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Does Subsidized Health Insurance Cause Ex Ante Moral Hazard? Empirical Analysis Of Smoking Intensity In Poor Communities In Indonesia

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ABSTRACT

The existence of ex ante moral hazard (EAMH) can cause inefficiency and threaten the sustainability of the health insurance program developed by the Indonesian government. The deficit in health social funds and the increase in the number of smokers in Indonesia may indicate the presence of EAMH. Several studies have explored EAMH, but their conclusions remain inconclusive. This study will utilize panel data from IFLS waves 2, 3, 4, and 5. By combining matching and Difference-in-Differences (PSM-DiD) methods to eliminate various potential biases, this research aims to reveal the impact of participating in subsidized health insurance on changes in smoking intensity among beneficiaries of Askeskin/JKN PBI. The findings suggest that, overall, the Askeskin policy does not indicate the presence of EAMH in relation to smoking behavior. However, within a specific subset of the data, there are indications of EAMH linked to rising smoking expenses among poor urban individuals.

INTRODUCTION

In 2014, the Government of Indonesia (GOI), through BPJS Kesehatan, committed to achieving Universal Health Coverage (UHC) for all Indonesians, aiming for its realization by 2019 (Agustina et al., 2019; Hindarti, 2022). However, BPJS Kesehatan is currently facing significant financial challenges that threaten the sustainability of the JKN program and impede the realization of UHC. From 2017 to 2019, the Health Social Fund (DJS Kesehatan) experienced a persistent deficit in its net assets. The deficit amounted to Rp2 trillion in 2017, escalated to Rp34 trillion in 2018, and peaked at Rp51 trillion in 2019. This deficit arises from an imbalance between the premium contributions received from participants and the claims issued for healthcare services provided. A significant portion of BPJS Kesehatan's expenses are attributed to medical costs related to smoking-related diseases, which constitute a substantial part of the overall expenses incurred (Hindarti, 2022).

The World Health Organization (WHO) highlights Indonesia as the fourth most populous country worldwide, with a staggering population of 260 million people. What compounds this issue further is that over 25% of the Indonesian population are smokers, according to data released by WHO (Reitsma et al., 2017). Alarming trends continue, with the prevalence of teenage smokers reaching 35.6% in 2019 (WHO, 2019). As a result, BPJS Kesehatan faces mounting losses, particularly due to escalating medical expenses associated with smoking-induced diseases. As this trend persists, the financial strain on BPJS Kesehatan is expected to intensify, and an increase in insurance premiums is implemented to address it.

Since 2005, the government subsidize health insurance premiums for individuals within the informal sector and those classified as poor (Sparrow et al., 2013). These groups have been the most vulnerable to economic shocks and have had the least access to the health insurance market. Therefore, the primary objective of Askeskin is to enhance access to healthcare facilities and provide financial safeguards against health-related shocks and illnesses (Sparrow et al., 2013). The anticipated outcome is to empower the poor to improve their health and productivity, enabling them to break free from poverty. However, TCSC-IAKMI (2020) indicates that the poorer the people, the higher the number of smokers.

Medical events (losses) resulting from illness can be prevented by adopting a healthy lifestyle. However, participation in health insurance might provide incentives for some individuals to neglect healthy behaviors. In the context of smoking, moral hazard refers to the idea that individuals may increase smoking when they are protected against risks or have insurance coverage, leading to increased risk-taking or irresponsible actions. Furthermore, the poor and near-poor do not have to pay for health insurance premiums, so they do not bear the financial repercussions of their smoking-related illnesses.

The costs of treating smoking-related diseases, which are often expensive and require long-term care, can strain healthcare resources and increase the financial burden on insurance programs like BPJS Kesehatan. This, in turn, can lead to higher premiums or reduced benefits for all participants, including those who do not smoke. Consequently, this can adversely affect other parties, such as healthcare providers, insurance systems like BPJS Kesehatan, and the government, which may have to pay higher subsidies for health insurance premiums.

In the Indonesian context, research on the impact of health insurance programs on changes in individual smoking behavior is limited. As far as the information obtained, only two studies have addressed this issue, and their findings remain inconclusive regarding the presence of the Ex Ante Moral Hazard (EAMH) effect of health insurance on smoking behavior. Hindarti (2022) found evidence of EAMH related to health insurance for obese household heads but did not find similar evidence for smoking behavior. In contrast, Putra (2020) observed indications of EAMH in the relationship between the JKN program and individual physical activity. Specifically, the JKN program was negatively associated with physical activity and positively associated with cigarette spending.

Based on the empirical and literature gaps, this paper aims to analyze indications of EAMH resulting from government policy interventions, specifically the provision of health insurance to the poor and near-poor, starting with the Askeskin program. Unlike previous studies, this research focuses on the poor and near-poor, who are the most vulnerable to welfare fluctuations due to health issues and the highest quintile of smokers in Indonesia. The analysis utilizes data from the Indonesian Family Life Survey (IFLS) waves 2, 3, 4, and 5, covering the periods 1997, 2000, 2007, and 2014. The study employs a quasi-experimental design using propensity score matching and difference-in-differences (PSM-DiD) to evaluate the impact of the Askeskin policy on smoking behaviour.

We do not find evidence of EAMH in relation to smoking behavior caused by the Askeskin programme. However, within a specific subset of the data, there are indications of EAMH linked to rising smoking expenses among poor urban individuals.

LITERATURE REVIEW

Achieves a state of balance known as Pareto efficiency, where both consumer and producer surpluses are maximized without harming either party (Kolmar & Hoffmann, 2022). However, achieving efficiency in the healthcare market is a primary challenge due to information asymmetry arising from adverse selection and moral hazard. This information asymmetry in the health insurance market often leads to lower premium payments than necessary, potentially resulting in a deficit that threatens the sustainability of the health insurance program. In Indonesia, where National Health Insurance (JKN) is mandatory for the entire population, the aim is to minimize the likelihood of adverse selection (Putra, 2020) by including both low-risk and high-risk individuals to create a more balanced risk pool. Nevertheless, research on the presence of moral hazard remains inconclusive, and experienced a persistent deficit in the Health Social Fund (DJS Kesehatan) net assets could potentially serve as empirical indicators of moral hazard.

On the other hand, health insurance can also exert an indirect positive influence on the market that is not directly reflected in product prices. In the health services market, positive externalities occur (Pindyck & Rubinfeld, 2013). Individual consumption of health services not only provides short-term benefits but also generates long-term advantages, such as increased personal productivity and spillover benefits to the economy through improved overall societal health. Government intervention is necessary to address market failures (Arrow, 1963) caused by asymmetric information—particularly moral hazard—and positive externalities in the health sector.

Moral Hazard And The Competing Effect Of Health Insurance On Health Behavior

Moral hazard is a key concept in health economics that refers to the tendency of individuals covered by health insurance to alter their behavior in ways that increase the risk of harm to the insurer. This behavior change not only leads to moral hazard but also results in economic inefficiency (Pindyck & Rubinfeld, 2013). Ehrlich & Becker (1972) developed a theory of demand in the insurance market by distinguishing between two sources of moral hazard: self-protection and self-insurance. Self-protection involves an individual's efforts to influence the likelihood of illness through the avoidance of risky behaviors (such as smoking and drinking alcohol) and the adoption of healthy practices (such as maintaining a healthy diet and exercising). In contrast, self-insurance pertains to an individual's efforts to influence future healthcare costs through activities like routine doctor visits, dental care, immunizations, and regular health examinations.Moral hazard in individual behavior within the health insurance market is classified into two types: ex-ante and ex-post (Zweifel & Manning, 2000). First, ex-ante moral hazard (EAMH) occurs when the risk of loss increases before a medical event due to individuals engaging in riskier behaviors and lacking incentives for preventive care, which raises the likelihood of future loss events. Second, ex-post moral hazard (EPMH) involves an increase in the utilization of health services after an incident, resulting in more intensive use of medical resources and higher costs for medical services. Theoretically, the existence of EAMH is linked to reduced incentives for preventive care due to the coverage effect on future disease events.

Health insurance holders have more opportunities to communicate and interact with medical professionals, gaining additional information about the benefits of engaging in preventive activities and receiving expert advice on effective preventive measures. This advice and increased interaction with healthcare professionals can enhance patients' knowledge, leading to better health behaviors and lifestyle choices, such as abstaining from smoking, reducing alcohol consumption, improving dietary habits, and increasing physical activity (informational effect). Nevertheless, some insurance participants might behave recklessly, assuming that insurance will cover the cost of medical treatment when they are ill. This behavior can lead to ex-ante moral hazard and adverse outcomes. Moreover, EAMH increases the risk for insurers by raising the incidence of catastrophic diseases and the associated costs of treatment.

Therefore, the net effect of health insurance on an individual's health can vary. If health insurance does not significantly impact an individual's health, its effect may be negligible. However, if it significantly influences an individual's perception and response to their health condition by increasing preventive activities, this is known as the net informational effect (where the informational effect outweighs the ex-ante moral hazard effect). Conversely, individuals might become less concerned about maintaining their health, knowing that their insurance will cover medical expenses if they fall ill. In this case, the net ex-ante moral hazard effect predominates, potentially leading to a decrease in proactive health behaviors (where the ex-ante moral hazard effect outweighs the informational effect).

Policy On Subsidized Health Insurance In Indonesia

According to classical welfare theory, the government has the primary responsibility for providing a public health system and serves as the regulator overseeing the allocation of resources for this system (Widaningrum, 2007). Additionally, market failures in the healthcare sector, driven by information asymmetry, lead to inefficiencies in the market. Therefore, government intervention is essential to address and correct these issues.

Furthermore, government policies in the healthcare sector are essential to ensure equitable access to health services (Vining & Weimer, 2016). It is evident that individuals living in poverty face significant challenges in obtaining adequate health coverage due to various factors. These include poorer health conditions resulting from insufficient nutrition, unfavorable living environments caused by financial constraints in accessing quality housing, and bad habits such as smoking, which disproportionately impact the expenditures of impoverished households. As a result, the premiums that the poor and near-poor must pay can be prohibitively high, yet their financial ability to pay these premiums is often minimal, leading to very low health insurance coverage for these groups. On the other hand, good health is crucial for the poor to increase their productivity, escape poverty, or for the near-poor to avoid falling back into poverty.

The most important government intervention in the health sector is the establishment of regulations to ensure equal access to health insurance for all segments of society, aiming for universal health coverage. However, the limited income of the poor and near-poor highlights the need for government support to improve their access to health insurance. Consequently, the government launched the Askeskin program on January 1, 2005, to provide premium assistance for the poor and near-poor. Participants in the Askeskin program benefit from guaranteed free health services, including inpatient care, emergency room visits, outpatient care, ambulance services, and emergency care, according to medical needs at designated health facilities. The program's funds are managed by PT Askes (Persero).

In early 2008, the Askeskin policy was succeeded by the Jaminan Kesehatan Masyarakat (Jamkesmas) program. Essentially, Jamkesmas is an enhanced version of the Askeskin policy (Damayanti, 2008). With the launch of the JKN program on January 1, 2014, all previous government health insurance programs (Askes PNS, JPK Jamsostek, TNI, Polri, and Jamkesmas) were integrated into the JKN program, which is managed by BPJS Kesehatan. Overall, the three health insurance programs for the poor and near-poor (Askeskin, Jamkesmas, and JKN-PBI) have remained largely unchanged, with the government continuing to cover insurance premium contributions for those who are poor and near-poor.

METHODS

The unit of analysis in this study consists of individuals aged 15 and older, using secondary data from the Indonesian Family Life Survey (IFLS). The relationship between the IFLS periods and the Askeskin period is illustrated in the Supplementary appendix, where the Askeskin policy intervention began in 2004. The timeframes selected for this study align with the IFLS surveys

conducted in 1997, 2000, 2007, and 2014. These specific periods were chosen to meet the requirements of the Difference-in-Differences (DiD) model, which requires two periods before the intervention to test the parallel trends assumption. Data from IFLS wave 2 (1997) and IFLS wave 3 (2000) were used as pre-policy implementation data, while IFLS wave 4 (2007) and IFLS wave 5 (2014) served as post-policy implementation data, covering both short-term and long-term effects.

From the IFLS data ditribution (see the Supplementary appendix for the detailed data), there are a total of 45,169 unique individual observations. A total of 8,871 individuals classified as "never treated" are those who did not receive health insurance (Askeskin) between 2007 and 2014. These individuals are assigned to the control group. Conversely, 2,345 individuals categorized as "always treated" are those who had health insurance in both 2007 and 2014 and will be assigned to the treatment group. Newly treated and newly untreated individuals are excluded from the analysis to avoid potential bias arising from changing statuses, which could create negative weighting issues in the estimation (Gitaharie et al., 2022). The term "non-sample/others" refers to individuals who were either under the age of 15 throughout all four observation periods or those who passed away or could not be surveyed during the survey period.

Distribution of sampel data indicates that in 2007, Askeskin provided coverage to 3,282 individuals, while 16,164 individuals did not have Askeskin coverage. Thus, Askeskin coverage in 2007 was 16.8%. This finding is consistent with the research by Sparrow et al. (2013), which indicated that, according to Susenas data, Askeskin coverage was 12% in 2006. In 2014, JKN covered 9,638 individuals, while 9,808 individuals were not covered by JKN. Therefore, JKN coverage in 2014 was 49.5%. This result aligns with the study by Darmayanti & Raharjo (2020), which reported JKN coverage of 52% in 2014.

Propensity Score Matching (PSM) is employed to satisfy the parallel trends assumption. PSM enhances the robustness of the Difference-in-Differences (DiD) model by using control variables to match treatment and control group observations, thereby reducing bias (Fredriksson & Oliveira, 2019). The matching process utilized pre-intervention data from the year 2000 and combined it with data from 2007. The kernel matching method was applied with a bandwidth of 0.06, following the method used by Sparrow et al. (2013). Resampling was performed using an estimation method with the following models:

$$W\text{i} = W(\Pr(SI_{i,2007}=1 \mid X_{i,2007})) = W(P(X_{i,2007}))$$

W_i represents the weight of PSM. Pr signifies the probability of treatment assignment. $SI_{i,2007}$ is the subsidized insurance targeting. Lastly, $X_{i,2007}$ denotes the set of household characteristics utilized by the Indonesian government as eligibility criteria for subsidized insurance targeting.This study aims to analyze the relationship between subsidized health insurance policies and smoking intensity among poor and near-poor communities in Indonesia. The empirical model used for reference is based on the research model developed by Gitaharie et al., (2022). Utilizing the available data, this study employs the canonical Difference-in-Differences (DiD) specification.

$$Y_{it} = \alpha + \beta_1 SI_{it} + \beta_2 POST_t + \mathbf{\beta_3 SI_{it}\ X\ POST_t} + \mathbf{X_{it}}\ \gamma + \eta_{rt} + \varepsilon_{it}$$

Y_{it} represents smoking intensity, consisting of Yi0 to Yi5. SI_{it} is a dummy variable indicating askeskin ownership for individual i in period t. X_{it} is a vector of control variables, ε_{it} represents the error term, and β_3 is the parameter of interest, serving as a DiD predictor.

To ensure the reliability of the estimation results, it is crucial to test the main assumption of the Difference-in-Differences (DiD) model: the parallel trends assumption. This assumption posits that, in the absence of the policy, the treatment group would have followed the same time trend as the control group concerning the specified outcome variable (Fredriksson & Oliveira, 2019). This assessment is conducted using a placebo treatment test. The DiD model will yield reliable results if the parallel trends assumption holds. However, if this assumption is violated, DiD may not be an appropriate method (Fredriksson & Oliveira, 2019), as the coefficients estimated by the DiD model could be biased. Therefore, the conclusions drawn from the analysis should consider the results of the placebo treatment test, which provides insights into the validity of the parallel trends assumption and the reliability of the DiD model.

RESULTS

Table 1 Descriptive Analysis Of Data Used For Did

Var	Control Group					Treatment Group				
	Before		After		diff	Before		After		diff
	N	mean	N	mean		N	mean	N	mean	
cekSI	10,532	0	17,722	0		2,857	1	4,690	1	
Yi0	10,532	0.283	17,722	0.284	0.001	2,857	0.338	4,690	0.324	-0.014
Yi1	10,532	3.225	17,722	3.557	0.332	2,857	3.630	4,690	3.547	-0.083
Yi2	10,532	1,208	17,722	2,817	1609	2,857	1,205	4,690	2,591	1386
Yi3	10,491	0.0174	17,722	0.00705	-0.010	2,857	0.0230	4,690	0.00855	-0.014
Yi4	10,532	56.11	17,686	73.02	16.91	2,846	66.87	4,678	76.01	9.14
Yi5	10,532	0.0281	17,722	0.0440	0.0159	2,857	0.107	4,690	0.0936	-0.013
dummy docvisit	10,532	0.00617	17,722	0.0988	0.0927	2,857	0.00350	4,690	0.100	0.096

Source: Data Processed, 2023

Descriptive Analysis

Table 1 shows that there are 34,811 data samples used in the analysis. Of these, 28.3% are smokers in the control group, while the rest are non-smokers. The trend for the variable of interest in the control group is as follows: +0.001 (Yi0), +0.332 (Yi1), +1.609 (Yi2), -0.010 (Yi3), +16.91 (Yi4), and +0.0159 (Yi5). In the treatment group, 34.0% are smokers, and the remainder are non-smokers. The trend for the variable of interest in the treatment group is as follows: -0.014 (Yi0), -0.083 (Yi1), +1.386 (Yi2), -0.014 (Yi3), +9.14 (Yi4), and -0.013 (Yi5).

Checking The Parallel Trend Assumption Before And After Resampling

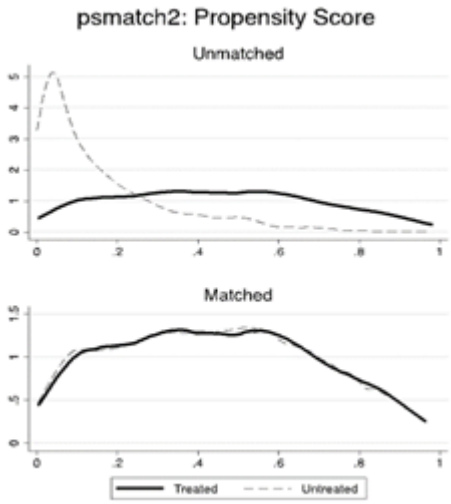
The analysis uses the Difference-in-Differences (DiD) method. However, not all variables of interest in this model satisfy the parallel trends assumption (see the Supplementary appendix for the detailed result). Specifically, variable Yi3 shows a significant difference between the treatment and control groups, thereby violating the parallel trends assumption. Applying the DiD method under these conditions could introduce bias into the model. To address this issue and satisfy the parallel trends assumption, resampling is performed using the Propensity Score Matching (PSM) method.

Resampling Using Propensity Score Matching

The resampling process employs the Propensity Score Matching (PSM) method to minimize selection bias. The results of the resampling indicate that 4,680 individuals fall within the common support. Among these, 92 individuals are considered off-support. Consequently, the analysis includes 1,047 individuals in the treatment group and 3,541 individuals in the control group. The common support distribution reveals substantial overlap between the

treatment and control groups. Figure 1 illustrates that the density after matching shows significant improvement, indicating a high level of similarity between the control and treatment groups. Consequently, it can be inferred that a balance has been achieved between the treatment and control groups. In conclusion, the covariates used in the propensity score matching (PSM) exhibit no significant differences, suggesting that the PSM model is reliable.

Figure 1 PSM result



Checking The Parallel Trend Assumption After Resampling

The parallel trends assumption is confirmed by the results of the placebo treatment test (see the Supplementary appendix for the detailed result), which show no statistically significant differences in any of the variables of interest. This suggests that the difference in outcomes between the control and treatment groups remains stable throughout the pre-treatment period. Therefore, it can be concluded that the treatment coefficients prior to the intervention do not impact the outcomes. Consequently, after resampling, the parallel trends assumption for this research estimation model can be considered satisfied.

Table 2 The Estimation Results Of The Impact Of The Askeskin Policy

Variables	Yi0	Yi1	Yi2	Yi3	Yi4	Yi5
treatment (β_1)	0.0612*	1.085**	365.5	0.00303	21.58**	0.116**
	(0.0333)	(0.448)	(245.4)	(0.00208)	(10.72)	(0.0505)
Post (β_2)	-0.0768**	-0.891**	2,357***	0.00440**	14.99	-0.0167
	(0.0342)	(0.433)	(422.0)	(0.00174)	(13.47)	(0.0534)
DID (β_3)	**0.00219**	**-0.237**	**379.6**	**0.0000173**	**-3.124**	**-0.00970**
	(0.0406)	**(0.548)**	**(407.0)**	**(0.00220)**	**(15.34)**	**(0.0633)**
Observations	13,473	13,473	13,473	13,473	13,473	13,473
R-squared	0.032	0.040	0.050	0.031	0.032	0.040
Controls:	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Source: Data Processed, 2023

Difference Across Group (B1)

β1 on the Table 2 indicates significant disparities between the control group and treatment group in all variables of interests, except for Yi2 and Yi3. This suggests that the treatment group exhibits a greater level of smoking intensity compared to the control group. This finding is align with previous research. Adolescents belonging to the lowest income group were more than twice as likely to smoke compared to adolescents from the highest income group (Kusumawardani et al., 2018).

Difference Across Period (B2)

β2 on the Table 2 indicates significant disparities between the pre-treatment and post-treatment group for variables Yi0, Yi1, Yi2 and Yi3, while there are no significant differences in variable Yi4 and Yi5 across period.

The Impact Of The Askeskin Policy On Smoking Intensity (B3)

The regression results in Table 2 show that β_3 does not exhibit any statistically significant differences between the treatment and control groups. The estimated results indicate that the government's intervention in the healthcare sector, through subsidizing insurance premiums for the poor and near-poor, does not lead to an increase in smoking behavior. Therefore, it is evident that ownership of the Askeskin Program does not result in ex-ante moral hazard (EAMH) affecting individuals' smoking intensity. The estimation of the research equation using the DiD-PSM method yields an R-squared value ranging from 3.2% to 10.5%, indicating that the variables in the model account for 3.2% to 10.5% of the variation in smoking intensity, with the remaining variation attributed to factors not included in the model.

Table 3 Heterogenity analysis

Variables	All	by region		by gender		by timeframe	
		Rural	Urban	Woman	Man	Short term	Long term
Yi0 = Has a smoking habit/not							
β_3	0.00219	-0.00142	0.0151	-0.0108	0.0267	-0.00545	0.00219
SE	(0.0406)	(0.0556)	(0.0586)	(0.0161)	(0.0553)	(0.0470)	(0.0406)
Observations	13,473	7,586	5,887	7,292	6,181	9,041	13,473
R-squared	0.032	0.033	0.045	0.031	0.079	0.031	0.032
Controls:	YES	YES	YES	YES	YES	YES	YES
Yi1 = Number of cigarettes smoked per day (NCD)							
β_3	-0.237	-0.453	0.106	-0.192	-0.301	-0.342	-0.237
SE	(0.548)	(0.743)	(0.796)	(0.172)	(0.870)	(0.616)	(0.548)
Observations	13,473	7,586	5,887	7,292	6,181	9,041	13,473
R-squared	0.040	0.042	0.049	0.027	0.098	0.044	0.040
Controls:	YES	YES	YES	YES	YES	YES	YES
Yi2 = Weekly expenditure on cigarettes							
β_3	379.6	-265.8	1,224**	-73.36*	338.7	180.3	379.6
SE	(407.0)	(505.9)	(588.9)	(38.24)	(740.0)	(473.2)	(407.0)
Observations	13,473	7,586	5,887	7,292	6,181	9,041	13,473
R-squared	0.050	0.055	0.054	0.011	0.110	0.028	0.050
Controls:	YES	YES	YES	YES	YES	YES	YES
Yi3 = The ratio of cigarette expenditure to total expenditure							
β_3	0.000017	-0.00201	0.00279	-0.000068	0.000534	-0.00092	0.000017
SE	(0.0022)	(0.0034)	(0.0020)	(0.00017)	(0.0041)	(0.0024)	(0.0022)
Observations	13,473	7,586	5,887	7,292	6,181	9,041	13,473

Variables	All	by region		by gender		by timeframe	
		Rural	Urban	Woman	Man	Short term	Long term
R-squared	0.031	0.032	0.052	0.012	0.088	0.027	0.031
Controls:	YES	YES	YES	YES	YES	YES	YES
Yi4 = Smoking index							
β_3	-3.124	-15.68	15.22	-1.839	-12.84	-8.967	-3.124
SE	(15.34)	(21.55)	(20.32)	(1.640)	(26.38)	(16.40)	(15.34)
Observations	13,462	7,577	5,885	7,292	6,170	9,041	13,462
R-squared	0.039	0.054	0.045	0.007	0.088	0.045	0.039
Controls:	YES	YES	YES	YES	YES	YES	YES
Yi5 = Smoking intensity index							
β_3	-0.00970	-0.0388	0.0395	-0.0167	-0.00514	-0.0229	-0.00970
SE	(0.0633)	(0.0876)	(0.0900)	(0.0219)	(0.0897)	(0.0732)	(0.0633)
Observations	13,473	7,586	5,887	7,292	6,181	9,041	13,473
R-squared	0.033	0.031	0.049	0.031	0.086	0.033	0.033
Controls:	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Source: Data Processed, 2023

Heterogenity Analysis

To examine the estimated the impact further, the main model was re-estimated using a subset sample. As shown in table 3, there are generally no indications of ex-ante moral hazard (EAMH). In rural areas, the results indicate that the implementation of the policy does not have a significant impact. In urban areas, the Askeskin policy similarly does not have a statistically significant effect on most variables related to smoking intensity, with the exception of Yi2.

The Askeskin policy led to an increase in weekly cigarette expenditure by Rp1,224 for individuals in urban areas. Although this increase is statistically significant, it is not economically substantial, representing only 0.3% of average total spending. Additionally, variable Yi3 did not show significant changes. The notable impact was observed solely in Yi2, the weekly expenditure on cigarettes, without affecting other variables. Thus, the increase in consumption was not attributed to a rise in the number of smokers (Yi0) or the quantity of cigarettes smoked (Yi1), but rather to higher cigarette prices or a shift to higher-tier cigarettes. This finding aligns with Putra (2020), which indicates a potential EAMH effect from the National Health Insurance (JKN) program on average individual cigarette expenditure.

In a gender-based subset sample, no statistically significant EAMH effects were found for either men or women. Additionally, across the examined timeframes, there is no statistical evidence that the Askeskin program significantly affects smoking behavior. This is reflected in the fact that none of the coefficients for variables Yi0 through Yi5 are significant in either period.

DISCUSSION

In the Indonesian context, research on the impact of health insurance programs on changes in individual smoking behavior is limited. The anticipated outcome of Askeskin is to empower the poor to improve their health and productivity, enabling them to break free from poverty. However, TCSC-IAKMI (2020) indicates that the poorer the people, the higher the number of smokers. This paper aims to analyze indications of EAMH resulting from government policy interventions, specifically the provision of health insurance to the poor and near-poor, starting with the Askeskin program. this research focuses on the poor and near-poor, who are

the most vulnerable to welfare fluctuations due to health issues and the highest quintile of smokers in Indonesia.

Holders of Askeskin/PBI JKN do not show an increase in smoking intensity among poor and near-poor individuals. Consequently, there is no evidence of a negative competing effect that would undermine the positive externalities of the Askeskin policy for the poor and near-poor community. Therefore, the financial strain experienced by BPJS Kesehatan is not attributable to expenses related to treating smoking-related illnesses within the poor and near-poor population. The financial strain may instead be due to the cost of treating illnesses not covered by PBI.

To summarize, the null effect can be attributed to the low levels of both the informational effect and the EAMH effect. This phenomenon may occur for several reasons. Firstly, when insurance premium subsidies are provided to the poor, it increases their purchasing power to afford insurance products, primarily through the substitution effect, as they previously lacked the means to purchase insurance. However, because the government directly transfers this subsidy to BPJS Kesehatan, it does not make the subsidy recipients relatively wealthier, thus minimizing any income effect. Consequently, while the subsidy transmission allows poor and near-poor individuals to access health insurance (substitution effect), it does not lead to an increase in tobacco consumption (income effect).

Secondly, there is consistently low utilization of healthcare services among the poor. Healthcare utilization among the poor was the lowest compared to other income quintiles during the 2011-2013 period (Saputri & Murniati, 2022). This low level of insurance utilization among the poor makes the informational effect insufficiently significant to reduce their tobacco consumption. Thirdly, the limited and uneven distribution of healthcare personnel leads to insufficient consultation time and long wait times. Indonesia faces a healthcare workforce crisis, characterized by a shortage of healthcare professionals and an uneven distribution across the country (Lette, 2020). In addition to a shortage of doctors, there is a concentration of healthcare workers in provincial capitals and major cities (Hermawan, 2019). This shortage results in long queues for accessing health insurance services and adversely impacts the quality of healthcare. Consequently, the lack of adequate consultation time hinders efforts to promote a healthy lifestyle.

Lastly, from a qualitative perspective, Reskiaddin & Supriyati (2021) concluded that social factors are the predominant causes of smoking, while health concerns are the primary motivations for quitting. This motivation is closely tied to their desire to improve their quality of life, rather than being driven solely by health issues. In addition to health-related motivations, individuals may also quit smoking due to financial and religious considerations.

In the context of health insurance policy, the regression results of this study are consistent with the findings of Hindarti (2022) research using multivariate probit regressions method with IFLS wave 3-5 data, which concluded that there is no evidence of EAMH in health insurance for smoking household heads. On the other hand, it differ with the findings of (Putra, 2020) research using tobit method with IFLS wave 4-5 data, which concluded that there was an indication of EAMH from the relationship between the JKN program and individual physical activity, where the JKN program has a positive relationship with individual smoking expenditure.

In the context of social assistance policy, the regression results of this study are relatively consistent with the findings of Al Izzati et al. (2023) research using the PSM-DID method with IFLS wave 2-5 data, which concluded that UCT (Universal Cash Transfer) had no statistically significant effect on cigarette consumption. On the other hand, it relatively vary with the findings of Dartanto et al. (2021) research, which employed the DID method and analyzed IFLS wave 4-5 data. It concluded that individuals who received social assistance programs like Rastra, BLT, PKH, or at least one BANSOS program demonstrated a higher increase in cigarette consumption compared to those who did not receive any social assistance.

CONCLUSION

Overall, this analysis provides evidence that there is no statistically significant increase in smoking intensity among holders of Askeskin/PBI (poor and near-poor individuals). Holders of Askeskin/PBI JKN do not show an increase in smoking intensity. Consequently, it suggests that the Askeskin policy does not exhibit any ex ante moral hazard (EAMH) with respect to smoking behavior. Therefore, there are no negative competing effects that could diminish the positive externalities of the Askeskin policy for the poor community.

Therefore, the financial strain experienced by BPJS Kesehatan is unlikely to be due to expenses related to treating smoking-related illnesses among the poor and near-poor populations covered by the subsidized health insurance (Askeskin/PBI JKN) policy. The financial bleeding may instead be attributed to the cost of treating illnesses not covered by PBI.

In the subset analysis based on gender and timeframe, there is no indication of EAMH. For the subset analysis based on region, most findings suggest that there is no evidence of EAMH, with the exception of the variable Yi2 in urban areas. The Askeskin policy resulted in an increase in weekly cigarette expenditure by Rp1,224 for individuals in urban areas. This significant impact was observed only in Yi2, the weekly expenditure on cigarettes, and did not affect other variables. Consequently, the rise in consumption is attributed to higher cigarette prices or the choice of more expensive cigarettes, rather than an increase in the number of smokers (Yi0) or the quantity of cigarettes smoked (Yi1).

LIMITATION

Based on the findings of this study, the following policy recommendations are suggested. Firstly, the information effect is enhanced by increasing awareness of a healthy lifestyle through consultation programs to prevent or quit smoking. So it’s needed to expanding the access to the Indonesian Quitline program by incorporating the reduction target for the number of adult smokers into the Ministry of Health's strategic plan (Renstra) and partnering with BPJS Kesehatan to integrate the Quitline program. This integration should involve online counseling services in the JKN Mobile application to provide remote support and offline counseling services at BPJS Kesehatan healthcare facilities.

Secondly, to mitigate the moral hazard effect, it is essential to restrict the access of the poor and near-poor population to cigarettes. The Ministry of Health should amend Government Regulation No. 109 of 2012, which addresses the control of addictive substances in the form of tobacco products. This revision should aim to strengthen tobacco regulations by: increasing cigarette costs, restricting sales of cigarettes on a per-stick basis, and expanding restrictions on smoking in public spaces. These changes are intended to enhance tobacco control within the community and reduce smoking behavior among vulnerable populations.

The indicators of risky health behavior utilized in this study are limited to smoking habits, which do not fully represent individuals' overall risky health. Additionally, the research does not address the effects of the Askeskin program's expansion or termination. Recommendations for future research include: evaluating the expansion of the Askeskin program, updating analysis to all type of JKN holder if there is an update IFLS 6, and broadening indicators of risky health behavior uch as unhealthy dietary patterns, lack of physical activity, and alcohol consumption habits.

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