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## **Modelling the Effects of Health Insurance on Health Care Demand in Indonesia**

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The main goals of this dissertation are to model and estimate the effects of health insurance on health care demand in Indonesia. To achieve this, this dissertation first describes the health care context in Indonesia, focusing on the health care delivery and financing systems. Reviews of the literature on: (i) the demand effects of health insurance, (ii) issues in modelling and estimating the demand effects of insurance, and (iii) the theoretical and empirical works on estimating health care demand, were presented. The reviews identified important factors that need to be considered in estimating the demand given insurance, i.e. adverse selection and provider behaviour. These factors persuade one to use a rigorous econometric model to isolate the true effects of insurance, which can be further classified into two main considerations--the features of the dependent variables and the nature of the data--.

A household model of health care demand was developed and tested empirically using the data from the second round of the Indonesia Family Life Survey (IFLS2). The sample used was limited to individuals between 19 and 60 years of age who reported being sick during the 4-week recall period of the survey. This restricted the sample size to 13,639 individuals. Approximately 82% of individuals reported being sick, and only 23% of the sick individuals sought formal outpatient care (68.5% chose public providers and 31.5% chose private providers).

This study disaggregated the demand for outpatient care into public and private providers. The demand was measured by both discrete categorical and discrete count data variables. Detailed econometric models used were presented in Chapter 2. The main results are summarized as follows:

- (1) For discrete choice estimates, a multinomial logit model was used to investigate the effects of social health insurance on (i) outpatient care use, (ii) provider choices, and (iii) equity. The results confirmed that Askes members had 94% ( $p < 0.01$ ) higher probability of using public outpatient care, whilst the beneficiaries of Jamsostek had higher probabilities of using public and private outpatient care by 65% ( $p < 0.5$ ) and

275% ( $p < 0.01$ ) respectively, than uninsured people. While the distribution of insurance was concentrated among the rich, the largest effects of insurance on demand were observed among individuals among the poor. Our simulation showed that expanding insurance overall increased outpatient care use by about 96% and 149% for public and private providers, respectively. Given provider-networks Jamsostek members were more likely to use private providers over public ones than the uninsured. There was significant inequity in access to public (which was pro-poor) and private (which was pro-rich) outpatient care. However, expanding health insurance had a negative impact on equity.

- (2) For discrete count estimates, six econometric model specifications were compared to estimate the effects of insurance on the number of visits to public and private outpatient care. A model selection criterion was adopted to select the best alternatives. The results concluded that the Generalized Method of Moments (GMM) estimator was the best model for the number of visits to public outpatient care, while the Hurdle Negative Binomial (HNB) was found to be superior in modeling the number of visits to private outpatient care. The findings confirmed that after controlling for selection bias Askes members increased their probability in the average number of visits to public outpatient care by 63% ( $p < 0.01$ ). The beneficiaries of private insurance had a 74% ( $p < 0.01$ ) higher probability on the contact decision for private outpatient visits, but no significant difference in the frequency decision.

As the use of formal health care services is very low, the extension of a social health insurance (SHI) policy is recommended. This policy will increase health care demand among the poor. To enlarge the memberships, repealing the conditional mandatory provision of Jamsostek and introducing wellness-subsidy for the poor to join insurance is well considered. Future studies need to be directed to better understand the effects of health insurance on inpatient care, financial protections, and health outcomes. Studies related to the proposed policy of expanding SHI need also to be further explored.