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## The impact of health insurance for children under age 6 in Vietnam: A regression discontinuity approach

Michael Palmer <sup>a,\*</sup>, Sophie Mitra <sup>b</sup>, Daniel Mont <sup>c</sup>, Nora Groce <sup>c</sup>

<sup>a</sup> The University of Melbourne, Australia

<sup>b</sup> Fordham University, United States

<sup>c</sup> University College of London, United Kingdom

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### ABSTRACT

Accessing health services at an early age is important to future health and life outcomes. Yet, little is currently known on the role of health insurance in facilitating access to care for children. Exploiting a regression discontinuity design made possible through a policy to provide health insurance to pre-school aged children in Vietnam, this paper evaluates the impact of health insurance on the health care utilization outcomes of children at the eligibility threshold of six years. Using three rounds of the Vietnam Household Living Standards Survey, the study finds a positive impact on inpatient and outpatient visits and no significant impact on expenditures per visit at public facilities. We find moderately high use of private outpatient services and no evidence of a switch from private to covered public facilities under insurance. Results suggest that adopting public health insurance programs for children under age 6 may be an important vehicle to improving service utilization in a low- and middle-income country context. Challenges remain in providing adequate protections from the costs and other barriers to care.

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### 1. Introduction

The impact of public health insurance programs has received a great amount of attention due to its importance to universal health coverage, a goal common to many low- and middle-income countries (LMICs) (Lagomarsino et al., 2012). Universal health coverage strives to provide equal access to the health care services that people need without causing financial hardship (World Health Organization, 2010). This goal is particularly important for children for whom there exists a high elasticity of demand for health care (Ching, 1995; Leibowitz et al., 1985; Sauerborn et al., 1994) and the early intervention of health services has been shown to be critical to future health and life outcomes (Chen and Jin, 2010; Kraft et al., 2009). Universal health coverage may be achieved through different means; chief among these is the expansion of public health insurance programs. Little is known about the impact of public health insurance programs on the utilization outcomes for children in LMICs. Improving knowledge on the health seeking behaviors of children under insurance has important implications for policy makers in the design and financing of benefit packages. If benefit packages are aligned with population needs then health

finance systems stand the best chance of meeting universal health coverage goals (World Health Organization, 2010).

Through pooling risk across individuals, health insurance lowers the price of health care at the time of purchase leading to increased use of health care (Zweifel and Manning, 2000). The effect on utilization, however, will depend upon the level of benefits provided and individual circumstances, alongside supply-side factors which affect levels of service utilization. Health seeking behaviors of younger children under insurance will conceivably differ to those of older children due to differences in underlying health status and health care needs, among other characteristics. This apparent lack of an adequate comparison group presents an evaluation challenge. Another concern is that the decision to purchase insurance may be linked to decisions around health status and health care usage. In this case, regression estimates of the impact of health insurance on service outcomes will be biased (Cutler and Zeckhauser, 2000).

In this study, we circumvent these problems through a regression discontinuity (RD) design, made possible by a 2005 policy in Vietnam to provide health insurance coverage to children under the age of six. The basic idea of the RD design is that children on either side of the cutoff age are similar and, in a sense, randomly assigned to insurance coverage. Under some plausible assumptions, differences in outcomes for children in the vicinity of the cutoff are attributed to differences in insurance coverage generating an

\* Corresponding author. Level 4, 161 Barry Street, Carlton, Victoria 3010, Australia.  
E-mail address: [michael.palmer@unimelb.edu.au](mailto:michael.palmer@unimelb.edu.au) (M. Palmer).

unbiased estimate of treatment effects. RD design is generally regarded as having the greatest internal validity of the quasi-experimental estimators and requires relatively mild assumptions (Angrist and Pischke, 2009; Imbens and Lemieux, 2008; Lee and Lemieux, 2010).

Using three cross-sections of the Vietnam Household Living Standard Survey (2006, 2008 and 2010), and exploiting a discontinuity in insurance coverage induced by a policy intervention with a fuzzy RD design, we evaluate the 2005 policy across a range of utilization outcomes at public facilities. We also examine possible substitution effects between public and uncovered private service utilization and the impact on health expenditures. This paper makes a novel contribution to the scant literature on the impact of public health insurance programs for young children in a LMIC context. The following section provides background on child health insurance in LMICs with particular attention to Asia and Vietnam, as well as review of child health insurance program impacts. This is followed by separate descriptions of the data and methodology used in this study before a presentation of the results. The paper concludes with a discussion of results and final remarks for policy.

## 2. Background

### 2.1. Public health insurance expansion in LMICs and in Asia

Public insurance schemes typically comprise a collection of co-contributory, contributory and non-contributory schemes targeted to distinct population groups such as formal sector employees and civil servants, informal sector employees and students, and social beneficiary groups (Giedion et al., 2013). In recent years, many LMICs have expanded public health insurance coverage as a means to improving access to formal health care services for their populations, and providing financial protection from the costs of health care, on the path towards universal health coverage (World Health Organization, 2010). For instance, through a series of reforms, China tripled health insurance enrollment across the population from 30% in 2003 to over 90% in 2012 (Xiong et al., 2013); Ghana increased coverage from 35% to 66% from 2007 to 2010 through voluntary contributory insurance reforms (Odeyemi and Nixon, 2013); and most notably, Thailand reached 100% coverage by 2005 through its “30 Baht” reforms of 2001 (Gruber et al., 2014).

### 2.2. Child health insurance programs in LMICs and in Asia

Targeting specific population groups, such as children, the poor and persons with disabilities in social health protection programs is critical to health equity and has been highlighted as a priority area in the Post-2015 Development Agenda (Groce et al., 2011; Mitra, 2013; Odeyemi and Nixon, 2013; Petrerá et al., 2013; Reinbold, 2011; United Nations, 2013). Targeting specific groups may be motivated by other considerations. Several studies have demonstrated that the elasticity of demand for health care may be highest for children and the poor in LMIC settings, implying that user-fees will deter these groups from using formal health care the most unless financial risk protection measures are taken (Asfaw et al., 2004; Gertler et al., 1987; Sauerborn et al., 1994). There also exists evidence, in the context of the United States and Burkina Faso, that medical demand for younger children may be more price sensitive than it is for older children (Leibowitz et al., 1985; Sauerborn et al., 1994).

Some LMICs have expanded health insurance by targeting certain vulnerable populations like children. This is for example the case in Guatemala, Argentina and Paraguay with programs for children and mothers, and Egypt with a program for school age children (World Bank, 2013; Yip and Berman, 2001). The arrival of

child health insurance programs in Asia is a recent development. To our knowledge, only four countries have introduced child-targeted health insurance programs (India (state of Karnataka), the Philippines, Taiwan and Vietnam) and little is known on the impacts of these programs. The Indian state of Karnataka developed a state-funded health insurance scheme for school children in 2006 (Government of Karnataka, 2014). The scheme automatically provides health cards to children enrolled in grades 1–10 offering regular health check-ups and free care for various ailments. Prior to 1995, Taiwan had developed various health schemes, which left uninsured mostly children under 14 and adults over 65. When Taiwan created the National Health Insurance in 1995, its social insurance program which consolidated the previously established programs, it started to target coverage of certain benefits to previously uninsured children (e.g. free annual check-ups and immunizations to children) (Cheng, 2003). In the Philippines, as part of an expansion towards universal health insurance coverage, an insurance program was launched for school-aged children (Quimbo et al., 2011).

Vietnam’s public health insurance journey can be traced back to 1986 when it introduced *Doi Moi*, a system of economic and political reforms that opened the socialist society to market forces (Lieberman and Wagstaff, 2009). In 1992, social health insurance was first introduced for civil servants and formal sector employees in a compulsory co-contributory scheme. The reforms also included a non-contributory scheme for ‘policy beneficiaries’ that included war heroes and other persons of merit in the socialist revolution. In 1994, a voluntary contributory insurance scheme was established initially for school aged children who by 2003 comprised over 99% of enrollees (Ekman et al., 2008). This proportion has reduced over time due to the gradual take up by farmers and the self-employed (71% in 2010, calculation by authors). In 2003, persons living in poor households became eligible to non-contributory health insurance through the Health Care for the Poor Program (non-contributory health insurance has been available to the poor since 1999 but was expanded more formally in effect from 2003 and later in 2006). In 2005, all children under the age of six years were added to the list of non-contributory beneficiaries (Socialist Republic of Vietnam, 2004, 2005). By the year 2010, some 61% of the Vietnamese population was insured (calculation by authors).

Fig. 1 plots insurance coverage for children, aged 0–10 years, over the years 2004–2010. The dramatic uptake for children under the age of six after the 2005 intervention illustrates that the policy

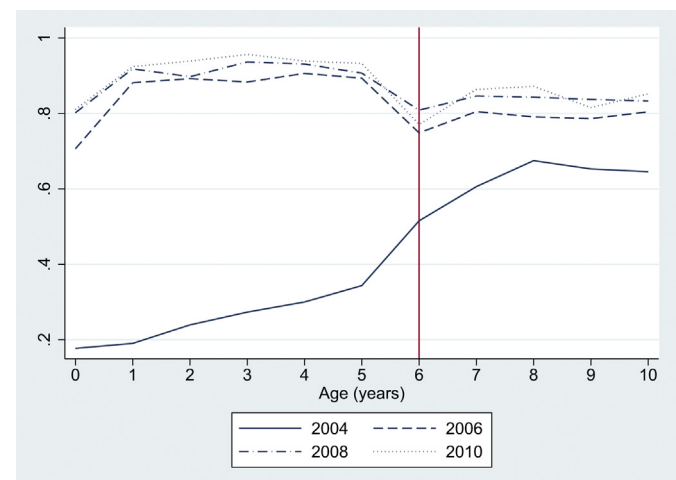


Fig. 1. Insurance coverage 2004–2010, aged 0–10 years.  
Source: Vietnam Household Living Standards Survey 2004, 2006, 2008, 2010

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