Nutritional Deficits and the Quantity-Quality Trade-off: Evidence from an Exogenous Fertility Shock in Low-Income Urban Settings in the Philippines

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I. Introduction

The quantity–quality trade-off is one of the most influential ideas in the economics of the family. This framework, introduced by Becker (Becker, 1960, 1991), asserts that parents who have more children must allocate fewer resources to each child. Constraints on income and attention lead to reductions in per-child investments, especially in settings where public provision of services is weak or inconsistent. The trade-off helps explain long-run trends in fertility decline, human capital accumulation, and intergenerational poverty in low- and middle-income countries (LMICs) (Rosenzweig and Schultz, 1980; Schwarze and Winkelmann, 2003).

Despite this theoretical foundation, most empirical tests of the trade-off have prioritized educational outcomes as the primary measure of child "quality." Studies often rely on proxies such as school enrollment, standardized test scores, or years of completed schooling (Black, Devereux and Salvanes, 2005; Angrist and Lavy, 2010). These indicators indeed encapsulate important aspects of human capital formation, yet they obscure other equally vital dimensions. Among these, nutrition stands out as both foundational and predictive. Adequate nutrition supports cognitive development and raises productivity later in life (Hoddinott et al., 2013). Children who experience chronic undernutrition face biological constraints that limit their ability to benefit from schooling, regardless of enrollment status or household income (Grantham-McGregor et al., 2007). Analyses that exclude nutritional outcomes therefore risk understating the full scope of the quantity–quality trade-off.

This paper addresses this gap by studying how an exogenous increase in fertility affected child nutrition in the Philippines. In 1990, the mayor of Manila issued an executive order that prohibited modern contraceptives in the city's public health system. Health centers could no longer distribute birth control pills, condoms,

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or IUDs. Local officials also removed family planning materials and instructed providers to offer only natural methods. Because the national government did not impose similar restrictions, this policy created a natural experiment. Poor families in Manila experienced a sudden reduction in access to contraceptive services, while other urban households in comparable regions retained access (Dumas and Lefranc, 2019).

I use this policy discontinuity to examine the relationship between fertility and child nutrition. The analysis draws on multiple waves of the Philippine Demographic and Health Surveys (DHS), which offer nationally representative data on household structure, maternal characteristics, and child anthropometrics. I focus on stunting (low height-for-age) and wasting (low weight-for-height) as outcome variables. These indicators capture long-term and short-term nutritional stress, respectively, and predict later-life productivity, disease risk, and mortality (Victora et al., 2008).

The empirical strategy proceeds in three steps. First, I replicate prior work to confirm that the contraceptive ban increased fertility among affected women (Dumas and Lefranc, 2019). Second, I estimate reduced-form effects of exposure to the policy on child nutrition. Third, I examine heterogeneity by maternal education, household wealth, and access to prenatal care. Families with fewer resources may face tighter constraints when household size increases. If the quantity–quality trade-off holds in the nutritional domain, then children in these households should face a higher risk of malnutrition.

This study contributes to the literature in several ways. It provides rare causal evidence that links fertility shocks to nutrition rather than education. It expands the definition of child quality to reflect physiological outcomes. It also highlights the long-run consequences of local reproductive policy in a middle-income democracy. In the wider policy landscape, the Philippine case offers a warning. Governments that restrict reproductive autonomy may unintentionally weaken child health and human capital formation. As countries pursue goals related to nutrition, health equity, and gender rights, evidence from natural experiments such as this one can inform the design of more inclusive and sustainable population policies.

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Mathematical Appendix