individuals’ preferences between having genetically related

4. Appendix A, is available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1707650. Abstract B is available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1707655.

children and adopting. Our chief empirical finding—that while the most comprehensive insurance mandates do increase IVF utilization, we find little evidence that they diminish adoptions—casts serious doubt on the substitution theory as a relevant reason to oppose broadening reproductive technology access through these mandates.

I. BACKGROUND ON REPRODUCTIVE TECHNOLOGIES AND ADOPTION

This Part briefly provides background information on reproductive technology usage and adoption in contemporary America to ground the normative and empirical analyses that follow.

A. INFERTILITY AND IVF IN THE UNITED STATES

Based on the most recently available data (from 2002), it is estimated that in the United States 7.3 million women ages fifteen to forty-four (or about 11.8 percent of the population of women of those ages) suffer from “impaired fecundity” and have used infertility services.⁵ Among U.S. married women of those ages, approximately 2.1 million women (or 7.4 percent of that population) meet the medical definition of “infertility”—being unable to get pregnant for twelve consecutive months given efforts to do so and the absence of contraception—although this number is better understood as an estimate of how many married *couples* are infertile, since infertility can be the result of either male or female factors.⁶ We focus on these populations of

5. Anjani Chandra et al., *Fertility, Family Planning, and Reproductive Health of U.S. Women: Data from the 2002 National Survey of Family Growth*, CENTERS FOR DISEASE CONTROL & PREVENTION, 106 tbl.67, 136 tbl.97 (Dec. 2005), http://www.cdc.gov/nchs/data/series/sr_23/sr23_025.pdf.

6. *See id.* at 108 tbl.69, 154; *see also* SPAR, *supra* note 1, at 1–2. Male factors and female factors each account for about a third of infertility cases, with some combination accounting for ten percent, and about twenty percent categorized as unexplained. *Frequently Asked Questions About Infertility*, AM. SOC'Y FOR REPROD. MED., <http://www.asrm.org/awards/index.aspx?id=3012> (last visited Sept. 28, 2010); *see also* Katherine T. Pratt, *Inconceivable? Deducing the Costs of Fertility Treatment*, 89 CORNELL L. REV. 1121, 1130–35 (2004). Male-factor infertility includes “disorders related to impaired sperm production, maturation, or transfer[;] . . . blocked or absent vas deferens[;] and] . . . absent or retrograde ejaculation,” and it can result from “hormonal imbalances; genetic disorders; environmental factors; anatomical defects; sexually transmitted diseases; spinal cord injuries; and bladder, prostate gland, or testicular cancer or surgery.” Pratt, *supra*, at 1130–31 (footnotes omitted). Female-factor infertility includes “ovulation disorders, blocked fallopian tubes,

infertile individuals, in part because they are the beneficiaries of most state-level insurance mandates. However, on other definitions of infertility, the population is larger still and encompasses single individuals and same-sex couples whose infertility does not necessarily stem from impaired fecundity.⁷

Attempts to cure infertility begin very early in recorded history, at least as far back as Hippocrates's use of Egyptian-inspired recipes containing red nitre, cumin, resin, and honey to try to open up the cervix of infertile women.⁸ Modern assisted reproductive technologies (ARTs), though, began with the invention of the microscope in the mid-1600s, which allowed the visualization of sperm and therefore an understanding of its role in fertilization.⁹ This development led to the first artificial insemination of dogs in 1780 (in Italy by the priest Lazzaro Spallanzani) and then in humans in 1785 (by the Scottish surgeon John Hunter).¹⁰ Artificial insemination using *donor* sperm occurred for the first time in 1884 by Doctor William Pancoast in Philadelphia.¹¹

Since the 1880s, modern medicine has added a number of methods for treating infertility.¹² For our purposes, though, one method is particularly important: *in vitro* fertilization, which was first successfully used in Oldham, England in 1978 to produce Louise Brown.¹³ IVF proceeds in four stages. First, the woman who will provide eggs is administered ovulation-

cervical disorders, endometriosis, and uterine disorders[.]” and can be caused by “hormonal imbalances; autoimmune reactions; genetic disorders; anatomical defects . . . ; pelvic inflammatory disease[;] venereal disease; scar tissue; fibroid tumors; and cancer.” *Id.* at 1131 (footnotes omitted). In the absence of these conditions, female fertility is highest at age twenty-seven and then decreases dramatically after age thirty-five. See I. Glenn Cohen, *The Right Not to Be a Genetic Parent?*, 81 S. CAL. L. REV. 1115, 1165 & n.161 (2008) (citing SPAR, *supra* note 1, at 15). This is the result of the combination of multiple factors, including ovarian and uterine dysfunction and chromosomal abnormalities in their eggs. Pratt, *supra*, at 1131.

7. Lisa Ikemoto refers to these groups as the “dysfertile.” Lisa C. Ikemoto, *The In/Fertile, the Too Fertile, and the Dysfertile*, 47 HASTINGS L.J. 1007, 1008–09 (1996).

8. JUDITH F. DAAR, REPRODUCTIVE TECHNOLOGIES AND THE LAW 25 (2006).

9. *Id.* at 26–28.

10. *Id.*

11. *Id.* at 28.

12. See, e.g., *id.* at 40–41 (describing intracytoplasmic sperm injection, gamete intrafallopian transfer, and zygote intrafallopian transfer).

13. E.g., SPAR, *supra* note 1, at 24.

stimulating hormones, which cause multiple egg-containing follicles to mature so that up to several dozen eggs can be harvested in a single treatment cycle.¹⁴ Second, just prior to ovulation the eggs are removed by a minor surgical procedure; today this is usually done by an ultrasound-guided needle inserted through the vaginal wall into a developed ovarian follicle through which, by suction, the egg is harvested.¹⁵ Third, sperm is introduced into individual culture dishes, each of which contains a culture medium and one egg with the culture dish monitored after the first day to determine if fertilization occurs.¹⁶ Finally, if fertilization occurs, the preembryos are allowed to mature in the medium, usually for two to three days after egg retrieval, until the preembryos reach the four or eight cell stage when some or all of them are transferred into the woman's uterus to attempt implantation.¹⁷ Ten to fourteen days after transfer, the woman will undergo a pregnancy test to determine if the transfer was successful.¹⁸ IVF can also be done using frozen eggs (i.e., those frozen between the second and third step), or using frozen preembryos (i.e., preembryos frozen after the third step but before the fourth step).¹⁹

In 2006, there were 93,866 IVF cycles performed in the United States using fresh (i.e., nonfrozen) nondonor eggs.²⁰ Of these, only a fraction resulted in pregnancies and live births.²¹

14. The CDC describes its cycle measure, which we use in the empirical portion of our study, as follows:

Because ART consists of several steps over an interval of approximately 2 weeks, an ART procedure is more appropriately considered a *cycle* of treatment rather than a procedure at a single point in time. The start of an ART cycle is considered to be when a woman begins taking drugs to stimulate egg production or starts ovarian monitoring with the intent of having embryos transferred. . . . For the purposes of this report, data on *all cycles that were started*, even those that were discontinued before all steps were undertaken, are submitted to CDC

CDC, ASSISTED REPRODUCTIVE TECHNOLOGY SUCCESS RATES 4 (2006), available at <http://www.cdc.gov/ART/ART2006/508PDF/2006ART.pdf>.

15. DAAR, *supra* note 8, at 40–41; Carl H. Coleman, *Procreative Liberty and Contemporaneous Choice: An Inalienable Rights Approach to Frozen Embryo Disputes*, 84 MINN. L. REV. 55, 58–59 (1999).

16. DAAR, *supra* note 8, at 41.

17. *Id.*

18. *Id.*; see also Coleman, *supra* note 15, at 58–59.

19. See, e.g., DAAR, *supra* note 8, at 568–71.

20. This figure breaks down as follows: 41,369 cycles for women under age thirty-five; 23,376 for women ages thirty-five to thirty-seven; 19,755 for women ages thirty-eight to forty; and 9346 for women ages forty-one to forty-two. CDC, *supra* note 14, at 89.

Using IVF to conceive is extremely expensive, with a per-cycle cost for IVF in the United States of approximately \$12,400,²² and an estimated average cost of between \$66,667 and \$114,286 per live birth.²³ A fifth or fewer of employer-sponsored insurance plans cover IVF,²⁴ so in the absence of state intervention many individuals would be forced to cover these high costs out of pocket.²⁵ One response to these high

21. Specifically, 44.6 percent resulted in pregnancy and 38.7 percent resulted in live births for women under age thirty-five. The figures are, respectively, 37.1 percent and 30.4 percent for women ages thirty-five to thirty-seven; 27.7 percent and 20.6 percent for women ages thirty-eight to forty; and 17.7 percent and 10.8 percent for women ages forty-one to forty-two. *Id.* The CDC also reports data for IVF using frozen embryos from nondonor eggs and for IVF using donor eggs. *Id.* We do not reproduce that data here.

22. SPAR, *supra* note 1, at 213 tbl.7-2.

23. *Id.* (citing Neumann et al., *supra* note 2, at 239–43). The large range depends on factors such as the age of the mother. *See* Neumann et al., *supra* note 2, at 239. The numbers will also vary based on the particular state in question. *See, e.g.,* Martha Griffin & William Panak, *The Economic Cost of Infertility-Related Services: An Examination of the Massachusetts Infertility Insurance Mandate*, 70 FERTILITY & STERILITY 22, 26 (1998) (estimating that in 1993 the average cost for a live birth in Massachusetts with IVF was \$69,448, and over \$100,000 for women over the age of forty).

24. *See* THE ALAN GUTTMACHER INSTITUTE, UNEVEN & UNEQUAL: INSURANCE COVERAGE AND REPRODUCTIVE HEALTH SERVICES 9 tbl.1 (1994) (reporting that only fourteen to seventeen percent of employers cover IVF); Dolgin, *supra* note 3, at 175 n.216 (2005); Julie Appleby, *Pricey Infertility Care Sparks Insurance Clash*, USA TODAY, Dec. 19, 2001, at 1B, available at <http://www.usatoday.com/money/covers/2001-12-19-bcovwed.htm> (“Among insurance policies offered by large employers, less than 20% cover IVF—and even fewer cover more advanced techniques . . .”); *see also* Anna Mulrine, *Making Babies*, U.S. NEWS & WORLD REP., Sept. 27, 2004, at 60, 62 (stating that IVF insurance coverage is “a rarity in the United States, where 85 percent of insured Americans have policies that will not cover that treatment”).

25. Some taxpayers may be able to partially finance fertility treatments using the deduction in § 213 of the Internal Revenue Code, which allows a taxpayer to deduct expenses for medical care not covered by insurance to the extent the expenses exceed 7.5 percent of the taxpayer’s adjusted gross income (AGI). I.R.C. § 213(a), (d)(1) (2006); *see also* Pratt, *supra* note 6, at 1137–38. This is slated to increase to ten percent in 2013. *Affordable Care Act Implementation Timeline*, DEMOCRATIC POL’Y COMMITTEE, 7 (2010), <http://dpc.senate.gov/healthreformbill/health65.pdf>. The IRS has historically taken inconsistent positions on the deductibility of fertility expenses. *See* Pratt, *supra* note 6, at 1137–61. While the tax status of costs associated with donor eggs and surrogacy still remain uncertain, the IRS has recently clarified in Publication 502 that expenses associated with IVF are deductible. INTERNAL REVENUE SERV., PUBLICATION 502: MEDICAL AND DENTAL EXPENSES 8 (2009), available at <http://www.irs.gov/pub/irs-pdf/p502.pdf> (reporting that deductible expenses include procedures to “overcome an inability to have children,” including “[p]rocedures such as in vitro fertilization (including temporary stor-

costs has been the introduction of state-level insurance mandates covering IVF, which we discuss in-depth below.

B. ADOPTION IN THE UNITED STATES

The use of reproductive technologies constitutes only one possible way of coping with childlessness due to infertility. Adoption is another alternative. The status of adoption in contemporary America is a vast topic involving law, sociology, economics, and a myriad of other disciplines, such that a brief description cannot do it justice. For the purposes of this Article, we instead give a basic background on adoption to contextualize the normative and empirical questions we examine. We begin by briefly describing the kinds of adoptions currently taking place in America and their historical antecedents, and then discuss a few important pieces of federal legislation on adoption that Congress passed during the time period of our study.

Modern adoption in the United States traces back to ancient Rome where it was used to avoid extinction of the adopter's family and ensure continuity of the adopter's religion.²⁶ By contrast, early English law was quite hostile to adoption, privileging blood lineage over the interests of children to be adopted.²⁷ Early English law prevented the absolute, permanent, and voluntary relinquishment of parental power to third persons, preferring instead to use a system of apprenticeships

age of eggs or sperm”). A recent tax court decision, *Magdalin v. Commissioner*, however, suggests the deductibility of IVF services is limited to medically infertile, married, opposite-sex couples. See *Magdalin v. Comm’r*, 96 T.C.M. (CCH) 491, 492–93 (2008), *aff’d* No. 09-1153, 2009 WL 5557509 (1st Cir. Dec. 17, 2009), *cert. denied*, 130 S. Ct. 2388 (2010) (mem.); Katherine T. Pratt, *Deducting the Costs of Fertility Treatment: Implications of Magdalin v. Commissioner for Opposite-Sex Couples, Gay and Lesbian Same-Sex Couples, and Single Women and Men*, 2009 WIS. L. REV. 1283, 1311–25. Even for those able to take the deduction for IVF, it is ordinarily a much less powerful way of financing fertility than is the insurance mandate. To borrow an example from Pratt (using 2004 tax rules), if an infertile couple eligible for the deduction makes \$100,000 per year at a marginal tax rate of thirty percent, and they spend \$10,000 on fertility services, taking the I.R.C. § 213 deduction only saves them \$750. Pratt, *supra* note 6, at 1180–81. By contrast, if an insurance mandate that fully covers a cycle of IVF applies and the patient is insured, the patient does not pay for the cost of the cycle aside from her general health insurance premium. There is also a large (and frankly somewhat shady) market in fertility loans that has emerged. See generally Melissa B. Jacoby, *The Debt Financing of Parenthood*, 72 LAW & CONTEMP. PROBS., Summer 2009, at 147, 160–64.

26. See, e.g., Susan Frelich Appleton, *Adoption in the Age of Reproductive Technology*, 2004 U. CHI. LEGAL F. 393, 400.

27. *Id.*

to satisfy child welfare goals.²⁸ In 1851, Massachusetts overruled centuries of English precedent by providing what is usually thought of as the first modern adoption law, a system for the judicially monitored transfer of rights from the birth parents to the adoptive parents, made with due regard for the welfare of the child and the parental qualifications of the adoptive parents.²⁹

At the present moment, adoptions in the United States can be divided in a few useful ways. At the highest level, we can separate U.S. adoptions into agency adoptions (which involve parents legally surrendering their child directly to an agency, which coordinates the adoption), nonagency or independent adoptions (in which birth parents give their consent directly to the adoptive parents), and intercountry adoptions.³⁰ A brief review of these three forms of adoption will help frame the discussion to follow.

Agency adoptions can involve either a public state-run agency or a private agency licensed by the state. To begin an agency adoption, the agency counsels the birth parents on their options and the legal consequences of the adoption process, and after such counseling the parents may voluntarily relinquish all legal rights to the child.³¹ In some cases, a birth mother will contact an agency prior to birth and tentatively agree to give her child up for adoption, but such prebirth agreements are not enforceable, and must be reaffirmed upon birth.³² The father's rights to the child must also be terminated before the child can be placed for adoption, which can be accomplished either by

28. See *id.*; Jamil S. Zainaldin, *The Emergence of Modern American Family Law: Child Custody, Adoption, and the Courts, 1796–1851*, 73 NW. U. L. REV. 1038, 1045–46 (1979). For more on the pre-1851 U.S. experience, see generally Naomi Cahn, *Perfect Substitutes or the Real Thing?*, 52 DUKE L.J. 1077, 1102–12 (2003).

29. See, e.g., Appleton, *supra* note 26, at 401; Stephen B. Presser, *The Historical Background of the American Law of Adoption*, 11 J. FAM. L. 443, 465 (1972); Zainaldin, *supra* note 28, at 1042–45. *But see* Cahn, *supra* note 28, at 1112–13 (arguing that the conventional view exaggerates the extent to which the Massachusetts statute breaks with the status quo and that the conventional view also exaggerates the depth of scrutiny the statute gives to children's interests).

30. See, e.g., David Brodzinsky, *Infertility and Adoption Adjustment*, in INFERTILITY 246, 247 (Sandra R. Leiblum ed., 1997).

31. Joan Heifetz Hollinger, *Introduction to Adoption Law and Practice*, in 1 ADOPTION LAW AND PRACTICE 1-1, 1-65 (Joan Heifetz Hollinger ed., 2009).

32. *Id.*

consent or by a court order.³³ When both parents' rights have been terminated, the child is placed in the custody of the agency, which may or may not involve the birth parents in the adoption process.³⁴

In 2002, 53,000 children were placed for adoption with public agency involvement, up from 37,000 in 1998.³⁵ Of those 53,000, just over 51,000 were placed for adoption out of foster care.³⁶ In 2002, only twenty-five percent of children waiting to be adopted from foster care were removed from their homes before the age of one.³⁷ Of children placed for adoption with public agency involvement in 2002, only two percent, or just over 1000 children, were under the age of one.³⁸ Another eight percent were age one, and eleven percent were age two.³⁹

In the second major category, independent (or "direct") adoptions, the birth parent(s) directly seek out a prospective adoptive parent without the involvement of an agency.⁴⁰ In most states, such a direct placement can be made either alone by the birth parent(s) or with the help of an unlicensed intermediary, such as a minister, lawyer, or doctor.⁴¹ In the few states that do not allow direct placements, the birth parent(s) must use an agency for placement, but can generally arrange with the agency to be allowed to designate the prospective adoptive parents.⁴² Direct placement is often done with a relative, but in almost all states it can also be done with unrelated prospective parents.⁴³ The Uniform Adoption Act of 1994 requires a preplacement evaluation of any prospective adoptive parents, regardless of whether the placement is direct or done

33. *Id.*

34. *Id.*

35. *The AFCARS Report*, U.S. DEPARTMENT HEALTH & HUM. SERVICES, § V, http://www.acf.hhs.gov/programs/cb/stats_research/afcars/tar/report12.htm (last visited Oct. 3, 2010).

36. *Id.* § III. Most of these children were not relinquished upon birth, but were removed involuntarily from their parents for reasons of neglect or abuse. Hollinger, *supra* note 31, at 1-67. The remaining 2000 children were adopted with public agency involvement, but were not part of the foster care system. *The AFCARS Report*, *supra* note 35, § V.

37. *The AFCARS Report*, *supra* note 35, § IV.

38. *Id.* § V.

39. *Id.*

40. Hollinger, *supra* note 31, at 1-69.

41. *Id.* at 1-70.

42. *Id.*

43. *Id.*

through an agency.⁴⁴ It is difficult to say how many private adoptions (either direct or private agency placements) are made each year because there is no central tracking agency for such data. It has been estimated, however, that in 2001 private agency and direct placements accounted for approximately forty-six percent of adoptions, or 58,000 children.⁴⁵

In intercountry (or “international”) adoption, parents seek to adopt a child located in another country. The number of intercountry adoptions has risen dramatically in recent years, from 9050 adoptions in 1991, to 19,237 in 2001.⁴⁶ Of these adoptions, forty-six percent are of children under the age of one.⁴⁷

The cost of adopting varies by the type of adoption. One recent estimate (although contested) suggested that the average cost of domestic adoption of a newborn from an agency in 2008 and 2009 was \$30,948, while adoption from foster care cost \$1,960.⁴⁸ The same study suggested that the average cost of international adoption varied by the child’s country of origin—for example, \$53,702 for Russia, \$35,400 for Korea, \$26,531 for China, and \$24,977 for Ethiopia.⁴⁹

44. *Id.* at 1-71.

45. *How Many Children Were Adopted in 2000 and 2001?*, U.S. DEPARTMENT HEALTH & HUM. SERVICES, 2 (Aug. 2004), http://www.childwelfare.gov/pubs/s_adopted/s_adopted.pdf.

46. *International Adoption Facts*, EVAN B. DONALDSON ADOPTION INST., <http://www.adoptioninstitute.org/research/internationaladoption.php> (last visited Oct. 3, 2010).

47. *Id.*

48. *Cost of Adoption Update: 2008-2009*, ADOPTIVE FAMILIES, <http://www.adoptivefamilies.com/articles.php?aid=2076> (last visited Oct. 3, 2010). These numbers do not reflect the Federal Adoption Tax Credit, up to \$12,150 in 2009. *Adoption Benefits Increased*, INTERNAL REVENUE SERVICE, <http://www.irs.gov/formspubs/article/0,,id=177982,00.html> (last updated Nov. 26, 2009). See also SPAR, *supra* note 1, at 180 (reporting that as of 2004, domestic infant adoptions in the United States cost “between \$10,000 and \$40,000”); Kathleen A. Lamb, *Exploring Adoptive Motherhood: Adoption-Seeking Among Hispanic and Non-Hispanic White Women*, 11 ADOPTION Q. 155, 160 (2008) (citing *Costs of Adopting*, U.S. DEPARTMENT HEALTH & HUM. SERVICES (June 2004), http://www.childwelfare.gov/pubs/s_cost/s_costs.pdf) (suggesting a cost of \$2500 for adoption of special needs children from foster care in the United States, \$5000 to \$40,000 for domestic infant adoptions, and \$7000 to \$30,000 for international adoptions).

49. *Cost of Adoption Update*, *supra* note 48. These numbers include home study costs, travel expenses, in-country adoption expenses, getting the child’s visa and passport, etc., and they do not reflect the Federal Adoption Tax Credit, up to \$12,150 in 2009. *Id.*; see also SPAR, *supra* note 1, at 184 tbl.6-2 (listing the 2004 costs for international adoption through several different agencies;

In addition to background information about the types of adoption, three pieces of federal legislation passed during our study period should be mentioned—the Multiethnic Placement Act, an amendment to the tax code, and the Adoption and Safe Families Act. While these pieces of legislation have altered the adoption landscape, as discussed below, one advantage of our differences-in-differences methodology is that it can factor out national changes unless they have state-specific effects.

For most of the twentieth century, the majority of children available for adoption in the United States were healthy, white infants.⁵⁰ Toward the century's end, however, large-scale societal changes had altered that supply; the growing acceptance of single parenthood, the ready availability of contraception, and the legalization of abortion resulted in a steady decline in the number of non-special-needs white babies available for adoption.⁵¹ According to an estimate Solangel Maldonado offered in 2006, white non-special-needs infants were in such short supply that applicants for those children in the United States faced waits as long as seven years.⁵² But despite the relative scarcity of white non-special-needs infants, up until the early 1990s, the majority of adoption agencies strongly favored same-race placements, often delaying placements of nonwhite babies even when a white family was willing to adopt.⁵³ In response to concerns over these practices and the growing number of nonwhite babies in foster care, Congress passed the Howard M. Metzenbaum Multiethnic Placement Act of 1994 (MEPA).⁵⁴ The initial version of MEPA forbade adoption agencies that received federal funding from making placement decisions solely on the basis of race, but allowed the use of race as a

for example, the Wide Horizons for Children agency charges a base application and agency fee of \$5700, and country-specific additional program fees of \$18,240 for adopting from Guatemala, \$15,000 for adopting from Russia, \$7165 from China, \$6700 from Ethiopia, and \$5000 from India).

50. Brodzinsky, *supra* note 30, at 247.

51. *E.g., id.* at 248; Solangel Maldonado, *Discouraging Racial Preferences in Adoptions*, 39 U.C. DAVIS L. REV. 1415, 1432 (2006).

52. Maldonado, *supra* note 51, at 1431–32.

53. Douglas R. Esten, *Transracial Adoption and the Multiethnic Placement Act of 1994*, 68 TEMP. L. REV. 1941, 1942 (1995).

54. See Multiethnic Placement Act of 1994, Pub. L. No. 103-382, § 551, 108 Stat. 3518, 4056 (codified at 42 U.S.C. § 5115a (1994) (repealed 1996)); see also Small Business Protection Act of 1996, Pub. L. No. 104-188, § 1807, 110 Stat. 1755, 1899 (reenacting the pertinent portions of the Multiethnic Placement Act under the Interethnic Adoption Provisions).

relevant factor.⁵⁵ The Act was amended in 1996 to completely prohibit consideration of race as a factor.⁵⁶ There has been considerable debate over whether promoting transracial adoptions is desirable, as well as whether MEPA is effective in doing so,⁵⁷ but it is clear that the percentage of African American children among those waiting for adoption has decreased significantly—from fifty-three percent in 1998 to forty-two percent by 2002.⁵⁸

Second, in 1996 Congress amended the tax code to encourage adoptions by adding I.R.C. §§ 23 and 137.⁵⁹ Section 23 allows adoptive parents to claim a tax credit of up to \$10,000 for adoption (to use the numbers at the time of enactment).⁶⁰ Section 137 allows the exclusion of up to \$10,000 of adoption reimbursements from an employer-provided adoption assistance program.⁶¹ The Code permits both provisions to apply to a single adoption but not to the same adoption expense.⁶²

The third major piece of federal adoption legislation passed in our study period was the Adoption and Safe Families Act of 1997 (ASFA).⁶³ This legislation was a response to the Adoption Assistance and Child Welfare Act of 1980 (AACWA), which Congress passed to regulate state-run foster care systems.⁶⁴ AACWA placed considerable emphasis on reunifying families and preventing unnecessary placements of children into the foster care system.⁶⁵ Some commentators criticized the Act for requiring that “reasonable efforts” be made to keep together

55. Esten, *supra* note 53, at 1943.

56. Removal of Barriers to Interethnic Adoption Amendments, 42 U.S.C. § 1996b (2006).

57. See David J. Herring, *The Multiethnic Placement Act: Threat to Foster Child Safety and Well-Being?*, 41 U. MICH. J.L. REFORM 89, 99–102 (2007) (discussing the debate surrounding the MEPA); see also Elizabeth Bartholet, *Where Do Black Children Belong? The Politics of Race Matching in Adoption*, 139 U. PA. L. REV. 1163 (1991).

58. *The AFCARS Report*, *supra* note 35, § V.

59. See Small Business Job Protection Act of 1996, Pub. L. No. 104-188, § 1807, 110 Stat. 1755, 1899.

60. I.R.C. § 23(b)(1) (2006); see also Pratt, *supra* note 6, at 1179–80.

61. I.R.C. § 137(a)(1), (d)(1)(D); see also Pratt, *supra* note 6, at 1179.

62. I.R.C. § 23(b)(3)(A); see also Pratt, *supra* note 6, at 1179.

63. Adoption and Safe Families Act of 1997, Pub. L. No. 105-89, 111 Stat. 2115 (codified as amended in scattered sections of 42 U.S.C. (2000)).

64. Adoption Assistance and Child Welfare Act of 1980, Pub. L. No. 96-272, 94 Stat. 501 (codified at 42 U.S.C. §§ 620–628, 670–679 (1988)).

65. James R. Marsh, *Federal Impact on Adoptions*, in 3 ADOPTION LAW AND PRACTICE, *supra* note 31, at 17-5.

families, without focusing on the best interests of the child.⁶⁶ Further, while the number of children in foster care initially decreased after passage of the AACWA, the number increased from 262,000 in 1982, to 445,000 in 1993, and to a high of 567,000 in 1999.⁶⁷

In response to these concerns, Congress passed ASFA to “shift the pendulum of the child protection system away from what many saw as an unreasonable emphasis on family preservation and towards permanency, and thus health and safety, for the children.”⁶⁸ Congress attempted to accomplish this goal in several ways. First, ASFA requires that the health and safety of the child be the “paramount” consideration in any effort to reunify his or her family.⁶⁹ While states are still required to make “reasonable efforts” to prevent a child from being removed from his or her family, ASFA contains a number of exceptions, including a consideration of whether a parent had subjected the child to “aggravated circumstances” as defined by state law.⁷⁰

Second, ASFA requires a permanency hearing (formerly known as a dispositional hearing) to be held within thirty days of a judicial finding that one of these exceptions applies or within twelve months of a child entering foster care.⁷¹ At the hearing, a “permanency plan,” such as referral for adoption, guardianship, or placement with a relative, must be established.⁷² The list of such goals had previously included long-term foster care, but no longer does.⁷³ Third, ASFA then requires states to make reasonable efforts to place the child in a permanent situation in a timely manner.⁷⁴

Finally, ASFA requires states to file for a termination of parental rights and seek an adoptive family when a child has been in foster care for fifteen out of the past twenty-two months, or when a child is abandoned as an infant, or when the

66. *Id.*

67. *Id.*

68. Kathleen S. Bean, *Aggravated Circumstances, Reasonable Efforts, and ASFA*, 29 B.C. THIRD WORLD L.J. 223, 224 (2009).

69. Marsh, *supra* note 65, at 17-6.

70. *Id.* at 17-3 to -6.

71. Libby S. Adler, *The Meanings of Permanence: A Critical Analysis of the Adoption and Safe Families Act of 1997*, 38 HARV. J. ON LEGIS. 1, 8 (2001).

72. Marsh, *supra* note 65, at 17-5 to -8.

73. *Id.*

74. *Id.*

parent commits certain criminal acts.⁷⁵ This requirement can be waived for children in the care of a relative, if the agency fails to provide reunification services to the child's family, or when upholding the requirement would not be in the best interest of the child.⁷⁶ The majority of states have passed legislation to comply with ASFA.⁷⁷

With the foregoing background on reproductive technology and adoption in mind, we can now focus on the primary question of this Article: the relationship between these two modes of forming families in the United States.

II. THE POLICY DEBATE OVER STATE-LEVEL INSURANCE MANDATES COVERING IVF: DO STATES HAVE AN OBLIGATION TO IMPROVE ACCESS TO REPRODUCTIVE TECHNOLOGIES EVEN IF IT DECREASES ADOPTIONS?

In this Part we explain why, according to a number of normative theories, there is a *prima facie* case for a state obligation to improve access to reproductive technologies. We then examine a series of objections (religious, libertarian, safety, etc.) that might be marshaled in opposition to the state doing so. We next focus on one objection in the set, an objection highlighted by Elizabeth Bartholet, Peter Neumann, and others: that these mandates should be opposed because they will lead to a diminution in adoptions. After setting out this objection more fully, we draw out and put pressure on some of its normative assumptions. We do this not so much to refute it conclusively, but to identify its many unstated and contestable premises and to argue that it requires a stronger theoretical foundation than that which has been put forward in favor of it.

A. THE PRIMA FACIE CASE FOR IMPROVING ACCESS TO REPRODUCTIVE TECHNOLOGIES

As discussed, a number of states have adopted insurance mandates covering reproductive technologies as the primary method of improving access to such technologies. While not the only possible method,⁷⁸ they are perhaps the most powerful

75. *Id.*

76. *Id.*

77. *Id.*

78. Other possible methods of subsidizing reproductive technologies would include a more generous tax deduction for infertility medical expenses or a tax

method currently in place.⁷⁹ The deep normative question is whether state action here is desirable. On a number of moral and political theories the answer seems to be, in principle, “yes.”

Some theorists reach this conclusion because they believe in a more general duty of the state to promote the health of its population, and conclude that genetic reproduction is an important part of health. For example, Martha Nussbaum, writing from a more aretaic (i.e., Aristotelian, focusing on character and virtue) perspective, has argued that the state’s role is to enable human flourishing by raising people above the threshold level on a number of “capabilities.”⁸⁰ She describes one of these capabilities, “bodily health,” as “[b]eing able to have good health, *including reproductive health*; to be adequately nourished; to have adequate shelter,” and another, “bodily integrity,” as including “having opportunities for sexual satisfaction

credit for these expenses. States could, at least theoretically, also subsidize these treatments through direct payments to health care providers in this sector or investments in technology development. They could also include the service in the list of services for which Medicaid reimburses.

79. These mandates are powerful, especially the complete mandates, because they defray so much of the costs of using IVF. That said, as a mechanism for improving access, state-level insurance mandates have two clear limitations. First, because they determine the content of what must be included in an insurance policy, they are only effective at improving access for those who are or will be insured. Second, because of ERISA preemption, employers that self-insure are not bound by these mandates in insuring their population. See 29 U.S.C. § 1144(b)(2)(B) (2006); Allison Overbay & Mark Hall, *Insurance Regulation of Providers that Bear Risk*, 22 AM. J.L. & MED. 361, 380 (1996). Precise statistics on the number of self-insured firms in each state are unavailable, though a study using 1997 data from seven states found that thirteen percent of all firms, fifty-six percent of firms with 500 or more employees, twenty-five percent of firms with 100–499 employees, and three percent of all employers with fewer than 100 employees, were self-insured. M. Susan Marquis & Stephen H. Long, *Recent Trends in Self-Insured Employer Health Plans*, HEALTH AFFAIRS, May/June 1999, at 161, 163. A more recent study using a different methodology suggests this number has grown significantly in the past decade, estimating that fifty-five percent of all workers and seventy-seven percent of workers in large companies are now covered by self-funded plans that escape the mandates. KAISER FAMILY FOUND. & HEALTH RESEARCH & EDUC. TRUST, EMPLOYER HEALTH BENEFITS: 2007 ANNUAL SURVEY 148 tbl.10.3 (2004). As discussed in more depth below, in our empirical analysis we follow the literature by attempting to control for the population in each state that is covered by self-insured employers and track these changes over time.

80. See MARTHA C. NUSSBAUM, FRONTIERS OF JUSTICE 76–78 (2006). See generally AMARTYA SEN, DEVELOPMENT AS FREEDOM (2000) (articulating the capabilities-functionings view).

and for choice in matters of reproduction.”⁸¹ On this view, subsidization of IVF via insurance mandates is a welcome step toward realization of health capabilities.

Norman Daniels, coming from a more Rawlsian tradition (i.e., a liberal tradition focused on promoting liberty and distributive justice through giving priority to the worst-off), grounds the state’s role in promoting health in the obligation, as a matter of political justice, to ensure access to the “normal opportunity range” to pursue the “array of life plans reasonable persons are likely to develop for themselves.”⁸² From this foundation, Daniels concludes that “infertility is a departure from normal functioning that reduces an individual’s fair share of the normal opportunity range and gives rise to claims for assistance” because infertility interferes with “basic functions of free and equal citizens, such as reproducing themselves biologically, an aspect of plans of life that reasonable people commonly pursue.”⁸³ On this view, as well, one should welcome increased access to IVF through insurance mandates.

Interestingly, as a doctrinal matter, the Supreme Court has taken a similar approach in its case law by treating the inability to reproduce as a disability, and discrimination on that basis as protected by the Americans with Disabilities Act (ADA). In *Bragdon v. Abbott*, an HIV-positive patient sued a dentist who refused to treat her cavity outside of a hospital setting (where she would pay extra costs) under the ADA for discriminating on “the basis of disability in the . . . enjoyment of the . . . services . . . of any place of public accommodation by

81. NUSSBAUM, *supra* note 80, at 76 (emphasis added).

82. NORMAN DANIELS, JUST HEALTH: MEETING HEALTH NEEDS FAIRLY 43 (2008); *see also id.* at 29–60 (outlining Daniels’s theory of the “special moral importance of health”).

83. *Id.* at 59. It is worth emphasizing that both of these theories do a better job justifying classifying infertility treatment as the meeting of *health* needs for partnered individuals with impaired fecundity, rather than single individuals or same-sex couples (the “dysfertile”). It may be possible to construct an argument on Daniels’s framework for covering infertility of these groups as well, based on the notion that failing to do so would unfairly deny these groups access to the “normal opportunity range” to pursue the “array of life plans reasonable persons are likely to develop for themselves” on the basis of marital status or sexual orientation, in a way that is inappropriate in a liberal society. *Id.* Doing so, though, would require Daniels to de-emphasize his biological conception of “normal functioning.” *Id.* These are difficult questions, but ones we are able to sidestep in this Article because the state mandates in question largely target the reproductive needs of married individuals of child-bearing age with medical infertility.

any person who . . . operates [such] a place.”⁸⁴ In holding that HIV was a disability within the statutory meaning, that is a “physical . . . impairment that substantially limits one or more of [an individual’s] major life activities,”⁸⁵ the Supreme Court noted its effect on the reproductive capacity of the individual and held that “[r]eproduction falls well within the phrase ‘major life activity’” because “[r]eproduction and the sexual dynamics surrounding it are central to the life process itself,” and “reproduction could not be regarded as any less important than working and learning,” which clearly were covered by the ADA.⁸⁶ Thus, for ADA purposes, the Supreme Court has treated infertility as a health deficit amounting to a disability equivalent to other more typical examples of disabilities such as blindness, deafness, or epilepsy.

State action to improve access to reproductive technologies may also be justified on more welfarist-consequentialist moral theories (i.e., those that evaluate the morality of a policy based solely on the consequences for human welfare). Infertile individuals who want to reproduce genetically may face a major setback to their welfare,⁸⁷ as studies showing high levels of depression in the infertile population demonstrate.⁸⁸ Reducing the impediment to successful reproduction may diminish these negative effects.⁸⁹

These mandates may also be justified by narrower health outcomes or on dollars and cents grounds. Empirical studies have suggested that the enactment of insurance mandates cov-

84. *Bragdon v. Abbott*, 524 U.S. 624, 629 (1998) (quoting 42 U.S.C. § 12182(a) (1994)).

85. 42 U.S.C. § 12102(2)(A).

86. *Bragdon*, 524 U.S. at 638–39.

87. We put to one side disagreement as to what welfare consists of—for example, whether it is best thought of as pleasure and the absence of pain (hedonism), or the satisfaction of desire, see generally L.W. SUMNER, *WELFARE, HAPPINESS, AND ETHICS* (1996) (exploring these divisions), because we believe that the capacity to reproduce would be valued on any variant.

88. See, e.g., David Orentlicher, *Discrimination Out of Dismissiveness: The Example of Infertility*, 85 *IND. L.J.* 143, 154–56 (2010) (collecting studies); Pratt, *supra* note 6, at 1128 & n.22.

89. It remains an open question whether the negative effects of being denied genetic reproduction could successfully be reduced by widespread attempts to de-emphasize the importance of the genetic connection in parenting. For more on the malleability of preferences about genetic parenthood and the law’s expressive function in shaping them, see Cohen, *supra* note 6, at 1142, 1151, 1189–90. It bears noting, though, that at least in the foreseeable future such preference reprogramming seems unlikely.

ering IVF may diminish the rate of multiple births.⁹⁰ One possible mechanism that has been proposed to explain this effect is that in the absence of mandates, the large per cycle cost of IVF prompts individuals to keep the number of cycles attempted per successful childbirth as low as possible. In order to do so, individuals tend to implant a larger number of preembryos as part of IVF to increase the chance that one preembryo will successfully implant.⁹¹ But implanting larger numbers of preembryos leads to higher rates of multiple births, especially of three or more infants,⁹² an outcome worth preventing as multiple births are associated with health risks to infants and to gestating mothers.⁹³ Further, the extremely high medical costs associated with multiple births⁹⁴ mean that if these mandates reduce mul-

90. See Tarun Jain et al., *Insurance Coverage and Outcomes of In Vitro Fertilization*, 347 NEW ENG. J. MED. 661, 665 (2002); Barton H. Hamilton & Brian McManus, *Infertility Treatment Markets, The Effects of Competition and Policy* 26 (Oct. 2005) (unpublished manuscript), available at <http://apps.olin.wustl.edu/faculty/hamiltonb/wpapers/Infertility%20Treatment%20Markets.pdf> (correlating a decrease in multiple birth rates with Universal insurance mandates). *But see* Melinda B. Henne & M. Kate Bundorf, *Insurance Mandates and Trends in Infertility Treatments*, 89 FERTILITY & STERILITY 66, 73 (2008) (noting research supporting this relationship, but observing uncertainty about the correlation's strength); Meredith Reynolds et al., *Does Insurance Coverage Decrease the Risk for Multiple Births Associated with Assisted Reproductive Technology?*, 80 FERTILITY & STERILITY 16, 22 (2003) (finding that while state-level insurance mandates were correlated with decreased multiple embryo transfer rates, there was no conclusive evidence that they actually decreased the number of multiple births).

91. See Jain et al., *supra* note 90, at 665.

92. See *id.*; Hamilton & McManus, *supra* note 90, at 27. *But see* Henne & Bundorf, *supra* note 90, at 71 (suggesting that existing data cannot rule out a different possible mechanism whereby more individuals with poor prognoses now seek IVF due to the mandate, thus decreasing the multiple birth rate not because of reduced embryo transfer, but because more patients unlikely to conceive are added into the denominator for multiple birth rate); Reynolds et al., *supra* note 90, at 22 (suggesting that insurance mandates may at the same time increase the number of individuals attempting ART who but for mandates would not have, but that these individuals can only afford a single procedure due to co-pays and uncovered expenses, resulting in additional multiple births).

93. The risks to children from a multiple birth include stillbirth, physical and developmental disability, respiratory distress syndrome, intracranial hemorrhage, cerebral palsy, and blindness—all risks associated with premature birth. Jain et al., *supra* note 90, at 665. The maternal risks include premature labor and delivery, pregnancy-induced hypertension, gestational diabetes, and uterine hemorrhage. *Id.*

94. See, e.g., *id.* (citing Tamara L. Callahan et al., *The Economic Impact of Multiple-Gestation Pregnancies and the Contribution of Assisted-Reproduction Techniques to Their Incidence*, 331 NEW ENG. J. MED. 244 (1994)) (noting that

tiple births, they may actually reduce overall health care costs for patients, insurers, and/or the state.⁹⁵

All of this amounts to a good prima facie argument for state action to improve access to reproductive technologies.⁹⁶ Indeed, most legal scholars who have discussed the issue strongly support these mandates and argue for their expansion.⁹⁷ This argument is, however, only a prima facie case, because apart from the possible negative effects on adoption we discuss in Part III, there may be other countervailing normative arguments against improving access to particular reproductive technologies or against particular mechanisms for ensuring access. The next section explores these arguments.

B. ARGUMENTS AGAINST EXPANDING ACCESS TO REPRODUCTIVE TECHNOLOGIES THROUGH MANDATES

One might object to state action expanding access to IVF through insurance mandates on a number of grounds. These objections might sound in health, religion, or political ideology. To contextualize our critique of the substitution theory, this section explores some of the more salient objections not related to adoption that one might raise.

hospital charges for twin birth and triplet births were four and eleven times as high as singleton births, respectively, according to 1991 data).

95. See DAAR, *supra* note 8, at 296 (discussing this possibility). *But see infra* notes 98–99 and accompanying text (suggesting some countervailing health concerns from using IVF).

96. While many of these theories would support improving access to IVF as a prima facie matter, we cannot go so far as to say there is a universal overlapping consensus involving all possible moral theories on the point. In particular, nonutilitarian but liberal theories that either do not regard health as a primary good or do regard health as a primary good but reject infertility as a bona fide health care need, would not support the claim. We examine the question of whether infertility is a health care need in more depth below.

97. See, e.g., Judith F. Daar, *Assessing Reproductive Technologies: Invisible Barriers, Indelible Harms*, 23 BERKELEY J. GENDER L. & JUST. 18, 42–43 (2008) (supporting these mandates as attempts to deal with cost and racial barriers to infertility access, but expressing concerns about their effectiveness); Elizabeth A. Pendo, *The Politics of Infertility: Recognizing Coverage Exclusions as Discrimination*, 11 CONN. INS. L.J. 293, 343–44 (2005) (supporting these mandates as a way of ending discrimination against the infertile, but suggesting they be federalized to avoid the problem of ERISA preemption); Debora Spar & Anna M. Harrington, *Building a Better Baby Business*, 10 MINN. J. L. SCI. & TECH. 41, 50 (2009) (noting that “[p]oor, infertile people suffer twice as a result, first from the inability to conceive for free and then from the unaffordability of assisted reproduction,” and supporting expansion of state-level insurance mandates covering IVF).

One set of objections to IVF mandates centers on health concerns. Some worry that children conceived via IVF are less healthy than children born through natural conception and object to subsidizing IVF on that ground. A 2002 *New England Journal of Medicine* study found that the use of IVF appears to roughly double the risk of having a singleton with low birth weight or a child with a major birth defect, even when one controls for multiple birth, maternal age and parity, the sex of the infant, and correlation between siblings.⁹⁸ Still, “the majority of couples who require assistance with reproduction will not be affected, [because] the likelihood of having a term singleton infant of normal birth weight is about 94 percent, and the likelihood of having an infant who is free of major defects is about 91 percent.”⁹⁹

Moreover, there are hard questions regarding how a state should value such “harm” to the child when the counterfactual to the use of IVF is that the child would otherwise not exist.¹⁰⁰

Others may object that government programs to expand access to IVF have the problematic expressive effect of reinforcing the centrality of biological ties for family, or will further undermine the self-worth of infertile women who try IVF and fail.¹⁰¹ This critique can stand alone or be understood as part of radical feminist critiques of IVF more generally.¹⁰²

98. Michèle Hansen et al., *The Risk of Major Birth Defects After Intracytoplasmic Sperm Injection and In Vitro Fertilization*, 346 NEW ENG. J. MED. 725, 729 (2002); see also Allen A. Mitchell, *Infertility Treatment—More Risks and Challenges*, 346 NEW ENG. J. MED. 769, 769 (2002) (analyzing the study).

99. Mitchell, *supra* note 98, at 769.

100. This idea is associated with Derek Parfit’s Non-Identity Problem, which states that a particular child cannot be harmed by being brought into existence unless a given life is not worth living, for the child’s counterfactual is not existing at all. See DEREK PARFIT, REASONS AND PERSONS 358–59 (rev. ed. 1987). This problem raises a host of complex and interesting issues discussed in great depth in prior and forthcoming work by one of this Article’s authors. See I. Glenn Cohen, *Intentional Diminishment, the Non-Identity Problem, and Legal Liability*, 60 HASTINGS L.J. 347 (2008); I. Glenn Cohen, *Well What About the Children?: Best Interests Reasoning, the New Eugenics, and the Regulation of Reproduction* (unpublished manuscript) (on file with author).

101. See, e.g., ELIZABETH BARTHOLET, FAMILY BONDS: ADOPTION AND THE POLITICS OF PARENTING 93 (1999) (noting social preference for adoption of biologically similar children). See generally Dorothy E. Roberts, *The Genetic Tie*, 62 U. CHI. L. REV. 209 (1995) (discussing the negative social consequences of the emphasis put on the genetic ties between parents and children for the infertile and for racial discrimination).

102. See, e.g., GENA COREA, THE MOTHER MACHINE: REPRODUCTIVE TECHNOLOGIES FROM ARTIFICIAL INSEMINATION TO ARTIFICIAL WOMBS 3

A very different kind of objection comes from some religions that oppose IVF because it separates the unitive and the procreative elements of reproduction within a marriage.¹⁰³ Others offer religious or nonreligious objections to IVF because it frequently leads to the destruction of preembryos.¹⁰⁴

Still others might object on more political or ideological grounds. Some would object to direct government subsidy of any health care on libertarian grounds,¹⁰⁵ and for this reason would also object to direct government subsidy of reproductive technology, although they may be somewhat mollified by more limited forms of government intervention such as insurance mandates.

Others argue on more economic grounds that including IVF coverage in every insurance policy will drive up the cost of insurance, and therefore price more people out of the health insurance market. While a 1995 study suggested that including IVF coverage would increase the cost of the average insurance premium by only \$3.14 per year,¹⁰⁶ that estimate may not re-

(1979) (“What is the real meaning of a woman’s ‘consent’ to in vitro fertilization in a society in which men as a social group control not just the choices open to women but also women’s *motivation* to choose?”); Barbara Katz Rothman, *The Meanings of Choice in Reproductive Technology*, in TEST TUBE WOMEN: WHAT FUTURE FOR MOTHERHOOD? 23, 31 (Rita Arditti et al. eds., 1984) (“[A]ll of the new treatments for infertility have also created a new burden for the infertile—the burden of not trying hard enough. Just how many dangerous experimental drugs, just how many surgical procedures, just how many months—or is it years?—of compulsive temperature-taking and obsessive sex does it take before one can now give in gracefully?”). For an excellent history of radical and liberal feminist depictions of infertile women in legal and nonlegal scholarship, see Jody Lyneé Madeira, *Common Misconceptions: Reconciling Legal Constructions of Women in the Infertility and Abortion Contexts* 6–26 (2010) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1565172.

103. See, e.g., Rachel Anne Fenton, *Catholic Doctrine Versus Women’s Rights: The New Italian Law on Assisted Reproduction*, 14 MED. L. REV. 73, 79 (2006); *Ethical and Religious Directives for Catholic Health Care Services*, U.S. CONF. CATHOLIC BISHOPS, <http://www.usccb.org/bishops/directives.shtml> (last visited Sept. 29, 2010) (“Homologous artificial fertilization (that is, any technique used to achieve conception using the gametes of the two spouses joined in marriage) is prohibited when it separates procreation from the marital act in its unitive significance (e.g., any technique used to achieve extra-corporeal conception).”).

104. See, e.g., Coleman, *supra* note 15, at 66; *Ethical and Religious Directives for Catholic Health Care Services*, *supra* note 103.

105. See, e.g., RICHARD A. EPSTEIN, *MORTAL PERIL: OUR INALIENABLE RIGHT TO HEALTH CARE?* (1997).

106. See Jain et al., *supra* note 90, at 666 (citing John A. Collins et al., *An*

flect changes in technology, availability, and insurance plan structure in the intervening decade and a half. A 2007 estimate (without supporting data) published in *Fertility and Sterility* suggested a range of \$0.87 to \$10 increase in premiums per member per month (or \$10.44 to \$120 annually) for policies that cover IVF.¹⁰⁷ Whether an increase in premiums is a good reason not to adopt these insurance mandates might depend on where precisely in that range the cost increase falls, whether one views infertility as a health deficit on par with other medical needs, and more general views about how much health insurance should be a situs for redistribution and solidarity.

Still others might strongly favor government action to maintain access to reproductive technology as part of the state's obligation to promote health, but they would argue that in the grand scheme of health needs infertility ought to be ranked fairly low, such that a government of limited means ought to facilitate access to reproductive technology only after achieving other health care goals. Such a position might be presented either as an attack on satisfying infertility-related needs when other health care needs judged more important go unmet,¹⁰⁸ or as a claim that treatment for infertility should not be

Estimate of the Cost of In Vitro Fertilization Services in the United States in 1995, 64 FERTILITY & STERILITY 538 (1995).

107. K.R. Omurtag & T.L. Toth, *The Cost Effectiveness and Health Outcomes of In Vitro Fertilization (IVF) as a Mandated Benefit*, 88 FERTILITY & STERILITY (SUPPLEMENT 1) S122, S122 (2007).

108. Whether such an argument succeeds may depend on the theory giving rise to the state's obligation in the first place. On Nussbaum and Daniels's approaches, for example, the treatment of infertility would appear to have equal standing as the treatment of other health states. *See supra* notes 80–82 and accompanying text.

Daniels, at least, has built in to his theory a form of this objection in his notion that right claims to health care are “system-relative,” and just because an individual may have a claim to health does not mean all societies will be unjust if they do not satisfy all elements of his health need. As he puts it, “[t]ypically, not all health needs can be met under reasonable resource constraints. Deciding . . . what resources are to be used – both within and outside the health sector – requires careful moral judgment and a wealth of empirical knowledge about the effects of alternative allocations.” DANIELS, *supra* note 82, at 146. Ultimately, “[t]he right to health can yield entitlements only to those needs that we can reasonably try to meet.” *Id.*

By contrast, Nussbaum's account seems to reject the notion that justice can dictate satisfying some health needs before others. In Nussbaum's view, “all ten of these plural and diverse ends are minimum requirements of justice, at least up to the threshold level,” NUSSBAUM, *supra* note 80, at 175, such that “the capabilities are radically nonfungible: lacks in one area cannot be made up simply by giving people a larger amount of another capability.” *Id.* at 166–

considered a health need at all but only the satisfaction of a lifestyle choice. In this regard, it is interesting to note that the Oregon Health Plan Medicaid experiment of 2002 (which rationed care based on marginal benefit through Quality Adjusted Life Years), like many state Medicaid plans, excluded IVF from the list of covered treatments.¹⁰⁹

There may be other kinds of objections as well. For the purpose of this Article we self-consciously put each of these objections to one side, acknowledging that if the argument we offer here succeeds, these objections will nonetheless persist and their persuasiveness will have to be evaluated in further work in order to determine the ultimate question of whether expanding IVF access through insurance mandates is desirable. Here we instead focus on an objection from a perspective otherwise open to promoting access to health care goods and reducing inequality—the objection that focuses on the negative effects these mandates have on adoption. The next section offers a thorough exposition of this objection and puts pressure on its normative foundations.

C. THE SUBSTITUTION THEORY AND ITS NORMATIVE ASSUMPTIONS

An advocate pressing the substitution theory might suggest that the argument for state subsidization of IVF, as so far stated, adopts far too limited a view of whose interests we ought to consider. While state actions to increase reproductive technology access may very well improve the lives and health outcomes of those who are infertile, they exacerbate a different kind of inequality: the interests of children waiting for adoption

67. As a result, her “theory does *not* countenance intuitionistic balancing or tradeoffs among them,” but instead “demands that they *all* be secured to each and every citizen, up to some appropriate threshold level.” *Id.* at 175. She recognizes that “[i]n desperate circumstances, it may not be possible for a nation to secure them all up to the threshold level, but then it becomes a purely practical question what to do next, not a question of justice”; that is, “[t]he question of justice is already answered: justice has not been fully done here.” *Id.* at 175.

For more explicitly welfarist-consequentialist models this objection may be easier to ground: within the health sector the state should satisfy health needs that make larger contributions to welfare before those that make smaller contributions. Evaluation of this objection may also turn on the form of government action increasing availability in question (direct subsidy, tax deduction, insurance mandate, etc.).

109. See, e.g., Orentlicher, *supra* note 88, at 169. We discuss a related issue in more depth below. See *infra* text accompanying notes 125–29.

are set back, because with greater access to reproductive technology, fewer individuals will adopt. Indeed, the incentive to use IVF instead of adoption that these mandates provide is even greater than it first appears, because not only do these mandates in whole or in part eliminate the costs associated with IVF, but if parents choose to use these technologies they also potentially avoid the costs associated with adoption, which can be substantial.

We call the assumption that increased access to reproductive technologies causes a diminution in adoptions “the substitution theory” because of its conjecture that prospective adoptive parents substitute away from adoption when reproductive technologies become more financially available.

Commentators have advanced arguments rooted in the substitution theory for many years. A few leading scholars in the field, such as Peter Neumann and Elizabeth Bartholet, have informally put forth the substitution theory, both as an empirical claim that adoptions diminish when IVF access is expanded and as a normative claim that this serves as a valid reason to oppose state-level insurance mandates. Neumann addresses the issue in an article on the wisdom of IVF insurance mandates, noting the concern “that IVF can ensnare couples in an obsessive and often physically and psychologically damaging pursuit for a child, despite long odds of success, when they might otherwise consider adoption,” and if IVF fails they may be precluded from adopting because they are “too old and without the financial or emotional resources.”¹¹⁰ Speaking more generally about the reproductive technology versus adoption tradeoff in her elegant and passionate book *Family Bonds*, Elizabeth Bartholet argues that “[t]he infertile are potentially a significant resource for children in need of homes, but at present only a limited number of them adopt,” because “[s]ociety drives the infertile away from adoption and toward efforts to reproduce with a wide array of conditioning mechanisms and regulatory structures.”¹¹¹ She suggests “[i]t makes no sense for a society that thinks of itself as sane and humane to

110. Peter J. Neumann, *Should Health Insurance Cover IVF? Issues and Options*, 22 J. HEALTH POL. POL'Y & L. 1215, 1225–26 (1997). Neumann's preferred solution on this front, though, is not to reduce IVF mandates but to increase support for adoption by employers, as well as through tax credits. *Id.* at 1232–33.

111. BARTHOLET, *supra* note 101, at 30.

be driving people in the direction of child production rather than adoption” when a large number of children “will grow up without homes unless they are adopted.”¹¹² In short, a “sane and humane society should encourage people to provide for these existing children rather than bring more children into the world.”¹¹³ In the course of offering a widespread indictment of the fertility industry and social pressures toward genetic reproduction, as well as a call to act in ways “correcting the bias,” Bartholet specifically critiques moves toward expanding health insurance coverage for infertility given the lack of comparable support for adoption.¹¹⁴ Others have made similar claims.¹¹⁵

112. *Id.* at 35.

113. *Id.* at 35–36.

114. *Id.* at 35–37.

115. See, e.g., Appleton, *supra* note 26, at 410–21 (comparing the regimes governing reproductive technology and adoption and concluding that “for those intent on adding a child to the family without sexual reproduction and without adoption’s difficulties and intrusions, the law of ARTs should not present an obstacle” such that in “the main, the existing legal treatment of ARTs across the United States makes adoption a less attractive alternative for meeting the interests of those with fertility problems and a desire to have children”); Madelyn Freundlich, *Supply and Demand: The Forces Shaping the Future of Infant Adoption*, 2 ADOPTION Q. 13, 14–20 (1998) (discussing how the increased success rates of IVF and expansion of access to IVF through insurance mandates is likely to cause a reduction in the number of adoptions); Joan Heifetz Hollinger, *From Coitus to Commerce: Legal and Social Consequences of Non-coital Reproduction*, 18 U. MICH. J.L. REFORM 865, 926–28 (1985) (arguing that reproductive technologies present “an altogether different category of potential harm: the risk of indifference to the many thousands of children, indeed, to the hundreds of thousands, who are already born but in desperate need of parents to raise them,” and that without more resources committed to support adoption, “the worlds of adoption and of noncoital reproduction will grow farther and farther apart, and those who resort to the laboratory to conceive a child will be symbolically, if not actually, diminishing the role of adoption in our society”); Jacoby, *supra* note 25, at 153 (claiming that IVF insurance mandates “steer some intended parents toward assisted reproduction who might otherwise have seriously considered adoption”); Kimberly D. Krawiec, *Altruism and Intermediation in the Market for Babies*, 66 WASH. & LEE L. REV. 203, 211 (2009) (arguing that “prospective parents determined to have a child may be forced into the next best substitute, say adoption, when their first reproductive choice, say ART, has been fully exhausted without success or becomes otherwise unavailable”). Martha Field has offered a parallel critique as to surrogacy:

It would be a real social harm for surrogacy to substitute for adoption. Surrogacy allows creation of new, made-to-order children, but only at the expense of children who already exist and who need homes. Some answer that it is hard to adopt the healthy, white infants that many desire. But the shortage of newborns we have experienced in this country lately has resulted in many children being adopted who once would have been hard to place. Children we used to label “unadoptable” are

While the substitution theory seems intuitively quite plausible, as we discuss below, none of these authors has marshaled empirical evidence for the theory. But even if the empirical portion of these authors' claims is validated, there are multiple missing steps between empirically demonstrating the effect and normatively concluding it should influence states' policies on IVF insurance mandates.¹¹⁶ In the remainder of this Part, we make explicit some of those steps and the controversial issues they raise.

The high-level normative question is what position (if any) the government should take in encouraging adoption versus reproductive technology usage as a way of having families. At the threshold one might ask if it is "even possible for the state to remain neutral on this decision?" Here we can see a baseline problem of a kind familiar in law: the difficulty of specifying a truly neutral point of reference. While from one vantage point states that refuse to de facto subsidize reproductive technologies through insurance mandates are the neutral ones, from another they appear tilted toward adoption because they fail to balance the pro-adoption subsidization efforts of the federal adoption tax credit, which does not have a direct infertility equivalent.¹¹⁷ From another vantage point one might argue

finding adoptive homes these days, and the surrogacy system threatens to reverse that trend. This would be a real social cost of promoting surrogacy. While there is room for argument that this alone should not be a controlling consideration, it surely is wrong to evaluate the surrogacy system without at least taking account of the interests of existing children. Their interest must be taken into account, along with the interests of existing childless couples and others in society.

Martha A. Field, *Surrogacy Contracts—Gestational and Traditional: The Argument for Nonenforcement*, 31 WASHBURN L.J. 1, 8 (1991); see also Elizabeth S. Anderson, *Is Women's Labor a Commodity?*, 19 PHIL. & PUB. AFF. 71, 91 (1990) ("Leaders of the surrogate industry have proclaimed that commercial surrogacy may replace adoption as the method of choice for infertile couples who wish to raise families. But we should be wary of the racist and eugenic motivations which make some people rally to the surrogate industry at the expense of children who already exist and need homes.").

116. For what it is worth, we have seen no evidence that states adopting these mandates have even considered the possible effect on adoption, though the poverty of state legislative histories makes that conclusion somewhat uncertain. Of course, if these authors are right (both normatively and empirically) in their claims, the issue then becomes one of reforming laws for states with mandates, and dissuading those states that might adopt these mandates in the future from doing so.

117. While the general I.R.C. § 213 tax deduction for medical expenses and fertility loans may be helpful for some individuals, it is not usually as valuable as a tax *credit* like the one available for adoption. See *supra* text accompany-

that large swaths of the law (related to family law recognition, trust law inheritance, etc.) already privilege genetic connectedness such that the adoption tax credit is a mere drop in an ocean of state support for having genetically related children. Still a different vantage point might suggest that for the state to permit insurers to exclude coverage of infertility in health insurance plans is a move away from neutrality, a move that these insurance mandates correct. Such a view might follow from the argument of Daniels, Nussbaum, and others (including, indirectly, the U.S. Supreme Court)¹¹⁸ that infertility is as much a health problem as a heart attack, and one the state is as responsible for correcting. We examine the normative claims of the substitution theory first on the assumption that infertility treatments serve genuine health care needs, then by examining the case if that assumption is relaxed. On both routes, we find reasons to question the normative claims the substitution theory makes.

First, let us imagine that one accepts the frame of infertility treatment as a full bona fide health care need. One then faces hard questions of when it is ethically justifiable to take into account indirect benefits and costs in allocating resources to meet health care needs. Just as many ethicists believe it would be unethical to allocate an organ as between two individuals in need on the basis of “indirect benefits” (e.g., one is an industrialist who if given the organ is likely to create 5000 new jobs),¹¹⁹ one might wonder whether it is ethical to deny infertile

ing notes 25 and 62. Thus, as Pratt concludes, “tax law currently favors adoption over fertility treatment, even if fertility treatment expenses are characterized as medical expenses.” Pratt, *supra* note 6, at 1180. To use Pratt’s illustrative example (using 2004 tax law rules):

Lee and Shannon are infertile. They are deciding whether to adopt a foreign child or do a cycle of IVF. The cost of either option is \$10,000. Assume that their gross income for the year is \$100,000 and their marginal tax rate is 30 percent. If they adopt, they can claim a § 23 credit of \$10,000. The credit saves them \$10,000 in taxes and reduces their net adoption cost to zero. If they do the IVF cycle and take a § 213 medical expense deduction, the deduction will be \$2,500 (their \$10,000 medical expense less \$7,500, which is 7.5 percent of their gross income). The \$2,500 deduction will save them \$750 (\$2,500 deduction multiplied by the 30 percent tax rate) in taxes. Their net cost for the IVF procedure is \$9,250 (\$10,000 less \$750 tax savings).

Id. at 1180–81.

118. *Bragdon v. Abbott*, 524 U.S. 624, 638–39 (1998).

119. See, e.g., Dan W. Brock, *Separate Spheres and Indirect Benefits*, COST EFFECTIVENESS & RESOURCE ALLOCATION (Feb. 26, 2003), <http://www.resource-allocation.com/content/pdf/1478-7547-1-4.pdf>.

individuals access to reproductive technologies because of indirect costs as to children going unadopted or being delayed in their adoption. To put the point more forcefully, suppose (for purely hypothetical, fanciful, and illustrative purposes) we determine that requiring insurers to cover hip replacements leads to a diminution in domestic adoptions. Would that serve as a good reason to deny such insurance coverage to many Americans who desperately want hip replacements? If the answer is no, as we think it would be, then it seems impermissible to determine whether to provide insurance coverage for a particular health need based on indirect benefits and costs (at least as to adoption). What is true of hip replacements should be equally true of infertility.

Consider another hypothetical: suppose we have mandatory organ donation in our country. If a fifty-year-old accident victim comes into the emergency room and seeks emergency care—emergency care that we believe he has a justified moral claim to receive—would it be wrong to deny him that care merely because we could thereby ensure that seven individuals would benefit from his donated organs? If the answer is yes, as we think many would believe it ought to be, then again it seems wrong to deny emergency care based on the expected benefit to others if that care is denied. Why should infertility treatment be any different? Indeed, notice that in some ways the emergency care case is a *more compelling* one for *denying care* in that the benefits to others are within the “same sphere”—health care benefits—as the benefit denied to the individual patient. In this respect, the argument for denying infertility treatment because of concerns about adoption faces an additional hurdle, not present in the emergency hypothetical, because it requires trading-off benefits *between* spheres—from the health care sphere (IVF) to the family structure sphere (adoption).¹²⁰ Of course, one might respond by saying that hip replacements and emergency care are “real” health needs unlike infertility treatments such that we should be free to consider indirect benefits and costs in determining coverage only for the latter. That response illustrates clearly that the permissibility of considering indirect benefits here turns on the premise that

120. If one viewed infertile individuals as a particularly vulnerable group, then the denial of infertility treatments to promote adoption might also seem worse than the denial in the hip replacement case because it involves a kind of emotional blackmail.

treatments of infertility do not meet “real” health needs. As discussed above, however, that premise is one that authors like Daniels and Nussbaum and many welfare-consequentialists would reject;¹²¹ it is also a premise that might be hard to maintain on a more statistical (focusing on deviation from population norms)¹²² or biological view of health (focusing on the existence of physiological dysfunction).¹²³

One sophisticated reformulation of the claim might suggest that while infertility is a “real” health need, not all “real” health needs are created equal, and the analogy to emergency care (and perhaps also hip replacements) is therefore less probative. On this theory there exist “second-class” health needs, and infertility is one of them. This theory would then suggest that for “second-class” health needs (but not “first-class” ones such as emergency care), it is permissible to deny care to achieve other indirect benefits, especially when those benefits are particularly important. To be clear, this is a different objection than the one we discussed (but bracketed) earlier that involved satisfying other *health* needs before satisfying infertility needs, that is, prioritizing health needs.¹²⁴ Here, by contrast, the suggestion is that there are some health needs where the effect on *indirect* benefits can be considered (infertility) and others where it cannot (such as emergency room care and hip replacements). Thus, even if we had enough resources to satisfy *all* health needs, this objection is the separate claim that we would be entitled not to satisfy infertility-related ones because of the indirect benefits of letting the population go untreated.¹²⁵

What should we make of this reformulation of the objection? One might have at least two grounds for resisting it. First, there is a bit of a “just-so story” air to that approach. One might be tempted to ground the “second-class” status of infertility treatments in the observation that unlike “first-class” health care goods like emergency care where everyone is

121. See *supra* text accompanying notes 80–82.

122. See DANIELS, *supra* note 82, at 36–42.

123. See DAVID MECHANIC, *MEDICAL SOCIOLOGY* 55 (Free Press 2d ed. 1978).

124. See *supra* text accompanying notes 108–09.

125. See, e.g., Brock, *supra* note 119, at 4–6 (explaining how direct and indirect benefits may impact health care resource prioritization and suggesting that “[i]t is unfair when prioritizing health care resources, . . . to favor one group of patients over another, or some health care needs over others, solely because treating them is instrumentally valuable in producing indirect non health [sic] benefits for third parties”).

troubled by the dysfunction they seek to cure, many people voluntarily choose *not* to procreate in the sense of becoming genetic parents. It is a mistake, however, to equate the fact that not everyone wants to make use of a particular health state with the idea that achieving that health state is therefore a “second-class” health need or not a health need at all. This idea comes up most directly in Martha Nussbaum and Amartya Sen’s distinction between capabilities and functionings; enabling the former (what an individual is in a position to do), not the latter (the choices individuals make as to what to or not to do with those opportunities), is the goal of their theory of justice.¹²⁶ As Nussbaum points out, “if we were to take functioning itself as the goal of public policy, pushing citizens into functioning in a single determinate manner, the liberal pluralist would rightly judge that we were precluding many choices that citizens may make in accordance with their own conceptions of the good.”¹²⁷ Just as providing hip replacements to individuals who want to be able to walk meets a health need even if there exist some individuals who never wanted to walk, so treating infertility for those who want to reproduce meets a health need even if there exist some individuals in society who choose not to reproduce.

A second objection is that such an approach may have some implications we would reject when tested in other examples. Suppose we grant for the sake of argument that infertility is a “second-class” health status. This position seems to imply that we would be right to deny care to women experiencing something like pelvic inflammatory or venereal disease, which *causes* female-factor infertility,¹²⁸ in order to get the adoption benefit. We think most would find that result intuitively unacceptable, and are skeptical of accounts that try to distinguish this case from treating infertility by claiming that the former is “treatment” or “prevention,” while the latter is “enhancement.” Even if one thought the enhancement-treatment

126. MARTHA C. NUSSBAUM, *WOMEN AND HUMAN DEVELOPMENT* 86–96 (2000); *see also* NUSSBAUM, *supra* note 80, at 79–80; AMARTYA SEN, *INEQUALITY REEXAMINED* 4–5 (1992).

127. NUSSBAUM, *supra* note 126, at 86–96.

128. *See, e.g.*, Pratt, *supra* note 6, at 1131. After all, infertility is usually a “symptom” of something, be it a germ-model disease, a congenital dysfunction, or something else. If pelvic inflammatory disease is bad and demands treatment *because* it causes infertility, then it seems we have the same reason to prevent it as we do to correct other kinds of infertility—unless one accepts a strong treatment-prevention distinction that we reject for the reasons stated in this paragraph.

distinction has moral weight—which is far from clear—the most plausible accounts of drawing the line suggest that treatments are correcting deviations of species-typical normal functioning,¹²⁹ and under that criteria IVF falls comfortably within the realm of “treatment.” Nor does the mere fact that the assistance or correction is to some extent not “internal” seem relevant. A wheelchair is just as much an intervention that meets a health need as is spinal surgery to correct paralysis. To be sure, we do not paint our claims here as conclusive. It could be the case that there is an argument out there we have not anticipated that clearly shows that infertility is not a health need (or is at least a “second-class” health need). What we hope our analysis does show, however, is that those arguing for such a premise face an uphill battle, and that this is a premise on which the substitution theory’s normative component inexorably depends.

Separate from this issue, one might also wonder whether it should matter for the normative analysis and for states’ policy decisions whether the children available for adoption differ in particular ways (beyond mere genetic relatedness) from the kind of children parents would seek to have through reproductive technologies. For example, should it be relevant whether the child available for adoption is an older child rather than a newborn, or whether the child is developmentally delayed or psychologically scarred from early rearing in difficult conditions? What if the difference is that the child does not match the race of the parents?¹³⁰ Does it matter where that preference comes from—for example, if the preference only reflects a desire to “pass” as a genetically related family rather than one in-

129. See, e.g., DANIELS, *supra* note 82, at 149. That said, it is possible that there are subcategories of IVF users (for example, women over fifty for whom their normal functioning would *not* include fertility) for whom IVF is arguably an enhancement and not a treatment—access by gays and lesbians would be a closer case. However, as we suggested above, the fact that the vast majority of these mandates do not cover IVF for these subpopulations makes a determination as to this question less relevant for our claims in this Article. See *supra* note 83.

130. These distinctions are significant since the vast majority of children available for adoption in America do not meet these criteria. See, e.g., SPAR, *supra* note 1, at 176–77 (pointing out that children in foster care who are eligible for adoption “are older, often scarred by a difficult past, and frequently children of color”); Maldonado, *supra* note 51, at 1434–38 (explaining that many children adopted internationally are likely to have serious medical problems or developmental delays).

volving adoption, a kind of privacy interest on behalf of the parent and/or in the interests of the child?¹³¹

There is also a further question of whether the preference for genetic children carries forward *after* adoption, or, as has been demonstrated with quality of life measures related to disability, whether individuals instead “adapt” their evaluations to some extent.¹³² Does that adaptation occur for all potential adopted children, or is it less likely to occur with, for example, special needs children? If preference “adaptation” does take place to some extent, which set of preferences should policy makers “count,” the adapted or unadapted ones? An analogous problem has proven perplexing in the context of allocation debates for scarce health resources to prevent disability, that is, whether we should allocate resources based on unadapted or adapted quality of life estimates for people with disabilities.¹³³ Finally, there is the question of whether the negative effects of being denied genetic reproduction could successfully be reduced by widespread attempts to de-emphasize the importance of the genetic connection in parenting. Given the long history of this preference and its centrality in many religious traditions, we think such preference reprogramming is unlikely in the foreseeable future.¹³⁴

We have so far assumed fertility to be a bona fide health care need. Now suppose one rejects the classification of infertility treatment as part of “health,” or—contrary to Daniels, Nussbaum, and others—rejects the premise that government has any special obligations to further the health of its citizens. Even on this route the substitution theory faces some serious

131. See, e.g., Barbara Fedders, *Race and Market Value in Domestic Infant Adoption*, 88 N.C. L. REV. 1687, 1707–08 (2010) (explaining the view of some child welfare advocates “that children of color adopted by white families may experience discomfort and a sense of alienation as they age, struggling to feel a sense of belonging with their cultures of origin”).

132. See, e.g., Paul Menzel et al., *The Role of Adaptation to Disability and Disease in Health State Valuation: A Preliminary Normative Analysis*, 55 SOC. SCI. & MED. 2149, 2149 (2002) (“[I]ll and disabled patients generally rate the value of their lives in a given health state more highly than do hypothetical patients imagining themselves to be in such states.”). *But see* MARK S. STEIN, *DISTRIBUTIVE JUSTICE AND DISABILITY: UTILITARIANISM AGAINST EGALITARIANISM* 25–30 (2006) (arguing that accounts of adaptation are exaggerated).

133. See Menzel et al., *supra* note 132, at 2156–57.

134. For more on the malleability of preferences about genetic parenthood and the law’s expressive function in shaping them, see Cohen, *supra* note 6, at 1142, 1151, 1189–90.

challenges. At the threshold, we might push substitution theorists on what model they are implicitly advancing for how the state should balance the interests of adopted children and infertile parents.

One possible model is strictly utilitarian, such that it merely compares the sizes of welfare gains and losses to the would-be genetic parents and children waiting for adoption and treats each individual's welfare as counting equally, aggregating welfare gains and losses from each of them. Survey evidence suggests that, when polled *ex ante*, most individuals have a preference for genetic over adopted children.¹³⁵ Proponents of the substitution theory might plausibly argue that the welfare deficit of children left unadopted (or whose adoption is delayed) due to the mandate outweighs this setback to the interests of prospective genetic parents.

This claim, however, raises some interesting and hard questions. For one, we need to aggregate the interests of *both* prospective parents against the interest of each adopted child, such that even if the child's welfare gain is greater one might ask whether it is plausibly *twice* as great. Further, even if the child's welfare gain really was twice as great, we would need to know how many additional individuals get access to reproductive technologies from the mandates versus how many fewer children are adopted in order to determine the merits of the objection from a utilitarian point of view. At some point, larger numbers of smaller welfare gains to prospective genetic parents when aggregated ought to outweigh smaller numbers of larger welfare gains to adopted children. The empirical tests we conduct below are crucial to actually answering these questions, in part because proponents of the substitution theory do not appear to consider the relevant numbers tradeoff, which may be far from 1:1. That is, if these mandates significantly expand IVF access to a large number of people but cause only a small reduction in adoptions, then a state may favor the mandates even if we assume that each child who goes unadopted (or whose adoption is delayed) because of the mandate loses more

135. See, e.g., Cahn, *supra* note 28, at 1153; *National Adoption Attitudes Survey: Research Report*, HARRIS INTERACTIVE, 6, 36 (June 2002), http://www.davethomasfoundationforadoption.org/html/resource/Adoption_Attitudes.pdf (noting that nearly a quarter of those polled did not believe it was "very likely" that adoptive parents love their children as much as they would have loved their biological children). Here too the aforementioned issues of preference adaptation and their malleability might be relevant.

(in welfare terms) than each parent whose genetic reproduction the mandate enables gains (in welfare terms).

The substitution theory's normative claim would be easier to support on a moral theory approach that is not utilitarian, such as one that is explicitly prioritarian and thus would "not give equal weight to equal benefits, whoever receives them," but would instead give "[b]enefits to the worse off . . . more weight."¹³⁶ If it is the case that children waiting to be adopted are worse off than those who are infertile, on the prioritarian view the state may favor adoption in the reproductive technology/adoption tradeoff. Even if the combined interests of prospective genetic parents were greater than the interest of the adopted child, because the child is less well-off, prioritarians might give his or her interests extra weight, which could make up for the difference.

A government could also be sufficientarian, a moral theory that focuses not on improving the lot of the least well-off (or maximizing welfare irrespective of distribution), but instead hews to an absolute duty to raise those falling below a threshold of primary goods before it satisfies the needs of those above the threshold.¹³⁷ Depending on how the threshold is defined, this might lead a government to think that adopted children are below threshold while infertile would-be parents are above it, such that the government again ought to favor adoption in the tradeoff.¹³⁸ Of course, adopting a prioritarian or sufficien-

136. Derek Parfit, *Equality or Priority?*, in *THE IDEAL OF EQUALITY* 81, 101 (Matthew Clayton & Andrew Williams eds., 2000).

137. See Harry Frankfurt, *Equality as a Moral Ideal*, 98 *ETHICS* 21, 21–22, 34–35 (1987) (explaining that rather than attaching moral significance to economic inequality, or even extreme poverty, a doctrine of sufficiency focuses on allocating resources to meet people's most urgent needs); see also Roger Crisp, *Equality, Priority, and Compassion*, 113 *ETHICS* 745, 758 (2003).

138. Whether this follows depends not only on empirical facts about the world, but on further specifications of the sufficientarian theory. First, if the threshold is set too low we might find that both children waiting for adoption and the infertile are above it such that neither deserves preference. If we set the threshold too high, both groups may be below it, in which case we face a problem of how to make below-threshold tradeoffs. Second, is the threshold based on a monistic currency of justice—welfare, for example—or do we instead think there are multiple thresholds (health, family, happiness, etc.) for each of which all individuals need to be raised above? The existence of multiple thresholds complicates the inquiry and raises the question of how to treat between-threshold tradeoffs. See, e.g., Anita Silvers & Michael Ashley Stein, *Disability and the Social Contract*, 74 *U. CHI. L. REV.* 1615, 1638 (2007) (discussing this problem under Martha Nussbaum's approach); Mark S. Stein, *Nussbaum: A Utilitarian Critique*, 50 *B.C. L. REV.* 489, 496 (2009) ("Nuss-

tarian moral theory would have serious and systematic consequences as to how the state should tax its well-off and spend on programs for its worst-off, requiring changes that some would find unwelcome.¹³⁹

Thus, resolution of the adoption-reproductive tradeoff (assuming it exists) depends not only on estimating the magnitude of welfare benefits/losses to parents who want genetic children versus children waiting for adoption, and on considering how many benefit and lose, but it also depends on which of several rival forms of welfare-consequentialist moral theories (utilitarian, prioritarian, or sufficientarian) a government adopts.¹⁴⁰

Furthermore, the way we have formulated the case thus far (as involving tradeoffs between parental and adopted child welfare) may be overly generous to the proponents of the substitution theory in that we have been implicitly assuming that the welfare of the children who come into existence through IVF because of these mandates count for nothing in the equation. If the interests of these resulting children count for something, the question becomes increasingly complex—raising issues about welfare and potential populations that one of this Article's authors has discussed elsewhere.¹⁴¹ Still, taking into

baum has no principle for the resolution of conflicts among above-threshold interest . . . [or] below-threshold.”).

139. How significant the changes adopting a prioritarian or sufficientarian model would portend and how unwelcome those changes would be depends in part on *how much* priority the worst-off get and *what counts* as sufficient to meet thresholds on particular articulations of these theories. One conceivable way to avoid this result would be to argue for a prioritarian or sufficientarian approach in this domain, but a more utilitarian approach in other state decisions. Such an argument, however, would bear the burden of justifying why a special approach is warranted in this context and not elsewhere.

140. Adding in nonconsequentialist moral theories as possible contenders would further complicate the picture, and it would raise interesting questions of whether children waiting for adoption might make rights claims that could count as side constraints and whether there are any countervailing rights claims on the part of parents.

141. See Cohen, *supra* note 100, at 361 n.44; Cohen, *supra* note 100 (unpublished manuscript). Without sidetracking the main discussion too much, the point goes as follows. Take the following purely illustrative and skeletal facts about the population to be true:

Hypothetical 1: There exist three children (Alvin, Simon, and Theodore) waiting for adoption, each with welfare four. If IVF mandates are not in place, they will be adopted, and their welfare will increase by three to seven. If, by contrast, the mandates are in place, none of them will be adopted (and their welfare will remain at four), but three new children (Huey, Dewey, and Louis) will come into existence with welfare seven. Should a utilitarian consequen-

tialist government that purely seeks to maximize welfare support the mandates under this circumstance?

This utilitarian government could have two different maximization rules. It could be a total utilitarian, which determines the best state of the world by summing up the welfare of all individuals in existence. Or, it could be an average utilitarian, which would add together the utility of all individuals in the population and then divide that sum by the number of individuals in the population. See, e.g., JOHN RAWLS, A THEORY OF JUSTICE 139–43 (rev. ed. 1999). On the total utilitarian view, opposing the mandate is preferable because the total with the mandate in place is 33 ($4 + 4 + 4 + 7 + 7 + 7$) while the total with it not in place is 21 ($7 + 7 + 7$). On the average utilitarian view, supporting the mandate is not preferable because the average utility with the mandate in place is $7 ((7 + 7 + 7) / 3)$ versus 5.5 with the mandate in place ($(4 + 4 + 4 + 7 + 7 + 7) / 6$). On these numbers, it appears the choice of total or average utilitarianism as the maximization rule would be dispositive.

In fact, though, things are much more complicated for four reasons. First, this conclusion is to some extent dependent on the numbers we have chosen. In the first hypothetical, we have assumed that adopted children “catch up” fully (in utility terms) when adopted to the children born under IVF to begin with. This need not necessarily be so. Many studies suggest welfare outcomes may be dependent on the age at which the children were adopted. See, e.g., D. Marianne Blair, *Safeguarding the Interests of Children in Intercountry Adoption: Assessing the Gatekeepers*, 34 CAP. U. L. REV. 349, 394 (2005). Consider in this regard a different way the world might work:

Hypothetical 2: There exist three children (Larry, Moe, and Curly) waiting for adoption, each with welfare four. If IVF mandates are not in place, they will be adopted, and their welfare will increase by one unit to five. If, by contrast, the mandates are in place, none of them will be adopted (and their welfare will remain at 4), but three new children (Jan, Marsha, and Cindy) will come into existence each with welfare nine. The total utilitarian still favors the mandate since $39 (4 + 4 + 4 + 9 + 9 + 9)$ is greater than $15 (5 + 5 + 5)$. But now the average utilitarian would also favor the mandate since $6.5 ((4 + 4 + 4 + 9 + 9 + 9) / 6)$ is greater than $5 ((5 + 5 + 5) / 3)$. To be sure, we could present different sets of numbers that would have the opposite implication (making total utilitarianism oppose the mandate). The broader point is that how this tradeoff works out is dependent on other facts about the world, namely the utility boost that children waiting for adoption get as compared to the utility of children born from IVF.

Second, the situation is still more complex for the utilitarian in that we have thus far been assuming that the presence of the mandate means that we are trading-off improving the life of one adopted child versus bringing into existence one new child from IVF. That need not be the case, and there is no reason to believe the world should be so neatly 1:1, as we suggested above. If, in fact, the mandate increases the number of children born through IVF more than the number of children adopted, things should look better for the mandate on either total or average utilitarian grounds. Along these lines, consider this variation on the first hypothetical:

Hypothetical 3: There exist three children (Alvin, Simon, and Theodore) waiting for adoption, each with welfare four. If IVF mandates are not in place, only Alvin will be adopted, and his welfare will increase by three to seven. If, by contrast, the mandates are in place, none of the three children will be adopted (and their welfare will remain at four), but three new children (Huey,

account these interests seems to make the case for the substitution theory still less plausible. But even in this expanded form our lens may be too narrow, and expanding our calculus

Dewey, and Louis) will come into existence with welfare seven. The total utilitarian favors the mandate because $33(4 + 4 + 4 + 7 + 7 + 7)$ is greater than $15(7 + 4 + 4)$. The average utilitarian now also favors the mandate because $5.5((4 + 4 + 4 + 7 + 7 + 7) / 6)$ is greater than $5((7 + 4 + 4) / 3)$.

Third, we have been engaging in the opposite simplification that we used in the main text, now trading-off child welfare between adopted and IVF-born children but ignoring *parental* welfare from IVF. It can be the case under either total or average utilitarianism that the combination of the welfare improvement to parents who want to have genetically related children plus the welfare of the new children who come into existence together is greater than the welfare loss to children awaiting for adoption. On the flip side, we would have to consider things like welfare losses to prospective parents who attempt but do not succeed in their IVF usage.

Fourth, to the extent average and total utilitarianism conflict, there is also the further problem of which rule to adopt in population-changing cases, or whether to adopt a mixed rule. This introduces a host of other complications relating to choosing between what Derek Parfit has called “the Repugnant Conclusion” and “the Mere Addition Paradox.” PARFIT, *supra* note 100, at 388–90, 419–21; *see also, e.g.*, ALLEN BUCHANAN ET AL., FROM CHANCE TO CHOICE: GENETICS AND JUSTICE 254–55 (2000); Cohen, *supra* note 100 (unpublished manuscript). There are also further questions of whether our obligations to improve the lot of existing individuals (who can be harmed if their lives go badly) ought to take precedence over creating new people (who will not be harmed if not brought into existence) as opposed to merely considering the total or average welfare of two possible populations. For sophisticated arguments that we ought not ignore the welfare of individuals who will come into existence, see, for example, LOUIS KAPLOW, THE THEORY OF TAXATION AND PUBLIC ECONOMICS 387–90 (2008); John Broome, *Should We Value Population?*, 13 J. POL. PHIL. 399, 406 (2005); Eric Rakowski, *Who Should Pay for Bad Genes?*, 90 CALIF. L. REV. 1345, 1369–88 (2002). Broome suggests that while the welfare of these not-yet-existing children should count in evaluating the goodness of a state of the world, it may not create a responsibility to produce these children, thus avoiding the problematic suggestion that there is a duty to reproduce in a way that maximizes total utility. Broome, *supra*, at 412–13. That may be true, but that qualification does not necessarily apply to the question of what steps the state should take in *facilitating* reproduction through IVF access among other means.

All this constitutes further considerations that the proponents of the substitution theory—to the extent they are understood as making a consequentialist case for their antimandate position—would need to speak to in order to make good on their normative claim. We do not pretend to have answers to all of these points—one of the reasons why we frame this Part as concerns with the substitution theory’s claim rather than as a strong statement of the opposite claim—but they do require an answer before the substitution theory (again assuming the truth of its empirical proposition) can entail the normative conclusion its proponents assign to it.

wider still would add more complexity but also more indeterminacy.¹⁴²

Even if a government concludes that the interest in providing homes for adopted children trumps the interests of those who want to have genetically related children, it faces the further question of whether it is fair for the solution to fall on the shoulders of the infertile rather than being shared equally among all members of society. On egalitarian or prioritarian grounds, one might think it particularly unfair to single out those who are infertile, and already worse off in that respect compared to society at large, to shoulder such an obligation; instead, perhaps they ought to be the first to be relieved of that obligation.¹⁴³ The large number of children in need of adopted

142. In focusing on the prospective-parent/adopted-child/potential-child-from-IVF triad, we have thus bracketed many externalized costs and benefits from the decision of whether to favor reproduction versus adoption. Among other things, a true global utilitarian calculus would have to factor in the interests of prospective grandparents and other relatives in the parents having genetic children, the welfare benefit to doctors who have greater demand for IVF services (and the increased tax revenue stemming from it), and the welfare gains of the foster parents who retain children for longer periods of time without the mandates. On the other side of the ledger, the state would have to consider the social cost of the delays in the adoption of these children in domains such as the state's subsidization of foster care, the decrease in these children's future earning potential (and thus tax revenue) or increase in propensity toward delinquency, and so on. Trying to anticipate, assign values to, and then compare totals on each of the thousands of variables relevant to this truly global utilitarian question is an impossible task, and thus the public policy analysis will have to draw the line somewhere. Wherever that line is drawn, though, our point above about the ratio of IVF births facilitated to adoptions delayed or prevented, and the important empirical question of effect size we discuss below, will be crucial.

143. To be sure, Bartholet at least would clearly want to increase adoptions by *all* elements of society and her focus on reproductive technology access is likely pragmatic as a promising point of influence. Cf. BARTHOLET, *supra* note 101, at 29–30.

A further normative problem in attaching weight to the reproductive technology-adoption tradeoff stems from what are sometimes called “agent-centered prerogatives.” In responding to the critique that consequentialism impermissibly alienates an agent from his own life projects, some have urged a modification in which we recognize that in some cases an individual may permissibly depart from his duty to produce the “best overall state of affairs” in order to pursue important life projects necessary for the integrity of the person. See SAMUEL SCHEFFLER, *THE REJECTION OF CONSEQUENTIALISM* 5–6, 20–23 (1982). On a theory that made room for such prerogatives, one might make the case that having genetically related children is so important to one's life projects that even if failing to adopt diminishes overall welfare, one is justified in making that choice. That claim may be controversial—especially for those discussed above who think that insurance mandates covering IVF are part of

homes is a tragedy, but it is not a tragedy the infertile are, in particular, causally responsible for creating, and the fertile are just as capable as the infertile of acting to correct the tragedy. Still, pragmatically, given normative and constitutional protections for a noninterference (negative) right to procreate (at least through coitus), and thus the state's likely inability to limit natural reproduction to promote adoption, controlling access to reproductive technologies (at most a matter of a positive-liberty right to procreate) may be the only potent lever available to the state to induce choices away from reproduction.¹⁴⁴

However, the mere fact that this may be the only way forward does not answer the question of whether it is just to impose the burden selectively on the infertile. Often we conclude that a duty to avoid acting unjustly appropriately constrains us from pursuing welfare-maximizing initiatives. Here, however, the situation is more complex in that the question is not merely doing injustice to improve welfare, but instead choosing between failing one of two groups to whom we owe duties of justice. To put it crudely, should one act unjustly to avoid doing a potentially "greater" injustice? That is, should one decline to meet the health needs of the infertile—because they are instrumentally useful as a mere means to get more adoption—to avoid failing to meet the needs of children waiting for adoption? That is a difficult question that resists a domain-general answer; among other things, it depends on having a theory of how to compare the "size" of injustices (which may be further complicated when, as here, the injustices impinge on different spheres) as well as some views about one's causal role and responsibility in bringing about different kinds of injustices (i.e., is the state more responsible for failing to meet the needs of infertile individuals by not passing insurance mandates than it is for the fact that children are waiting to be adopted?). Filling in those ideas in a defensible way is something the substitution theory must do to overcome this objection.

the social construction of genetic parentage as an important life goal rather than serving as a way of satisfying an already existing goal—but it represents another difficulty with the normative side of the substitution theory.

144. For a further discussion of distinctions between positive and negative liberty conceptions of a right to procreate in normative and constitutional thinking, see, for example, I. Glenn Cohen, *The Constitution and the Rights Not to Procreate*, 60 STAN. L. REV. 1135, 1139–46 (2008).

A different response to the potential injustice problem would be for the substitution theory to claim we all *do already* collectively bear some of the burden of adoption through the tax system—the tax credits for adoption-related expenses reduce the general revenue raised through the taxes we all pay¹⁴⁵—and it is not clear that we have an obligation to bear that burden “in kind” rather than through redistributive finances. This response, however, leaves open the question of where our collective obligation ends and whether we have done enough. For example, the current adoption tax credits are quite small and one might wonder whether a more potent adoption tax credit, or other forms of support for parents who choose to adopt, might mitigate concerns about diminishing adoptions due to increased reproductive technology access.¹⁴⁶ Thus, proponents of the substitution theory must explain why we do not bear an obligation to try measures like a larger adoption tax credit whose cost we all share in as a way to improve adoption rates *before* rationing access to reproductive technologies to achieve that same goal.¹⁴⁷

D. DOMESTIC VERSUS INTERNATIONAL ADOPTIONS

Thus far we have discussed adoption writ large in the normative sense. But the introduction of these mandates may have

145. See *supra* notes 59–62 and accompanying text.

146. A 2000 Treasury Report to Congress on the adoption tax credit suggested it was not clear how much the credit (as it then existed) affected adoptions. It did suggest its role in promoting special needs adoptions (because those adoptions are already heavily subsidized) was unlikely and its role in promoting foreign adoptions was likely. *Report to the Congress on Tax Benefits for Adoption*, U.S. DEPARTMENT TREASURY, 3–5 (Oct. 3, 2000), <http://www.ustreas.gov/offices/tax-policy/library/adoption.pdf>; see Pratt, *supra* note 6, at 1178–80. This does not, of course, answer the question of what effect a much more generous set of tax credits for adoption might have.

At least theoretically, another possibility would be for the state to refuse to aid individuals in achieving medical care for infertility for the instrumental purpose of improving adoption rates, but then attempt to compensate those individuals for the setting back of that interest. As a practical matter, it is not clear this would work since as long as the compensation is fungible with cash it might offer an alternative way to finance infertility treatments. At a theoretical level, such singling out might also counterproductively increase the stigma of being infertile and reinforce the way in which the state has selectively chosen the infertile as its instruments to improve adoption rates.

147. Improvements to the foster care system might also somewhat mitigate these concerns, although the United States' historical record on this score should make us less sanguine about this prospect. *Cf.* SPAR, *supra* note 1, at 176–78 (describing the relationship between adoption and the foster care system).

differential effects on international adoptions versus domestic adoptions. Indeed, given the higher expenses involved in international adoptions and the larger pool of available infants,¹⁴⁸ one might make an arm-chair prediction that international adoptions would be the main margin of substitution. In the next Part we go beyond the arm chair and examine the question with real data. In this section, though, we discuss the additional normative complication of whether the substitution theory ought to consider diminutions/delays in international adoptions as good a reason to oppose these mandates as diminutions/delays in domestic adoptions. We briefly discuss two reasons why the answer might be “no,” the second of which embroils us in debates between different approaches to international justice. The purpose of this discussion is not to conclusively answer the question, but rather to demonstrate the ways in which the domestic versus international adoption distinction further complicates the normative case for the substitution theory—a case that we have argued has yet to be fully defended even in the domestic context.

The first reason why the international adoption context may be different is that the U.S. government may conclude that decreased international adoption by U.S. citizens (as opposed to domestic adoptions) is actually a *desirable* effect. A number of authors have suggested that international adoption is rife with abuse and is a form of exploitation or cultural theft that makes these children, their families, and their countries worse off.¹⁴⁹ Others passionately disagree and critique these claims.¹⁵⁰ We do not purport to resolve these contentious issues here, but rather merely flag them as reasons why U.S. policy makers may not find any possible negative effect on international adoptions a cause for concern, even if they believe that diminutions in domestic adoptions are worrisome.

Second, even if one were to conclude that, all things being equal, international adoption furthers the welfare of children abroad waiting to be adopted, there may be reasons why the

148. See Pratt, *supra* note 6, at 1178–80.

149. See, e.g., Bernie D. Jones, *International and Transracial Adoptions: Toward a Global Critical Race Feminist Practice?*, 10 WASH. & LEE RACE & ETHNIC AN. L.J. 43, 44 (2004); Richard F. Storrow, *Quests For Conception: Fertility Tourists, Globalization and Feminist Legal Theory*, 57 HASTINGS L.J. 295, 322–23 (2005).

150. See, e.g., Elizabeth Bartholet, *International Adoption: Thoughts on the Human Rights Issues*, 13 BUFF. HUM. RTS. L. REV. 151, 177–91 (2007).

U.S. government might still choose to privilege the interests of their own citizens to become genetic parents over the interests of foreign children in being adopted. To put the point forcefully, while it is evident why the U.S. government should care about the welfare of *American* children waiting for adoption, it is less clear whether it should care about negative effects on the life prospects of those waiting for adoption internationally. In other words, as a matter of political philosophy, a government could believe that its obligations of distributive justice end at its national border; that is, it may take a statist rather than a cosmopolitan view of international justice obligations. It might also adopt an intermediate view wherein the interests of those abroad count for something, but less than the interests of comparable U.S. citizens. Let us say more about each of those families of views and their implications in this setting.

If U.S. states adopted a cosmopolitan view, such as that urged by Martha Nussbaum and Charles Beitz, the interests of individuals count equally whether they are members of the nation-state or outside of its borders,¹⁵¹ and the analysis is the same whether the diminution in adoptions occurs domestically or internationally. Such a view often stems from the desire to avoid moral arbitrariness in the distribution of the things we value by not treating “national boundaries as having fundamental moral significance,” and/or from a recognition that the increasing interdependence of today’s world erodes the case for limiting redistributive duties to within the nation-states.¹⁵²

On the other extreme, if the U.S. government adopted a statist view of international justice, such as the ones espoused by John Rawls or Thomas Nagel on distributive justice concerns,¹⁵³ the interests of the states’ citizens in this regard will

151. See, e.g., CHARLES R. BEITZ, *POLITICAL THEORY AND INTERNATIONAL RELATIONS* 143–53 (1979); NUSSBAUM, *supra* note 80, at 291, 313–20 (offering a cosmopolitan view based on the Capabilities/Functioning approach); Charles R. Beitz, *Justice and International Relations*, 4 *PHIL. & PUB. AFF.* 360, 373–83 (1975) (offering a cosmopolitan Rawlsian view).

152. BEITZ, *supra* note 151, at 151; see also THOMAS W. POGGE, *REALIZING RAWLS* 247 (1989) (arguing that the country into which one is born “is just one further deep contingency (like genetic endowment, race, gender, and social class), one more potential basis of institutional inequalities that are . . . present from birth,” and that allowing one’s entitlement to primary goods to depend on this fact would be morally arbitrary); Beitz, *supra* note 151, at 367, 373–76.

153. See, e.g., JOHN RAWLS, *THE LAW OF PEOPLES* 30–64, 93 n.6, 107–20 (1999); Thomas Nagel, *The Problem of Global Justice*, 33 *PHIL. & PUB. AFF.*

trump (whether one's approach to distributive justice is utilitarian, prioritarian, or sufficientarian); that is, given a choice, one should favor increasing the welfare of American would-be genetic parents through increased reproductive technology access even though it comes at the cost of reducing international adoptions and therefore diminishing the welfare of *foreign* children waiting to be adopted. This is so because the interests of those living abroad do not count for distributive justice purposes. Statist views of this sort are premised on the idea that an obligation toward distributive justice depends on the existence of a scheme of social cooperation that involves reciprocal benefits and burdens and mutual coercion, and while that structure is present among nation-states, it is absent in the international order.¹⁵⁴ That said, while these theories recognize no distributive-justice based duties to those living abroad, they continue to endorse a duty to aid burdened states¹⁵⁵ and *humanitarian* duties to those living abroad.¹⁵⁶ It might be possible

113, 118, 127–30 (2005).

154. See generally RAWLS, *supra* note 153, at 34–35 (explaining that people's reasoning and rationale for "accepting functional social and economic inequalities in their liberal society" leads to people offering to others "fair terms of political and social cooperation"); Nagel, *supra* note 153, at 128–30 (explaining that "we are assigned a role in the collective life of a particular society" and that "our active cooperation . . . cannot be legitimately done without justification—otherwise it is pure coercion").

155. Rawls has in mind a duty to assist "burdened societies" whose "historical, social, and economic circumstances make their achieving a well-ordered regime, whether liberal or decent, difficult if not impossible." RAWLS, *supra* note 153, at 90. Burdened societies, as Rawls uses the term, "lack the political and cultural traditions, the human capital and know-how, and, often, the material and technological resources needed to be well-ordered," but with assistance can over time become able to "manage their own affairs reasonably and rationally and eventually to become members of the Society of well-ordered Peoples." *Id.* at 106, 111. Being a well-ordered society requires having a "decent scheme of political and social cooperation," meaning that the state secures "a special class of urgent [human] rights, such as freedom from slavery and serfdom, liberty (but not equal liberty) of conscience, and security of ethnic groups from mass murder and genocide," and a right to formal equality. *Id.* at 66, 79. This further requires that citizens view their law as imposing duties and obligations "fitting with their common good idea of justice" and not "as mere commands imposed by force," and that officials believe that "the law is indeed guided by a common good idea of justice," not "supported merely by force." *Id.* at 66–67. For more on this concept and its boundaries, see, for example, Matthew E. Price, *Persecution Complex: Justifying Asylum Law's Preference for Persecuted People*, 47 HARV. INT'L L.J. 413, 432 (2006), and Mathias Risse, *What We Owe to the Global Poor*, 9 J. ETHICS 81, 109 (2005).

156. Nagel suggests that "there is some minimal concern we owe to fellow human beings threatened with starvation or severe malnutrition and early

to ground concerns over the effects of IVF mandates on international adoption in such duties, though we are skeptical that the duty to aid burdened states can serve as an adequate foundation for such concerns,¹⁵⁷ and cautious about any attempt to ground the concern in the duty to provide humanitarian aid.¹⁵⁸

death from easily preventable diseases” such that “some form of humane assistance from the well-off to those in extremis is clearly called for quite apart from any demand of justice, if we are not simply ethical egoists.” Nagel, *supra* note 153, at 118. Although he is self-admittedly vague, he thinks “[t]he normative force of the most basic human rights against violence, enslavement, and coercion, and of the most basic humanitarian duties of rescue from immediate danger, depends only on our capacity to put ourselves in other people’s shoes.” *Id.* at 131. He speaks of obligations to relieve others, whatever their state, “from extreme threats and obstacles to [the freedom to pursue their own ends] if we can do so without serious sacrifice of our own ends.” *Id.* In a similar vein, Michael Blake suggests a duty to provide “access to goods and circumstances” to enable people “to live as rationally autonomous agents, capable of selecting and pursuing plans of life in accordance with individual conceptions of the good,” and singles out “famine, extreme poverty, crippling social norms such as caste hierarchies” as the kinds of things against which we have obligations to intervene notwithstanding the citizenship of the victim. Michael Blake, *Distributive Justice, State Coercion, and Autonomy*, 30 PHIL. & PUB. AFF. 257, 271 (2001).

157. Locating an obligation as to international adoption in the duty to aid burdened states faces at least two problems. First, such an obligation would only attach to a subset of source countries for international adoptees who meet the definition of “burdened states,” which may include some, but certainly not all, of the countries from which international adoptees come. Second, and more critically, the kind of institution-building assistance Rawls has in mind as part of the duty to aid burdened states—that is, assisting the state “to realize and preserve just (or decent) institutions,” RAWLS, *supra* note 153, at 107—seems like a poor fit for a duty toward international adoptions. Whatever it may do for the actual children being adopted, it is hard to see this international adoption as helping to build just institutions in the state these children *leave behind*.

158. The duty toward humanitarian aid emphasized by Nagel is more promising in fit, but will likely apply only to a subset of international adoption cases. While the life prospects of many children waiting for adoption abroad are poor, it is unclear whether they are subject to “extreme threats” such as “starvation or severe malnutrition and early death from easily preventable diseases[.]” Nagel, *supra* note 153, at 118, 131. For some sending countries there is a plausible argument that the answer will be “yes,” but for many others the answer will be “no.” We ought to be cautious in specifying the level of deprivation needed to trigger these humanitarian duties since the resulting duties are not adoption-specific; that is, if we decide a particular kind of deprivation is enough to trigger our duty to rescue these children waiting for adoption, we will bear a comparable duty to all citizens of that foreign country in comparable conditions. Too expansive a conception of the humanitarian duty will result in few meaningful differences between obligations of humanitarian and distributive justice and may have significant implications for issues like our general immigration policy that Nagel (and others) have sought to avoid. See, e.g., Nagel, *supra* note 153, at 129–30 (discussing immigration). One might also wonder whether such a duty, if it exists, is better discharged

Finally, on intermediate positions on international justice, such as those put forth by Joshua Cohen, Charles Sable, and Norman Daniels, the interests of those outside of the coercive structure of the nation-state count for something in distributive justice terms, but they do not count the same as the interests of those within it.¹⁵⁹ The authors call these duties of “inclusion.”¹⁶⁰ While conceding to the statist the importance of “joint authors[hip] of the coercively imposed system,” for full-blown duties of distributive justice, these authors argue that lesser duties of inclusion might attach under less demanding circumstances.¹⁶¹ Cohen and Sable suggest they may be triggered in part by the actions of international bodies such as the WTO. That is, “[e]ven when rule-making and applying bodies lack their own independent power to impose sanctions through coercion,” they still shape conduct “by providing incentives and permitting the imposition of sanctions.”¹⁶² And since “withdrawing from them may be costly to members (if only because

through financial aid to those in distress abroad rather than setting back the interests of our own citizens who would like access to IVF.

In any event, pursuing this path would suggest at least three steps of analysis going forward. First, we would have to make a determination as to whether the plight of children from particular sending countries is severe enough to activate humanitarian duties. Second, we would have to determine what effect IVF mandates have on adoptions from those particular countries—our approach below does not attempt to offer country-by-country analysis, nor could it have done so with the econometric frameworks we use given the small sample size that would result from splitting by country. Finally, we would have to determine whether noncoverage of IVF as a humanitarian duty would entail a “serious sacrifice of our own ends,” to use Nagel’s term, *id.* at 131, an analysis that would presumably depend on not only the answers to the two prior questions (How bad is the deprivation these children are saved from? How many of the worst deprived children would be affected by abolishing the IVF mandates?), but also to the more fundamental questions discussed above as to whether we think the State has an obligation to assist in fertility as part of ensuring the health of its citizenry, and on whom the obligations to assist those waiting for adoption justly fall.

159. See DANIELS, *supra* note 82, at 346 (proposing an approach that “focus[es] on a middle ground between strongly statist claims that egalitarian requirements of social justice are solely the domain of the nation-state and its well-defined basic structure and strong cosmopolitan claims that principles of justice apply to individuals globally, regardless of the relations in which they stand or the institutional structures through which they interact” (citations omitted)); see also Joshua Cohen & Charles Sable, *Extra Rempublicam Nulla Justitia?*, 34 PHIL. & PUB. AFF. 147, 154–70.

160. DANIELS, *supra* note 82, at 345–54; Cohen & Sable, *supra* note 159, at 147, 154–55.

161. Nagel, *supra* note 153, at 128–30.

162. Cohen & Sable, *supra* note 159, at 165.

of the sometimes considerable loss of benefits),” it follows that in some “attenuated but significant way, our wills—the wills of all subject to the rule-making authority—have been implicated, sufficiently much that rules of this type can only be imposed with a special justification.”¹⁶³ Daniels suggests that certain kinds of international independencies may also give rise to duties of inclusion. He gives the example of medical migration (“brain drain”), and argues that the International Monetary Fund’s (IMF) requirement that countries like Cameroon make severe cutbacks in their publicly funded health care systems in order to reduce deficits resulting in poorer working conditions for medical personnel (a “push” factor), combined with the attempt by the U.K. and other OECD countries to recruit medical personnel from developing countries (a “pull” factor), combine to give rise to a duty on the part of Western countries and the IMF to address the ill-effects of this migration.¹⁶⁴ Under this framework, we would face two sets of questions before we could determine what weight the U.S. government should give to potential diminutions in foreign adoptions. First, we would need to determine whether any of the triggering conditions for these lesser duties of inclusion are met in this context. General interdependence is not enough on this framework; instead, we would need to determine whether there is quasi-coercive or interdependence in the adoption (or at least the family formation) context specifically. Second, if those triggering conditions are met, we would need to determine the content of the duties of inclusion, including how much to count the interests of those abroad, how much children abroad benefit from adoption, and how much would-be genetic parents benefit from access to these technologies. Until one can answer these complex questions, it is not clear what weight to attach to international adoptions on this intermediate framework.

We do not pretend to offer a choice between these three approaches to international justice in this Article, nor do we present this list of theories as exhaustive. Instead, we merely want to emphasize how this extranormative question may potentially differentiate the issue of diminution of international adoptions from diminution of domestic ones due to IVF subsidization.

163. *Id.* at 168.

164. DANIELS, *supra* note 82, at 338–39.

More generally, our goal in this Part has been to show that all of these normative considerations stand between an empirical finding that insurance mandates covering IVF are associated with diminutions in domestic or international adoptions and the normative conclusion that those mandates are therefore problematic. What we have said here does not stand as a full condemnation of that normative conclusion, but rather an acknowledgment of the numerous moral theory questions proponents of this position would have to defend to reach the conclusion they have urged. To put the point another way, after an empirical showing of the substitution effect, there are many ways to “get off the bus,” leading to the conclusion that state-level insurance mandates should be condemned.

All of this has departed from the assumption that the substitution theory is, in fact, empirically sound. Does the increased access to reproductive technologies *actually* decrease the number of adoptions? We now turn to that question.

III. THE EMPIRICAL QUESTION: IS THE INTRODUCTION OF IVF INSURANCE MANDATES ASSOCIATED WITH DECREASES IN ADOPTION?

This Part focuses on the empirical claim central to the substitution theory—that the introduction of insurance mandates covering IVF is associated with a decrease in adoption. We begin by discussing the intuitive appeal of this claim and the qualitative interview and survey results that seem to support it. We then describe our study design, which uses several econometric frameworks and several data-sets to measure the effect of the introduction of state mandates on IVF utilization and adoption, as well as the relationship between increases in IVF utilization and adoptions. Our primary finding is that while the introduction of the most comprehensive mandates is associated with an increase in IVF utilization, we do not find strong evidence that the introduction of comprehensive mandates is associated with a decrease in either domestic or international adoptions of nonrelative children, the substitution theory’s central claim.¹⁶⁵

165. See *supra* Part II.C.

A. THE INTUITIVE APPEAL OF THE SUBSTITUTION THEORY

Intuitively enough, scholars like Bartholet and Neumann have assumed that increased access to IVF through state-level insurance mandates leads to a diminution in adoptions.¹⁶⁶ Although these authors do not explicitly explain why that assumption might be reasonable, one explanation stems from what we know from prior empirical examinations of the relationship between infertility, adoption, and reproductive technology use.¹⁶⁷ Several studies show that infertility, and prior attempts at fertility treatments, are associated with considering adoption or actually adopting.¹⁶⁸ And while not all adoptive parents are motivated by infertility, a 1996 study that surveyed 2589 adoptive parents in California found that sixty-nine percent said they had adopted because they were unable to have a biological child, while only twenty-seven percent identified hu-

166. See *supra* notes 110–14 and accompanying text.

167. Pushing slightly in the other direction is a literature in sociology and economics on peer effects and reproduction, which suggests that individuals' preferences as to the number of children they have may depend on their observation of the number of children others have. See Susan Cott Watkins, *From Local to National Communities: The Transformation of Demographic Regimes in Western Europe, 1870-1960*, 16 *POPULATION & DEV. REV.* 241 (1990); Ilyana Kuziemko, *Is Having Babies Contagious? Estimating Fertility Peer Effects Between Siblings* (June 2006) (unpublished manuscript), available at http://www.princeton.edu/~kuziemko/fertility_11_29_06.pdf. This view might suggest that increased reproductive technology use among one part of the population might stimulate increased adoption rates in the other.

168. For example, drawing on data from the 1995 National Survey of Family Growth (NSFG), a survey done on a national sample of 10,000 American women ages fifteen to forty-four seeking information on adoption attitudes among other subjects, Anjani Chandra and her colleagues found that having considered adoption, having taken steps toward adoption, and having actually adopted was more common among women who had suffered some fertility impairment and who had previously used fertility services. See ANJANI CHANDRA ET AL., *ADOPTION, ADOPTION SEEKING, AND RELINQUISHMENT FOR ADOPTION IN THE UNITED STATES* 1, 6–7 tbls.2 & 3 (Nat'l Ctr. for Health Statistics, Advance Data Report No. 306, 1999), available at <http://www.cdc.gov/nchs/data/ad/ad306.pdf>. Specifically, the study found that 44.9 percent of women who had ever considered adoption reported impaired fecundity and 41.1 percent reported having tried infertility services, for those currently seeking or planning to adopt the equivalent numbers were 54.8 percent and 59.4 percent. *Id.*; see also *Numbers and Trends: Persons Seeking to Adopt*, CHILD WELFARE INFO. GATEWAY, 2–3 (Mar. 2005), http://www.childwelfare.gov/pubs/s_seek.pdf (explaining the data from the 1995 NSFG). A similar study using the 2002 NSFG data also found that “infertility, infecundity, and using infertility services were highly significant predictors of having sought to adopt” among both Hispanic and non-Hispanic white women. Lamb, *supra* note 48, at 166–69 tbl.2.

manitarian and/or religious reasons for adopting.¹⁶⁹ Studies using qualitative interview methods paint a similar picture. For example, in a 2003 interview study of thirty-nine couples who had adopted, Judith Daniluk and Joss Hurtig-Mitchell found that all but two couples suggested they saw adoption as a “backup plan” if infertility treatment failed, but indicated it was a reality they expected never to face.¹⁷⁰ The couples also repeatedly stressed their need to try everything to have genetically related children before trying adoption.¹⁷¹ As Susan Appleton has aptly observed in interpreting and summarizing the results of these kinds of studies, “most couples turn to medical treatment when first experiencing a fertility problem, reinforcing the ‘second best’ or ‘last resort’ status of adoption.”¹⁷²

Perhaps because of this kind of data and the intuitive nature of the claim, no one has yet investigated the empirical bona fides of the substitution theory’s contention that increasing access to reproductive technology will lead to a diminution in adoptions. Further, even if increased reproductive technology access is associated with a statistically significant decrease in adoption, a public-policy maker must also consider how large the *effect size* is,¹⁷³ a question that has also gone unexamined.

169. Marianne Berry, *Preparation, Support, and Satisfaction of Adoptive Families in Agency and Independent Adoptions*, 13 CHILD & ADOLESCENT SOC. WORK J. 157, 161, 165 tbl.2 (1996). Those seeking to adopt children from Haiti in the aftermath of the recent disaster give a poignant reminder that some who adopt do so out of humanitarian impulses rather than as a way of building a family in the face of infertility. See, e.g., *U.S. Works to Expedite Adoptions of Haitian Children*, CNN.COM (Jan. 18, 2010, 9:57 PM) <http://www.cnn.com/2010/US/01/18/haiti.us.orphans/index.html>.

170. Judith C. Daniluk & Joss Hurtig-Mitchell, *Themes of Hope and Healing: Infertile Couples’ Experiences of Adoption*, 81 J. COUNSELING & DEV. 389, 392 (2003).

171. *Id.*

172. Appleton, *supra* note 26, at 427; see also Frank van Balen et al., *Choices and Motivations of Infertile Couples*, 31 PATIENT EDUC. & COUNSELING 19, 19–20, 22 (1997) (showing in a 1992 study of 131 infertile couples in the Netherlands that ninety-five percent of these couples considered and eighty-six percent actually used medical help when faced with infertility, compared to only thirty-five percent who considered and five percent who actually used adoption).

173. To use an obviously slanted example purely for illustrative purposes, even if one could say that a measure increasing access to reproductive technology had a statistically significant effect on adoption at the $p = .01$ level, some would not be dissuaded from favoring the measure if, per year, it enabled 10,000 additional women to conceive children through reproductive technology, but only resulted in a decrease of five children being adopted. This is just

In the remainder of this Article, we examine these empirical questions, which must be resolved before evaluating possible policy approaches to improving access to reproductive technology. We study the question by considering an important mechanism of improving access to reproductive technologies in the United States—state-level insurance mandates. Contrary to the assumption of the substitution theory and the consensus in the literature, we do not find substantial evidence that reproductive technology subsidies (at least in the form of state-level insurance mandates) diminish domestic or international adoptions. In some ways, the findings as to international adoptions (where we have the most data) are the most striking blow against the substitution theory because, as we alluded to above, from an arm-chair economics perspective one would have guessed that this was the margin along which substitution was *most* likely both because such adoptions are more expensive and because there are too few healthy, white, and very young children available for domestic adoption to meet that demand, such that many have turned to international adoption.¹⁷⁴

B. STUDY DESIGN

In this section we set out the key features of our study, including descriptions of the state-level mandates, the data-set we use to measure IVF utilization, the multiple data-sets we use to measure domestic (public and private) and international adoptions by U.S. citizens by state, and our three-pronged empirical strategy.

Our study design builds methodologically on a number of prior studies that examined the effect of reproductive technology access on IVF utilization rates and found that the introduction of mandates increases utilization. Tarun Jain and coauthors studied the differences in utilization rates for IVF based on whether a state had an insurance mandate covering IVF (and of what type) for a single year, 1998, and found that IVF utilization rates were higher in states with comprehensive insurance mandates.¹⁷⁵ Melinda Henne and M. Kate Bundorf ex-

to state the obvious fact that for most public policy decision makers effect sizes matter, not just statistical significance. *See also* Kathleen McCatney & Robert Rosenthal, *Effect Size, Practical Importance, and Social Policy for Children*, 71 CHILD. DEV. 173, 178 (2000). As suggested above, on many plausible moral theoretical approaches to this problem, effect sizes also matter.

174. *See supra* notes 48, 49, 130 and accompanying text.

175. *See Jain et al., supra* note 90, at 663 (finding that complete coverage

amined differences between states with and without insurance mandates over a decade and also found that utilization rates were higher and increased most rapidly in states that have adopted comprehensive insurance mandates.¹⁷⁶ Schmidt used differences in the enactment of mandates across states and over time and found that mandates significantly increased first-birth rates for women over thirty-five.¹⁷⁷ Two later studies by Marianne Bitler and Lucie Schmidt found that the effects were largest for the use of ovulation-inducing drugs and artificial insemination and that insurance mandates did not ameliorate infertility disparities by race or education.¹⁷⁸ In an unpublished study, Barton Hamilton and Brian McManus found that new IVF technologies diffused faster in states with more comprehensive insurance mandates.¹⁷⁹

None of these studies used adoption data to look at the effect of reproductive technology access on adoption rates, the main contribution of our study. In the course of this investigation, we also found that these studies may have somewhat overestimated the effect of these mandates in increasing IVF utilization.

1. Division of State Mandates

In the last twenty-five years, fifteen states have introduced state-level insurance mandates pertaining to IVF and other reproductive technologies.¹⁸⁰ But not all mandates are created equal; we would expect that mandates offering more generous coverage of reproductive technologies should have a greater positive impact on reproductive technology usage, and therefore a greater negative impact on adoption.¹⁸¹ We therefore divide

mandates are associated with a 177 percent increase in IVF utilization, while partial coverage mandates are associated with a twenty percent increase in IVF utilization).

176. Henne & Bundorf, *supra* note 90, at 70.

177. Lucie Schmidt, *Effects of Infertility Insurance Mandates on Fertility*, 26 J. HEALTH ECON. 431, 437 (2007).

178. Marianne Bitler & Lucie Schmidt, *Health Disparities and Infertility: Impacts of State-Level Insurance Mandates*, 85 FERTILITY & STERILITY 858, 861–64 (2006).

179. Hamilton & McManus, *supra* note 90, 27–29.

180. *Id.* at 3.

181. See *supra* Part II.C (discussing the Substitution Theory, which suggests that IVF takes the place of adoption in some cases); *supra* notes 175–79 and accompanying text (discussing other studies indicating a correlation between insurance mandates and IVF utilization).

these mandates into four types: complete, partial, offer, and non-IVF. In a *complete* coverage state the mandate requires HMOs and other private insurers to cover the cost of infertility, including IVF. In Illinois, for example, all health insurance policies must cover at least four attempts at oocyte retrieval.¹⁸²

A *partial* coverage state also covers IVF, but does so less generously. The mandate in Hawaii, for example, requires all insurance policies to cover IVF only when the patient has a greater than five-year history of infertility, and then it requires covering the cost of only one IVF cycle.¹⁸³ Mandate to *offer* states require insurance companies to offer one insurance policy that covers IVF to employers but does not require employers to adopt that policy.¹⁸⁴ Texas is an example of a state that has such a mandate.¹⁸⁵ A few states, such as Louisiana, have enacted reproductive technology mandates that specifically exclude IVF but cover other reproductive technology services.¹⁸⁶ We call these *non-IVF* mandates.

182. 215 ILL. COMP. STAT. ANN. 5/356m(b)(B) (West 2008). Not all complete coverage states are exactly the same; there is heterogeneity in the exact terms of coverage. For example, in Rhode Island insurers can impose up to a twenty percent copayment and a lifetime cap of \$100,000 in coverage. R.I. GEN. LAWS § 27-18-30 (2008); see Jain et al., *supra* note 90, at 662. The authors are happy to share the survey of these laws prepared for this Article if contacted directly.

183. HAW. REV. STAT. § 431:10A-116.5 (West 2005); see Jain et al., *supra* note 90, at 662.

184. See, e.g., Schmidt, *supra* note 177, at 432.

185. TEX. INS. CODE ANN. § 1366.002-.004 (2009); see Schmidt, *supra* note 177, at 433.

186. E.g., LA. REV. STAT. ANN. § 22:1036(A) (West 2009) (“Any health insurance policy . . . shall not exclude coverage for diagnosis and treatment of . . . infertility. This . . . shall not be construed to require coverage of the following: [f]ertility drugs; [i]n vitro fertilization or any other assisted reproductive technique; or [r]eversal of a tubal ligation, a vasectomy, or any other method of sterilization.”). This category is our most heterogeneous in that while Louisiana, New York, and Ohio statutes are mandates to cover these other services, the California statute is merely a mandate to offer them. See CAL. INS. CODE § 10119.6(a) (West 2005); LA. REV. STAT. ANN. § 22:1036(A); N.Y. INS. LAW § 3221(a)(1)(C)(v) (McKinney 2006); OHIO REV. CODE ANN. § 1751.01(A)(1)(h) (LexisNexis 2009); Spar & Harington, *supra* note 97, at 52 & n.68 (2009). Still, we construct this category as a useful check on our methods, in that since these statutes explicitly exclude IVF they ought to have no statistically significant effect on increasing IVF cycles. The effect on adoption one would predict from the introduction of these mandates is less clear: on the one hand, they might have some effect on adoption since they make some services for assisted reproduction more accessible; on the other hand, IVF is by far the most expensive of the services, and it is the area in which we would expect to see the most substitution given subsidization.

Our categorization is broadly similar to other categorizations in the literature on the effect of insurance mandates covering IVF,¹⁸⁷ although none of these studies has examined the effect of these mandates on adoption.¹⁸⁸ Table 1 presents this categorization.¹⁸⁹ It is also worth emphasizing that these insurance mandates often exclude single individuals or same-sex couples from coverage, implicitly or explicitly.¹⁹⁰

We use state and time variation as to where and when these mandates came into effect to examine the impact of subsidization on IVF utilization and on adoption. Because complete mandates require the most generous coverage of IVF, if the substitution theory was correct we would expect these mandates to have the biggest positive impact on IVF utilization, and by that mechanism, the largest negative effect on adoptions (particularly domestic, nonrelated adoptions and international adoptions). Thus, we focus on these complete mandates in our analysis, though we provide results for all forms of mandates.

Table 1: State-Level Reproductive Technology Mandates and When They Were Introduced

Mandate Type	State	Year
Mandate for Complete Coverage	Massachusetts	1987
	Rhode Island	1989
	Illinois	1991
	New Jersey	2002

187. See Bitler & Schmidt, *supra* note 178, at 859; Hamilton & McManus, *supra* note 90, at 33; Henne & Bundorf, *supra* note 90, at 67; Jain et al., *supra* note 90, at 662; Schmidt, *supra* note 177, at 433, tbl.1. We discuss the divergences in Appendix A. Appendix A, *supra* note 4. The text of all state mandates and their categorization was verified by one of this Article's authors and by a research assistant.

188. As discussed in more depth below and set out in Appendix A, see *supra* note 187, as a robustness check we reran our analyses using these other categorizations as well as reclassifying some "close calls," but we found no changes in our core findings.

189. Except where otherwise noted, each of these was the first mandate covering IVF in that state. Where the two diverge we use the law's effective date, not the enactment date.

190. See, e.g., Ellen Waldman, *Cultural Priorities Revealed: The Development and Regulation of Assisted Reproduction in the United States and Israel*, 16 HEALTH MATRIX 65, 89–90 (2006).

Mandate for Partial Coverage	West Virginia	1977
	Maryland	1985
	Arkansas	1987
	Hawaii	1987
	Montana	1987
	Ohio	1991
	Connecticut	2005
Mandate to Offer	Texas	1987
	Connecticut	1989
Non-IVF Mandate	California	1989
	Ohio	1997
	New York	1990
	Louisiana	2001

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2. Data Description: IVF Utilization and Adoption

Our data for the IVF utilization measures comes from clinic-by-clinic data collected by the Centers for Disease Control

191. Three additional details are worth mentioning. First, Connecticut was originally a mandate-to-offer state, beginning in 1989, but in 2005 its mandate was changed so that it is now a partial-coverage mandate state. *See* CONN. GEN. STAT. § 38a-509, -536 (2010). In our data analysis we code it accordingly, but here we list it in both categories. Second, there appears to be some controversy about whether Ohio's statute actually covers IVF. The actual statutory term "infertility services" is left undefined and there is an exclusion for "experimental procedures." OHIO REV. CODE ANN. § 1751.01(A)(1)(h) (LexisNexis 2009). Until 1997, this was apparently interpreted as providing a mandate that covers IVF. *See* Schmidt, *supra* note 177, at 433 tbl.1, n.c. However, in 1997 the Ohio Department of State interpreted the statute to cover "diagnostic and exploratory procedures . . . including surgical procedures to correct . . . disease . . . of the reproductive organs including but not limited to, endometriosis, collapsed/clogged fallopian tubes or testicular failure," but made clear that "in vitro fertilization, gamete intrafallopian transfer, and zygote intrafallopian transfer are not essential . . . and are therefore not mandated benefits . . ." OHIO DEPT OF INS., BULLETIN 97-1 (1997), *available at* <http://www.insurance.ohio.gov/Legal/Bulletins/Documents/97-1.pdf>, *revised by* OHIO DEPT OF INS., BULLETIN 2009-07 (2009), *available at* <http://www.insurance.ohio.gov/Legal/Bulletins/Documents/2009-07.pdf>; *see also* Schmidt, *supra* note 177, at 433 tbl.1, n.c. Therefore, we code Ohio as a partial mandate state from 1991–1997 and a non-IVF mandate state from 1997 onwards, and we list it twice in the chart. Third, our auditing of the CDC data shows that Montana, despite having a mandate, does not have any IVF clinics. *See Assisted Reproductive Technology*, CENTERS FOR DISEASE CONTROL & PREVENTION, <http://www.cdc.gov/ART> (last visited Oct. 3, 2010). To be sure that this quirk did not create any problems with our analysis, we reran our results excluding Montana and found no differences in our core findings. Therefore, in what follows we include Montana as a mandate state.

and Prevention (CDC) since 1995.¹⁹² The data contains information from the vast majority of clinics in the United States,¹⁹³ so we follow others in treating this data as exhaustive.¹⁹⁴ We group this data by state. For our utilization measure, we use the number of fresh nondonor IVF cycles per 1000 women ages twenty-five to forty-four.¹⁹⁵ This data is available from 1990 to 2006. The 1995–2006 data was available in a ready-to-analyze form from CDC. For the years 1990–1994 we relied on hard-coded data generously provided by Henne and Bundorf from their own work.¹⁹⁶

For adoption, our data comes from three sources.¹⁹⁷ First, we obtain year-by-year adoption records from the National Data Archive on Child Abuse and Neglect Adoption and Foster Care Analysis and Reporting System (AFCARS) at Cornell University.¹⁹⁸ States are required to report data to the system

192. The data are available at *Assisted Reproductive Technology*, *supra* note 191. The collection of these data was prompted by the Fertility Clinic Success Rate and Certification Act of 1992, Pub. L. No. 102-493, 106 Stat. 3146 (codified at 42 U.S.C. §§ 263a-1 to -7), which requires all fertility clinics in the United States to report data.

193. See CDC, *supra* note 14, at 5 (noting its inclusion of 426 clinics and its belief “that almost all clinics that provided ART services in the United States throughout 2006 are represented in this report”). In each year’s report, the CDC also publishes a list of facilities that have closed or failed to properly report data. In 2006, for example, there were fifty-seven clinics that failed to report. See *id.* at 567–70.

194. See Hamilton & McManus, *supra* note 90, at 14; Jain et al., *supra* note 90, at 662.

195. For the CDC’s definition of cycle, see CDC, *supra* note 14, at 4. We prefer to measure cycles rather than live births for two reasons. First, this is a standard measure used by others in the literature to determine IVF utilization. See, e.g., Henne & Bundorf, *supra* note 90, at 69–70. Second, IVF is associated with multiple births, e.g., Callahan et al., *supra* note 94, at 244, which we feared might complicate its use as a measure of a substitute for adoption, since individuals who receive IVF may only want one child but end up with a multiple birth.

As we describe below, as a robustness check we reran our analyses using live births rather than cycles as a measure and found no change in our core findings. We also reran our analyses using information on cycles from frozen nondonor eggs and donor eggs and found no change in our core findings.

196. There are slight differences between the CDC and hard-coded data, but the differences do not affect our results since no state mandate change occurred between 1994 and 1995 and our adoption data begins in 1995.

197. For each of our data sources, the “year” reported is the year the adoption was completed.

198. For more on this data-set or to receive a copy, see *AFCARS Details*, NAT’L DATA ARCHIVE ON CHILD ABUSE & NEGLECT, <http://www.ndacan.cornell>

on all children who are adopted through their child welfare agencies. This source includes detailed demographic data and information on the characteristics of birth and adoptive parents.¹⁹⁹ It breaks down adoptions by several types. Most usefully for our purposes, it distinguishes adoptions by nonrelatives from other types of adoptions. As part of our empirical strategy, we look at the difference IVF mandate introduction has on different types of adoptions because it seems plausible that adoptions by nonrelatives should be more affected by improved access to IVF through state-level insurance mandates than should adoptions by relatives, on the theory that the availability of an IVF alternative should be less influential in the motivation to adopt a relative's child than to adopt the child of a stranger.²⁰⁰ The AFCARS data is available from 1995 to 2006 (but not available for every state in the early years).

Since many of the changes in reproductive technology insurance mandates occur before 1995, we also use a second source of data from a study by Victor Flango and Carol Flango (later updated by them in their work for the Department of Health and Human Services), which covers the years 1987, 1989–1992, 2001, and 2002, and which draws from several different data sources in an attempt to estimate all public and private adoptions for the years listed, including intercountry

.edu/NDACAN/Datasets/Abstracts/DatasetAbstract_AFCARS_General.html (last visited Oct. 3, 2010).

199. The AFCARS data also contains coding for each adoption as to whether a state or federal subsidy was given, as well as the size of the subsidy, *id.*, although we do not make use of this coding in our analysis.

200. This approach is supported by work done using the aforementioned NSFG data-set, which suggests that while adoption of unrelated children is more common among women with impaired fecundity, the same pattern does not carry over for adoption of related children. William D. Mosher & Christine A. Bachrach, *Understanding U.S. Fertility: Continuity and Change in the National Survey of Family Growth, 1988-1995*, 28 FAM. PLAN. PERSP. 4, 8–9 (1996). This result does not hold as strongly across all racial groups and socioeconomic status (SES) levels in that “[b]lack families and families with low incomes and low levels of education are more likely than others to adopt a relative.” *Id.* at 9. To be sure, our assumption that if the substitution theory is correct IVF mandates should have a greater effect on related versus unrelated adoptions is not uncontested, and confirming or disproving this assumption is a fruitful direction for further sociological or other work on the relation between adoption and IVF utilization.

adoptions.²⁰¹ From this data-set we use their “total adoptions” measure, which we label “Public and Private” in all tables.

Our third data-set comes from the U.S. Department of Homeland Security Office of Immigration Statistics, which records the number of children (by year and by state) issued immigrant orphan visas in order to come to the United States for purposes of adoption.²⁰² This data-set covers the years 1972 to 2009 and overlaps with our IVF cycles data from 1990 to 2006, and is labeled “Int'l” in all of our tables.

In order to try to avoid omitted variables bias, we also collected a number of control variables at the state level that vary by year and might be correlated with both insurance mandates and adoption rates. For example, if states that adopted insurance mandates also had rising per capita income in the same period, an increase in IVF utilization that appeared after the enactment of mandates might reflect not the impact of the mandate but the increase in wealth. The solution is to control for changes over time in per capita income. We therefore control for a series of possible omitted variables, including the distribution of the female population in the ages most likely to use IVF (i.e., percentage of the population which is reproductive-age women ages twenty-five to twenty-nine, percentage of reproductive-age women ages thirty to thirty-four, percentage of reproductive-age women ages thirty-five to thirty-nine), per capita personal income (inflation adjusted), distribution of the population based on race and ethnicity (i.e., non-Caucasian, non-Hispanic percentage of population, Hispanic percentage of population), and proportion of adults with a high school degree. Because the mandates only apply to workers with private insurance and are restricted to those with coverage from firms that do not self-insure,²⁰³ we also include proxies for the size of the population to which the mandates apply (i.e., unemploy-

201. Victor Flango & Carol Flango, *How Many Children Were Adopted in 1992?*, 74 CHILD WELFARE 1018 (1995); *How Many Children Were Adopted in 2000 and 2001?*, *supra* note 45.

202. OFFICE OF IMMIGRATION STATISTICS, DEP'T OF HOMELAND SEC., YEARBOOK OF IMMIGRATION STATISTICS (2009), available at http://www.dhs.gov/xlibrary/assets/statistics/yearbook/2009/ois_yb_2009.pdf. Data for the period 2001–2009 are available from the DHS website. Data for the period 1972–2000 are available at *Immigrants Admitted to the United States Series*, INTER-U. CONSORTIUM FOR POL. & SOC. RES. (ICPSR), <http://www.icpsr.umich.edu/icpsrweb/ICPSR/series/00121> (last visited Oct. 3, 2010).

203. See *supra* note 79.

ment rate, percentage of working age adults with private insurance, and percentage of population employed in firms with over 500 workers). These data come from the U.S. Census Bureau, Current Population Survey, and U.S. government agencies.²⁰⁴

Summary statistics are displayed in Table 2.²⁰⁵ Figure 1 displays yearly averages of our data on IVF utilization, total public adoption (AFCARS), public and private adoptions (Flango and Flango), and international adoptions (all IVF and adoption outcomes are measured per 1000 women ages twenty-five to forty-four). For example, the first graphical point for cycles in 1990 of “.5” means that the average state had 0.5 cycles undertaken for every 1000 women ages twenty-five to forty-four in that year.

Table 2: Summary Statistics

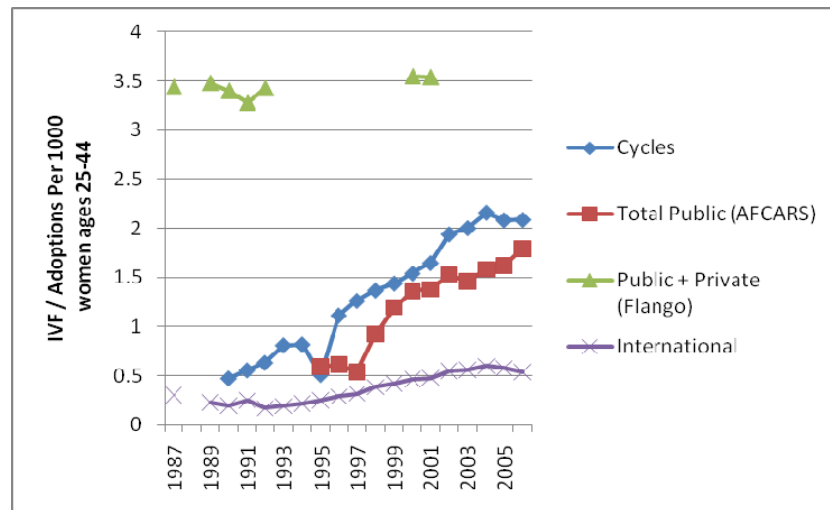
	Count	Mean	Sd	Min	Max
Cycles	849	1.305	1.514	0.000	10.846
Nonrelated (AFCARS)	566	0.209	0.259	0.000	2.019
Related (AFCARS)	566	0.211	0.266	0.000	1.328
Foster (AFCARS)	566	0.633	0.535	0.000	3.800
Stepparent (AFCARS)	566	0.011	0.078	0.000	1.018
Total Public (AFCARS)	566	1.264	0.936	0.000	5.474
Public and Private	357	3.441	1.177	0.925	8.742
International	1938	0.310	0.233	0.009	1.549

204. We considered using as a control variable a classification based on how adoption-friendly each state was, see Christine Adamec, *State Adoption Laws*, in NAT'L COUNCIL FOR ADOPTION, ADOPTION FACTBOOK III 365, 367 (1999), to try to rule out bias resulting from the possibility that states which were more adoption-friendly to begin with passed IVF mandates. We ultimately decided not to use this classification because we were worried about the time-invariant nature of this categorization. In any event, in earlier iterations when we did use the classification we found little effect on our primary results.

205. These are the same variables used by Henne and Bundorf in their investigation of the effects of mandates on IVF utilization. See Henne and Bundorf, *supra* note 90, at 69–70. Three explanatory notes are in order. First, because AFCARS did not report data from every state in the early years, Figure 1 shows a slightly misleading jump because it shows total, not average, numbers of public adoptions; states not reporting data cannot contribute to the total number of adoptions. Second, Table 2 lists different numbers of observations because our data-sets are not wholly overlapping for the time period. Finally, our level of analysis is at the state-year level.

% of Reproductive-Age Women Age 25–29	1938	0.266	0.041	0.179	0.368
% of Reproductive-Age Women Age 30–34	1938	0.257	0.019	0.196	0.325
% of Reproductive-Age Women Age 35–39	1938	0.245	0.021	0.191	0.289
Non-Caucasian, Non-Hispanic % of Population	1754	0.158	0.145	0.000	0.820
Hispanic % of Population	1754	0.059	0.081	0.000	0.452
% Working-Age Adults with Private Insurance	1122	0.749	0.061	0.555	0.886
% Adults with High School Degree	1754	0.797	0.087	0.464	0.940
Per Capita Personal Income (Thousands \$)	1754	22.940	4.305	13.798	39.377
% Working-Age Women in Labor Force	1754	0.686	0.075	0.370	0.858
% Labor Force Employed by Large Firms	1122	0.415	0.051	0.244	0.555
Unemployment Rate	1734	5.920	2.023	2.300	17.400

All IVF and adoption outcomes are measured per 1000 women ages twenty-five to forty-four. Cycles refer to Fresh Nondonor IVF cycles. Nonrelated, related, foster, and stepparent adoptions all refer to public agency adoptions; not every state reports data. Public and Private adoptions are available from Flango and Flango. *See* Flango & Flango, *supra* note 201. International adoptions are from the *Yearbook of Immigration Statistics* (formerly entitled *Statistical Yearbook of the Immigration and Naturalization Service*) and are available over the period 1972–2009. *See supra* note 202. Note our summary statistics Table has different numbers of observations for variables because our data-sets are not wholly overlapping for the time period, and our level of analysis is at the state-year level such that a count of “849” represents 849 state-years.

Figure 1: IVF Utilization and Adoption Rates

3. Empirical Strategy

We examine what effect the different types of mandates have on IVF utilization rates (measured by using the number of IVF cycles per 1000 women ages twenty-five to forty-four)²⁰⁶ and on adoption of children through a number of different approaches.

Our primary approach is a differences-in-differences framework, which (in nontechnical terms) compares the treatment group after the treatment (IVF utilization and adoption in states with mandates) to the treatment group before the treatment (these same measures in these same states before the mandates were introduced) and to another control group (states without mandates).²⁰⁷

To better understand this form of analysis, its benefits, and its drawbacks, we begin with what might be a simple way of studying our problem: we could just look at the experimental group (states that have mandates) before and after the treatment (in our case IVF utilization and adoption rates before and

206. Previous studies that have also examined the effect of insurance mandates on IVF utilization rates include Jain et al., *supra* note 90; Hamilton & McManus, *supra* note 90; Henne & Bundorf, *supra* note 90. Schmidt examines the effect of insurance mandates on fertility. Schmidt, *supra* note 177.

207. See generally JAMES H. STOCK & MARK W. WATSON, INTRODUCTION TO ECONOMETRICS 385–88 (2003) (explaining differences-in-differences framework).

after the introduction of mandates). One might worry, however, that there were a lot of things going on at the same time as the treatment that might cause the observed increase or decrease in adoptions. The advantage of a differences-in-differences analysis is that it uses the control group to subtract out other changes occurring at the same time so long as those changes affect both the treatment and control groups. To give a tangible example, if we were worried about changes in federal tax treatment or national laws regarding adoption during the same time period as the insurance mandates skewing the adoption numbers, it would be misleading to compare the adoption rates in mandate states before and after the mandates are introduced. So long as these tax or other law changes are national, though, and therefore affect both the mandate and the non-mandate states, the differences-in-differences approach factors them out.²⁰⁸

Because the analysis also compares an individual state—for example, Massachusetts—before and after the mandate, it also factors out any particular attributes of the state of Massachusetts that might affect IVF utilization or adoption, and lets us isolate how the mandate affected Massachusetts. That still leaves open the possibility of state-specific effects at a particular time. To return to the earlier example, suppose that the per capita income in Massachusetts increases precisely at the time its insurance mandate is introduced, such that what appears to be an effect of the introduction of the mandate is actually the effect of the change in income.²⁰⁹ To deal with this, as part of the differences-in-differences analysis, we control for variations over time with the series of control variables described above.

208. One commentator raised concern that our analysis on international adoptions might be affected by the overall decline in U.S. international adoptions since 2004 due to changes in policies of sending countries, a decline that was orthogonal to IVF access. See, e.g., Peter Selman, *The Rise and Fall of Intercountry Adoption in the 21st Century*, 52 INT'L SOC. WORK 575, 575–92 (2009). As discussed above, most of our international data comes before this period of decline and, more importantly, one advantage of the differences-in-differences approach, is that so long as declines in the number of children available for international adoption effect mandate and nonmandate states alike—and there is no evidence to the contrary—the approach factors them out.

209. In this way, differences-in-differences allows us to control for unobserved variables, such as cultural attitudes toward adoption, which differ from one state to the next but do not change over time, as well as factors such as ease of obtaining adoptions, which vary through time but do not vary across states. See STOCK & WATSON, *supra* note 207, at 386 (explaining advantages of differences-in-differences analysis).

Of course, no list of omitted variables is ever perfect and with any econometric analysis there is the risk that the analysis has missed one, but because differences-in-differences analysis narrows down potential omitted variables to those affecting specific states at particular times, it allows us to be more confident in the results.²¹⁰

To set out the analysis more formally, our estimating framework is:

$$Outcome_{it} = a * Law_{it} + b * X_{it} + t_i + s_i + e_{it}(1)$$

where we consider different measures of *Outcome_{it}* such as IVF cycles per 1000 women and adoptions per 1000 women ages twenty-five to forty-four as the dependent variable in state *i* and year *t*. We examine several different measures of adoption, as discussed above. *Law_{it}* is a set of binary variables measuring whether a particular insurance mandate (complete, partial, offer) exists in state *i* and year *t*. Our specifications control for state- and time-varying characteristics, *X_{it}*, listed above. Any remaining characteristics of states that are fixed across time or period effects that are fixed across state are captured by time- and state-fixed effects, *t_i* and *s_i*. These are intended to control for fixed characteristics invariant across states or across years that may be correlated with both the insurance mandate and adoption rates. All standard errors are clustered at the state level to address correlation in errors over time within a state.²¹¹ We weight by population of women ages twenty-five to forty-four. Table 3 shows the results for this approach. We perform a differences-in-differences analysis of the effects of IVF insurance mandates first on IVF utilization and then on adoption rates.

One weakness of differences-in-differences analysis in this setting, discussed more fully below, is the relatively small number of states whose mandate status changed during the years for which we have data (although this is less of a concern with our analyses of international adoptions for which our data-set extends far back in time). For this reason, we initially also conducted a cross-sectional analysis of the data as well, but for a number of reasons (including the suspicion that the cross-

210. *Id.*

211. In doing so we follow Marianne Bertrand et al., *How Much Should We Trust Differences-in-Differences Estimates?*, 119 Q.J. ECON. 249, 272–73 (2004).

sectional analysis's assumption of a linear time trend in the data was problematic), we chose the differences-in-differences framework as our preferred method of analysis. Nevertheless, we report the results of the cross-sectional approach and discuss them in Appendix B, listing any differences that obtain from our preferred differences-in-differences analysis.²¹² As discussed more fully in Appendix B, on one finding (the effect of complete insurance mandates on nonrelated adoptions in the AFCARS data-set), the cross-sectional method is more supportive of the substitution theory.²¹³

To get a more complete picture we also directly analyzed the effects of IVF cycles on adoption. Under the substitution theory, we would expect to see an increasing number of cycles associated with a decreasing number of adoptions. We show both ordinary least squares (OLS) and the two-stage least squares (2SLS) estimates of the effect of IVF cycles on adoption rates.²¹⁴

OLS analysis, in nontechnical terms, is a statistical technique that finds the best linear relationship between a dependent variable and one or more independent variables.²¹⁵ In our case, the dependent variable is adoption rates and the independent variable is IVF utilization. Thus, this framework gives us a test of the substitution theory that is somewhat divorced from the effect of the mandates, measuring directly instead how the number of adoptions changes when IVF utilization changes. There are, however, several downsides to OLS analysis, including omitted variables and simultaneous causality. Omitted variable bias can be addressed only if one has data on the omitted variable.²¹⁶ When there is simultaneous causality—say, if IVF utilization affects adoption rates and adoption rates affect IVF utilization—then OLS cannot eliminate the bias.²¹⁷

2SLS approach, also known as instrumental variables (IV) approach, uses a set of “exogenous” instruments to create, in a first stage regression model, predicted values for the outcome

212. See *supra* note 187, Appendix B, Table B-1.

213. See *supra* note 187, Appendix B.

214. See *supra* note 187, Table B-2.

215. See generally WILLIAM H. GREENE, *ECONOMETRIC ANALYSIS* ch. 6 (3d ed. 1997).

216. See STOCK & WATSON, *supra* note 207, at 143–49 (describing omitted variable bias).

217. See *id.* at 251–53 (describing simultaneous causality).

measure, conceptually removing the bias.²¹⁸ In our use, the instrumental variables (insurance mandates) isolate the movements in IVF utilization rates that are not correlated with omitted variables or simultaneously affected by adoption rates. The downsides of this approach are that the instruments themselves must not be correlated with omitted variables that directly affect adoption rates, nor can they be caused by adoption rates, or else we face the same omitted variable bias problem that plagues OLS estimates.

In more technical terms, for the 2SLS analysis our instrumental variable for IVF cycles is the insurance mandates, Law_{it} , that have a significant effect on IVF cycles. Table 5 displays these results. The specification that examines the relationship between IVF cycles and adoption is as follows. The first stage is displayed in equation 2 and the second stage is displayed in equation 3.

$$IVFCycles_{it} = c * Law_{it} + d * X_{it} + t_t + s_i + w_{it}(2)$$

$$Adoption_{it} = a * IVFCycles_{it} + b * X_{it} + t_t + s_i + e_{it}(3)$$

Both of these approaches look at the effects of mandates on IVF usage and adoption. In Appendix B we also rerun the OLS and 2SLS analyses using a cross-sectional, rather than differences-in-differences, framework.²¹⁹

Thus, we essentially provide three analyses. First, using a differences-in-differences framework we study the effect of mandates on IVF utilization and the effect of mandates on adoption. Second, we examine the effect of IVF utilization on adoption rates using an OLS approach. Finally we evaluate the effect using a 2SLS approach (which uses the variation in IVF utilization coming from differences in insurance mandates).

C. RESULTS AND INTERPRETATION

In this section, we present the results of our econometric analyses. We begin by presenting the differences-in-differences results for the effect of the mandates on IVF utilization and adoption. We then present the OLS and 2SLS approach results for the effect of IVF utilization on adoption rates. We then dis-

218. See *id.* at 343–44 (describing the 2SLS approach).

219. See *supra* note 187, Appendix B, Table B-2.

cuss several robustness checks we ran to confirm our results, and close by discussing some limitations of our study.

1. IVF Utilization

A prior study by Henne and Bundorf using a cross-sectional methodology finds that partial mandates have very little effect on IVF utilization, while complete mandates have a significant effect.²²⁰ Other studies have reached similar conclusions.²²¹ Using our differences-in-differences analysis, we too find a positive effect of complete insurance mandates on IVF utilization. However, partial, offer, and non-IVF mandates have statistically significant *negative* effects on IVF utilization. These results can be seen under the first four rows of the “Cycles” column in Table 3.

Given the robust positive effect of complete mandates on IVF utilization, if individuals really do substitute IVF usage for adoption when it becomes more affordable through insurance coverage, under the substitution theory we would expect to find that complete mandates are associated with a significant negative effect on adoption rates. We examine that question in the next section, again employing both a cross-sectional and differences-in-differences approach.

2. Adoption

We now turn to the main contribution of this Article, empirically examining for the first time the effect of state-level insurance mandates covering IVF on adoption rates. If the substitution theory is correct, we would expect that mandates should have more of an effect on nonrelative adoptions than on relative and stepparent adoptions, on the theory that the tendency to adopt the children of relatives or one’s spouse should be less influenced by increased access to IVF.²²²

220. Henne & Bundorf, *supra* note 90, at 70–72. Small differences between our classification and Henne and Bundorf’s classification of states by mandate type are discussed in Appendix A. *See infra* text accompanying notes 235–36; *supra* note 187, Appendix A.

221. Hamilton and McManus use a slightly different categorization scheme, as set out in Appendix A, but find a similar result using a differences-in-differences analysis. *See* Hamilton & McManus, *supra* note 90, at 28; text accompanying notes 240–41; *supra* note 187, Appendix A.

222. As discussed above, we have three separate data-sets that we use for our adoption analyses. The AFCARS data-set groups adoptions into four categories: stepparent (adoption by a stepparent), other relative (adoption by

Table 3: The Effect of Insurance Mandates—Differences-in-Differences Approach

	Cycles	Non-Related	Related	Foster	Step-Parent	Total Public	Public and Private	Int'l
Complete Mandate	1.537*** (0.249)	0.0798** (0.0346)	-0.136** (0.0675)	0.137* (0.0742)	0.0292 (0.0328)	-0.0555 (0.187)	0.720*** (0.112)	0.0204 (0.0584)
Partial Mandate	-0.553*** (0.118)	0.0240 (0.0384)	-0.0700 (0.0673)	0.357 (0.216)	-0.0509 (0.0371)	0.241 (0.289)	-0.169 (0.160)	-0.0839 (0.0689)
Offer Mandate	-1.969*** (0.201)	-0.625*** (0.0815)	-0.282** (0.115)	0.442** (0.206)	-0.0813 (0.0705)	-0.748** (0.370)	-0.893 (1.061)	0.0423 (0.0444)
Non-IVF Mandate	-0.379** (0.163)	0.000818 (0.0273)	-0.0637 (0.0448)	0.183 (0.137)	-0.00447 (0.00903)	0.0565 (0.200)	0.326* (0.175)	-0.0155 (0.0270)
Observations	849	566	566	566	566	566	306	1683
R²	0.900	0.603	0.737	0.750	0.224	0.734	0.762	---

Standard errors in parentheses

Standard errors are clustered at the state level. All outcomes are measured per 1000 women ages twenty-five to forty-four. Cycles refer to Fresh Nondonor IVF cycles and are available from 1990 to 2006. Nonrelated, related, foster, and stepparent adoptions all refer to public agency adoptions and are available from 1995 to 2006 from AFCARS; not every state reports data. *The AFCARS Report, supra* note 35. Public and Private adoptions are available from Flango and Flango and are available for 1987, 1989–1992, 2001, and 2002. *See* Flango & Flango, *supra* note 201. International adoptions are from the *Yearbook of Immigration Statistics* (formerly entitled *Statistical Yearbook of the Immigration and Naturalization Service*) and are available over the period 1972–2009 and overlap with our IVF data from 1990–2006. *See supra* note 202. All specifications include time-varying demographic controls and state- and year-fixed effects. Ex-

another relative), foster (adoption by nonrelated individuals who previously served as foster parents to the child), and nonrelative (adoption by nonrelated individuals who did not serve as foster parents to the child). It also has a “total public” measure meant to capture all public adoptions in the data-set. We initially hypothesized that foster adoptions would also be unaffected by the mandate, but one commentator suggested that, though national in scope, ASFA may have had state-specific effects making our finding as to foster adoption less reliable—in that it is hypothetically possible the data for foster adoption reflects state-specific effects of these statutes rather than the introduction of insurance mandates. In any event, due to this possible complication we place less reliance on our foster adoption data as compared to our finding on nonrelated adoptions, for which ASFA should have no effect, on what we are told by those knowledgeable in the field is the plausible assumption that individuals do not treat foster adoption as a substitute for other kinds of adoption or IVF use.

cept for the Flango data, all point estimates for offer mandates are not identified separately from the constant term since no offer mandates were implemented in the time frame for the IVF cycles or adoption data in those columns.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As reported in Table 3, we find that complete insurance mandates have a *positive* and statistically significant effect on (i.e., they are associated with an increase of) nonrelative and foster adoptions, but a negative effect on (i.e., they are associated with a decrease of) relative adoptions. Complete mandates also have a positive statistically significant effect on the total “Public and Private” adoption measure from the Flango data-set, and a positive *but not statistically significant* effect on international adoptions (as can be seen in the last column). Partial mandates do not have statistically significant effects.

Because there was no state that enacted an offer mandate after 1989 and our AFCARS adoption data do not extend that far back, we cannot say anything about the effect of offer mandates on adoption (i.e., the offer dummy is a constant, so the coefficient is the intercept) for these data-sets. The Flango data does extend far enough back but shows no statistically significant effects for offer mandates. The international data-set does extend back and shows a positive but not statistically significant effect from these mandates. Non-IVF mandates have a positive effect on total public and private adoptions in the Flango data-set, but otherwise produce no significant results.²²³

In sum, the differences-in-differences analysis gives little support to the predictions of the substitution theory—in particular, complete mandates (which are associated with an increase in IVF usage) appear to be associated with a statistically significant increase rather than a decrease in nonrelated adoptions. We also do not see a statistically significant negative effect on international adoptions as the substitution theory would predict.²²⁴

223. See *supra* Table 3.

224. As discussed below, we examine the robustness of this finding as to international adoptions through a bootstrap test and find some reason to doubt it. See *infra* text accompanying notes 236–39.

3. IVF Utilization and Adoption

To offer a more complete picture, we also examine the effect of IVF utilization on adoption rates. First, we use an OLS approach (shown in Panel A of Table 4). This provides a test of the substitution theory that is somewhat divorced from the effect of the mandates, and instead simply looks at how adoption rates change when IVF utilization changes. Using a differences-in-differences OLS approach, we find no correlation between IVF cycles and adoption rates for most adoption outcomes, as shown in Table 4.²²⁵ Other than a positive correlation between IVF cycles and public and private adoptions from the Flango data-set in Panel A (0.302**), no other results reach significance on this analysis. Notably, we do not find a statistically significant decrease in nonrelative or international adoptions when IVF utilization increases, the finding that the substitution theory would predict.²²⁶

Second, we use a 2SLS estimate, using complete insurance mandates as our instrumental variable for IVF cycles (with results shown in Panel B of Table 4). Essentially, this analysis assumes that complete mandates affect adoptions only through IVF utilization, and it calculates the effect of utilization on adoptions by making a ratio of the effect of mandates on adoptions and mandates on utilization. Using this method we find that IVF cycles have a significant negative effect on related adoptions, a positive effect on foster adoptions, a positive effect on total public and private adoptions in the Flango data-set, and that no other results reach significance.²²⁷ This analysis gives little support for the substitution theory. In particular, we do not see a significant negative effect on nonrelated adoptions or international adoptions; more specifically, we can rule out with ninety-five percent confidence a substitution effect of 0.0132 nonrelated adoptions and a substitution effect of 0.1172 international adoptions for each additional IVF cycle.²²⁸

225. In Appendix B, we also run an OLS analysis using a cross-sectional approach. *See supra* note 187, Appendix B, Table B-2, Panel A.

226. *See infra* Table 4.

227. *See infra* Table 4.

228. *See supra* note 187, Appendix B. The standard errors represent the statistical confidence regarding a particular estimate. The range represented by the point estimate plus or minus two times the standard error is the ninety-five percent confidence interval. For any magnitude outside of this range, we can reject as being true with ninety-five percent confidence. The lower limit for this range was calculated from Table 4, Panel B, Column 1: $0.0468 - 2 * 0.0300$.

Table 4: The Effect of IVF Cycles on Adoption—Ordinary Least Squares and Instrumental Variables Estimates: Differences-in-Differences

Panel A-OLS Cross-Sectional	Non- Related	Related	Foster	Step- Parent	Total Public	Public and Private	Int'l
Cycles	-0.00305 (0.0211)	-0.0289 (0.0434)	-0.0499 (0.0835)	0.0114 (0.00832)	-0.111 (0.157)	0.302** (0.117)	-0.00976 (0.0155)
Panel B-2SLS (IV) Differences-in- Differences							
Cycles	0.0468 (0.0300)	-0.105** (0.0489)	0.113* (0.0590)	0.0223 (0.0248)	-0.0511 (0.142)	0.781*** (0.135)	-0.0445 (0.0362)
Observations	548	548	548	548	548	255	849

Standard errors in parentheses.

Standard errors are clustered at the state level. All outcomes are measured per 1000 women ages twenty-five to forty-four. Cycles refer to Fresh Nondonor IVF cycles and are available from 1990 to 2006. Nonrelated, related, foster, and stepparent adoptions all refer to public agency adoptions and are available from 1995 to 2006 from AFCARS; not every state reports data. *The AFCARS Report, supra* note 35. Public and Private adoptions are available from Flango and Flango and are available for 1987, 1989–1992, 2001–2002. See Flango & Flango, *supra* note 201. International adoptions are from the *Yearbook of Immigration Statistics* (formerly entitled *Statistical Yearbook of the Immigration and Naturalization Service*) and are available over the period 1972–2009 and overlap with our IVF data from 1990–2006. See *supra* note 202.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4. Robustness Checks

In order to be more confident in the findings, we ran several robustness checks.

First, other studies on the effect of state-level insurance mandates on IVF usage have divided the mandates into slightly different categories. These different categorizations are set out in Appendix A.²²⁹ The results from rerunning our analyses using these other classifications are set out in Tables A-2 and A-3 in the Appendices.²³⁰ To summarize those results, we

The lower limit for international adoptions was calculated from Table 4, Panel B, Column 8: $-0.0455 - 2 * 0.0362$.

229. See *supra* note 187, Appendix A.

230. See *supra* note 187, Appendix A, Table A-2; Table A-3.

find that “universal” or “strong” mandates still have a strong positive and robust effect on IVF utilization.²³¹ As to the effect of mandates on adoption, we find a broad pattern of mandates having statistically significant positive effects on many categories of adoptions.²³² Whenever a negative effect can be found, another, often larger positive effect can be found for the same law for another adoption category, with the exception of partial mandates in the differences-in-differences approach. The most important take-away is that using any of these alternate categorizations fails to show a consistent pattern of statistically significant negative effects of these mandates on adoption; that is, they do not show the results one would expect under the substitution theory.

Second, we examined whether lags and leads of the laws affect our results, as shown in Table 5.²³³ Doing this robustness check was particularly important for our adoption results because adoption is a drawn out process and it is plausible that any effect from these mandates might take some time to manifest in actual recorded adoptions. In part, because we were unable to find agreed-upon estimates of the length of the adoption process (domestically or internationally) from inception to finalization, we chose to present results for one- to five-year lags.

Table 5: The Effect of Insurance Mandates—Differences-in-Differences Approach with Lags and Leads

	Cycles	Non-Related	Related	Foster	Step-Parent	Total Public	Public and Private	Int'l
Complete (lead)	1.443*** (0.204)	0.0410 (0.0252)	-0.168* (0.0969)	0.0950 (0.101)	0.0144 (0.0127)	-0.200 (0.272)	0.0410 (0.0252)	-0.0129*** (0.0349)
Complete	0.413 (0.272)	0.0466 (0.0385)	0.0569 (0.0458)	0.144 (0.0935)	0.0104 (0.0203)	0.305* (0.156)	0.0466 (0.0385)	-0.0109 (0.0195)
Complete (lag1)	-0.00956 (0.209)	0.0243 (0.0253)	-0.0169 (0.0221)	-0.301*** (0.0430)	-0.0108 (0.00747)	-0.311*** (0.0782)	0.0243 (0.0253)	-0.0033 (0.0127)

231. See *supra* note 187, Appendix A, Table A-2, Column 1; Table A-3, Column 1.

232. See *supra* note 187, Appendix A, Table A-2; Table A-3.

233. Tables 5–7 show many missing values for estimates of the lag effects of offer insurance mandates. The reason is that the two states with mandates to offer, Texas and Connecticut, also enacted those statutes relatively early (1987 and 1989, respectively), such that we lack both IVF utilization and adoption data for those states before they enacted their mandates.

Complete (lag2)	0.111 (0.126)	0.0232 (0.0306)	-0.0536 (0.0405)	0.256*** (0.0638)	0.0138* (0.00801)	0.172 (0.136)	0.0232 (0.0306)	0.0126 (0.0165)
Complete (lag3)	-0.261 (0.331)	-0.0471* (0.0255)	-0.0101 (0.0292)	0.0378 (0.0454)	0.00814 (0.0152)	-0.0295 (0.0898)	-0.0471* (0.0255)	-0.0056 (0.0236)
Complete (lag4)	0.177 (0.199)	-0.0897** (0.0367)	0.0112 (0.0359)	-0.0617 (0.0994)	0.0224* (0.0131)	-0.129 (0.143)	-0.0897** (0.0367)	-0.0362*** (0.0117)
Complete (lag5)	1.331*** (0.236)	-0.104** (0.0448)	-0.0961 (0.0602)	0.612*** (0.0598)	0.0440 (0.0365)	0.316* (0.183)	-0.104** (0.0448)	0.1030*** (0.0359)
Partial (lead)	-0.0805 (0.0987)	-0.0672 (0.0958)	-0.251 (0.191)	0.327* (0.181)	-0.0280 (0.0627)	-0.241 (0.524)	-0.0672 (0.0958)	-0.0510 (0.0352)
Partial	-0.638*** (0.141)	0.0559 (0.0507)	-0.0312 (0.0631)	0.205 (0.183)	-0.0236 (0.0275)	0.198 (0.264)	0.0559 (0.0507)	-0.0137 (0.0177)
Partial (lag1)	0.122 (0.111)	0.0753 (0.0595)	0.0166 (0.0525)	0.220** (0.0912)	-0.0278 (0.0261)	0.328* (0.168)	0.0753 (0.0595)	0.0163* (0.0086)
Partial (lag2)	0.127** (0.0588)	-0.00121 (0.0686)	-0.0183 (0.0582)	-0.0428 (0.0761)	-0.0445 (0.0418)	-0.0805 (0.182)	-0.00121 (0.0686)	-0.0118 (0.0114)
Partial (lag3)	0.145* (0.0824)	-0.0310 (0.0411)	0.0258 (0.0771)	-0.206** (0.0912)	0.0170 (0.0176)	-0.185 (0.230)	-0.0310 (0.0411)	-0.0177** (0.0072)
Partial (lag4)	0.0120 (0.0594)	-0.0872 (0.0563)	0.131 (0.106)	-0.0846 (0.157)	0.0381 (0.0484)	0.0892 (0.318)	-0.0872 (0.0563)	0.0029 (0.0090)
Partial (lag5)	0.0694 (0.168)	-0.105 (0.0668)	-0.202 (0.150)	0.0333 (0.127)	-0.0256 (0.0252)	-0.475 (0.374)	-0.105 (0.0668)	-0.0754** (0.0568)
Offer (lead)	-1.296*** (0.228)	0.0939 (0.117)	-0.258 (0.223)	0.410** (0.183)	-0.0496 (0.0956)	-0.0124 (0.600)	0.620 (1.291)	-0.0234 (0.0370)
Offer	-0.433*** (0.160)	-0.837*** (0.0615)	-0.240*** (0.0868)	0.162 (0.212)	-0.0275 (0.0347)	-1.156*** (0.321)	0 .	0.0065** (0.0167)
Offer (lag1)	-0.935*** (0.163)	0.293*** (0.0743)	0.0201 (0.0659)	0.301** (0.123)	-0.0475 (0.0308)	0.634*** (0.231)	-0.245 (0.217)	0.0193 (0.0135)
Offer (lag2)	0.0505 (0.0803)	0.599** (0.255)	-0.232 (0.352)	-0.838 (0.554)	0.262 (0.239)	-0.704 (1.185)	0.532* (0.300)	0.0507*** (0.0171)
Offer (lag3)	0.462** (0.205)	0 .	0 .	0 .	0 .	0 .	0 .	0.0134 (0.0153)
Offer (lag4)	-0.0673 (0.105)	0 .	0 .	0 .	0 .	0 .	0 .	0.0207 (0.0130)
Offer (lag5)	-0.102 (0.167)	0 .	0 .	0 .	0 .	0 .	0 .	-0.0324 (0.0270)
Non-IVF (lead)	-0.0820 (0.0885)	-0.0359 (0.0487)	-0.0587 (0.0543)	0.163** (0.0711)	0.0163 (0.0164)	0.00999 (0.166)	-0.834*** (0.307)	0.0174 (0.0306)
Non-IVF	-0.634** (0.281)	0.0445 (0.0329)	-0.0622 (0.0503)	0.0797 (0.130)	-0.0184 (0.0165)	-0.000210 (0.195)	0.272 (0.172)	0.0356*** (0.0119)
Non-IVF (lag1)	0.191 (0.181)	0.0107 (0.0346)	0.0216 (0.0374)	-0.0230 (0.0886)	0.00729 (0.0159)	0.0309 (0.137)	0.440* (0.235)	0.0118 (0.0083)

Non-IVF (lag2)	0.248* (0.136)	0.0135 (0.0452)	0.0115 (0.0440)	-0.0357 (0.0617)	-0.0223 (0.0219)	0.000734 (0.126)	0.353 (0.239)	-0.0435*** (0.0117)
Non-IVF (lag3)	0.0363 (0.103)	-0.00283 (0.0294)	0.0159 (0.0358)	0.00667 (0.127)	0.00722 (0.0109)	0.0357 (0.179)	0.300 (0.240)	0.0153* (0.0083)
Non-IVF (lag4)	0.150** (0.0682)	-0.0296 (0.0386)	0.0990 (0.0898)	0.0455 (0.0864)	0.0276 (0.0291)	0.214 (0.243)	-0.487 (0.661)	-0.0109 (0.0091)
Non-IVF (lag5)	-0.187 (0.165)	-0.0699* (0.0412)	-0.119 (0.102)	0.121 (0.119)	-0.0282 (0.0183)	-0.187 (0.269)	-0.550 (0.653)	-0.0654*** (0.0190)
Observations	849	566	566	566	566	566	306	1377
R ²	0.919	0.609	0.739	0.760	0.228	0.738	0.796	---

Standard errors in parentheses.

Standard errors are clustered at the state level. All outcomes are measured per 1000 women ages twenty-five to forty-four. Cycles refer to IVF cycles and are available from 1990 to 2004. Nonrelated, related, foster, and stepparent adoptions all refer to public agency adoptions and are available from 1995 to 2004 from AFCARS; not every state reports data. *The AFCARS Report, supra* note 35. Public and Private adoptions are available from Flango and Flango and are available for 1987, 1989–1992, 2001, and 2002. *See* Flango & Flango, *supra* note 201. International adoptions are from the *Yearbook of Immigration Statistics* (formerly entitled *Statistical Yearbook of the Immigration and Naturalization Service*) and are available over the period 1972–2009 and overlap with our IVF data from 1990–2006. *See supra* note 202. All specifications include time-varying controls and state- and year-fixed effects. Coefficients we are unable to estimate for lack of data are shown as 0s.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

How do lags and leads change the picture as to IVF utilization? We find that both leads and lags of the laws affect IVF cycles (as can be seen by the results in the Cycles column of Table 5). In other words, five years after the state law introduces an insurance mandate, IVF cycles are still higher in states that passed complete mandates; one year before the law is passed, IVF cycles are also higher.²³⁴ This phenomenon can be more clearly seen in Figure 2, which shows year-by-year changes in IVF utilization for the states that changed their insurance mandate status during the time frame of our data. It shows that IVF utilization is higher the year before complete mandates pass. This raises an endogeneity problem where the

234. It appears that Henne and Bundorf did not examine lags in their earlier work on the effect of mandates on IVF utilization. *See* Henne & Bundorf, *supra* note 90.

increase in IVF cycles might be attributable to the continuation of a trend that predated the introduction of the mandates. That is, an increase in IVF cycles would be consistent with a theory predicting that states with large numbers of IVF cycles are the states most likely to pass insurance mandates for IVF.

To address this problem, we use a specification that controls for state-specific time trends, the results of which are displayed in Table 6. In this specification, we see that complete insurance mandates are not correlated with IVF utilization in the year before complete insurance mandates are passed, but they are correlated in the years after the complete insurance mandates are passed, suggesting that endogeneity is somewhat addressed by this specification. Endogeneity is not completely addressed because offer and non-IVF mandates appear to be correlated with IVF utilization in the year before offer and non-IVF mandates are passed, which is another reason we emphasize our findings as to complete mandates rather than the other possible mandates.

Figure 2: Changes in IVF Utilization and Insurance Mandates

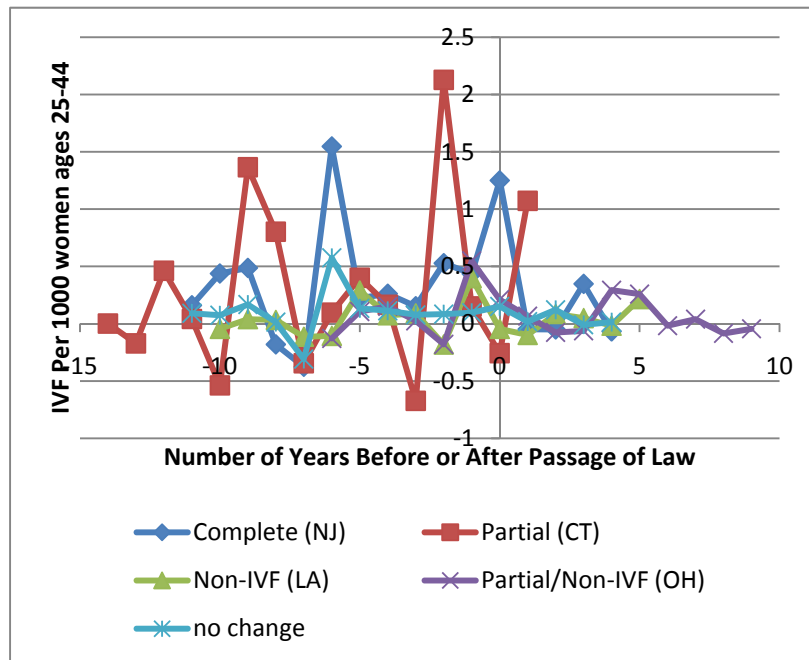


Table 6: The Effect of Insurance Mandates—Differences-in-Differences Approach with State-Specific Time Trends

	Cycles	Non-Related	Related	Foster	Step-Parent	Total Public	Public and Private	Int'l
Complete (lead)	0.254 (0.156)	0.103** (0.0424)	-0.0179 (0.0431)	0.414** (0.158)	-0.0313 (0.0231)	0.481** (0.201)	-0.0625 (0.141)	0.0030 (0.0134)
Complete	0.365 (0.364)	0.0700 (0.0498)	0.0439 (0.0461)	0.229*** (0.0844)	-0.0103 (0.0112)	0.386** (0.157)	0.946*** (0.307)	0.0033 (0.0149)
Complete (lag1)	-0.227 (0.210)	0.0419* (0.0241)	0.0456 (0.0350)	-0.192*** (0.0327)	-0.0132 (0.00806)	-0.0584 (0.0975)	-0.195 (0.190)	-0.0126 (0.0149)
Complete (lag2)	-0.0301 (0.194)	0.0176 (0.0326)	-0.0170 (0.0466)	0.299*** (0.0861)	-0.00404 (0.0145)	0.282* (0.156)	0.277 (0.400)	0.0061 (0.0132)
Complete (lag3)	-0.334* (0.185)	-0.0289 (0.0325)	0.0247 (0.0266)	0.107** (0.0426)	-0.00706 (0.00666)	0.127 (0.0964)	-0.581** (0.246)	0.0004 (0.0258)
Complete (lag4)	-0.00712 (0.163)	-0.109* (0.0569)	0.0454 (0.0483)	0.0252 (0.0779)	-0.0121 (0.0174)	0.00739 (0.169)	-0.621** (0.270)	-0.0334* (0.0187)
Complete (lag5)	0.517*** (0.144)	-0.0713* (0.0383)	0.0189 (0.0389)	1.422*** (0.0736)	0.0186 (0.0227)	1.388*** (0.152)	0.749*** (0.193)	0.0450 (0.0392)
Partial (lead)	-0.0466 (0.334)	0.153 (0.125)	0.175 (0.154)	0.574* (0.296)	0.0126 (0.0553)	1.077* (0.557)	-0.223 (0.191)	0.0101 (0.0221)
Partial	-0.176*** (0.0574)	0.136** (0.0677)	0.137 (0.0974)	0.354 (0.260)	-0.0173 (0.0269)	0.764* (0.393)	-0.152 (0.208)	-0.0124 (0.0140)
Partial (lag1)	-0.0403 (0.0343)	0.178** (0.0669)	0.161* (0.0908)	0.387*** (0.140)	-0.0168 (0.0276)	0.887*** (0.273)	-0.565 (0.343)	0.0185** (0.0085)
Partial (lag2)	0.0626 (0.0378)	0.00569 (0.0956)	0.0415 (0.0762)	0.0419 (0.110)	-0.0425 (0.0420)	0.131 (0.249)	-151.1 (565.9)	-0.0125* (0.0119)
Partial (lag3)	0.00117 (0.101)	0.0176 (0.0709)	0.175 (0.149)	-0.0501 (0.176)	-0.0188 (0.0284)	0.318 (0.434)	0.726 (0.613)	-0.0046 (0.0060)
Partial (lag4)	0.0199 (0.0415)	-0.0514 (0.0946)	0.188 (0.121)	0.146 (0.192)	-0.0129 (0.0264)	0.471 (0.396)	-0.606 (0.942)	0.0089 (0.0160)
Partial (lag5)	-0.347 (0.235)	-0.0553 (0.0846)	-0.0631 (0.0698)	0.0615 (0.160)	-0.00829 (0.0232)	-0.120 (0.255)	-0.669** (0.272)	-0.0186 (0.0303)
Offer (lead)	-0.696* (0.347)	0.668*** (0.153)	0.150 (0.152)	0.847*** (0.311)	0.00214 (0.0755)	1.816*** (0.565)	129.4 (448.5)	0.0091 (0.0310)
Offer	0.309*** (0.101)	-0.649*** (0.0806)	-0.0338 (0.104)	0.351 (0.302)	-0.00851 (0.0295)	-0.365 (0.431)	0 .	0.0073 (0.0108)
Offer (lag1)	-0.858*** (0.0959)	0.543*** (0.104)	0.170 (0.104)	0.568*** (0.166)	-0.0103 (0.0464)	1.450*** (0.337)	0.0477 (0.203)	0.0377** (0.0167)
Offer (lag2)	-0.172*** (0.0574)	-128.2* (74.62)	32.51 (63.58)	105.2 (157.2)	-1.530 (22.62)	42.05 (232.7)	0.387 (0.479)	0.0475*** (0.0140)

Offer (lag3)	-0.347*** (0.126)	0 .	0 .	0 .	0 .	0 .	0 .	0.0204 (0.0211)
Offer (lag4)	0.0160 (0.0511)	0 .	0 .	0 .	0 .	0 .	0 .	0.0461** (0.0178)
Offer (lag5)	-0.0148 (0.0543)	0 .	0 .	0 .	0 .	0 .	0 .	0.0123 (0.0251)
Non-IVF (lead)	0.339*** (0.0937)	0.152*** (0.0564)	0.202** (0.0869)	0.402** (0.165)	0.0249 (0.0242)	0.957*** (0.305)	-2.013* (1.128)	0.0133 (0.0103)
Non-IVF	-0.0538 (0.0808)	0.0884 (0.0547)	0.0473 (0.0503)	0.160 (0.151)	-0.0206 (0.0190)	0.343 (0.222)	0.0352 (0.327)	0.0327*** (0.0115)
Non-IVF (lag1)	-0.149*** (0.0531)	0.0851* (0.0441)	0.118** (0.0520)	0.0599 (0.0932)	-0.00233 (0.0109)	0.381** (0.182)	0.283 (0.399)	0.0118 (0.0078)
Non-IVF (lag2)	0.0753* (0.0413)	0.0286 (0.0652)	0.0375 (0.0513)	0.0483 (0.0592)	-0.0390 (0.0352)	0.152 (0.167)	0.415 (0.316)	-0.0291*** (0.0088)
Non-IVF (lag3)	-0.130 (0.114)	0.0299 (0.0470)	0.138 (0.0857)	0.0459 (0.139)	-0.00898 (0.0228)	0.351 (0.259)	0.0606 (0.291)	0.0182** (0.0069)
Non-IVF (lag4)	0.0163 (0.0654)	-0.0155 (0.0689)	0.128 (0.0890)	0.238** (0.117)	-0.0282 (0.0194)	0.478 (0.288)	-0.812 (1.046)	-0.0067 (0.0053)
Non-IVF (lag5)	-0.392** (0.167)	0.0109 (0.0571)	0.00429 (0.0601)	0.0910 (0.131)	-0.000701 (0.0120)	0.110 (0.205)	0.671 (1.837)	-0.0315* (0.0161)
Observations	849	566	566	566	566	566	306	1377
R ²	0.975	0.727	0.863	0.838	0.493	0.842	0.908	---

Standard errors in parentheses.

Standard errors are clustered at the state level. All outcomes are measured per 1000 women ages twenty-five to forty-four. Cycles refer to IVF cycles and are available from 1990 to 2004. Nonrelated, related, foster, and stepparent adoptions all refer to public agency adoptions and are available from 1995 to 2004 from AFCARS; not every state reports data. *The AFCARS Report, supra* note 35. Public and Private adoptions are available from Flango and Flango and are available for 1987, 1989–1992, 2001, and 2002. *See* Flango & Flango, *supra* note 201. International adoptions are from the *Yearbook of Immigration Statistics* (formerly entitled *Statistical Yearbook of the Immigration and Naturalization Service*) and are available over the period 1972–2009 and overlap with our IVF data from 1990–2006. *See supra* note 202. All specifications include time-varying controls and state- and year-fixed effects. Coefficients we are unable to estimate for lack of data are shown as 0s.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

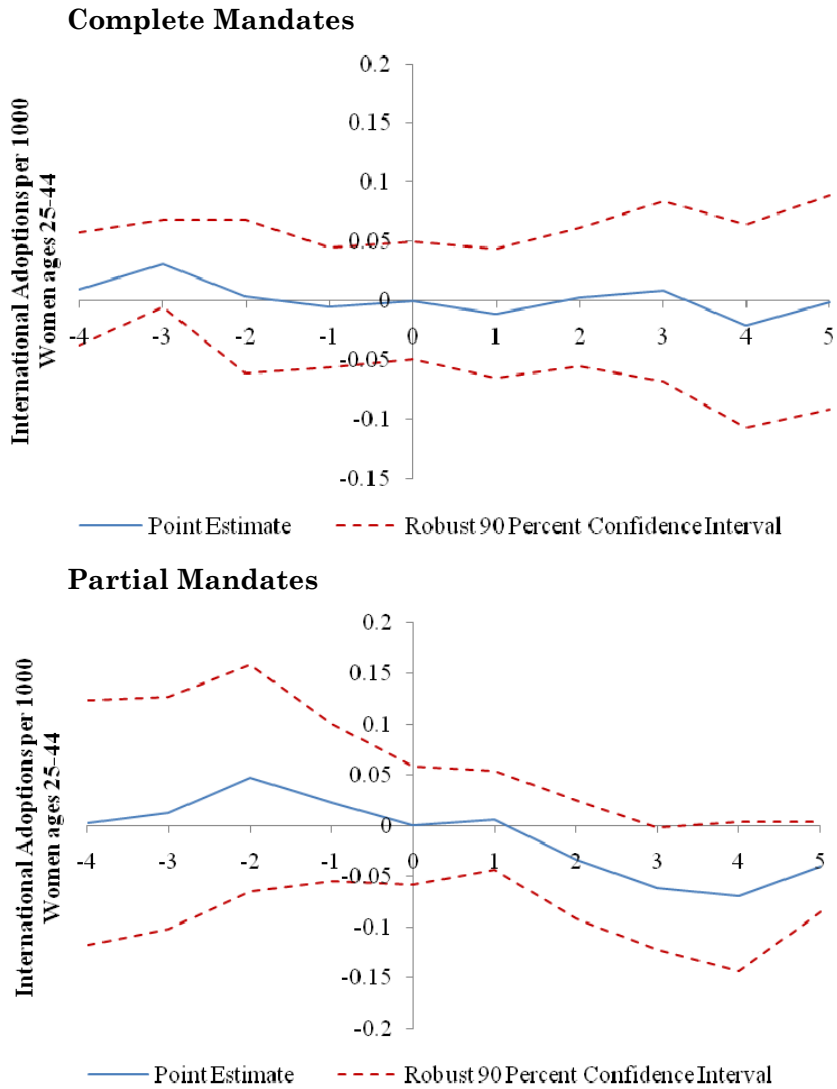
How do lags and leads change the picture of the effects on *adoption*? As reported in columns 2–8 of Table 5, the lags of insurance mandates show effects that change signs and significance on a yearly basis. On net, when comparing the aggregate

effect of five years of lags, the lag results are not inconsistent with the earlier results in Table 3. Figure 3 focuses on international adoptions and provides a visual summary of the international adoption data. It plots estimated international adoptions in mandate states relative to nonmandate states at yearly intervals in the four years prior through the five years following the passage of a particular mandate. The dashed lines in each figure represent robust ninety percent confidence intervals for each yearly point estimate. As the figure shows, the effect of mandates on international adoptions is not clearly visible for any of the mandates. The figure thus corroborates our inference from statistical analyses that there is no strong evidence for a negative effect of these mandates on international adoption.

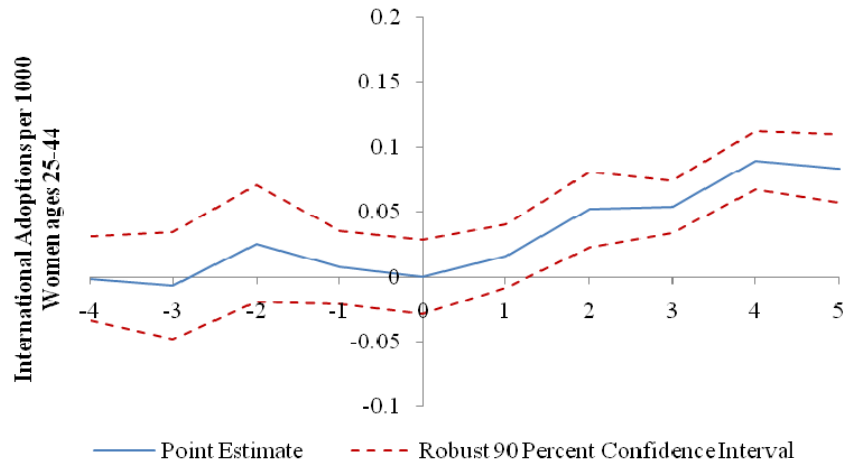
When it comes to leads, we see that adoption rates are sometimes higher (e.g., foster adoptions) before the passages of these laws (as displayed in the “Partial (lead)” or “Offer (lead)” rows in Table 5). An increase in adoptions would be consistent with a theory that states that have large numbers of adoptions or IVF cycles are the states most likely to pass insurance mandates for IVF. In particular, an increasing trend in adoption rates predicts the passage of insurance mandates. That is, IVF insurance policies might be endogenous to recent adoption rates, which might suggest that increasingly high adoption rates reflect a pent-up demand for IVF subsidies.

To address this problem, we again use a specification that controls for state-specific time trends, the results of which are shown in Table 6. Even in this specification, we find no consistent pattern of *decreases* in adoption rates, and in the few instances where we find insurance mandates decrease adoption rates, they also decrease IVF cycles, which is inconsistent with a substitution theory. For example, the final column shows that complete mandates reduce international adoptions in the fourth year, but the first column shows that complete mandates reduce IVF cycles in the third year after the passage of complete mandates. Partial mandates have a more consistently negative effect, though sometimes again displaying negative correlations before the mandate is passed. Non-IVF mandates appear to have little robust effect, with the international coefficients changing signs from year to year. Thus, again, we find no strong evidence supporting the substitution theory.

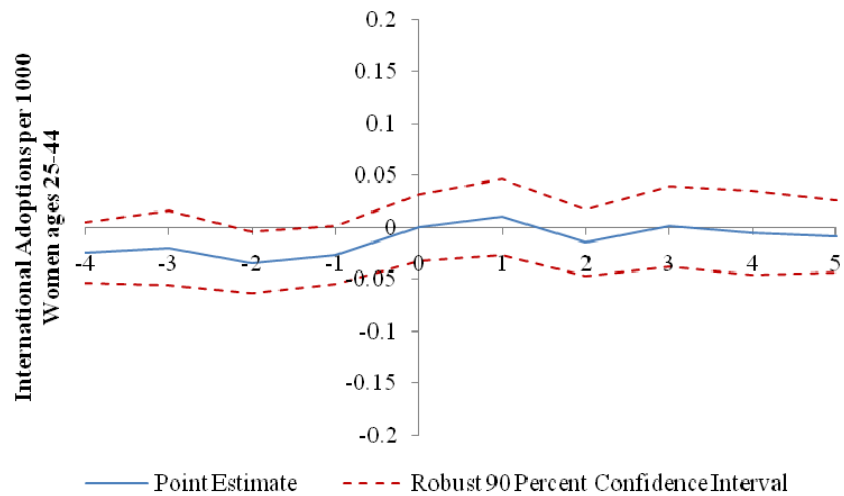
Figure 3: International Adoptions Before and After Passage of Insurance Mandates: Yearly Lags and Leads from Four Years Before to Five Years After Passage



Offer Mandates



Non-IVF Mandates



Third, one possible reason that adoption rates do not decrease and may even increase in response to insurance mandates for infertility treatments is that individuals may attempt to use IVF, fail, and then try to adopt instead. That is, attempts at IVF that lead to failure reinforce the desire for children, leading individuals to then turn to adoption. By contrast, as discussed above, a mechanism identified by Bartholet and Neumann by which expansion of IVF access decreases adoption is precisely the opposite: their theory is that individuals try

IVF, fail after repeated attempts, and then for financial, emotional, or age reasons are unwilling to try adoption.²³⁵

The data-sets we have available allow us to investigate these dueling hypotheses to some extent. The CDC data-set has a measure of IVF cycles that led to live births, and by using this metric we can measure the effect of insurance mandates on successful IVF cycles. Insurance mandates increase successful IVF cycles, but not surprisingly, they also increase the number of failed IVF cycles. Without data on the IVF history of adopting parents or separate variation that makes some states have higher failure rates than others, we are unable to go much further in ascertaining whether attempting IVF, but not succeeding, is associated with increased adoptions. A different way of getting at this issue, though, is through our lag analysis. If the mechanism identified by Bartholet and Neumann is in place, we should see increased diminutions of adoptions only after the mandates have been in effect for several years. As Table 6 shows, we do not find substantial evidence that complete mandates have delayed negative effects on international adoptions.

Fourth, and relatedly, we checked to see whether any of our core findings changed if we used live births from fresh cycles (i.e., cycles using fresh embryos, a measure of IVF outcomes) instead of cycles (a measure of IVF *utilization*). Our key findings remain largely unchanged. In the differences-in-differences framework we continue to see that the complete mandates have a positive effect on the number of live births and that there is no strong evidence of live births crowding out adoptions. In the OLS specification, we continue to only see a positive effect on public and private adoptions. In the instrumental variables specification, we see a negative effect of live births on related adoptions and a positive effect on public and private adoptions; the only finding that changes when using live births is that the weakly significant increase in foster adoptions in the 2SLS framework disappears.

Fifth, to partially address the problem of few mandates actually changing in the period for which we have data (an issue discussed further in the next section), we conducted bootstrap randomization tests in which we randomly assigned the law changes to the fifty states and reran our basic regression specification with clustering to account for serial correlation across

235. See *supra* text accompanying notes 110–14.

time within states.²³⁶ With very few states that changed their mandate status, the differences-in-differences approach can frequently overestimate the statistical significance of any finding.²³⁷ To address this problem, randomization inference asks, when the laws are randomly assigned, how likely it is that our actual estimate is indistinguishable from these random estimates. We reran our basic regression 5000 times and observed where our actual estimated differences-in-differences coefficient falls into the 5000 placebo estimates. We find that only four estimates pass this randomization inference test: the positive effect of complete mandates on IVF cycles is statistically significant at the five percent level, the negative effect of offer mandates is statistically significant at the ten percent level, the negative effect of offer mandates on nonrelated adoptions is statistically significant at the five percent level, and the negative effect of partial mandates on international adoptions is statistically significant at the ten percent level. However, if we adjust the p-values to account for the fact that we conduct multiple related hypothesis testing for each outcome, using the simplest and most conservative approach, the Bonferroni adjustment, we find that none of the effects are statistically significant at the ten percent level, with one exception: the effect of complete mandates on IVF cycles is still statistically significant at the ten percent level.²³⁸ The coefficient for each of the other mandates and other categories of adoptions are not sta-

236. We considered clustering for serial correlation across states within years, but the correlation pattern implied by two-way clustering currently used in some applications allows for essentially unrestricted time dependence within cells and unrestricted cross-sectional dependence across cells within time periods, and imposes zero correlation across cells in different time periods. For example, CA in Period 1 is arbitrarily correlated with CA in Period 2. NV in Period 1 is arbitrarily correlated with NV in Period 2. CA and NV are arbitrarily correlated in Period 1. CA and NV are arbitrarily correlated in Period 2. However, CA in Period 1 is somehow uncorrelated with NV in Period 2, which is unnatural given the assumptions of this approach. Given that the data does appear serially correlated across time within states, we employ our chosen method for clustering in this bootstrap procedure.

237. See Bertrand et al., *supra* note 211.

238. See Esther Duflo et al., *Using Randomization in Development Economics Research: A Toolkit*, in 4 HANDBOOK OF DEVELOPMENT ECONOMICS 3895, 3947 (T. Paul Schultz & John A. Strauss eds., 2007). The Bonferroni adjustment multiplies the p-values by the number of tests in the family; in this case we are multiplying by four because we have four mandates in each family of tests. *Id.* Figure 2 suggests why the randomization inference test passes for IVF utilization. The control states to which the placebo laws are assigned are on average close to zero; but this is not the case for the adoption data.

tistically significant; therefore, we cannot reject the null hypothesis that the mandates had no effect on adoptions. This analysis gives us more reason to be confident about our finding that complete mandates increase the number of IVF cycles, and further undermines the (admittedly weak) evidence of a substitution toward domestic or international adoptions.²³⁹

Sixth, one might worry that because our analysis covers the entire population of adopters in age terms, it may mask substitution of particular age groups. The AFCARS data set contains information on the age of adopters. To examine this question, we looked to see whether there was evidence of substitution in a particular age band, adopters over the age of forty.²⁴⁰ We found no evidence that increased IVF-utilization substitution leads to a diminution in adoption rates of women or men over forty. This result holds even when we restrict the sample to nonrelated adoptions rather than all adoptions.

Seventh, we had a parallel concern about age of *adoptees*: that grouping together adoptees of all ages might mask substitution as to particular age bands of adoptees. Perhaps, for example, we would see substitution away from the youngest set of adoptees since they are most similar in age to the newborns that come from IVF usage. We used the age of adoptees listed in the AFCARS data set and divided the sample into age bands of ages three and under, four to seven, eight to eleven, and older than twelve. In our differences-in-differences framework, we did not find any significant effect related to the introduction of any of the mandate types after dividing by age bands in this way, ruling out this concern about our results.

239. We have focused on complete mandates because they are the only mandates that significantly and consistently increase IVF utilization. *See supra* Part III.C. But a careful reader of our results would notice that offer mandates have a significant negative effect on IVF cycles and that they have a significant positive effect on international adoptions (both with and without state-specific time trends). One might interpret this result as some (albeit unexpected and indirect) evidence supporting the substitution theory in that mandates which decrease IVF utilization seem to increase international adoptions. As we have said before, because there are only two states that adopted offer mandates in our data period, and the changes occurred relatively early in our data period (1987 and 1989), we do not put a lot of stock in this result as to offer mandates. *See supra* note 192. However, to be safe, we did another bootstrap randomization of the kind described in the text as to this result and found that offer mandates do not have a statistically significant effect on international adoptions in this analysis.

240. We chose this age band on the idea that adopters over forty were more likely to have tried infertility treatments first.

Although our focus in this Article is not racial patterns in adoption, we were concerned that our population-wide analysis might also mask substitution toward adoption by a particular racial group; that is, that IVF subsidization might lead to a substitution away from children of other races. Our data-set and empirical methods do not allow us to perfectly answer this question, but we did a few analyses to try and get at it. Most of the results we found were not robust to both the differences-in-differences and cross-sectional analyses (reported in Appendix B), but there were a few findings that were qualitatively the same on both analyses: offer mandates reduce the number of white parents adopting white children and reduce the number of Hispanic parents adopting Hispanic children; complete mandates reduce the number of Hispanic parents adopting white children; and offer mandates reduce the number of black parents adopting Hispanic children.²⁴¹ These findings are merely a preliminary cut at what is an empirically and politically complex question, and one that merits more attention in future work.

Finally, we examined whether the fact that the source of our IVF cycles data changes in 1995 affects our analyses of the relationship between IVF cycles and international adoptions, whose data coverage overlaps both types of IVF data. If we break out the two data-sets we see that the relationship is positive when we just use 1990–1994 data and negative when we just use 1995–2006 data.²⁴² It is possible that this is a function of the two slightly different data sources, but it could also reflect a number of other possible explanations such as changes in behavior. One partial check we ran was to linearly extrapolate the CDC data backwards from 1995 and average that extrapolation with the hard-coded 1990–1994 data. In that analysis, we did not see the relationship between IVF cycles and international adoptions becoming significant at conventional levels.

5. Limitations

There are several limitations to our study.

First, we examine only one form of subsidization of IVF, state-level insurance mandates—the major form currently in

241. See *supra* note 187, Appendix B, Table B-1.

242. See OFFICE OF IMMIGRATION STATISTICS, *supra* note 202; *supra* note 173 and accompanying text.

place in the United States. Other proposed solutions to increase IVF availability, such as tax deductions for IVF expenses, may have different effects on adoption.

The second and most serious limitation to our study is that many of the mandates were introduced in the 1980s, such that for some of the mandates some of our data-sets do not extend far enough back to capture years before their introduction (for details, see Table 1). For IVF utilization, our data extends only back to 1990 capturing the change in mandate status of only six states (two complete mandate states, two partial mandate states, and two non-IVF mandate states). On the adoption side, the AFCARS data goes back to 1995 allowing us to capture change in mandate status of only four states (one complete mandate state, one partial mandate state, and two non-IVF mandate states). This limitation—unavoidable given the available data-sets and the dates of mandate introduction—should lead one to be somewhat cautious about the conclusions that can be drawn from the analyses we conduct. To be sure, as to this data limitation we are in good company, in that all the studies in the oft-cited literature on the effects of IVF state-level insurance mandates on IVF utilization and the rate of multiple births suffer from the same problem.²⁴³ Indeed, the most-cited paper on this subject, published in the *New England Journal of Medicine*,²⁴⁴ merely examined IVF utilization data from one calendar year in reaching its conclusions. But the fact that this problem is unavoidable does not mean it is not real. The problem is somewhat mitigated by our OLS analysis, which offers a test of the substitution theory that depends only on the effect of IVF utilization on adoption rates and is thus divorced from the mandates, but that is not a complete solution since many of the factors that influence IVF utilization may influence adoption rates as well. The randomization test discussed in the previous section also partially addresses this problem as to the domestic adoption results, but the limitation still remains and will persist as a challenge in this literature unless more states change their mandate status going forward.²⁴⁵

243. See *supra* note 90 and accompanying text (listing and discussing these studies).

244. See Jain et al., *supra* note 90.

245. A different data-set limitation was suggested by one commentator on the paper who mentioned that the Flango and Flango data-set may underes-

For other data-sets, by contrast, this is less of a problem. The Flango data-set, which starts in 1987, allows us to capture the change in mandates of nine states (three complete mandate states, two partial mandate states, one mandate to offer state, and three non-IVF mandate states), but it provides data only for intermittent years.²⁴⁶ The international data-set fares the best on this score, since it starts in 1972 and thus allows us to capture mandate changes in all sixteen states that have implemented mandates, spanning all four of the mandate categories.²⁴⁷

Third, we lack detailed individual-level information about IVF users that would shed more light on our results. In particular, we are unable to distinguish between first versus repeat IVF users, and so we cannot determine to what extent our results are driven by a handful of individuals. We are also unable to observe people moving to states in order to take advantage of these mandates, a form of intranational medical tourism to take advantage of insurance differences. If people did move, however, then the delayed effect should be picked up in our lagged measures of the effect of these mandates. It is theoretically possible that such movement could explain why adoptions did not decrease upon the introduction of these mandates: new entrants try IVF, fail, and adopt instead. This would be consistent with our finding that both total IVF cycles and failed IVF

estimate the number of private adoptions. Many others have relied on this data-set in the literature. Even if the data-set makes this measurement error, as long as that error is uncorrelated with the introduction of the mandates themselves, then the potential measurement error would make it more difficult to detect any effect. The estimates we find would be a lower bound of the true effect. In addition, we note that it is possible that a high proportion of domestic private adoptions are interstate. As a robustness check for the possibility that interstate adoptions are in fact correlated with insurance mandates, we at one point controlled for the friendliness of state laws toward adoptions (as discussed *supra* note 204), but found it did not affect our results. Indeed, if mandate and nonmandate states are equally likely to have interstate adoptions, and these interstate placements are uncorrelated with the mandates themselves, then our estimates provide a lower bound when using the Flango data-set (our AFCARS data measures public adoptions). In actuality, complete mandates are negatively correlated with being most friendly toward adoptions. If there are any omitted variables associated with higher interstate adoptions but not captured by the friendliness of state laws variable, we should find a negative relationship between complete mandates and adoptions, but we do not.

246. See Flango & Flango, *supra* note 201, at 1021–22, tbl.1.

247. See OFFICE OF IMMIGRATION STATISTICS, *supra* note 202.

cycles increase in response to the insurance mandates, but with our existing data it is nothing more than a hypothesis.

Fourth, we have some reason to question whether insurance mandates are exogenous to adoption rates. An obvious concern in examining the impact of insurance mandates, especially through differences-in-differences approaches, is whether they are correlated with unobservable variables that might be driving both insurance mandates and the outcome in question. In their work on IVF utilization, Hamilton and McManus investigate this possibility and conclude that insurance mandates are exogenous to IVF usage. They find that states with and without IVF-specific insurance mandates are not different in observable characteristics, such as female labor force participation, female educational attainment, average family size, and median household income, factors that might influence the decision to undergo infertility treatment.²⁴⁸ The main observable difference between states with and without IVF subsidies appears to be residents' preferences for government intervention in medical markets.²⁴⁹ IVF subsidies come in a package of other laws, but Hamilton and McManus conclude that there is no evidence that this package includes specific differences in preferences for children. They further examine possible unobservable differences between states with and without IVF insurance mandates by estimating a "preprogram" regression of the number of patients receiving treatment at reproductive clinics in 1987 as a function of future regulatory status along with other contemporary control variables, but they do not find a significant effect.²⁵⁰ We replicate this finding in our examination of whether IVF utilization rates are predicted by future regulatory status (our leads analysis) when we include state-specific time trends. That is, we do not find that states that passed complete insurance mandates had different trends on IVF usage before passing the mandates as compared to the states that did not pass these insurance mandates.

When the question shifts from whether IVF mandates are exogenous to utilization to the question of whether they are exogenous to *adoption*, things look different. A finding that increases in adoptions are positively correlated with future regulatory status would cast doubt on the exogeneity of insurance

248. Hamilton & McManus, *supra* note 90, at 17–18.

249. *Id.*

250. *Id.*

mandates to adoptions. That is, it may be possible that while IVF use does not precede insurance mandates, adoption rates could plausibly reflect pent-up demand for IVF use. We find that when state-specific time trends are included, the categories that are increasing before the introduction of complete insurance mandates are the following: nonrelated adoption, public adoption, and foster adoption. This gives us some reason to question whether our estimates of the effect of mandates on adoption rates, at least in these categories, are really independent of other supply and demand shifts in adoptions during the relevant time period that we cannot observe. In future research, we hope to use other research designs to address this possible endogeneity issue.²⁵¹

Fifth, the fact that we see mandates associated with an increase in foster adoptions (and sometimes foster adoptions alone) in some of the specifications is troubling because we have no theoretical explanation for why mandates should have this effect. One speculative possibility is that the number of foster adoptions has been increasing rapidly in recent years in part due to the law changes discussed above (ASPA). It is possible that the effect of these law changes on foster adoption has not been uniform across all states, and some states have increased foster adoptions more than others such that these results actually reflect state-specific effects of these law changes that coincide with insurance mandate changes, but are not the result of the mandates themselves.²⁵² It is for this reason that we are more cautious about our findings as to foster adoption than the other subcategories of domestic adoption. Sixth, while one of our data-sets contains both public and private domestic

251. Building on a design one of this Article's authors has employed in the context of sexual harassment, see Daniel L. Chen & Jasmin K. Sethi, *Insiders and Outsiders: Does Forbidding Sexual Harassment Exacerbate Gender Inequality?* (June 2010) (unpublished manuscript), *available at* <http://ssrn.com/abstract=1119968>, one possible strategy may be to use the random assignment of appellate judges expanding or decreasing the scope of IVF mandates to examine the issue, on the theory that this random assignment will be independent of other supply and demand shifts in adoptions.

252. A different hypothetical possibility would be that since these laws have changed, individuals who try IVF and fail are increasingly switching to foster adoption rather than other forms of adoption. However, there is no reason to believe individuals would specifically substitute to this type of adoption; indeed, everything we know about the sociology of adoptive foster parents (i.e., they are often individuals who are already giving foster care on a temporary basis) suggests they are unlikely to be the population for whom IVF access makes a difference.

adoptions, we have been unable to find a data-set containing *only* private domestic adoptions. Thus, we cannot specifically speak to the effect on private domestic adoptions of complete mandates. However, the fact that on two of our econometric frameworks we find statistically significant effects in the opposite direction of the substitution theory in the data-set comprising both private and public domestic adoptions suggests that substitution on this margin is unlikely.

A final limitation goes not to our study itself, but to the limits of quantitative research designs more generally. Studying human behavior through data on behavior is a useful complement, but not a substitute to more qualitative methods. Thus, this Article's empirical approach to the reproductive technology-adoption tradeoff should be seen as one piece of the puzzle, not a complete answer. One advantage of this kind of research is that it allows us to examine the ways in which self-reported data and answers to qualitative interview processes do or do not translate into actual behavior, the gap between attitudes and outcomes. In this regard, our findings are particularly striking because they produce an answer quite different from that which one would expect based only on the existing qualitative data, which, as discussed above, suggests that most individuals only turn to adoption when reproductive technologies are unavailable. Again, our analysis fails to find much effect on international or domestic adoptions when IVF becomes more available. We thus see this project as furthering the dialogue between quantitative and qualitative methods, in the hope of better understanding what actually is occurring. To this end, qualitative research designs focused directly on the effect of these mandates seem like the logical next step for those interested in the issue.

Most of our discussion has been at the level of statistical significance, finding no statistically significant negative effects on adoption from complete insurance mandates for nonrelated or international adoptions, contrary to what the substitution theory would have predicted. As we discussed above, however, significance is only a part of the story, for even if there was a statistically significant effect in the direction predicted by the substitution theory (contrary to what we found), the size of that effect would matter a great deal for public policy decisionmakers. To put the point less technically and in a mode of speaking we used in Part II when discussing the normative premises of

the substitution theory: a public policy decision maker might feel quite differently about a world where every additional IVF birth reduced the number of children adopted by one (a 1:1 ratio) than a world where every one hundred additional IVF births reduced the number of children adopted by one, especially on a utilitarian welfare account where parental welfare gains (as well as the potential welfare of the new children who come into existence) from IVF usage due to the mandates is balanced against the welfare losses of children waiting for adoption. Having found no statistically significant effect, we cannot directly talk about effect size, but we can calculate the bounds of our confidence intervals in a way that illuminates the question. We can rule out with ninety-five percent confidence a substitution effect of 0.0132 fewer nonrelated adoptions and of 0.1172 international adoptions for every additional IVF cycle.²⁵³ That is, we can be very confident that one hundred additional IVF cycles will result in thirteen or fewer reduced adoptions,²⁵⁴ a conclusion that again shows how tough a normative case the substitution theory must make to be convincing.

CONCLUSION

A number of leading scholars have suggested that the negative effects on adoption that stem from the introduction of insurance mandates covering IVF provide a good reason to oppose those mandates. In this Article, we have put pressure on that claim in two ways.

First, we have exposed some of the controversial underlying normative premises on which the argument depends: the relative size of the interests of to-be-adopted children and would-be genetic parents and the numbers on each side; the normative criterion by which they are to be traded-off; whether it is just for the burden to help these children to fall primarily

253. The standard errors represent the statistical confidence regarding a particular estimate. The range represented by the point estimate plus or minus two times the standard error is the ninety-five percent confidence interval. For any magnitude outside of this range, we can reject as being true with ninety-five percent confidence. The lower limit for this range for nonrelated adoptions was calculated from Table 4, Panel B, Column 2: $0.0468 - 2 * 0.0300$. The lower limit for this range for international adoptions was calculated from Table 4, Panel B, Column 8: $-0.0455 - 2 * 0.0362$.

254. To be precise, 13.04 children, that is $(0.0132 + 0.1172) * 100$. Indeed, even that claim is too generous to the substitution theory because it does not factor in the positive effects from these mandates on foster adoption.

on the infertile rather than all of society; whether our conception changes if we view the demand for assistance with infertility as a health need and, if so, the propriety of considering indirect benefits in allocating health care; and how our obligations to children living abroad differ from our obligations to those within the nation-state. We have not attempted to offer a full condemnation of the normative claim that diminutions in adoption are a good reason to oppose expanding access to reproductive technologies, but rather to make explicit the large number of difficult and contestable assumptions that appear to *sub silentio* stand behind the claim.

Second, we have challenged the intuitive empirical assumption made by the proponents of the argument that increased reproductive technology access through state-level insurance mandates covering IVF has diminished adoption. Contrary to an assumption of some leading scholars in this area, we fail to find strong evidence for that claim.

These results are admittedly preliminary—we have noted some limitations in our study, and this is the first empirical examination of an issue that deserves much more scholarly attention—but assuming our conclusion is correct, what explains the lack of an effect? That is, why do complete mandates *not* reduce nonrelated domestic or international adoptions? More empirical work is needed to answer this question, but with an eye toward advancing the field let us offer two speculative possibilities that might be investigated in further work, econometric or other.

First, whatever negative effects increased IVF utilization has on adoption are outweighed by the positive effect it has through the peer effects mechanism we alluded to earlier, or because undergoing IVF and failing confirms the desire for a child. Indeed, because even the most complete mandates usually have set limits on the number of cycles covered, it may be that the point at which the mandated coverage runs out (and individuals have to start paying out of pocket) becomes a choice point where the individual is forced to reevaluate her IVF use and consider switching to adoption. In this way, those with mandated coverage may somewhat avoid the gambler's fallacy and other types of mistaken reasoning that besets IVF users.²⁵⁵

255. See Pratt, *supra* note 6, at 1194–95 (“For example, patients may assume that, with a twenty percent per cycle success rate for IVF, the odds of success after four unsuccessful cycles would be much higher than twenty per-

A conflicting hypothesis would suggest that IVF insurance mandates lead to increased IVF utilization because now an additional number of cycles are covered by insurance rather than paid for out-of-pocket and thus are almost “free” from the point of view of the user. Our findings that complete mandates *do* increase IVF utilization measured by number of cycles seems to favor the latter hypothesis, although the negative relationship between *partial* mandates and IVF cycles might suggest some evidence for the former “choice-point” hypothesis. In any event, this is an area where qualitative data from IVF users in mandate versus nonmandate states would be useful in further examining these possibilities.

Second, there may be what we will term a “two solitudes” effect: individuals have preferences for or against domestic adoption that are independent of IVF’s availability such that they will either adopt or refuse to adopt regardless of whether or not they have a substitutive method of having children. This suggestion, however, is in tension with much of the qualitative empirical literature reviewed earlier on adoption decisionmaking. These studies suggest that many individuals turn to adoption only after exhausting IVF. A more subtle variation on this theory might suggest an interplay between who benefits from these mandates and who adopts. That is, although these mandates increase IVF utilization *overall*, they may not increase utilization among particular groups who are most likely to adopt domestically.²⁵⁶ Much more work should be done to examine these (and other) possibilities, but we are hopeful that this Article will help scholars and policy makers rethink the

cent in their next IVF cycle. In fact, the chance of success may remain the same . . .”).

256. For example, some literature suggests that there are nonprice-based barriers to reproductive technology use that affect African Americans and other racial minorities, even in states with mandated benefits. See DAAR, *supra* note 8, at 38–43; Tarun Jain & Mark D. Hornstein, *Disparities in Access to Infertility Services in a State with Mandated Insurance Coverage*, 84 FERTILITY & STERILITY 221, 223 (2005) (listing multiple nonprice barriers to minority IFV use); Jaime King, *Predicting Probability: Regulating the Future of Preimplantation Genetic Screening*, 8 YALE J. HEALTH POLY L. & ETHICS 283, 313 (2008) (“Cultural and educational factors can also inhibit access . . .”). It is hypothetically possible that these groups *both* benefit least from the insurance mandates and are the most likely to adopt, which could explain why the mandates do not have more of an effect on adoption. This hypothesis would in turn generate a series of interesting research questions: for example, are there differences in the sociology of those who adopt domestically versus internationally that might make this hypothesis more or less plausible?

possibility (or at least the parameters) of a reproductive technology versus adoption tradeoff.

In closing, we return to the policy and normative questions that animated this project. On a number of normative theories there are strong reasons to favor state intervention to make reproductive technologies more affordable and therefore accessible. One fear expressed by those otherwise committed to this goal is that increased access to reproductive technology would decrease adoption, and we would thus fail in our duties of justice to those waiting to be adopted. We have shown that such a tradeoff, if it exists, would foist on us some very difficult questions of political theory. Using the best available data, however, our analysis suggests that at least as to one particularly powerful state intervention currently used to increase the availability of IVF (state-level insurance mandates), there is no strong evidence that decreases in adoptions are associated with the introduction of these mandates. Of course, as discussed, the concern about effects on adoption is but one reason to oppose these mandates, and we leave full examination of other possible reasons to oppose these mandates for further work.