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From 1958 to 2021, fertility rates in the United States have declined from 3.5 births per woman to 1.8 births per woman (macrotrends). Declining fertility is a common trend in developed countries, specifically for countries in the Organization for Economic Cooperation and Development (OECD). Fertility is crucial to workforce replacement, so declining fertility rates have a direct impact on GDP. In the United States, the working-age population growth rate has fallen below the total population growth rate. Workforce replacement is the ratio of working-age people entering the workforce to retired age people exiting the workforce. This paper studies the relationship between the rising costs of children and fertility rates. Economists have agreed that individual demand for children responds no differently to an increase in costs than any other market commodity; as price increases, demand decreases. Children also fit the definition of a normal good as established by Thomas Malthus' theory of fertility. Higher female educational attainment and employment rates in the developed world have resulted in an increased opportunity cost of having children for women. Higher opportunity costs for women combined with high monetary costs of private childcare causes an economic constriction on the demand for children. The literature demonstrates that government intervention can correct the market failure of private childcare in the United States to alleviate the costs of children.

The labor force participation rate and educational attainment in OECD countries for prime-age women have increased in the past century, resulting in a delay in childbearing, and an initial decline in fertility. In the early 20th century, the role of a woman was as a mother and caretaker of the home. Families, therefore, incurred no monetary costs of childcare, because women were traditionally expected to perform free household labor. As women began to enter higher education and thereafter the workforce, career advancement became the best-foregone alternative to having children. Further, into the 20th century, women began to independently

establish themselves economically before marrying. More women were making the decision to pursue careers rather than solely pursuing the goal of marriage and then family life. The opportunity cost of having children increased significantly for women, as taking time off to have a child results in a decrease in pay and other negative consequences for potential career advancement. At every degree level, women experience a decrease in earnings to take an 18-month break to raise a child: “a decrease in earnings of 41 percent for those with an MBA, 29 percent for those with a JD or a Ph.D., and 15 percent for those with an MD " (US Treasury). A study in the UK demonstrating the foregone potential earnings of women who have children found that “Between the 'typical' mother's 17th and 60th birthdays [gross earnings] amount to 163,000 euros. Her total potential earnings had she not had children amount to 285,000 euros” (Joshi 1990). In the past century, the full cost of having a child has become, “the sum of an actual outlay (net of any child subsidy or tax allowance) and an opportunity cost (net of any income tax)” (Barmby and Cigno 1990). The opportunity cost of having children can be quantified in forgone earnings as Joshi demonstrated in 1990. Because women were not previously expected to have a salary, the introduction to forgone earnings is a cost only to the mother. While opportunities for women have increased educational attainment and career advancements, costs have increased in the family sphere. The literature has insofar demonstrated that women potentially face massive career tradeoffs to raise a child. As we will now discuss, women are choosing to delay having children to mitigate the effects on career, but there are associated costs to fertility rate and childbearing recuperation.

Delaying marriage to pursue careers that provide economic independence, concurrently results in a delay in childbearing, and women can't recover fertility later in life, as they are more likely to have fewer children if they choose to give birth after their prime age. OECD data has

demonstrated that "more educated women have fewer children than less educated ones in all countries and years considered" (d'Addio and d'Ercole 2005). Education is not the determinant factor in this statistic but it is rather the portion of a woman's prime childbearing years that education takes up. An elongated period of education results in an increase in "the mean age of women at first childbirth and reduce[s] the number of years in which they can have additional children" (d'Addio and d'Ercole 2005). Delayed childbearing means that "completed fertility is unlikely to return to replacement levels in most OECD countries" (d'Addio and d'Ercole 2005). In addition to a lack of recuperation, women in their 30s and 40s face greater health risks to themselves and their children, increasing the costs of childbearing in terms of health. These challenges, not carried by male partners or fathers, have created a unique dilemma for fertility. In the past, the role of a woman within the family dynamic was to care for and raise children, but with a shifting cultural dynamic, disconnecting the female wage from the costs of children is pivotal to recuperating fertility.

While the correlation between female labor force participation rates (FPR) and total fertility rates (TFR) was distinctly negative before the 1970s, data from OECD countries from 1970-1995 demonstrated a reversal of that trend, as a result of strong childcare alternatives. The negative correlation between FPR and TFR was around -0.5 during the 1970s and rose to a positive correlation of 0.5 in the 1990s (Ahn and Mira 2002). A shift from personal child care to private childcare occurred as a result of women moving away from the responsibility of in-home unpaid childcare labor, and entering the workforce at higher rates. As more mothers chose to outsource childcare to the private industry, both TFR and FPR were positively supported "mainly due to more use of market child care and the rising income effect of wages at high levels of the female wage" (Ahn and Mira 2002). The reversal of this trend is strongly demonstrated by the

empirical change in child care spending which between 1970 and 2010 in the United States, "increased by a factor of 21-or approximately 2,000 percent- in those 40 years." (Thompson 2019). As childcare becomes an alternative to a mother's unpaid labor, it facilitates an increase in wages for women, which in recent years has been correlated with an increase in fertility. In the past few decades, women have become an established portion of the workforce, and their income contributes to the financial stability of family decisions. Based on the assumption that children are a normal good when the financial capabilities of a family increase they are likely to increase their demand for children. Despite the positive reversal of this trend, the current quality of childcare in the United States is not sustainable in supporting both total fertility rates and female participation rates.

The extensive positive externalities of high-quality child care are not reflected in the market price and therefore result in an under allocation of resources, producing an inefficient market outcome. A positive externality is when a third party receives a benefit from a good or service that they did not invest capital in. In terms of childcare, society as a whole benefits from the positive effects of high-quality childcare on toddlers; quality childcare "Should at a minimum meet children's social, cognitive, physical, and emotional needs" (Harbach 2015). Data has shown that individuals who experienced high-quality care "are less likely to require remedial education, more likely to graduate from high school, less likely to commit crimes, less likely to be neglected or abused, less likely to be unemployed, less likely to require public assistance, less likely to become teen parents, and are generally healthier" (Harbach 2015). By staying healthier and less likely to commit crimes, children who experience high-quality care impose fewer burdens on enforcement agencies and the healthcare system. Unfortunately, the private market does not take into consideration these "spillover effects" and therefore the costs associated with

private childcare do not accurately reflect the benefits of the services provided. Because private childcare prices are already so high as, "The average cost of a full-time child-care program in the U.S. is now $16,000 a year," it is not even remotely possible for the private market to include positive externalities in the market price, as most parents struggle to pay for the service as it currently is. The literature does not argue for the private market to correct and offer the service at a higher price, but rather it seeks for the government to intervene to make childcare more affordable, and positive externalities are a strong rationale for government action. A lack of knowledge, among parents choosing childcare options, creates information problems, another aspect of market failure that encourages government intervention.

Information problems have caused a lower than optimal demand for quality childcare, resulting in a market that is not obligated to produce it. Adam Smith's "Invisible Hand" theorem generally dictates that self-interested buyers and sellers will produce market outcomes that are socially optimal and produce no waste. In the case of childcare, self-interested parents lack all of the information necessary to make adequate decisions about what to purchase and demand. Due to all of the positive externalities of child care, families would need to consider the spillovers to all of society to create a socially optimal market price without government intervention, "Yet families consider only the private, internal benefits of childcare in determining their willingness to pay" (Harbach 2015). Asymmetrical information drives down the quality of childcare that is produced by the private market. Because private childcare is acting as an alternative to free labor by mothers or other family members, the biggest factor parents take into consideration is quantity, or how many hours per day a childcare facility is capable of providing. This emphasis on quantity results in quality tradeoffs that ignores the importance of high emotional and cognitive stimulation for infants and toddlers. Parents won't demand higher quality care because

they do not have all the information necessary to do so, which enables child-care providers to continue producing a lower quality of care.

High private costs of children have resulted in a lower fertility rate, and government intervention in the childcare market is required to ensure workforce replacement. To support the high costs of childcare the government should implement a subsidy that is equivalent to the marginal external benefit that high-quality childcare generates for society. The government will receive the costs of subsidies back in the long term as, "In 2015, the Council of Economic Advisors wrote that every $1 spent on early-childhood education results in roughly $8.60 of societal benefits" (Thompson 2019). This will alleviate both information asymmetry and the overall quality of childcare that the market produces. In the United States, individual states have begun to introduce childcare subsidies with positive results in increasing financial security and maintaining maternal employment. For example, "$1,000 higher annual state subsidy spending per low-income child led to a 3.5 percentage point increase in the likelihood of maternal employment," demonstrating a distancing between the cost of children and FPR (Prenatal Policy Impact Center). Subsidies also increase a family's economic security as a "Subsidy receipt led to an increase in monthly earnings by 250%" (Prenatal Policy Impact Center) which helps increase the demand for children as families have more capital to spend. In addition to subsidies that help account for positive externalities, quality regulations must be imposed to drive out low-quality childcare. Imposing quality regulations will also alleviate information asymmetry, as parents will not bear the burden of understanding the standards of quality childcare, as businesses will already be required to meet them.

A couple's decision to not have children, or delay childbearing, is bad behavior. Countries like Japan have faced major hits to their GDP as an aging population was failed to be replaced by

new generations. Countries in the developed world must find solutions to prevent economic decline due to a lack of workforce replacement. The increased costs of children in the past century have caused a decline in the number of children per family as well as a delay in the time period in which women choose to have children. Rising engagement in higher education and labor force participation increases the opportunity cost of having children for women. Market failure in the private market for childcare services is unsuccessful at alleviating time costs due to liquidity restraints on families and the inability of the private market to supply childcare at an affordable and consistent rate. Government intervention in the private childcare market is justified by this market failure as well as the positive externalities of high-quality childcare. The decline in fertility is caused by rising costs of children, and because fertility impacts workforce replacement, government intervention is necessary to mitigate this negative trend.

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