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THE STATE OF SOCIAL ENTERPRISES IN THAILAND

ANALYSIS OF THE ECONOMIC COSTS AND SOLUTIONS TO THE PROBLEM OF ADOLESCENT PREGNANCY IN THAILAND

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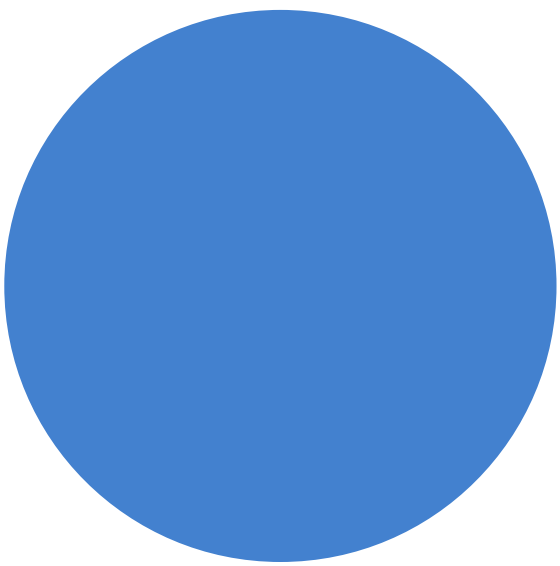

THE STATE OF SOCIAL ENTERPRISES IN THAILAND*

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1. INTRODUCTION

Social enterprise has a long history in Thailand. Co-operatives that fit within social enterprise criteria have operated in Thailand for more than a century. Early entrepreneur-led social enterprises in this country date back to the 1970s. Some of them were royal projects focused on generating employment for ethnic minorities in remote mountainous areas which lacked access to public services. These projects, such as Doi Kham and Doi Tung, soon developed more commercial business models to ensure their operations' financial sustainability. Other well-known social enterprises that emerged in this period were businesses initiated by the Population and Community Development Association, including Cabbages & Condoms restaurants and Birds & Bees hotels. In the late 1990s, more social enterprises were established in conjunction with renowned enterprises, including

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the Chaophraya Abhaibhubejhr Hospital, Green Net Co-operative, and Dairy Home.

The most recent wave of social enterprises includes those established from 2010 onwards, when the government started to introduce a social enterprise promotion policy. These social enterprises have been acknowledged by the Thai Social Enterprise Office (TSEO) through its publications and media, and later certified by the National Board on Social Enterprise Promotion when the TSEO was closed. The current certifying body for social enterprises is the Office of Social Enterprise Promotion (OSEP).

As social enterprises take a range of forms and not all of them register as such, the exact number of social enterprises operating in Thailand is unknown. A report from the National Social Enterprise Office in 2014 established an estimate of 116,298, with 1,915 of them operating in Bangkok and 114,383 operating in other provinces.[1] The Asia Foundation made a similar estimate in 2015, at more than 120,000 social enterprises.[2]

This study on the state of social enterprises in Thailand is aimed at understanding the current status of social enterprises across the country, and helping support and nurture social enterprises into the future. This study looks into the impacts of social enterprises on the Thai economy and society, as well as their adaptation strategy during the initial stage of the COVID-19 pandemic and during the period

[1] *(2014). แผนแม่บทสร้างเสริมกิจการเพื่อสังคม พ.ศ. 2553-2557. Bangkok: The National Social Enterprise Office.*

[2] *Yeoh, A. (2015). Challenges in the Malaysian Social Enterprise Scene. The Asia Foundation.*

March-August 2020. The findings and analysis have been developed into a set of evidence-driven policy recommendations for relevant agencies and stakeholders in the social enterprise ecosystem in Thailand.

2. LAWS AND POLICIES

The first official policy for promoting social enterprises was the Master Plan for Social Enterprise Promotion, B.E. 2553–2557 (2010–2014). In 2011, the Rule of the Office of the Prime Minister on the Promotion of Social Enterprise established the Thai Social Enterprise Promotion Board, chaired by the Prime Minister. In the same year, the TSEO was founded to promote social enterprises and was planned to be an independent registrar of social enterprises. The office closed in 2016; the registration process was completed by the Board, which registered a total of 103 social enterprises. Of these, 70 were Pracharath Rak Samakkee (PRS) social enterprises, which were established according to a policy of the then government to engage major conglomerates, civil society organizations, local communities, and academia in national social and economic development. One PRS social enterprise acts as a central coordination body at the national level, and there is one PRS social enterprise in every province nationwide, totaling 76 social enterprises.

In May 2019, the Social Enterprises Promotion Act, B.E. 2562 (2019) was finally enforced, followed by the issuance of bylaws and adoption of official promotional measures believed to be crucial for social enterprise development. Under this law, three entities were introduced as the main policy mechanisms for the promotion of social enterprises:

- The Social Enterprise Promotion Committee, responsible for designing policy and plans relating to the promotion of social enterprises in Thailand and giving recommendations to the Cabinet to improve related regulations.
- The Office of Social Enterprise Promotion (OSEP), which replaced TSEO as the registrar of social enterprises. Currently, there are 141 registered social enterprises under the new Act.
- The Social Enterprise Promotion Fund, providing loans and grants for registered social enterprises.

There are two types of social enterprise registration according to the Act: the profit-sharing type and non-profit-sharing type. The criteria for the former are more restricted, and the tax benefit of waiving corporation tax is applicable only to the latter.

The Act sets out criteria for registration of social enterprises as follows:

1. Be a juristic person under Thai laws. This may be in the form of a limited company, co-operative, foundation, and so on.
2. Have social purpose, such as promoting employment of disadvantaged groups, or

improving a community, society, or environment.

3. No less than 50 percent of revenue must come from selling products or services (restricted only for the profit-sharing type).
4. No less than 70 percent of the profit must be reinvested for social purposes (applicable only to the profit-sharing type).
5. Have good governance.
6. Have never had its registration revoked.
7. No composition of more than 25 percent of the partners, board members, authorized representatives of the entity can be from revoked entities.

Registered social enterprises are entitled to four types of benefits:

- The right to receive grants or loans from the Social Enterprise Promotion Fund.
- Preferential treatment in government procurement.
- Tax benefit, which is supported by the Royal Decree on the Taxation Code regarding tax exemption No. 621 B.E. 2559 (2016), granted to social enterprises that do not share profits with shareholders, investors and donors of social enterprises. Note that the Royal Decree was specifically introduced as an incentive for the private sector to participate in the PRS social enterprises before being expanded to include all registered social enterprises under the new Act.
- The Securities and Exchange Commission (SEC) allows registered social enterprises to raise funds from the public without having to change the legal entity from a limited company to a public limited company and without applying for permission of the SEC's permission.

The first two benefits are stated in the Act as a framework, meaning that the relevant government units can further elaborate these benefits through ministerial-level regulations which have not been issued yet.

The Act also bans any organizations that are not registered social enterprises from calling themselves "*visahakit puea sangkom*," which is the direct translation of the words "social enterprise" in Thai, and using the term to promote their organizations. The prohibition does not extend to the use of any English-language term or similar terms in Thai such as "*turakit puea sangkom*" (social business).

3. METHODOLOGY

3.1 Research overview

This study employs both qualitative and quantitative methods. On the qualitative side, we conducted key informant interviews with 19 government agencies, universities, intermediaries, and other organizations representing the main players in Thailand's social enterprise ecosystem. During each interview, we asked about the support available to social enterprises, the challenges and

limitations for social enterprises in receiving such support, and recommendations for future growth. We conducted the key informant interviews from March to August 2020.

On the quantitative side, we adopted a questionnaire developed by the British Council for research in various countries, and adapted some questions to fit the local context better. Owing to the disease control and prevention measures during the ongoing COVID-19 pandemic, we chose an online survey as the main evidence-collecting tool. We distributed the online survey link among networks of social actors and the general public from April to July 2020. The survey contained 41 questions, in both the Thai and English languages, on eight topics: general information, organizational status, personnel, operations, social impact, obstacles, effects of COVID-19, and additional information.

3.2 Classifying social enterprises

In total, we collected 202 survey responses. To focus only on social enterprises, we took three steps, as follows. First, we removed 29 respondents who did not answer all the questions and thus their questionnaires could not be used for further analysis. This left us with a total of 173 organizations. Second, we further eliminated two sets of respondents from the same organizations, leaving a total of 171 responses. Finally, we used the following three questions included in the survey as screening questions. These were based on our consultation with stakeholders; we do not claim that this represents an accepted definition of social enterprise, merely that it is the most suitable approach for the purposes of this research.

- **What is the main purpose of your business?** Eight respondents answered "For-profit only." These respondents were removed.
- **Do you generate earned income/trading revenue?** We eliminated 16 respondents from our sample pool who answered "No, we receive grants or donations only."
- **How do you use/plan to use your profit/surplus?** Four respondents answered: "Profit sharing with owners and shareholders" and were screened out from our sample.

Using the above criteria, we eliminated 25 respondents who did not fit the definition of a social enterprise used for this research. This left us with 146 respondents.

4. SURVEY FINDINGS

4.1 General information

4.1.1 Overall objectives

Social enterprises in Thailand have diverse objectives, although most social enterprises are aimed at selling products or services as their overall objective. The overall objectives of the social enterprises surveyed in this study were to: sell products or services (21.2%); improve a community (13.7%); protect the environment (12.3%); and promote education (11.6%). Other aims varied but were all ultimately about making a positive impact

on society and the environment.

In terms of gaps, our survey did not include any social enterprises that reported their main objective as promoting equality for minorities with diverse gender and sexual orientations, and only one social enterprise had women's empowerment as its primary objective. However, women, of course, may still benefit from the work of social enterprises, as will be explored later.

4.1.2 Year of establishment

Social enterprises in Thailand are often young. The majority (53%) of social enterprises surveyed in this study were established between 2008 and 2017 (B.E. 2551 and 2560).

This corresponds with the period of time when the government started promoting the concept of social enterprises in Thailand. However, this may also reflect digital readiness as these relatively young social enterprises may be more likely to access an online survey (see below for more on the ages of leaders of social enterprises).

4.1.3 Scale of operations

Social enterprises in Thailand work across a range of scales. There were 46 social enterprises (31.5%) operating on a smaller than provincial level, which includes district, sub-district, and village levels.

Around 30 percent of social enterprises were operating at a national scale (44 respondents) and 19.2 percent were operating at the provincial level (28 respondents).

4.1.4 Location

Social enterprises in Thailand are most likely to be based in Bangkok. The head offices of most social enterprises surveyed in this study were situated in Bangkok (82 respondents, 56.2%). The remaining 64 reported that their head office was in various other provinces, such as Chiang Mai (11), Patum Thani (five), and Nakhon Ratchasima (four). This finding is in contrast to the assessment made by TSEO that the majority of social enterprises in Thailand are based outside of Bangkok (98.4%), which may partly be a result of bias in our survey as accessibility to an online survey is likely to differ between Bangkok and the other provinces.

Social enterprises in Bangkok and other provinces, were classified by scale of operation. Social enterprises outside Bangkok tended to operate at a smaller scale, while social enterprises that had international operations tended to be located in Bangkok, as might be expected.

4.2 Operation

4.2.1 Sector

Social enterprises in Thailand largely operate within diverse industries, with the three most frequent being agriculture, fisheries, and livestock (15.8%), education (12.3%), and health (11.6%)

The top five sectors in which social enterprises are operating, were classified by location. Social enterprises in the agricultural, fisheries, and livestock sector were largely operating outside of Bangkok (69.6 percent), while the majority of social enterprises in the energy and environment sector

were in Bangkok. Social enterprises working in mobility and transport, fashion, and various types of entertainment businesses, such as movies, music, and performing arts, also tended to be based in Bangkok.

4.2.2 Legal entity

Social enterprises in Thailand take various legal forms. The majority of social enterprises surveyed in this study are registered in the form of a limited company (91 respondents, or 62.3% of the total).

The rest are co-operatives (8.2%), foundations/associations (5.5%), and partnerships (4.1%). Fifteen respondents (10.3%) reported that they had yet to formally register.

The majority of social enterprises in Thailand, especially the relatively younger ones, are registered in the form of a limited company. Social enterprises that are registered as co-operatives tended to be established longer, for example prior to 2008. Social enterprises that have not registered as a legal entity can be seen in almost all ranges of years, but most of them started within the past decade.

4.2.3 Registered social enterprises

Twenty-five social enterprises (17% of our sample), which registered under the Social Enterprise Promotion Act, B.E. 2562 (2019), participated in this survey. For those which had not registered, when asked if they would register as social enterprises under the law in the future, 56 respondents reported that they had plans to do so, while a similar number (52) said they would not. Among those with plans to become registered social enterprises, 37.5 percent planned to register within one year.

The reluctance of many social enterprises to formally register as such may be explained by the legal requirements for registration. Some benefits for registered social enterprises are yet to be clarified, such as the preferential treatment in government procurement as well as access to loans or grants from the Social Enterprise Promotion Fund.

The majority of registered social enterprises have taken the form of limited companies, followed by foundations and co-operatives. The fact that some foundations and associations, which are traditionally viewed as non-commercial or philanthropic organizations, have successfully registered as social enterprises, is noteworthy, not least as one of the criteria for registering is that these enterprises must earn no less than half of their income from selling products and/or services.

Approximately 30 percent of registered social enterprises operate in the health and social care sector and receive support, both financial and non- financial, from the Thai Health Promotion Foundation, a public statutory body with funding from an earmarked excise tax on tobacco and alcohol. The Thai Health Promotion Foundation has been empowering networks of social service providers in health and well-being promotion through grants and skill development over recent years, demonstrating the importance of financial and non-financial support for social enterprise development in Thailand.

4.2.4 Subsidiaries

Most social enterprises in Thailand are not subsidiaries of other organizations. This study found that 90.41 percent (132 organizations) were not subsidiaries of other companies. Yet, 8.90 percent (13 respondents) reported that they were a subsidiary, of which 46.15 percent (6 respondents) were subsidiaries of private companies.

4.3 Personnel

Our survey explored the staff and leadership of social enterprises in Thailand.

4.3.1 Gender dimensions of leadership

Social enterprises in Thailand were found to be led more often by women than businesses more widely. Our survey showed that 59.6 percent of chief executive officers (CEOs) or managing directors (MDs) leading the surveyed social enterprises were men, while women led more than one-third of social enterprises in Thailand (34.9%). Social enterprises registered under the Social Enterprise Promotion Act, B.E. 2562 (2019) also had a similar ratio, with 36 percent led by women.

This is about 50 percent higher than the ratio of women in leadership positions in Thailand more widely. According to the *Women in Business Report 2020: Putting the Blueprint into Action* (Grant Thornton Services, 2020), 24 percent of business leaders in Thailand are women. On the global and Asia-Pacific level, women in leadership positions account for 20 percent and 13 percent of the total respectively.

Three quarters of the social enterprises led by women started operations within the past decade. If we classify social enterprises by the number of employees, the majority of social enterprises led by women (78%) tended to be small, with fewer than 10 workers.

With regard to the top five sectors in which social enterprises are operating, social enterprises in the energy and environment sector are often viewed as male-dominated, but largely led by women. In terms of legal form, social enterprises with women CEOs or MDs tend to be more likely to register as community enterprises.

4.3.2 Leadership age

People of all ages lead social enterprises in Thailand; 27.4 percent of the CEOs and MDs leading the social enterprises in our survey were between 35 and 44 years of age (40 respondents). The second most common age range was 45 to 54 years (23.3%), followed by 25 to 34 years (21.2%).

In terms of business registration, the few respondents with leaders between 18 and 24 years of age did not have a formal legal entity. Those led by people aged 25 to 34 years were mostly registered as limited companies. Those led by CEOs or MDs aged 60 and older were often co-operatives.

4.3.3 Level of education of leaders

Most social enterprise leaders in Thailand are well educated. Around half (49.3%) of the surveyed social enterprises have a CEO or MD with an education level higher than a bachelor's

degree (72 respondents).

4.3.4 Board of directors/trustees

Most social enterprises in Thailand are overseen by a board of directors. The majority of surveyed social enterprises (52.7%) report that they have adopted a management model of a board of directors, while nearly half of respondents (47.3%) said that they did not operate under a board of directors.

The boards of social enterprises in Thailand often comprise very few individuals. In this study, more than half of those with a board (57.1%) reported that their board of directors includes fewer than five people. Around a third of respondents (33.8%) reported they have 6-15 board members.

4.3.5 Employment

This section explores employment in social enterprises, including full-time employment, part-time employment, employment of women, and employment of specific groups.

- **Full-time employment:** Social enterprises in Thailand are creating jobs and taking on more full-time staff. Social enterprises in our survey created at least 6,913 full-time jobs in 2018 and 7,144 jobs in 2019. Among our respondents, three social enterprises employed more than 1,500 full-time staff. After removing them, we found that the average number of full-time staff rose from 14 people per social enterprise in 2018 to 16 people in 2019.
- **Part-time employment:** Similar to the case of full-time employment, part-time employment among social enterprises in Thailand also increased between 2018 and 2019. The average number of part-time staff employed by social enterprises also rose from eight people per social enterprise in 2018 to ten people per social enterprise in 2019, or from four people to six people, after removing two outliers.
- **Employment of women:** Social enterprises in Thailand are creating more jobs for women, both full-time and part-time positions. There was an increase of 21 full-time women employees in 2018 to 22 per social enterprise in 2019, a small increase from 45 percent to 46 percent. Women are more likely to be employed in full-time roles in the agricultural, animal husbandry and fisheries sectors (16%) as well as the education sector (12%). The average number of part-time female employees also rose from six per social enterprise in 2018 to seven per social enterprise in 2019, representing the increased proportion of total part-time employment from 69 percent to 72 percent. The social enterprise sectors that see the highest rates of part-time employment of women are the arts and craft (14.3%) followed by the education, health and social sectors (12.9%). While full-time employment of women tends to be often found among social enterprises that operate on a national scale (32%), part-time employ-

ment of women is more commonly found in social enterprises at smaller than provincial level (36%).

- **Employment of specific groups of population:** Social enterprises in Thailand are employing diverse groups of people, including marginalized groups. Young adults, women (including single mothers), and the elderly are employed by a wide range of social enterprises. Other specific groups include the long-term unemployed (17.1%), individuals with a physical or learning disability (16.4% and 6.2% respectively), as well as ex-offenders (8.9%). Such employment practices are sometimes even the explicit business model of social enterprises, which are aimed at providing disadvantaged groups with employment opportunities.

4.3.6 Volunteers

Social enterprises in Thailand tend to not rely on volunteers. The majority of surveyed social enterprises did not take on volunteers or unpaid staff, while those that did tended to use only a small number of them; 58.2 percent of respondents had no volunteers, while only 35.6 percent took on volunteers in some capacity.

Volunteering is not a widespread practice in Thailand. Donating financial resources is a more popular benevolent activity among Thai people. Nevertheless, the idea of volunteering in social enterprises seems to be becoming more popular, as newly established social enterprises tend to use volunteers more frequently.

As for social enterprises that use volunteers by year of establishment, almost all the relatively old social enterprises, especially those established before 1997, employed no volunteers at all, while around half of the social enterprises established during the past 10 years are supported partly by volunteers.

4.4 Financial support

Social enterprises in Thailand receive external funding or financial support from a range of sources. The social enterprises surveyed in this study receive financial support in the forms of grants from corporates (26%), friends and family (25.3%), and also rely on personal income (23.3%).

That nearly half of external financial support for social enterprises in Thailand comes from friends, family and self-support (49%) indicates that formal financial sources, such as commercial banks, often are not yet attractive or accessible enough for social enterprises. This was also reflected in many of our interviews, which suggested that most commercial banks in Thailand do not normally give loans to social enterprises because of the lack of collateral.

The study found several trends in terms of financial support. Social enterprises operating on a smaller than provincial scale were more likely to turn to personal income and grants, while social enterprises operating on a national scale were more likely to receive support from private organizations. Social enterprises receiving grants from corporates tend to have leaders aged 25 to 44 years old and

the majority are those established during the past decade (33 out of 38). More than half of the social enterprises receiving grants from corporates are located in Bangkok (25 out of 38, accounting for 68% of the total).

4.5 Non-financial support

Most non-financial support for social enterprises comes in the form of training (for 52%), followed closely by mentorship and consultancy (for 50.7%).

Social enterprises that are recipients of non-financial support tend to be more recently established and also more likely to be led by older people. However, training is roughly equally accessible for social enterprises across all age groups of CEOs or MDs, but contrary to the pattern of those receiving financial support, the majority of social enterprises accessing training are located outside Bangkok (54%).

4.6 Income

Social enterprises in Thailand are trading businesses, earning their revenue through commercial activities; 51.8 percent of enterprises surveyed in this study earned all of their revenue through trading as businesses.

The proportion of female-led social enterprises that generate 100 percent of their revenue from business operations out of all female-led social enterprises was found to be higher than that of male-led social enterprises (59% and 42% respectively).

4.7 Profits

Social enterprises in Thailand are viable businesses: 42 percent reported making a profit last year, 36 percent did not, and 19 percent reported breaking even.

Social enterprises in Thailand are reinvesting profits in the mission. Around 83 percent said that they planned to use their profit in activities for organizational growth and development. The second highest priority was building reserves (56.2%), and the third-highest priority was to reward staff (43.2%).

These aspects also reinforce how the majority of social enterprises in Thailand (75.3% of respondents) do not share their profits with shareholders. Among those that do share their profits, the majority do not share more than 30 percent. According to the Social Enterprise Promotion Act, registered social enterprises are not supposed to pay more than 30 percent in dividends.

4.8 Growth

Social enterprises in Thailand are optimistic about the future. The vast majority (81.5%) expect to experience future growth, while only 15.8 percent do not expect future growth.

Most social enterprises (65.8%) consider the development and launching of a new product or service to be the most important part of their plans for the future. This is closely followed by expanding into new geographic areas (58.9%), and attracting new customers (57.5%).

4.9 Social impact

4.9.1 Beneficiaries

Social enterprises in Thailand are working for a diverse range of beneficiaries. People with low incomes, the elderly, and children and youth are the top three groups who benefit from the work of social enterprises.

It should be noted that, in our survey, no social enterprise reported the overall objective as advocating for the equality of the LGBTQ (lesbian, gay, bisexual, transgender, and queer) community. However, we found that there were 10 social enterprises indicating that their direct beneficiaries include people in the LGBTQ group. This is because the question about the overall objective allowed only one answer, while the question about the direct beneficiaries allowed multiple answers.

For the 59 respondents that reported having the elderly as their main beneficiaries, 41 also employed elderly people. This reinforces the idea that some social enterprises employ specific groups of the population as part of their model of delivering impact. Many social enterprises (27.4%) believe that their operations benefited more than 1,000 people over the past 12 months, Impacts generated by social enterprises in Thailand in 2019 ranged from environmental protection and community development to education.

4.9.2 Impact assessment

Almost half of social enterprises conducted their own social impact assessments; 45.2 percent of the surveyed social enterprises did not assess their own social impact, while a very similar proportion (44.5%) had carried out impact assessments themselves. Only nine organizations (6.2%) reported having their impact assessed by others.

Most social enterprises that measured their social impact were smaller ones, with fewer than 10 permanent employees. The characteristics of social enterprises commissioning external organizations to conduct impact evaluations are rather mixed, with half having more than 20 full-time employees.

Although our survey did not explore the causes of the low adoption of external impact assessment among social enterprises, it was one of the topics mentioned during our consultation workshop. Several leading players in the social enterprise ecosystem agreed that external impact assessments are currently very costly, putting too much of a financial burden on social enterprises.

4.10 Obstacles

Social enterprises in Thailand face a range of obstacles. Access to capital and the limited understanding of the concept of social enterprise among the general public or customers were major obstacles reported by social enterprises.

Limited access to investors due to a lack of networks and corporate relationships is a major constraint to accessing finance for social enterprises (33.6%). This is closely followed by having an unrefined business model (30.8%), and not meeting the requirements for bank loans (28.1%).

Of these difficulties, accessing investors and meeting criteria for credit were the most frequently

cited obstacles for social enterprises operating at the national level. On the other hand, smaller than provincial-level enterprises cited unrefined business models as the major constraint for their enterprises.

The findings corresponded with the information given in key informant interviews with representatives of support organizations. Access to finance was mentioned most often when they were asked about the obstacles faced by social enterprises, including problems with early-stage grant funding, tax benefits for investors, and the costs of debt financing from institutional sources.

With regard to equity financing, the survey suggests that most social enterprises believe they cannot access investment due to their limited connections in the investor field. Yet our key informant interviews suggested that there are indeed very few impact investors in the national ecosystem. Two such interviews specifically described how perceptions of financing for social impact are still largely associated with philanthropy.

The second most common obstacle identified in our key informant interviews was the lack of business knowledge and skills, including, for example, business management, legal knowledge, understanding of financing, and available support in the ecosystem, as well as a lack of a growth mindset.

The third obstacle suggested by the key informant interviews was market access, which was linked to a call for preferential procurement measures in the public sector.

Last but not least, awareness of social enterprises among entrepreneurs and the general public is still lacking. Social entrepreneurs had limited knowledge of the advantages of being certified as a social enterprise, while "mainstream" entrepreneurs did not understand what social enterprise is. Demand for social enterprise products and services is also lower than it could be due to a lack of consumers' understanding of social enterprise.

4.11 Effect of the COVID-19 pandemic

The 2020 COVID-19 epidemic in Thailand has had a range of impacts on social enterprises. Social enterprises have been perhaps surprisingly resilient. The majority of surveyed social enterprises (54.1%) reported that they saw no need to lay off staff during the national COVID-19 epidemic, and only 19 social enterprises reportedly had to lay off staff. However, it should be noted that this survey was conducted during the early stages of the global pandemic.

At the time of writing this report, there has been no policy assistance from the government specifically targeting social enterprises. About half of respondents (48%) reported not having access to any governmental support. Among those that did, the main measures received were measures for social security contributions for a period of three months.

During the ongoing national epidemic, most social enterprises (65.1%) reported that they needed support to establish contact and networking with funders. This was followed by coordinating non-financial support from outside agencies (34.3%), and providing and signposting to guidance on how to run a business during the epidemic (for 31.5%).

Social enterprises in Thailand have been agile in challenging circumstances. The majority of social enterprises have transformed their operations in response to the global pandemic. Nearly 60 percent have modified their operations. Meanwhile 30.5 percent reported that they transformed their operations to online access entirely and adjusted their business operations with technology permitting remote work and overcoming problems with inaccessibility under lockdown conditions.

5. CONCLUSIONS

Social enterprises in Thailand play a fundamental role in the socio-economic development of the country. In summary, social enterprises:

- Operate largely within three sectors: agriculture, health, and education
- Are young: most social enterprises in Thailand (53%) started within the period 2008–2017, the same time period in which the government started promoting social enterprises
- Are most likely to be based in Bangkok (56.2%)
- Are often registered as a limited company (62.3%)
- Are more often led by women than businesses more widely
- Operate at the local, provincial, national and international scales, and are often led by the younger generations
- Often employ young people (47.3%)
- Tend to receive non-financial support in the form of training (52.1%)
- Are optimistic and expect future growth (81.5%)
- Face limited access to investors, which is a major financial constraint for social enterprises (33.6%)
- Tend not to hire volunteers or unpaid staff, while those that do only maintain a small number of such staff
- Serve a range of vulnerable individuals, such as the elderly, low-income earners, and young people
- Are resilient – most social enterprises in Thailand have not layed off staff during the COVID-19 epidemic
- Are agile – many have transformed their operations online
- Need support – a substantial number reported receiving no government support and found themselves in need of funding support

6. RECOMMENDATIONS

Based on our findings in this report, we offer five recommendations as follows.

1. Promote awareness and understanding of social enterprises

Our study found that there is a lack of understanding among the general public, consumers, and investors in Thailand about the concept of social enterprise. This includes what such enterprises are,

what they do, how they are different from other types of organization, and their contributions to Thai society. Increasing awareness of social enterprises in Thailand can help attract customers and investment, and improve the wide enabling environment.

Social enterprises can be promoted as a tool for economic equality. Thailand already has a huge base of co-operatives and community enterprises, which can also be considered part of the social enterprise community.

An awareness-raising campaign may be conducted in a variety of forms. The Win-Win-War television program is a good example of showing how to transform social development ideas into viable business operations. Other similar events supported by TSEO are competitions and marketplaces for social enterprises at an annual expo. OSEP and network organizations, such as Social Enterprise Thailand, should work together to create more platforms like these in future and explore opportunities for jointly supported awareness-raising campaigns, harnessing the media, personalities, advertising campaigns, education curricula, and more.

2. Information and research

There are specific gaps in available information on social enterprises in Thailand. For instance, the contribution of and challenges facing social enterprises operating in the form of co-operatives and community enterprises could be better understood. OSEP should consider linking the databases from the registrars of co-operatives and community enterprises to compile more information about social enterprises in Thailand. Such information would help develop a more accurate estimate of the number of social enterprises in Thailand, their areas of work, their objectives, their contributions and their support needs. OSEP and others can use these findings to design a more focused and responsive policy framework for social enterprises in Thailand.

3. Demonstrate impact and contribution

To engage more investors and promote awareness among the public, understanding the social impact and contribution of social enterprises can help. Currently, the cost of conducting social impact assessments is quite high, and approaches are variable and contested.

OSEP should consider how to support social enterprises to demonstrate their impact, including making impact assessment tools and approaches more appropriate, consistent, and affordable for social enterprises. International standards are available, but these need to be adapted into the local context and language. Indicators used for assessment may also need to vary across sectors, areas, and sizes of social enterprises. Making information available about these indicators to social enterprises for assessment is also a crucial step.

This tool may be based on common principles and a minimum set of standards that social enterprises may adopt to communicate with the public and others. OSEP should also consider providing subsidies to defray the cost of conducting

impact assessments by professionals or the cost of peer reviews.

4. The law

Currently, donors and investors in social enterprises can receive a tax deduction. However, the tax deduction benefit is granted only to institutional supporters. To encourage more investment into early-stage social enterprises in particular, this tax benefit could be adapted and also extended to offer incentives to individual investors, building on the existing benefit granted to institutional investors. This may be done by issuing a subsidiary law, either in the form of a ministerial regulation or another royal decree on the taxation code regarding tax exemption.

Meanwhile, implementing the other two benefits prescribed in the law should be a priority for OSEP, coordinating with other relevant agencies. One is the Social Enterprise Promotion Fund, to provide loans and grants for registered social enterprises, as well as to support intermediaries in providing non-financial support, such as capacity-building for both registered and non-registered social enterprises.

Second is the favorable treatment in government procurement. A formal policy should apply to all government agencies and clearly state how this treatment should operate. For example, social enterprises receive a higher scoring when procurement awards are made, and/or social and environmental impact should be included in the scoring criteria.

5. Expanding funding and finance

Social enterprises may face additional barriers to accessing finance and funding, beyond those faced more widely by small and medium-sized enterprises. The survey findings suggest that many social enterprises have to rely on informal sources of capital, such as loans from family and friends. Investors specifically aiming to invest in social enterprises are also limited in number.

The Social Enterprise Promotion Fund prescribed under the Social Enterprises Promotion Act, B.E. 2562 (2019) is probably the most direct source of funding currently for social enterprises. However, the fund is still new and should be expanded, as the current pot of money comes from registration fees.

Granting tax benefits to individuals and corporates which donate money into the fund should be considered.

ANALYSIS OF THE ECONOMIC COSTS AND SOLUTIONS TO THE PROBLEM OF ADOLESCENT PREGNANCY IN THAILAND*

*Chakorn Loetnithat***

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1. INTRODUCTION

Pregnancy during adolescence is among the leading problems Thailand faces in relation to the improvement of people's quality of life. The issue of adolescent pregnancy appears in the Sustainable Development Goals (SDGs) as part of the third Goal to ensure healthy lives and promote well-being for all individuals at all ages, and as part of the seventh Target of that Goal, which places emphasis on universal access to sexual and reproductive health-care services (Global SDG Indicator Platform 2018). The second Indicator for that Target takes into account the annual number of births to females aged 10-14 years and 15-19 years per 1,000 females in each of the respective age groups.

The inclusion of adolescent pregnancy in the SDGs (Global SDG Indicator Platform 2018) is motivated by the negative impact that adolescent

pregnancy has on a wide range of issues. First, adolescent pregnancy gives rise to health risks from the onset of a pregnancy until childbirth due to the underdeveloped physique and mental state of the teenage mother, which may result in further health problems for the child. Second, adolescent pregnancy may hinder educational opportunities and lead to long-term impacts with regard to employment opportunities, income and socio-economic status of the mother.

The rationale behind the determination of the aforementioned Indicator is consistent with numerous research studies that have concluded that adolescent mothers are more likely to drop out of school prematurely and enter the workforce unprepared and with insufficient skills to carry out their occupation, which will subsequently affect their future income. Moreover, there is an increased risk of defective health among babies born to adolescent mothers; the associated cost of treatment will create further financial burdens for the mothers and force them to depend more on their family for financial support (Aherrera et al. 2015).

A study conducted in El Salvador by the United Nations Population Fund (UNFPA) (2017, 5) showed the multidimensional effects of adolescent pregnancy. Adolescent pregnancy is associated with health problems for the mother and the child, discontinuities in education trajectories due to social pressure, and barriers to entry into formal sector employment. Furthermore, for those with low economic status, pregnancy during adolescence contributes toward the intergenerational poverty transmission circle and forced marriages.

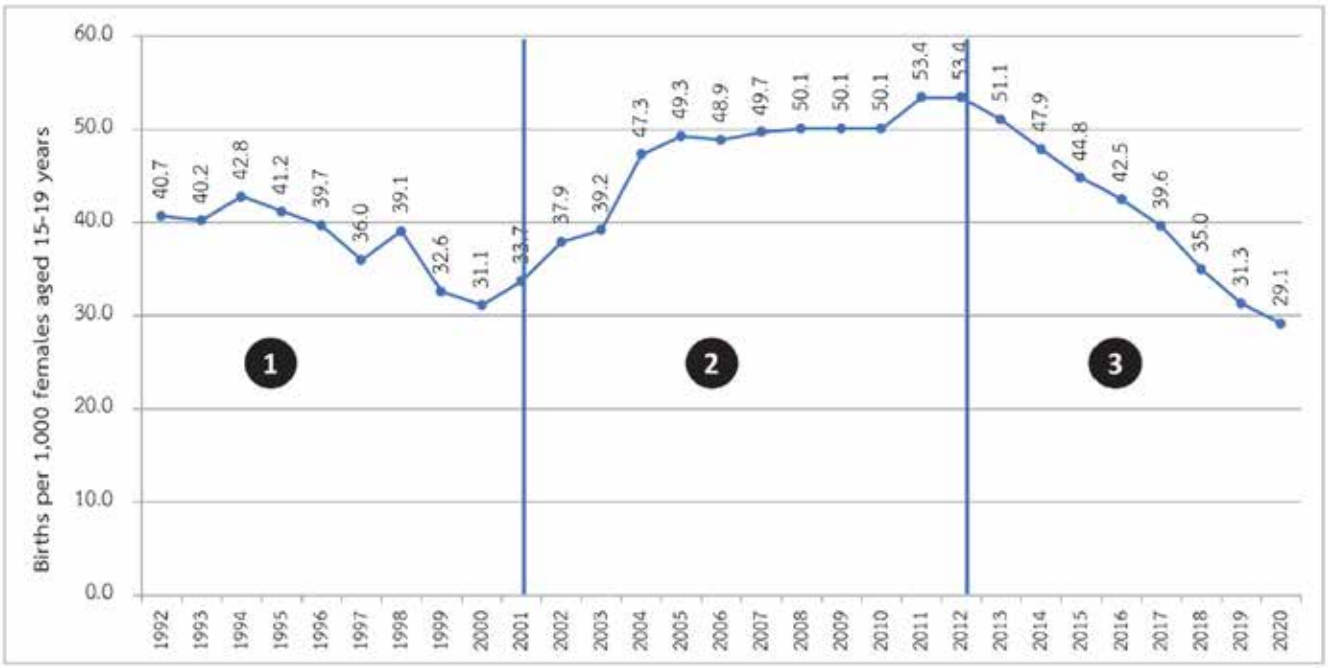
Nevertheless, research that is specifically focused on the economic costs of adolescent pregnancy in Thailand and on those at the international level are still limited. The Health Intervention and Technology Assessment Program (HITAP) (ศรีเพ็ญ และคณะ 2556) reviewed studies into the economic costs of adolescent pregnancy in the United States. It was found that in 2004 the federal government and local governments together paid economic costs worth $1,430 per capita, equivalent to $9.1 billion for adolescent pregnancies (Hoffman 2006). In the case of the United Kingdom, a research study suggested that adolescent pregnancy cost the National Health Service insurance system more than £69 million in 2008. Additionally, the research concluded that every British pound invested in the prevention of adolescent pregnancy would yield benefits worth £4 (Frances 2008).

With regard to countries in ASEAN, research in the Philippines (Herrin 2016) showed that adolescent pregnancy is associated with a decline in the wage rate, even for mothers who have graduated from high school. It was found that lifetime wage earnings of women aged 18-19 years was reduced by an average of ₱33 billion (1 baht = 1.5 pesos) as a consequence of pregnancy during adolescence; this amount represents 1.1 percent of the country's gross domestic product (GDP).

Changes in the fertility rate[1] among females aged 15-19 years old, which has been documented

[1] *The number of live births per 1,000 females (aged 15-49 years) per year.*

Figure 1: Fertility rate among females aged 15-19 years old divided by the year of study

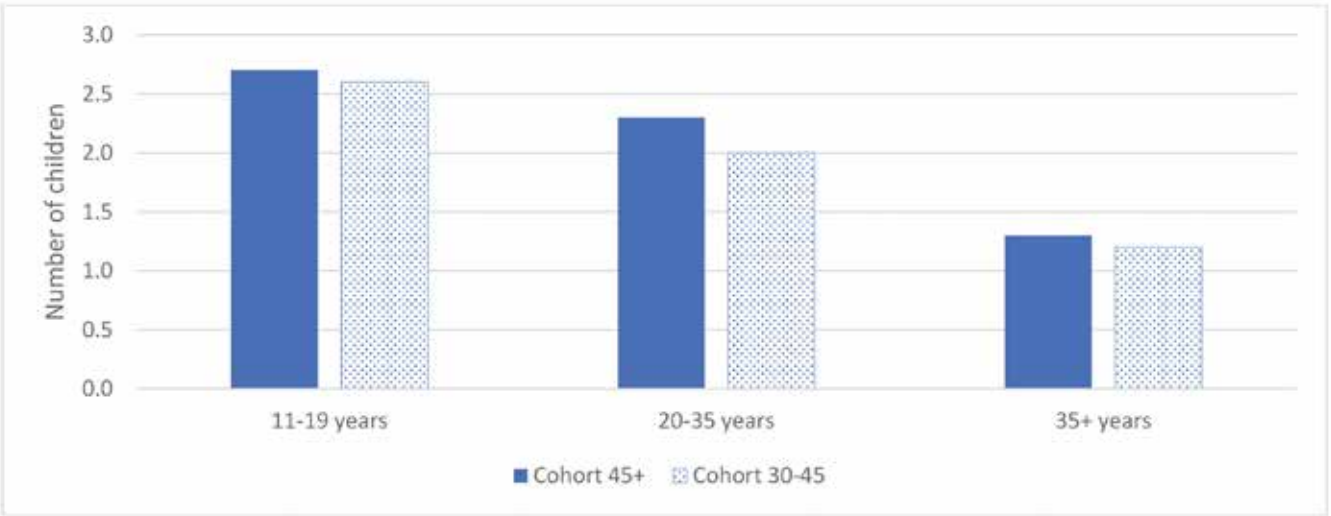


Source: Teenage Pregnancy Surveillance Report, Thailand (various years), Bureau of Reproductive Health, Department of Health, Ministry of Public Health.

systematically, suggest that the situation of adolescent pregnancy in Thailand has been constantly evolving over the past three decades. Nevertheless, it is important to note that the fertility rate does not holistically reflect the extent of adolescent pregnancy as it does not take into account pregnancies that have been terminated. From the information on adolescent pregnancy that has been documented from 1992 to 2020, changes in adolescent pregnancy can be separated into three time periods (Figure 1). In the first time period spanning the decade from 1992 to 2001, the fertility rate among adolescents was relatively stable at approximately 40 births per 1,000 adolescents, and a downward trend can be observed starting from 1997 onwards. In the second period spanning the decade from 2002 to 2011, fertility rates among adolescents displayed a noticeable upward trend, reaching more than 53.4 births per 1,000 adolescents in 2011 and 2012. With the onset of the third time period in 2013, the fertility rate among adolescents started to decline and fell to 29.1 births per 1,000 adolescents in 2020.

The importance of the situation in Thailand discussed above brought about considerations that are integral to understanding and designing appropriate measures to deal with adolescent pregnancy. First among these is the value of the economic opportunity costs that arise from pregnancy among female adolescents aged 15-19 years old in Thailand. Second are the relevant measures that are effective in alleviating problems that arise from adolescent pregnancy in Thailand, included as part of the recommendations to improve preventative measures and solutions in the future.

Figure 2: Average number of children categorized by age at first birth



Source: Calculated by the author using multiple indicator cluster surveys in 2016 (fifth survey: MICS 5).

2. ASSESSMENT OF THE ECONOMIC OPPORTUNITY COSTS THAT ARISE FROM PREGNANCY AMONG ADOLESCENTS AGED 15-19 YEARS OLD

Assessment of the economic opportunity costs of adolescent pregnancy can be done on several levels. At the individual level, the cost could include expenses for prenatal care, products for newborns, healthcare for mother and child, and other indirect costs. One important indirect cost is the loss of productivity due to increased domestic burdens and school dropouts, which could lead to a lower ability to generate income in the future.

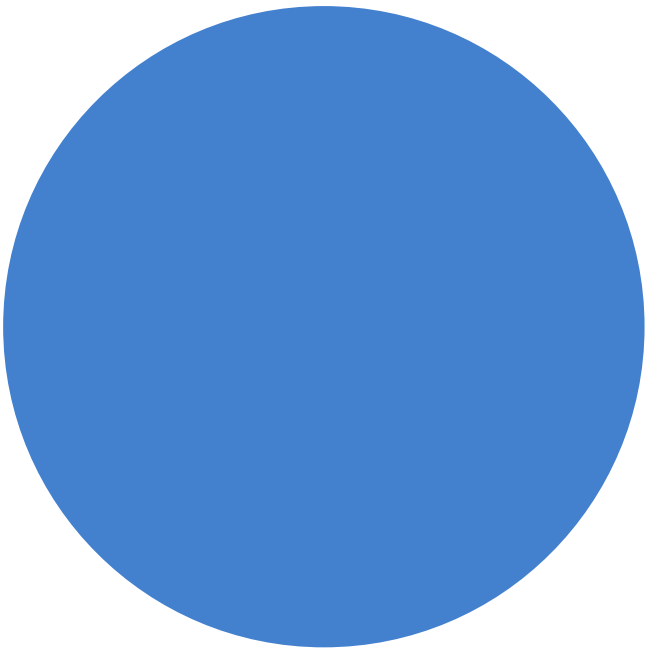
At the macro level, school dropouts because of adolescent pregnancy would harm the competitiveness of Thailand. As a result, tax revenues would be lowered, which means a loss of return from investment in education. Furthermore, there will also be additional expenses needed for tackling adolescent pregnancy.

Nonetheless, this study is focused only on direct economic opportunity costs of school dropouts due to pregnancy, both intentional and unintentional. The opportunities of this group of females to have employment and income depend on (a) their educational attainment and (b) the time needed to take care of their babies. Additionally, an analysis of multiple indicator cluster surveys (MICS) in 2016 (Figure 2) shows that women who have a first birth since their adolescence have a greater likelihood of having more children in the future than other groups of women.

Hence, economic loss because of adolescent pregnancy, which is the difference in lifetime income between pregnant adolescents and adolescents with similar characteristics, depends on various factors, including highest educational attainment, pregnancy, age when being pregnant, and lifetime childbearing profile. Lifetime income and economic

loss of adolescent pregnancy can be expressed as functions of the previously mentioned factors, as follows:

Lifetime income	=	f (highest educational attainment, lifetime childbearing profile, other factors, such as characteristics of employment and jobs)
Economic loss of adolescent pregnancy	=	Lifetime income (control group) – Lifetime income (pregnant adolescents)

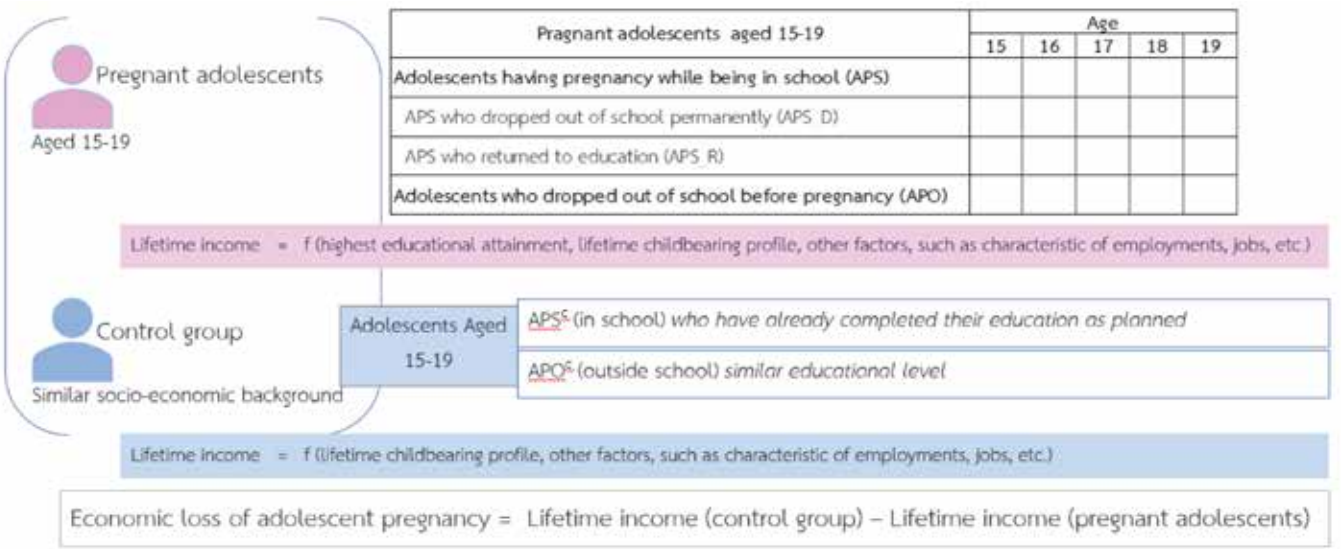


However, educational attainment is affected by pregnancy. Therefore, in calculating the economic loss because of adolescent pregnancy for the group that dropped out of school before becoming pregnant, educational attainment has to become the control variable, meaning that the control group should be females who have the same level of educational attainment when they dropped out of school. Adolescent pregnancy (AP) in this study can be grouped into two main groups (Figure 3), as follows:

(1) *Adolescents becoming pregnant while in school (APS)*. Pregnancies in this group are all unintentional pregnancies. This group can be separated into two sub-groups: (a) *APS who dropped out of school permanently* (APS_D), and (b) *APS who returned to education* (APS_R). The control group for APS is denoted as APS^c, females who have already completed their education as planned and also at a similar age and have a similar socio-economic background as APS. Differences between APS and APS^c are educational attainment and lifetime childbearing profile.

(2) *Adolescents who dropped out of school before becoming pregnant (APO)*. The control group for APO is denoted as APO^c, females who are at a similar age, have a similar socio-economic background and educational attainment when they dropped out of school. The only difference between APO and APO^c is lifetime childbearing profile. Due to limitations in the data set, pregnancies cannot be identified as being intentional or unintentional.

Figure 3: Estimating lifetime income of each group of pregnant adolescents



Source: Author.

The next section will describe the steps in the method for calculating economic loss caused by adolescent pregnancy; the details of the three main steps are as follows:

The first step estimates the possible highest educational attainment of the pregnant adolescents as if they were not pregnant. This estimation was performed by propensity score matching (PSM), using data from MICS 5 and the Household Socio-Economic Survey 2017 (SES 2017). The variables included in the model are factors that could influence the likelihood of adolescent pregnancy, which are identified in the literature, e.g., household composition, household income, and parental educational attainment.

The second step estimates lifetime income of the pregnant adolescents, conditional on the estimated possible highest educational attainment in the previous step. Estimation in this step used data from five sources: MICS 5, SES 2017, Health and Welfare Survey 2017 (HWS 2017), Survey of Population Change 2016 (SPC 2016), and administrative data from the Department of Health.

The third step calculates the economic loss of adolescent pregnancy by subtracting the estimated lifetime income calculated in the previous step from the estimated lifetime income of the control group, which was obtained by estimation from SES. In other words, it calculates the difference in lifetime income between the pregnant adolescents and the control groups who were not pregnant during their adolescence and were able to complete their education as planned. It should be noted that only income earned during the ages from 15 to 60 years are considered as lifetime income, and the estimated lifetime income is converted to the present value.

Results of PSM in the first step (Appendix Table A) and analysis of SES show that adolescents

Table 1: Difference in income from propensity score matching model, by age groups

(Characteristics of person and household are controlled)

Females, age group (years)	Compared to those with similar characteristics but who were not pregnant during adolescence	Compared to those who did not have similar characteristics and were not pregnant during adolescence
15-30	**2,811 baht/person/month**	5,786 baht/person/month
31-45	**1,666 baht/person/month**	4,348 baht/person/month
46-60	**1,558 baht/person/month**	3,859 baht/person/month

Source: Calculated by author.

with high educational attainment, adolescents in household with a highly educated household head, and adolescents in a household that has socio-economic class as manager or professional are less likely to become pregnant during adolescence. *In contrast, adolescent pregnancy tends to occur among household in non-municipal area that have socio-economic class as farm operator or laborer.*

Additionally, results from PSM also show that pregnant adolescents (treatment group) had lower income than those with similar characteristics but who did not become pregnant during adolescence (by 2,811 baht per person per month), and lower than those who did not have similar backgrounds and were not pregnant during adolescence (by 5,786 baht per person per month) (Table 1). These differences were only among females aged 15-30; however, the differences in income became substantially lower for females older than 30 years. Two reasons could explain this phenomenon: (a) the young generation tends to have higher educational opportunities, which make the opportunity costs higher; and (b) the effect of education may decline as work experience becomes more important at older ages.

To obtain more details, the income comparison by PSM was applied to the three target groups of this study: (1) APS who dropped out of school permanently; (2) APS who returned to education; and (3) adolescents who dropped out of school before becoming pregnant. The results are presented in Table 2. The opportunity cost was found to be highest in APS who dropped out of school permanently, at 4,582 baht per person per month, which is higher than APS who returned to education, whose opportunity cost was 3,936 baht per person per month.

It should be noted that the income difference of those who dropped out of school before pregnancy and their control group was only 1,786 baht per person per month, which is not surprising since both groups already decided to drop out in the first place. They are mostly unemployed or housewives, which also explains the low level of difference. However, if APO is compared to the group with dissimilar characteristics, the difference in income is extremely large, 6,073 baht per person per month, since this group has a better socio-economic status and many of them also completed higher education.

Table 2: Difference in income obtained from propensity score matching model of each type of adolescent pregnancy

(Characteristics of person and household are controlled)

Females aged 15-30 years	**Compared to those with similar characteristics but who were not pregnant during adolescence**	Compared to those who did not have similar characteristics and were not pregnant during adolescence
APS who dropped out of school permanently (APS_R)	**3,936 baht/person/month**	4,203 baht/person/month
APS who returned to education (APS_D)	**4,582 baht/person/month**	5,255 baht/person/month
Adolescents who dropped out of school before pregnancy (APO)	**1,786 baht/person/month**	6,073 baht/person/month

Source: Calculated by author.

The above findings have implications on policies that are aimed at preventing school dropouts or promoting the return to the education system in order to allow adolescents to complete their education as planned and have opportunities to gain employment and income.

Results in Table 1. The difference in income of each age group was used to calculate the economic opportunity cost of adolescent pregnancy (the reduction in lifetime income due to adolescent pregnancy). The equation for the calculation is as follows:

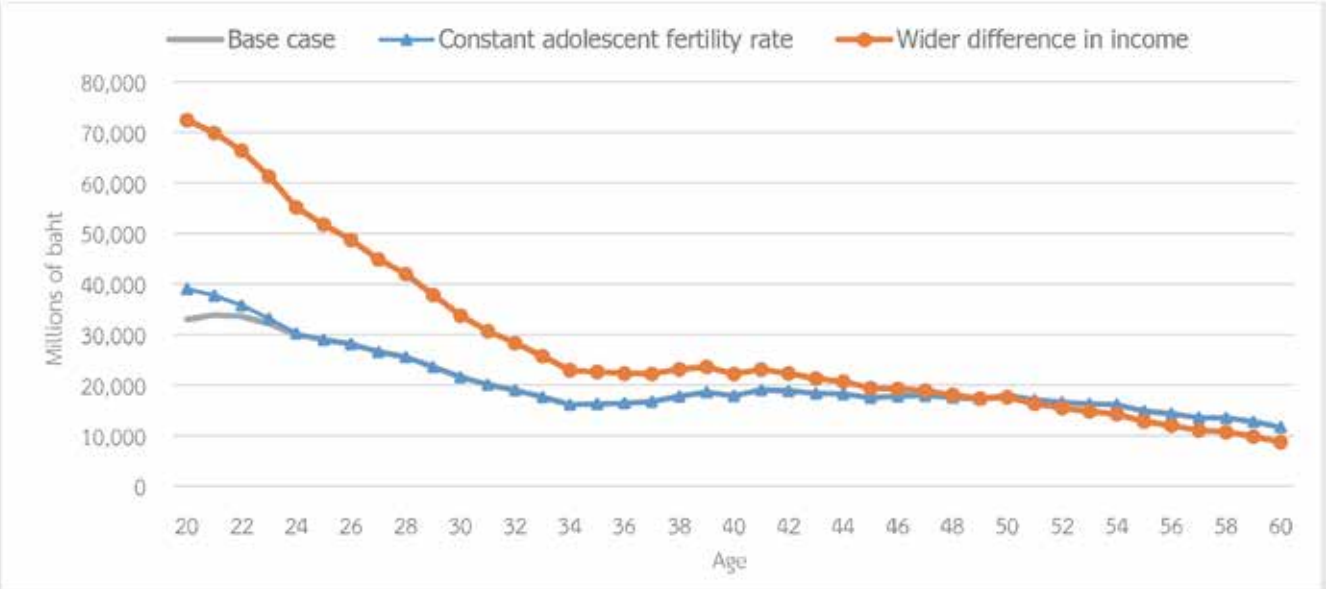
> Economic opportunity cost of adolescent pregnancy = number of females in each age group x fertility rate of females aged 15-19 years x difference in income of all three age groups (baht per person per month) x 12 (to annualize) x 41 (to convert to lifetime income which assumes that they will work during ages from 20 to 60 years)

Results of the calculation (Appendix Table B) shows that (a) *reduction in income of the pregnant adolescents due to pregnancy in only one year (2018) was substantial, i.e., 20,163 million baht*, which was equivalent to 0.12 percent of GDP in 2018, and (b) the present value of the reduction in income for 41 years (ages 20-60); in other words, the *economic opportunity cost of adolescent pregnancy was 826,700 million baht*, which was equivalent to 5.1 percent of GDP in 2018.

Results from the PSM model were then used to estimate the economic opportunity cost of adolescent pregnancy under several scenarios. The base case estimation was obtained by applying the logarithmic trend to the income gap variable in order to smooth the series.

One scenario assumes that adolescent fertility rates are always constant at 53.4 since 2018 (Appendix Table C), which means that the *economic opportunity cost of adolescent pregnancy will slightly increase to 5.12 percent of GDP*. It was also found that, if the adolescent fertility rate

Figure 4: Economic opportunity cost of adolescent pregnancy in each scenario



Source: Calculated by author.

increases by 1 unit (1 child per 1,000 women), the economic opportunity cost of adolescent pregnancy will increase by 1,215 million baht.

Another scenario assumes that the difference in income becomes wider among the young generation, which would be very plausible in the future due to the higher accessibility of education, especially tertiary education (Appendix Table D). It was found that the economic opportunity cost of adolescent pregnancy will significantly increase to 1.2 trillion baht, equivalent to 7.2 percent of GDP in 2018.

Economic opportunity cost also reflects the loss of opportunity to finish education, which adversely affects income. The gap in income between those who can finish their education and those who cannot will increase by 1,400 baht per person per month for 1 year of education loss, resulting in an economic opportunity cost of 172,993 million baht.

The above-mentioned estimations illustrate that economic opportunity cost will rise if the adolescent fertility rate does not decline, or the difference in income becomes wider among the young generation, which would increase the economic opportunity cost and fiscal burden in the future (Figure 4).

This finding signifies the importance of prevention and the solution of adolescent pregnancy, especially the promotion of returning to the education system in order to narrow the income gap in the future. Furthermore, the non-formal education system also needs to be developed to ensure that pregnant adolescents who cannot return to school will have the opportunity to develop their skills so that they are as close as possible to those in the school system.

Nonetheless, the estimated economic opportunity cost of adolescent pregnancy is only the minimum economic opportunity cost because of two limitations in the study: (a) only one-year data on the income gap were used, while the income gap tends to become larger and larger in the younger generation; and (b) adolescent pregnancy has many indirect costs on the economy apart from labor productivity loss, e.g., government revenue loss, costs of healthcare, and costs of social assistance, which should be studied in further research.

3. PREVENTIVE MEASURES AND SOLUTIONS TO THE PROBLEM OF ADOLESCENT PREGNANCY

The development of the adolescent pregnancy situation in Thailand is depicted by the time trend of the fertility rate among females aged 15-19 years (Figure 1). The time series can be divided into three periods based on its trend. The political policies, economic, and social situations are diverse in each period.

Since 1992, the Ministry of Public Health's Department of Health has been collecting statistics on the fertility rate among teenagers aged 15-19. Many reasons may have influenced pregnancy during the first phase, which spanned the period from 1992 to 2001, including a rise in the incidence of AIDS, condom use campaigns, and the 1997 Asian financial crisis (AFC). The first two factors may encourage contraception, while economic recession, such as the AFC, has been shown to have an impact on fertility (Percheski and Kimbro 2020).

Throughout the second period, from 2002 to 2011, there was a substantial increase in adolescent pregnancy. The trend reached its peak in 2011. During this time, social networks, such as Hi5, Facebook and online gaming, began to gain in popularity. These two factors may be responsible for the rise of adolescent pregnancy. According to some studies conducted in Kenya, access to social networks increases interest in sexually explicit music, sex photos, movies, and sex texting (AKimemia and Mugambi 2016).

In the last phase, the trend of adolescent pregnancy has been declining since 2013. The downtrend might be explained by a number of actions, including planning strategies, offering a hotline, and revising abortion pill regulations. Our study will be largely focused on the policy environment and important measures that occur throughout this time period.

We discovered that establishing national plans, such as the *Child and Youth Unready Pregnancy Prevention and Solution Plan (2010-2014)* by the Ministry of Social Development and Human Security, and the *Development of Reproductive Health First Plan* (2011) by the Ministry of Public Health, are essential first steps in resolving adolescent pregnancy problems.

The declining trend in adolescent pregnancy in the third period could be linked to better coordination between government agencies, the civil sector, and their network partners. For example, the coordination has been in favor of the *Act for the*

Prevention and Solution of Adolescent Pregnancy Problems (2016) since 2011, before it was passed in 2016. At the same time, the *National Action Plan of Strategy to Prevent and Solve Adolescent Pregnancy (2017-2026)* was passed. This action plan employs a teen-centered approach, with the help of parents, community, and others.

The above history of Thai adolescent pregnancy policies illustrates the evolving circumstances, strategies, and plans throughout three decades.

Our study, based on data analysis, a literature review, and stakeholder interviews, shows that important preventive measures and solutions to adolescent pregnancy can be divided into six categories, as follows:

1. Act for the Prevention and Solution of Adolescent Pregnancy Problems, B.E. 2559 (2016). The issue of adolescent pregnancy is multifaceted, and many parties must work together to solve it. Having a solid legal foundation clarifies each unit's responsibilities and improves coordination quality.

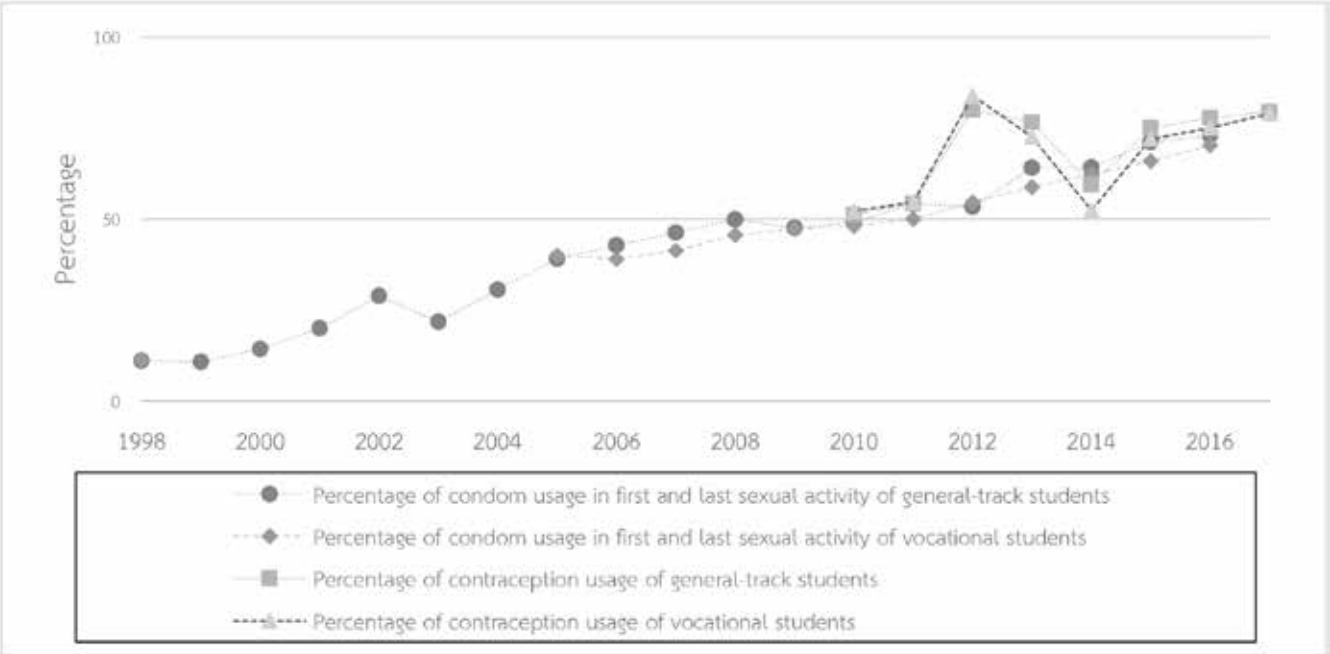
The Act gives ministers from five ministries command and control of the Act's implementation: the Ministry of Education; the Ministry of Public Health; the Ministry of Labour; the Ministry of Social Development and Human Security; and the Ministry of Interior. According to the Act, each ministry's major responsibilities for adolescent pregnancy are as follows.

1) Schools must provide appropriate sexuality education, defend pregnant students' right to complete their education, and provide a referral mechanism to health providers;
2) Health centers and clinics must provide safe-sex information, competent fertility services, and a system for referral to social assistance services;
3) Employers must offer their employees information about the availability of fertility services as well as mechanisms for referral to social assistance services;
4) Pregnant adolescents must get skill training from social service providers. Agencies may be able to offer foster families if necessary;
5) It is the responsibility of municipal agencies to enact local regulations concerning adolescent pregnancy as they consider appropriate.

2. Condom-related measures. This sort of strategy has been employed since 1992. The 100 Percent Condom promotion was one of the first such campaigns. In 2002, school programs, such as Teenpath and Lovecare (dare to love, dare to check), evolved to become more targeted toward teenagers. Information and counseling are also provided to those who are experiencing difficulties.

The percentage of condom use in both *first and last sexual activity has increased over the previous two decades (1998-2016)*. In 2016, more than 70 percent of students used a condom for both their first and last sexual engagement. In 2013, statistics show a clear disparity in grade 11 between

Figure 5: Percentage of condom usage in first and last sexual activity of general-track and vocational students in grade 11 (1998–2017)



Source: Bureau of Epidemiology, Department of Disease Control (2019).

general-track and vocational students (Figure 5).

3. Network partners' counseling and abortion services. These are quickly expanding as part of many strategic plans. The following are some examples of network partners that have grown as a result of the strategic plans: a network of physicians called R-SA (Referral System for Safe Abortion), networks under YFHS (Youth Friendly Health Service) and PATH2Health. Their services often include a hotline, such as 1663, for contacting and accessing target groups.

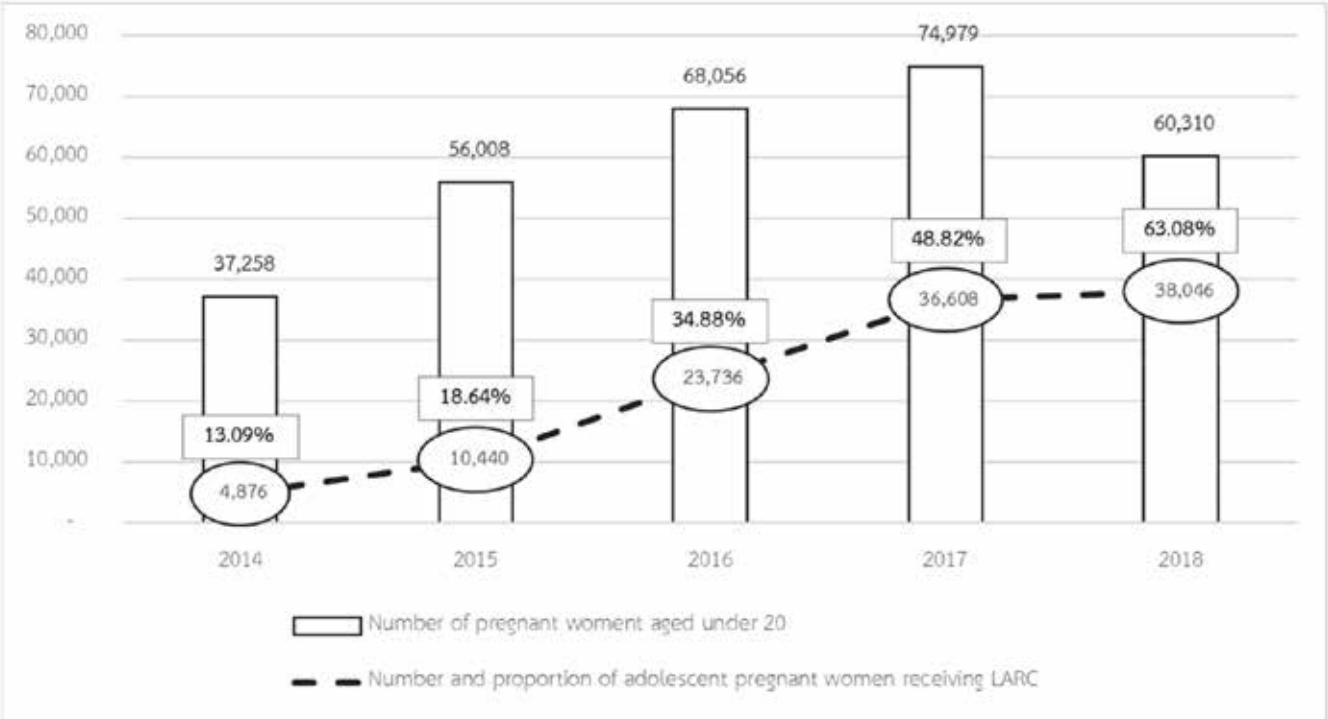
4. Teenage Repeated Pregnancy Prevention Program. Some adolescent pregnancies are the results of repeated pregnancies, creating a vicious cycle. *Long-acting reversible contraception (LARC)* appears to be the appropriate option for breaking the cycle. Fortunately, LARC is completely reimbursable through the National Health Security Office (NHSO).

The program's experience shows that the proportion of pregnant adolescents receiving LARC is growing; it reached 63.1 percent in 2018 (Figure 6).

5. Promotion of abortion pills (Medabon). Thailand's Ministry of Public Health's Department of Health and medical schools work along with the Concept Foundation and the World Health Organization (WHO) to include Medabon in Thailand's National Drugs Account. Medabon is legally permissible for use in the termination of a pregnancy.

In practice, teenagers still have the option of purchasing Medabon from a foreign website,

Figure 6: Number and proportion of pregnant adolescents receiving long-acting reversible contraception to that of pregnant adolescents (younger than 20 years)



Source: Department of Health (2020).

such as Women on Web, which obviously poses a risk to adolescents. Hence, public relations should be careful in telling where teenagers can purchase such pills in order to protect the safety of all pregnant teenagers.

6. Revising the Ministry of Education's sexuality education curriculum. Because of its responsibility to promote sexuality education, the Ministry of Education's involvement is critical. Throughout the years, the Ministry of Education rebranded "Life and Family Studies" as "Sex Education," which was subsequently rebranded as "Sexuality Education." The latter's material is more academically extensive and more applicable to everyday reality. Furthermore, the Ministry of Education attempted to change teachers' attitudes toward sexuality in order to assist instructors to develop better knowledge of the adolescent pregnancy problem. This may result in a suitable solution to the problem, but further examination is required.

In addition to the six stated measures above, some ministries have roles and duties in accordance with the Act for the Prevention and Solution of Adolescent Pregnancy Problems, B.E.2559 (2016), such as the Ministry of Interior, which monitors municipalities, and the Ministry of Social Development and Human Security, which is responsible for the welfare and social protection of pregnant teenagers.

4. POLICY RECOMMENDATIONS

This study had led to better understanding of the two essential components of adolescent pregnancy problems, based on data analysis, a literature study, and stakeholder interviews. The first component is the economic opportunity cost of adolescent pregnancy, and the second is a study of previous decades' policies and measures. This research has led to two sets of policy recommendations.

4.1 Policy recommendations linked to economic opportunity cost

Three important findings and concerns emerged from the first part of our research on economic opportunity costs: (a) household education and economic level have significant impacts on adolescent pregnancy; (b) when pregnant adolescents are unable to return to school and finish their education, economic opportunity costs rise; and (c) other indirect costs, such as health and social assistance, were not included in the economic opportunity costs. The following policy suggestions are based on these findings.

(1) Policies aimed at preventing and resolving adolescent pregnancy should be continuous and comprehensive in order to reduce costs and economic loss of the pregnant adolescents and society;

(2) Policies aimed at breaking the poverty cycle should be employed. The well-being of the target group is aided by policies aimed at breaking the cycle of poverty. Social assistance can be directed at a variety of groups, one of which is compose of those who have been disadvantaged since birth. Consequently, *the child support grant (CSG) should be used to prevent adolescent pregnancy and its adverse economic effects*;

(3) The entire social policy framework should be redesigned by revising the social protection (SP) framework, which consists of social services, social insurance, social partnership support, and social assistance. Revision of SP is expected to result in a reduction of poverty.

4.2 Policy recommendations linked to underlying policy mechanism

The problem of adolescent pregnancy is complicated, and it will take collaboration from many parties to overcome it. Our findings have resulted in eight policy recommendations, as follows.

(1) Increasing the number of promotional tools that promote life skills and adolescent sexuality. These tools should not be confined to school-related media; instead, they should be integrated into teen-oriented social media, film, and television series;

(2) Revising the regulations related to contraceptive medical procedures, such as contraceptive implantation, and pregnancy termination, among others. These revisions should include increasing remuneration for certain operations, enabling private providers to participate in specific services, educating nurses to perform some procedures, and allowing services to operate outside of office hours (the last one came from a

suggestion received in an interview);

(3) Providing life skill education to develop skills that can be applied in the actual world;

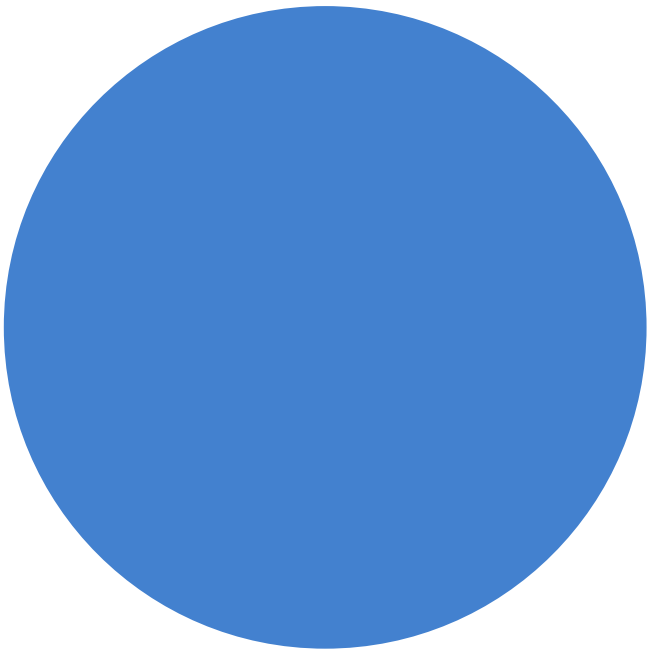
(4) Creating male-focused policy, which is currently rare. Males could play a variety of roles, including preventing pregnancy by using condoms and providing their female counterparts with contraceptive advice;

(5) Further feasibility study in practical and legal aspects of abortion pills is needed in order to improve the user-friendliness of the identity verification system. If it is implemented, abortion drugs will be more easily accessible over the Internet or other means;

(6) Putting more weight on designing user experience in the service operation. Teens, parents, teachers, and the community are all important users in this consideration. Improved user experience will lead to policy design that corresponds to the needs and behaviors of the target groups;

(7) Monitoring performance of the Act for the Prevention and Solution of Adolescent Pregnancy Problems (2016). The Act has been in effect for a while, and its effectiveness is dependent on collaboration among government entities. Monitoring and thorough reviewing will be helpful in updating the Act to make it more effective;

(8) Systematic cooperation between prevention and solution of adolescent pregnancy problems. Several parties must work together to address the problem efficiently. Objectives of the programs, both in output and outcome path, should be jointly established. Additionally, data should



be gathered to construct indicators. Examples of important indicators are:

- Hotline (1323, 1300, and 1663) usage statistics
- Hospital in partnership statistics (broken down by service type)
- Statistics on teenagers' condom use
- Medabon usage statistics
- The number and proportion of people who use LARC (broken down by user type)

Both sets of policy recommendations are part of the prevention and solution to the problem of adolescent pregnancy, which is a societal problem that must be addressed in order to decrease future economic, social, and opportunity costs.

APPENDIX

Appendix Table A: Results from propensity score matching for females aged 15-30, when characteristics of person and household are controlled

Probit regression — Number of obs = 6,894; LR chi2(6) = 598.33; Prob > chi2 = 0.0000; Log likelihood = -2654.416; Pseudo R2 = 0.1013

ap	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
yearedu	-.0147238	.0062928	-2.34	0.019	-.0270575	-.0023902
sc1	.6847205	.0632331	10.83	0.000	.5607858	.8086552
sc3	.2695355	.0629463	4.28	0.000	.1461629	.392908
sc6	-.4831408	.0986359	-4.90	0.000	-.6764637	-.2898179
area1	-.2534605	.0411475	-6.16	0.000	-.3341081	-.172813
C04	-.0011847	.0001595	-7.43	0.000	-.0014973	-.0008721
_cons	-.3606959	.0576559	-6.26	0.000	-.4736995	-.2476923

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
A15	Unmatched	5491.92715	11277.9188	-5785.99164	273.348828	-21.17
	ATT	5491.92715	8302.69536	-2810.76821	907.977119	-3.10

Note: S.E. does not take into account that the propensity score is estimated.

psmatch2: Treatment assignment	psmatch2: Common support On suppor	Total
Untreated	5,837	5,837
Treated	1,057	1,057
Total	6,894	6,894

Source: Calculated by author.

Note: variable ap=(1) adolescent pregnancy (0) non-adolescent pregnancy; yearedu=educational attainment of the female; C04=educational attainment of household head; sc1= socio-economic class of household being farm operator; sc3= socio-economic class of household being laborer; sc6= socio-economic class of household being professional; area1=(1) in municipal area (0) out of municipal area; _cons=constant value; A15= average monthly total income per capita.

Appendix Table B: Calculation of economic opportunity cost of adolescent pregnancy

(Base case)

Year	Adolescent fertility rate (number of births to females 15 to 19 years of age per 1,000 females in that age group)[1]		Age (x)	Number of females[2]	Estimated number of pregnant adolescents	Difference in income (baht/person/month)		Economic opportunity cost of adolescent pregnancy (million baht/year)	
	Actual rate	Average rate used in calculation for each age				PSM model	Smooth logarithmic trend*	PSM model	Smooth logarithmic trend
		(1)		(2)	(3)=(1)*(2)	(4)	(5)	(3)*(4)	(3)*(5)
2018	**35.0**	**35.0**	15-19	1,973,731					
2017	39.6	45.2	**20**	436,586	19,725	2,811	3,402	**665.3**	**805.3**
2016	42.5	47.9	**21**	472,589	22,656	2,811	3,036	**764.2**	**825.5**
2015	44.8	50.1	**22**	482,807	24,198	2,811	2,822	**816.2**	**819.5**
2014	47.9	51.2	**23**	478,944	24,512	2,811	2,670	**826.8**	**785.5**
2013	51.1	51.6	**24**	462,077	23,852	2,811	2,552	**804.5**	**730.6**
2012	53.4	51.4	**25**	466,849	24,005	2,811	2,456	**809.7**	**707.5**
2011	53.4	50.7	**26**	474,601	24,053	2,811	2,375	**811.3**	**685.4**
2010	50.1	49.8	**27**	471,418	23,467	2,811	2,304	**791.5**	**648.9**
2009	50.1	49.6	**28**	466,594	23,152	2,811	2,242	**780.9**	**622.9**
2008	50.1	49.1	**29**	447,383	21,949	2,811	2,186	**740.3**	**575.9**
2007	49.7	46.9	**30**	438,378	20,551	2,811	2,136	**693.2**	**526.8**
2006	48.9	44.5	**31**	438,988	19,544	1,666	2,090	**390.7**	**490.2**
2005	49.3	41.5	**32**	454,192	18,840	1,666	2,048	**376.6**	**463.0**
2004	47.3	37.8	**33**	472,389	17,875	1,666	2,009	**357.4**	**430.9**
2003	39.2	34.9	**34**	476,180	16,619	1,666	1,972	**332.2**	**393.3**
2002	37.9	34.9	**35**	489,056	17,058	1,666	1,938	**341.0**	**396.7**
2001	33.7	34.5	**36**	507,371	17,504	1,666	1,906	**349.9**	**400.4**
2000	31.1	35.7	**37**	507,853	18,130	1,666	1,876	**362.5**	**408.1**
1999	32.6	37.7	**38**	518,807	19,569	1,666	1,847	**391.2**	**433.8**
1998	39.1	39.8	**39**	521,889	20,750	1,666	1,820	**414.8**	**453.3**
1997	36.0	40.0	**40**	507,308	20,282	1,666	1,795	**405.5**	**436.8**
1996	39.7	40.9	**41**	533,850	21,845	1,666	1,770	**436.7**	**464.0**
1995	41.2	41.4	**42**	529,830	21,914	1,666	1,747	**438.1**	**459.3**
1994	42.8	41.6	**43**	521,170	21,660	1,666	1,724	**433.0**	**448.1**
1993	40.2	40.9	**44**	532,572	21,803	1,666	1,703	**435.9**	**445.4**
1992	40.7	40.5	**45**	523,190	21,179	1,666	1,682	**423.4**	**427.4**
1991	41.9	40.2	**46**	542,225	21,797	1,558	1,662	**407.5**	**434.7**
1990	42.2	40.1	**47**	553,157	22,182	1,558	1,643	**414.7**	**437.2**
1989	39.7	40.6	**48**	540,709	21,964	1,558	1,624	**410.6**	**428.1**
1988	37.9	40.8	**49**	535,346	21,864	1,558	1,606	**408.8**	**421.4**
1987	39.3	41.4	**50**	554,818	22,981	1,558	1,589	**429.6**	**438.2**
1986	41.4	41.7	**51**	528,998	22,070	1,558	1,572	**412.6**	**416.4**
1985	44.8	41.6	**52**	520,695	21,661	1,558	1,556	**405.0**	**404.4**
1984	**40.8**	**40.8**	**53**	527,012	21,502	1,558	1,540	**402.0**	**397.4**
1983	40.8	40.8	**54**	526,365	21,476	1,558	1,525	**401.5**	**393.0**
1982	40.8	40.8	**55**	490,589	20,016	1,558	1,510	**374.2**	**362.7**
1981	40.8	40.8	**56**	477,101	19,466	1,558	1,495	**363.9**	**349.3**
1980	40.8	40.8	**57**	456,397	18,621	1,558	1,481	**348.1**	**331.0**
1979	40.8	40.8	**58**	458,658	18,713	1,558	1,468	**349.9**	**329.6**
1978	40.8	40.8	**59**	437,549	17,852	1,558	1,454	**333.8**	**311.5**
1977	40.8	40.8	**60**	403,998	16,483	1,558	1,441	**308.2**	**285.1**
							Total (million baht)	**20,163**	**20,025**
							GDP in 2018 (million baht)	**16,368,711**	**16,368,711**
							(a) Reduction in income of pregnant adolescents in 1 year (percentage of GDP)	**0.12%**	**0.12%**
							**Reduction in income of pregnant adolescents from current age until age 60 (percentage of GDP)	1.6%	1.6%
							(a)*41 = reduction in lifetime income of pregnant adolescents (past, present, and future are included) (percentage of GDP)	**5.1%**	**5.0%**

Source: Calculated by author. [1] *Bureau of Reproductive Health.* [2] *Ministry of Health, National Statistical Office.*

*Note: *y = -528.1ln(x) + 3402.4 R^2 = 0.7333; **only differences in income from now until age 60 are calculated.*

Appendix Table C: Calculation of economic opportunity cost of adolescent pregnancy

(Assuming adolescent fertility rate did not decline in the period 2013-2018)

Year	Adolescent fertility rate (number of births to females 15 to 19 years of age per 1,000 females in that age group)[1]		Age (x)	Number of females[2]	Estimated number of pregnant adolescents	Difference in income (baht/person/month)		Economic opportunity cost of adolescent pregnancy (million baht/year)	
	Actual rate	Average rate used in calculation for each age				PSM model	Smooth logarithmic trend*	Actual rate	Average rate used in calculation for each age
		(1)		(2)	(3)=(1)*(2)	(4)	(5)	(3)*(4)	(3)*(5)
2018	**53.4**	**53.4**	15-19	1,973,731					
2017	**53.4**	**53.4**	**20**	436,586	**23,314**	2,811	3,402	**786.4**	**951.9**
2016	**53.4**	**53.4**	**21**	472,589	**25,236**	2,811	3,036	**851.2**	**919.5**
2015	**53.4**	**53.4**	**22**	482,807	**25,782**	2,811	2,822	**869.6**	**873.1**
2014	**53.4**	**52.7**	**23**	478,944	**25,260**	2,811	2,670	**852.0**	**809.4**
2013	**53.4**	**52.1**	**24**	462,077	**24,065**	2,811	2,552	**811.7**	**737.1**
2012	53.4	51.4	**25**	466,849	24,005	2,811	2,456	**809.7**	**707.5**
2011	53.4	50.7	**26**	474,601	24,053	2,811	2,375	**811.3**	**685.4**
2010	50.1	49.8	**27**	471,418	23,467	2,811	2,304	**791.5**	**648.9**
2009	50.1	49.6	**28**	466,594	23,152	2,811	2,242	**780.9**	**622.9**
2008	50.1	49.1	**29**	447,383	21,949	2,811	2,186	**740.3**	**575.9**
2007	49.7	46.9	**30**	438,378	20,551	2,811	2,136	**693.2**	**526.8**
2006	48.9	44.5	**31**	438,988	19,544	1,666	2,090	**390.7**	**490.2**
2005	49.3	41.5	**32**	454,192	18,840	1,666	2,048	**376.6**	**463.0**
2004	47.3	37.8	**33**	472,389	17,875	1,666	2,009	**357.4**	**430.9**
2003	39.2	34.9	**34**	476,180	16,619	1,666	1,972	**332.2**	**393.3**
2002	37.9	34.9	**35**	489,056	17,058	1,666	1,938	**341.0**	**396.7**
2001	33.7	34.5	**36**	507,371	17,504	1,666	1,906	**349.9**	**400.4**
2000	31.1	35.7	**37**	507,853	18,130	1,666	1,876	**362.5**	**408.1**
1999	32.6	37.7	**38**	518,807	19,569	1,666	1,847	**391.2**	**433.8**
1998	39.1	39.8	**39**	521,889	20,750	1,666	1,820	**414.8**	**453.3**
1997	36.0	40.0	**40**	507,308	20,282	1,666	1,795	**405.5**	**436.8**
1996	39.7	40.9	**41**	533,850	21,845	1,666	1,770	**436.7**	**464.0**
1995	41.2	41.4	**42**	529,830	21,914	1,666	1,747	**438.1**	**459.3**
1994	42.8	41.6	**43**	521,170	21,660	1,666	1,724	**433.0**	**448.1**
1993	40.2	40.9	**44**	532,572	21,803	1,666	1,703	**435.9**	**445.4**
1992	40.7	40.5	**45**	523,190	21,179	1,666	1,682	**423.4**	**427.4**
1991	41.9	40.2	**46**	542,225	21,797	1,558	1,662	**407.5**	**434.7**
1990	42.2	40.1	**47**	553,157	22,182	1,558	1,643	**414.7**	**437.2**
1989	39.7	40.6	**48**	540,709	21,964	1,558	1,624	**410.6**	**428.1**
1988	37.9	40.8	**49**	535,346	21,864	1,558	1,606	**408.8**	**421.4**
1987	39.3	41.4	**50**	554,818	22,981	1,558	1,589	**429.6**	**438.2**
1986	41.4	41.7	**51**	528,998	22,070	1,558	1,572	**412.6**	**416.4**
1985	44.8	41.6	**52**	520,695	21,661	1,558	1,556	**405.0**	**404.4**
1984	**40.8**	40.8	**53**	527,012	21,502	1,558	1,540	**402.0**	**397.4**
1983	40.8	40.8	**54**	526,365	21,476	1,558	1,525	**401.5**	**393.0**
1982	40.8	40.8	**55**	490,589	20,016	1,558	1,510	**374.2**	**362.7**
1981	40.8	40.8	**56**	477,101	19,466	1,558	1,495	**363.9**	**349.3**
1980	40.8	40.8	**57**	456,397	18,621	1,558	1,481	**348.1**	**331.0**
1979	40.8	40.8	**58**	458,658	18,713	1,558	1,468	**349.9**	**329.6**
1978	40.8	40.8	**59**	437,549	17,852	1,558	1,454	**333.8**	**311.5**
1977	40.8	40.8	**60**	403,998	16,483	1,558	1,441	**308.2**	**285.1**
							Total (million baht)	**20,457**	**20,349**
							GDP in 2018 (million baht)	**16,368,711**	**16,368,711**
							(a) Reduction in income of pregnant adolescents in 1 year (percentage of GDP)	**0.12%**	**0.12%**
							**Reduction in income of pregnant adolescents from current age until age 60 (percentage of GDP)	1.6%	1.7%
							(a)*41 = reduction in lifetime income of pregnant adolescents (past, present, and future are included) (percentage of GDP)	**5.1%**	**5.1%**

Source: Calculated by author. [1] *Bureau of Reproductive Health.* [2] *Ministry of Health, National Statistical Office.*

*Note: *y = -528.1ln(x) + 3402.4 R^2 = 0.7333; **only differences in income from now until age 60 are calculated.*

Appendix Table D: Calculation Economic opportunity cost of adolescent pregnancy

(Assuming income gap among young generation becomes wider due to higher education attainment)

Year	Adolescent fertility rate (number of births to females 15 to 19 years of age per 1,000 females in that age group)[1]		Age (x)	Number of females[2]	Estimated number of pregnant adolescents	Difference in income (baht/person/month)		Economic opportunity cost of adolescent pregnancy (million baht/year)	
	Actual rate	Average rate used in calculation for each age				PSM model	Smooth logarithmic trend*	Actual rate	Average rate used in calculation for each age
		(1)		(2)	(3)=(1)*(2)	(4)	(5)	(3)*(4)	(3)*(5)
2018	**35.0**	**35.0**	15-19	1,973,731					
2017	39.6	45.2	**20**	436,586	19,725	5,600	7,466	1,325.5	1,767.1
2016	42.5	47.9	**21**	472,589	22,656	5,600	6,273	1,522.5	1,705.5
2015	44.8	50.1	**22**	482,807	24,198	5,600	5,576	1,626.1	1,619.1
2014	47.9	51.2	**23**	478,944	24,512	5,600	5,081	1,647.2	1,494.6
2013	51.1	51.6	**24**	462,077	23,852	5,600	4,697	1,602.9	1,344.5
2012	53.4	51.4	**25**	466,849	24,005	5,600	4,384	1,613.2	1,262.8
2011	53.4	50.7	**26**	474,601	24,053	5,600	4,119	1,616.3	1,188.7
2010	50.1	49.8	**27**	471,418	23,467	5,600	3,889	1,577.0	1,095.1
2009	50.1	49.6	**28**	466,594	23,152	5,600	3,686	1,555.8	1,024.2
2008	50.1	49.1	**29**	447,383	21,949	5,600	3,505	1,474.9	923.2
2007	49.7	46.9	**30**	438,378	20,551	5,600	3,341	1,381.0	824.0
2006	48.9	44.5	**31**	438,988	19,544	1,666	3,191	390.7	748.5
2005	49.3	41.5	**32**	454,192	18,840	1,666	3,054	376.6	690.4
2004	47.3	37.8	**33**	472,389	17,875	1,666	2,926	357.4	627.7
2003	39.2	34.9	**34**	476,180	16,619	1,666	2,808	332.2	559.9
2002	37.9	34.9	**35**	489,056	17,058	1,666	2,697	341.0	552.0
2001	33.7	34.5	**36**	507,371	17,504	1,666	2,592	349.9	544.5
2000	31.1	35.7	**37**	507,853	18,130	1,666	2,494	362.5	542.6
1999	32.6	37.7	**38**	518,807	19,569	1,666	2,401	391.2	563.8
1998	39.1	39.8	**39**	521,889	20,750	1,666	2,313	414.8	575.9
1997	36.0	40.0	**40**	507,308	20,282	1,666	2,229	405.5	542.5
1996	39.7	40.9	**41**	533,850	21,845	1,666	2,149	436.7	563.3
1995	41.2	41.4	**42**	529,830	21,914	1,666	2,072	438.1	545.0
1994	42.8	41.6	**43**	521,170	21,660	1,666	1,999	433.0	519.6
1993	40.2	40.9	**44**	532,572	21,803	1,666	1,929	435.9	504.7
1992	40.7	40.5	**45**	523,190	21,179	1,666	1,862	423.4	473.1
1991	41.9	40.2	**46**	542,225	21,797	1,558	1,797	407.5	470.0
1990	42.2	40.1	**47**	553,157	22,182	1,558	1,734	414.7	461.6
1989	39.7	40.6	**48**	540,709	21,964	1,558	1,674	410.6	441.1
1988	37.9	40.8	**49**	535,346	21,864	1,558	1,615	408.8	423.8
1987	39.3	41.4	**50**	554,818	22,981	1,558	1,559	429.6	429.9
1986	41.4	41.7	**51**	528,998	22,070	1,558	1,504	412.6	398.4
1985	44.8	41.6	**52**	520,695	21,661	1,558	1,452	405.0	377.3
1984	**40.8**	**40.8**	**53**	527,012	21,502	1,558	1,400	402.0	361.3
1983	40.8	40.8	**54**	526,365	21,476	1,558	1,350	401.5	348.0
1982	40.8	40.8	**55**	490,589	20,016	1,558	1,302	374.2	312.7
1981	40.8	40.8	**56**	477,101	19,466	1,558	1,255	363.9	293.1
1980	40.8	40.8	**57**	456,397	18,621	1,558	1,209	348.1	270.1
1979	40.8	40.8	**58**	458,658	18,713	1,558	1,164	349.9	261.4
1978	40.8	40.8	**59**	437,549	17,852	1,558	1,121	333.8	240.1
1977	40.8	40.8	**60**	403,998	16,483	1,558	1,078	308.2	213.3
							Total (million baht)	**28,602**	**28,104**
							GDP in 2018 (million baht)	**16,368,711**	**16,368,711**
							(a) Reduction in income of pregnant adolescents in 1 year (percentage of GDP)	**0.17%**	**0.17%**
							**Reduction in income of pregnant adolescents from current age until age 60 (percentage of GDP)	2.4%	2.6%
							(a)*41 = reduction in lifetime income of pregnant adolescents (past, present, and future are included) (percentage of GDP)	**7.2%**	**7.0%**

Source: Calculated by author. [1] *Bureau of Reproductive Health.* [2] *Ministry of Health, National Statistical Office.*

*Note: *y = -528.1ln(x) + 3402.4 R^2 = 0.7333; **only differences in income from now until age 60 are calculated.*

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