Beauty Premium through Cosmetic Surgery for Prisoners:
Choice Experiment with Asymmetric Information

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Abstract

𝕿he concept of 'beauty premium' has been the subject of academic research for decades, but only a few studies have investigated the investment side of beauty. Meanwhile, the main concern of prisoners is to be given the opportunity to re-enter society. However, their low physical attractiveness has been claimed to be an obstacle that prevents them from entering the labour market. While a large literature reported the existence of beauty premium in the labour market worldwide, the current paper complements the existing literature by applying choice experiment (CE) with asymmetric information to investigate the impacts of cosmetic surgery on prisoners' labour market returns: job opportunities and incomes. Eighteen male prisoners' faces were simulated for cosmetic surgery and assigned as job candidates in a CE. The results show that, compared with the non-surgical group, respondents (employers) in the formal and informal sectors preferred cosmetic surgical groups with odds ratios or increase of utility of 4.05 and 2.54, respectively. The MWTP values show that employers are willing to pay an additional 3,500 baht to the surgical group. Using prisoners as subjects not only broadens existing literature by demonstrating the existence of economic returns to investment on beauty in this minority group, but it also presents additional ideas for further rehabilitation programme to help prisoners reintegrate themselves into society.

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1. Introduction

In recent articles, Thai ex-prisoners have been referred to as the *new-poor people* due to a very low possibility of getting employed. In February 2019, the TDRI also reported the prisoners' failure to re-enter the labour market, which contributed to recidivism rates of 15%, 25%, and 33% in the first three years (from 2013 to 2017), respectively, among 140,000 ex-prisonersattempting to find employment (Isranews Agency, 2017; TDRI, 2019). There are multiple causes to explain the predicament. It can be the ability of the prisoners themselves to reintegrate into society, stigma from the criminal history record, or the perception that society has towards prisoners and ex-prisoners.

However, scholars addressed other interesting issues that prisoners' facial defects could develop an inferiority complex, made employment difficult, and contributed to criminal behaviour. (Lewison, 1965; Spira et al., 1966). Let alone the stigmatization of the criminal history record, low physical attractiveness aggravates their labour market opportunity. This so-called 'beauty premium and penalty' phenomena are not new. A large body of literature has reported the significance of beauty (physical attractiveness) in the non-prisoner population, especially in the labour market. Such studies have presented statistics regarding the importance of beauty, demonstrating that attractive people tended to earn more job opportunities and incomes, succeed earlier, report a greater sense of happiness, and have less propensity to engage in criminal activities than the unattractive individuals. (See e.g., Hamermesh & Abrevaya, 2013; Hamermesh & Biddle, 1994; Mocan & Tekin, 2010).

The literature on the beauty premium empirically showed that beauty was economically and criminologically significant. But as far as we know, it rarely addressed the reverse perspective that beauty could also be purchased and in return, the purchaser is in more advantageous positions as the greater beauty premium received. Only a few studies have examined how people acquire beauty to enjoy more premium, particularly in a prisoner population. Not to mention that the literature has not previously compared the beauty premium between the formal and informal labour markets where beauty might manifest differently among the two sectors.

As in recent decades, 'beauty' is no longer limited to inheritance or genetics, and is no longer considered as the unalterable variable. Thus, the current study contributes to the literature by investigating the investment side of the beauty in ex-prisoners: a minority group that increasingly faces difficulties in labour market re-entry, and they were rarely drawn into analysis in the economics of beauty perspective. It is the first to integrates the literature on the beauty premium and cosmetic surgery in prisoners to investigate the change in beauty premium from 'initial beauty' to 'improved beauty' of the same individual in both formal and informal labour sectors. To the best of our knowledge, this represents one of the first attempts toward the studies of such a topic given that most studies are unable to compare this precise effect.

This article is organised as follows. Section 1 reviews the current literature on the beauty premium for the non-prisoner population which includes both non-experimental and experimental studies. It also explores the studies of the relationship between beauty and crime, followed by empirical studies on the impact of cosmetic surgery in the non-prisoner and the prisoner population. Section 2 describes the theoretical framework considering the choice experiment and Akerlof's (1970) original theory of the labour market with asymmetric information. Section 3 focuses on preparing subjects of the experiment. Section 4 elaborates on the intricacy of constructing the choice experiment

design. The data collection process is described in section 5, wherein section 6 explains the model estimation using conditional logit theory. Section 7 presents the choice experiment results and analysis wherein section 8 concludes and discusses the policy implication of the current study.

2.   Related literature

2.1 The physical attractiveness stereotype and the economic returns to beauty

Dion et al. (1972) were amongst the first who raised interest among scholars in the role and power of physical attractiveness (also called 'beauty'). Their question arose whether physically attractive individuals were assumed to possess more socially desirable personality traits and were expected to lead better lives than unattractive individuals. Indeed, after conducting their experiment to test the perceptions toward attractive people, the results showed that attractive people were perceived to be more sociable, desirable and successful, and were likely to achieve more prestigious occupations than their unattractive counterparts. This explicitly demonstrated the first guideline on how beauty is rationalised and perceived by individuals. Subsequent studies, such as that of Feingold (1992) and Langlois et al. (2000) supported the earlier work suggesting a significant correlation between physical attractiveness and basic personality trait. As physically attractive individuals ,both children and adults were perceived to be more dominant, intelligent, mentally healthy, socially skilled. They were perceived to exhibit more positive behaviour, and were treated more positively.

The pioneering economics study of Hamermesh and Biddle (1994) combined the workers' beauty rating scores: 5-point scale assessment[1] with their incomes to measure the impact of beauty on earnings. They demonstrated that other things being equal, the more attractive workers, both genders, would receive the higher wages than the average-looking and below-average-looking workers. Apart from Hamermesh and Biddle's study, a large number of economic studies on impact of beauty adopted relatively similar approach, thereby producing substantially similar results. They emphasized the impact of 'beauty premium' and the fact that it does not solely occur worldwide in occupations where it is usually agreed that physical attractiveness is crucial. For example, in the cases of Dutch sale executives (Pfann et al., 2000), political candidates in Australia (King & Leigh, 2009), commercial sex workers in Mexico (Arunachalam & Shah, 2012), and servers in Virginia restaurants (Parrett, 2015). Also, in cases where looks are not considered as integral to the job, such as cases of academic professors (Hamermesh & Parker, 2003) and borrowers (Ravina, 2008). The beauty premium also serves as an incentive for the more attractive women as they statistically reported having a spouse whose potential earning is higher (Hamermesh & Biddle, 1994; Lee & Ryu, 2012).

Moreover, Borland and Leigh (2014) and Scholz and Sicinski (2015) added to the literature that the beauty effect might have an enduring quality across a period of time. Wherein Borland and Leigh (2014) showed the consistency of beauty effect where Australian workers benefited from being beautiful as there had been a return to beauty on their hourly wage and household income of which hourly wages seemed to be consistent throughout the 1980s and 2000s. Scholz and Sicinski (2015) lengthy examined the effect of labour market return to male's beauty from their younger years to their early 50s and illustrated: despite controlling for IQ, high school experience, confidence, personality, and

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[1] 1 is homely/ugly, 3 is average looking, and 5 is strikingly handsome/beautiful (Hamermesh & Biddle, 1994).

family background, the wage premium was still enduringly presented in the early 50s of the attractive male respondents.

2.2 The experimental study on beauty and the relationship between beauty and crime

While beauty promised desirable traits and happiness (Hamermesh & Abrevaya, 2013), its obverse offered the probability of stigma. Using the interviews approach to gather beauty score and criminal activities data, Mocan and Tekin (2010) showed that being very attractive reduced a young adult's (aged 18 to 26) propensity to engage in criminal activities. And being unattractive increased it for several crimes: ranging from burglary to selling drugs. The explanation was drawn in their study as unattractive young students were isolated from their teachers and their peers. And this could influence their ability of adolescent's human capital formation which is significant when they enter the labour market. Nevertheless, to extract how beauty premium operates, Mobius and Rosenblat (2006) conducted the *maze-solving task* lab experiment on undergraduate and graduate students. Their lab experiment sessions consisted of participants assigned as employer and employee groups, where the employers were asked to estimate the productivities of employees' maze solving task and assign their wages. The result showed that attractive employees were paid more in the experiments, indicating that the beauty itself does not increase a person's productivity but increase the productivity's estimates instead. Ruffle and Shtudiner's (2015) work underlined Mobius and Rosenblat's (2006) result by conducting field experiment to examine the impact of beauty on the likelihood of a callback. Large number of fictitious resumes were sent to advertised job openings, and unsurprisingly, almost double the number of callbacks was returned to the attractive applicants.

2.3 Purchasing beauty and cosmetic surgery in non-prisoner and prisoner population

In 2002, Hamermesh et al. suggested there was a literature failure to consider the causation line of beauty premium when workers' looks might be affected by the efforts of individuals to ameliorate their deficiencies in beauty. Thus, they merged the labour market information, beauty rating scores, household expenditure, and female spending on beauty-enhancing goods and services to investigate the investment side of beauty. The result showed that beauty increased women's earnings. And clothing and cosmetics expenditures provided a positive marginal impact on a women's perceived beauty, and those purchases paid back less than 15% of additional units of expenditure in the form of higher incomes.

Recently, Póvoa et al. (2020) conducted a trust game experiment to examine the effect of makeup on facial trustworthiness. Both men and women were separated into two groups: with and without makeup, and the makeovers were done by one professional makeup artist. The result showed that wearing makeup increased perceived attractiveness and perceived trustworthiness, which in turn, led trustors to make larger transfers to female trustees in the trust game. The makeup premium also showed the gender difference in their favour when female trustees with makeup received larger transfers than female trustees without makeup when the trustors were men. Even though the study shows the existence of beauty premiums from wearing makeup, the reservation occurs since the person's facial appearance from makeup can change whenever people apply their makeup, especially the case for the non-professional ones. Thus, the consistency of the makeup premium appears to depend on the skill and skill consistency of each individual.

Most of the studies on beauty premiums have been found to not mention about the alterable quality of the variable 'beauty' (Arunachalam & Shah, 2012; Hamermesh & Biddle, 1994; Hamermesh & Parker, 2003; King & Leigh, 2009; Mobius and Rosenblat, 2006; Mocan & Tekin, 2010; Pfann et al., 2000; Ravina, 2008; Ruffle & Shtudiner, 2015). As far as we know, Lee and Ryu (2012) were the first to scrutinise the labour market return

of plastic surgery in the *non-prisoner population*. Integrating the plastic inquirers' facial grades with the income information from dating service data set allowed them to estimate the plastic surgery premiums. The result showed the increasing facial attractiveness of the plastic surgical group that increased the income in the labour market, and additional income from having a more favourable spouse.

In the *prisoner population*, there are several studies that have investigated the impact of cosmetic/plastic surgery on prisoners and suggested it as a tool to facilitate prisoners' rehabilitation. The theory behind assumes that people with deformity are unlikely able to adjust in an environment, and that could consequently lead to criminal behaviour. Thus, when the deformity is cured, the person should no longer be motivated to engage in criminal activities. Although some studies suggested no significant difference in recidivism between the cosmetic surgical groups (the treatment groups) and the control groups (Schuring & Dodge, 1967), seminal studies reported a larger decrease in recidivism rates among prisoners who received cosmetic surgery compared to those who did not. They further addressed the removal of such defects enabled prisoners to re-enter society more confidently which resulted in less inclination to go back to crime. (Freedman et al., 1988; Lewison, 1965; Spira et al., 1966)

3. Theoretical framework

This study is using **choice experiments (CEs)** and Akerlof's (1970) original theory of the labour market with asymmetric information to answer the research question. In a CE, respondents (employers) are presented with a series of alternatives (two prisoner job candidates), differing in respect of attributes and levels. The respondents are asked to choose their most preferred candidate by including price/cost (salary) as one of the attributes of the good (labourer). The *trade-offs* individuals are willing to make between good attributes or *willingness to pay* (WTP) can be indirectly recovered from individual's choices. (Bateman et al., 2002; Hanley et al., 2001; Louviere et al., 2000).

The chosen alternative is expressed as:

$$U_{ig} > max_{h\ Ci,\ h \neq g}\ U_{ih}, \tag{1}$$
$$P[(U_{ig} > U_{ih})\forall h \neq g] = P[V_{ig} - V_{ih}) > (eih - eig)]. \tag{2}$$

where in equation (1), U_{ig} represents the utility that is rationally maximised and $U_{ig} \neq U_{ih}$. Equation (2) shows the probability that the respondent prefers alternative *g* to *h* in the choice set implying that the probability associated with alternative *g* exceeds all other alternatives. When the parameter estimates have been acquired, the marginal willingness to pay (MWTP): the indicative amount of money employers are willing to pay for a particular qualifications and characteristics of prisoner job candidate can be calculated using formulas based on demand theory as demonstrated in equation (3) and (4). Wherein equation (3), V^0 denotes to the utility of the initial state and V^1 denotes to the utility of alternative state. The coefficient b_y contributes to the marginal utility of income and the coefficient of the cost attribute. In equation (4), the equation (3) was reduced where b_c is coefficient of any attributes. (Hanley et al., 2001)

$$WTP = b_y^{-1} ln \left\{ \frac{\sum_i \exp{(V_i^1)}}{\sum_i \exp{(V_i^0)}} \right\}, \tag{3}$$

$$WTP = \frac{-b_c}{b_y}. \tag{4}$$

According to Akerlof's (1970) original theory of the labour market with *asymmetric information*, due to limit access to information, employers are likely to use statistics, such as *race,* as a proxy for a potential employee's productivity. Such information was used to assess the candidate's education, socio-economic background, and capability. The current study modifies Akerlof's (1970) theory by applying the non-disclosure of criminal history record: employees know more about their state of nature than their potential employers and employers do not have access to this information. While a proxy in Akerlof's (1970) can also be a *race or good schooling*, the current paper equates all of these productivity-related characteristics and uses *facial beauty* as a proxy for potential employee's productivity. However, the non-disclosure setting of one's criminal record in the current study may not be falsely pre-supposed as Hurwicz (1972, cited in Azariadis, 1983, p.157) suggested that some individuals may be motivated to manipulate the market mechanism in their favour by resorting to lying, especially when market mechanism does not give individuals sufficient incentive to truthfully reveal the possessed private information. However, one might be concerned about the potential effect of this concept as employers may suffer from the unpleasant behaviours of some ex-prisoners. According to Akerlof's (1970) concept of *the cost of dishonesty* in the lemons model: sellers who are willing to offer inferior goods tend to drive the market out of existence. Consequently, ex-prisoner who performs below expectations will suffer from the cost of dishonesty by being degraded or suspended from the company.

Finally, it might be argued that using the asymmetric concept in the experiment does not make the difference in terms of implementing it in the non-prisoner population. What this means is that, in the non-disclosure setting, the respondents might automatically presume ex-prisoners in the experiment to be non-prisoners. However, past studies argued there was a relationship between criminality and physical appearance where facial proportion and structure conceivably a reliable signal of unethical and aggressive behaviour (Carre et al., 2009; Haselhuhn et al., 2012; Lombroso, 1911, cited in Bull, 1982, p. 6; Stillman et al., 2010). The investigation was made whether an individual could distinguish between the face of the criminal and the non-criminal by having the participant distinguish between facial photos of the two group: holding gender, race, age, attractiveness, and emotional expression. Their results showed that the individual could identify the 'face of criminals' and, to some extent, could identify which type of crime such particular photographed individual had committed: implying that stereotyping criminality could simply base on the facial appearance. (Thornton, 1939; Valla et al., 2011)

3.1 Unit of study
3.1.1 Generating the before and after cosmetic surgical faces

When the Research Ethics Review Committee for Research Involving Human, Research Participants, Health Sciences Group, Chulalongkorn University accepted the using of prisoner's facial photos in the study, this process came in three steps. Firstly, 27 ex-prisoners who were released for no longer than six months were asked to participate consentingly for having their photos used in the experiments. Secondly, after ruling out very old and attractive subjects who were rated above three from a five-point scale[2] (this rating process was conducted by six males and six females), the recruited 18 male ex-prisoners were simulated for cosmetic surgery by the graphic designer. Adobe Photoshop and other related applications were used to artificially manipulate the *after* cosmetic surgical faces: enhance the ex-prisoners' physical appearance so that they can achieve

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[2] The same scale as that used in Hamermesh and Biddle (1994) where 1 is homely/ugly, three is average looking, and five is strikingly handsome/beautiful.

better labour market outcome. Such simulated procedures referred the most popular face and head procedures in Thailand from ISAPS 2017 statistics including tattoo removal. And lastly, we stopped the artificial manipulation when the subject's beauty rating score by the 12 adults reached more than three from the five-point scale. Conclusively, the experiment used 36 faces as job candidates: 18 before cosmetic surgical simulated photos and 18 after cosmetic surgical simulated photos. These processes allowed us to investigate the within-individual cosmetic surgery premium wherein Lee and Ryu (2012) were unable to scrutinize this precise effect.

3.1.2 Manipulation of the job candidate's profiles

Modifying Ruffle and Shtudiner's (2015) method, we generated CEs where job candidates represented alternatives in the choice sets. The CEs included such positions that beauty is agreed to be more important. The reason being, if we want a detectable result of the beauty premium from cosmetic surgery in the data sets, it is best to test its effect in the occupations/positions wherein 'beauty' has a significant role. While *proxies* of productivity regarding Akerlof's (1970) can be a *race* and *good schooling*, we equated all productivity-related characteristics and used *facial beauty* as a proxy for job candidate's productivity (Mobius & Rosenblat, 2006), in an attempt to disclose the *beauty premium* from the CEs. Thus, in the choice sets, the inequality was set in the attached photos having different levels of facial attractiveness.

3.2 Choice experiment design
3.2.1 Attribute-level identification and description

As the current paper used the *facial attractiveness* of candidates as the main proxy of estimated productivity, the respondents (employers) were expected to estimate the candidate's productivity and hire their most preferred one based on facial attractiveness and salary. Therefore, *cosmetic surgery*, *head-shoulder profile photo of the prisoner*, and *salary* were set as the three attributes in the CEs. To simplify this, considering the subjects had been through cosmetic surgical simulation or otherwise, the facial photos of the subjects were attached for the criteria. Together with the salary stated in the choice set, we can examine how the employer values each attribute and respond to the CEs. The lists of attribute names and their respective levels are shown in Table 1 as follows.

Table 1: Choice experiment's attribute and their levels

Attributes	Levels	Variable names	Description
Cosmetic surgery	Yes No	Surgery No surgery	The attribute investigates the labour market impacts of simulated cosmetic surgery.
Head-shoulder profile photo of prisoner	18 levels (18 prisoners)	Prisoner A. to R.	The attribute represents 18 ex-prisoners of which photos were inserted in choice set having simulated for cosmetic surgery or otherwise.

Salary	15,000	Salary	The attribute represents salary levels of prisoner job candidates in experiment referenced and adjusted from The Informal Employment Survey, 2018
	(12,000 for Informal sector)		
	12,000		
	(9,000 for Informal sector)		

Remark: the attributes and its respective levels in the table were then used for coding in R-programme to create the CE design. The detail of how to create the design was as described in subtopic 3.2.2. below.
Source: Authors' discretions.

3.2.2 Choice set creation

We used function library(survival) and rotation.design in package support.CEs in R programme Version 1.2.1335 to generate the CEs design. Firstly, we generated the two-alternatives and four sub-blocks *half factorial design* that comprise 36 choice sets, considering *orthogonality* and *level balance*. Secondly, we applied the shifting method where the second alternative was created by adding one additional level to each attribute of the first alternative. It was to achieve *zero overlaps* where the same attribute level did not repeat within a choice set. Lastly, the design was evaluated in which the *orthogonality*, *level balance,* and *zero overlaps* met three out of four criteria for effective design determined in Huber and Zwerina (1996). The choice set design is elaborated in Table 2 as follows.

Table 2: Choice set design

Choice set	Block	Alternative 1	Alternative 2	Design code
1	1	292	1101	*Cosmetic Surgery (1ˢᵗ column)*
2	1	1111	2122	1 - Yes
3	1	2112	1121	2 - No
4	1	281	192	*Prisoners'head-to-shoulder*
5	1	162	271	1 - Mr. A
6	1	182	291	2 - Mr. B
7	1	1142	2151	3 - Mr. C
8	1	2152	1161	4 - Mr. D
9	1	1122	2131	5 - Mr. E
10	2	1131	2142	6 - Mr. F
11	2	2172	1181	7 - Mr. G
12	2	2161	1172	8 - Mr. H
13	2	2132	1141	9 - Mr. I
Choice Set	**Block**	**Alternative 1**	**Alternative 2**	**Design code**
14	2	111	222	10 - Mr. J
15	2	252	161	11 - Mr. K
16	2	2141	1152	12 - Mr. L
17	2	2121	1132	13 - Mr. M
18	2	261	172	14 - Mr. N
19	3	272	181	15 - Mr. O
20	3	1102	2111	16 - Mr. P
21	3	171	282	17 - Mr. Q
22	3	122	231	18 - Mr. R
23	3	221	132	*Salary (3ʳᵈ column)*
24	3	212	121	1 - 15,000 baht per month
25	3	1171	2182	2 - 12,000 baht per month
26	3	1182	211	(9,000 for informal sector)
27	3	1151	2162	

28	4	131	242
29	4	241	152
30	4	151	262
31	4	191	2102
32	4	2181	112
33	4	2101	1112
34	4	1162	2171
35	4	232	141
36	4	142	251

Remark: (1) The alternative 2 was created according to the shifting method. (2) Eighteen prisoners were assigned as Mr. A to Mr. R by order according to the youngest to the oldest years of age. It was done to avoid a large age gap between two candidates in the same choice set where age can be the proxy of working experience. Using the shifting method also helps us minimize the age gap between the two candidates within a choice set as much as possible.

Source: Authors' experiments.

The combinations in Table 2 were then used to construct the choice sets in questionnaire as shown in Table 3.

Table 3: Example of choice set of experiments in the formal labour sector

If you are hiring a customer-relations officer aged between 25 and 35 and you are having this scenario: two candidates, both 29, high school graduates, having related experiences, computer skills, and English proficiency. Whom would you like to hire regarding their qualifications and salary?

(Note: Photo of candidate A. and B. represent 2 attributes: Head-to-shoulder photo of prisoners and cosmetic surgery)	Candidate A.	Candidate B.
Salary	12,000 THB (374 USD)	15,000 THB (467 USD)
I choose	☐	☐

Remarks: (1) As this may contribute to a delicate issue, disclosing the real faces of the prisoners was omitted in this paper. However, the actual experiments showed photos without eye-closing tabs. (2) For the experiment in the informal sector, the professions (e.g., local store salesperson, local restaurant waiter) were modified to be congruent with the Thai informal labour market. And the salary levels were 9,000 and 12,000 baht, respectively.

Source: Authors' experiments.

The choice set in Table 3 is constructed from choice set number 1 in Table 2, of which the alternative 1 is prisoner job candidate (Mr. I) who did not undergo cosmetic surgical simulation and has salary level attached for 12,000 baht. The alternative 2 is prisoner job candidate (Mr. J) who underwent cosmetic surgical simulation and has attached salary level of 15,000 baht.

However, besides the literature gap described in section 1 where we argued that the literature rarely addressed the reverse perspective the beauty premium, such past studies also counted on quite a few of beauty raters who were not the actual labour-beauty-premium givers. Implying such beauty rating scores were presumed as universal and applicable in labour, marriage, and educational markets. (Hamermesh & Biddle, 1994; Hamermesh & Parker, 2003 King & Leigh, 2009; Pfann et al., 2000; Scholz & Scicinski,

2015). Another reservation exists in Ravina (2008)where photos in the study were obtained by having borrowers to upload their photos upon applying for loans online. All of which did not necessarily contribute to the actual facial attractiveness since it can be that some senders might have had edited their photo to be more attractive. Not to mention that some particular studies used inexperienced participants to assess workers' productivity and assign their wages (Mobius & Rosenblat, 2006). Moreover, when the studies had the beauty rating implemented at the process of the interview, the process could be contaminated by the interviewees' current condition, and sensitive matters in their conservations: resulting in distortion or inaccuracy of the interviewees' beauty scores (Arunachalam & Shah, 2012; Borland & Leigh, 2014; Mocan & Tekin, 2010).

Therefore, it may have been more illustrative to broaden the size and diversity to the former rating practice by having the 400 experienced employers, in our experiments, who came from many industries, rate the candidates' beauty for four choice sets in the last section of each questionnaire. This so-called 'manipulation check' then certified that the beauty premium specifically emanates from the perceived attractiveness of prisoner job candidates chosen by such employers. Since an increase of perceived attractiveness in individuals might also increase their perceived trustworthiness (Póvoa et al., 2020), this process asks each respondent to rate subjects in a choice set for both of their 'beauty' and 'trustworthiness' scores. The resulting beauty score shall confirm whether the employer deciding to hire a candidate with cosmetic surgery with a higher beauty score is a manifestation of the beauty premium. Table 4 represents examples of the manipulation check where two candidates were rated for their perceived attractiveness and perceived trustworthiness.

Table 4: The assessment of choice set No.1

Regarding the candidate's age, how much would you rate his facial attractiveness and trustworthiness on the scale of 1 to 5. (1 is unattractive/untrustworthy, 3 is moderate, and 5 is strikingly attractive/highly trustworthy)
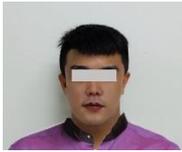
	Candidate A. Age 27	Candidate B. Age 27
Beauty score		
Trustworthiness score		

Source: Authors' experiments.

3.3 Data

Four hundred fifty sets of questionnaires were randomly distributed to 225 private organizations and 225 local businesses in Bangkok and surrounding areas. A total of 400 (200 sets each) questionnaires were used after sorting out unqualified questionnaires such as unfinished responses and responses which did not follow the questionnaire's instructions (e.g. selected both candidates in some choice sets). Then, the respondent data sets: the formal and informal labour sector data set were constructed based on Aizaki and Nishimura's (2008) method. The summary statistics of respondents: the employers from both the formal and informal labour sectors are demonstrated in Table 5. Wherein both

sectors: the majority of respondents in our data sets were at the age between 31-40 and mean ages were 39 and 41 years for the formal and the informal sector. For gender, the majority were female respondents contributed for 67.5% in the formal and 59% in informal sector, while the average hiring experience of employers from both sectors is approximately 10 years.

Table 5: Summary statistics of respondents' characteristics

	Formal sector		Informal sector	
Variable	N	%	N	%
Age (years)				
<21	0	0	0	0
21-30	32	16	45	22.5
31-40	90	45	64	32
41-50	64	32	49	24.5
51-60	13	6.5	24	12
>60	1	0.5	18	9
Total	200	100	200	100%
Mean age	39.02	-	41.55	
Gender				
Male	65	32.5	82	41
Female	135	67.5	118	59
Total	200	100	200	100%
Hiring experience				
<5	47	23.5	56	28
5-10	77	38.5	82	41
11-15	35	17.5	21	10.5
16-20	25	12.5	21	10.5
>20	16	8	20	10
Total	200	100	200	100%
Mean	10.2	-	10.31	

Source: Authors' calculations.

3.4 Model estimation

The models were estimated using the function clogit and library(survival) in the package support.CEs in R progarmme, according to the conditional logit model (CLM). We followed method developed by Aizaki, 2012 and Aizaki and Nishimura, 2008. And the fundamental utility function is given by:

$$V_{in} = ASC_i + B_{Surgery}Surgery_{in} + B_{Prisoner\,(i)}Prisoner(i)_{in} + B_{Salary}\,Salary_{in}, (5)$$

where V_{in} signifies the representative element of utility for prisoner job candidate (i), (I = A, B,…,R); ASC refers to an alternative specific constant; $Surgery_{in}$ represents a dummy variable taking value of 1 if the prisoner has gone through cosmetic surgery, and 0 otherwise; and $Prisoner(i)_{in}$ represents a dummy variable for each prisoner, for example, $Prisoner(A)_{in}$, takes a value of 1 if it is prisoner A and 0 otherwise. In addition, $Salary_{in}$: the continuous variable that denotes the salary set for prisoner job candidate. Finally, $B_{Surgery}$, $B_{Prisoner\,(i)}$ and B_{Salary} are coefficients associated with $Surgery_{in}$, $Prisoner(i)_{in}$ and $Salary_{in}$, respectively.

According to the CLM, one level of each of dummy coded attribute was set as the based variable except for *salary*. The based variables were set as follow:

Attribute	*Based Variable*
Cosmetic Surgery	No Surgery
Prisoner	Prisoner A.

And the CLM results are shown in Model 1: the model of the formal labour sector, where Model 2 shows the results in the informal labour sector. Finally, the marginal willingness to pay (MWTP) for each non-monetary attribute is estimated by the function mwtp. As demonstrated in Tables 6 and 7: the MWTP values for the formal and the informal sectors, respectively

4. Result and analysis

Model 1: Basic model using asymmetric information for prisoners in the formal sector

	coef	**exp(coef)**	**se(coef)**	**z**	**p**
ASC	24.99	7.160e+10	1.146e+03	0.022	0.983
Surgery	1.399	4.049	0.077	18.146	<2e–
Salary	–3.814	0.021	0.257	–14.855	<2e–

Remark: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Likelihood ratio test= 2305 on 20 df, p=<2e–16
n= 5400, number of events= 1800
Rho-squared = 0.5828995
Adjusted rho-squared = 0.5727857
Akaike information criterion (AIC) = 1689.634
Bayesian information criterion (BIC) = 1799.545
Number of coefficients = 20
Log likelihood at start = –1977.502
Log likelihood at convergence = –824.8172
Source: Authors' estimations.

Model 2: Basic model using asymmetric information for prisoners in the informal sector

	coef	**exp(coef)**	**se(coef)**	**z**	**p**
ASC	23.09	1.062e+10	1.124e+03	0.021	0.984
Surgery	0.931	2.536	0.0595	15.649	< 2e–16***
Salary	–2.762	0.063	0.198	–13.938	< 2e–16***

Remark: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Likelihood ratio test=1993 on 20 df, p=< 2.2e–16
n= 5400, number of events= 1800
Rho-squared = 0.5039613
Adjusted rho-squared = 0.4938476
Akaike information criterion (AIC) = 2001.835
Bayesian information criterion (BIC) = 2111.746
Number of coefficients = 20
Log likelihood at start = –1977.502
Log likelihood at convergence = –980.9175
Source: Authors' estimations.

Table 6: Marginal willingness to pay in the formal sector

	MWTP	2.5%	97.5%
Surgery	0.3667	0.3293	0.4118

Remark: As we are interested in the coefficients and MWTP values of the cosmetic surgical group compared with the non-surgical group. Thus, the coefficients and MWTP values for Prisoner A. to Prisoner R. stated in Table 1. will not be showed within the article.
Source: Authors' estimations, Method proposed by Krinsky and Robb (1986).

Table 7: Marginal willingness to pay in the informal sector

	MWTP	2.5%	97.5%
Surgery	0.3370	0.2888	0.3957

Source: Authors' estimations, Method proposed by Krinsky and Robb (1986)

Model 1 and Model 2 are regression results from equation (5), the *surgery* variables for both the formal and the informal sectors are positively significant 0.1% with the odds ratios or an increase of utility of 4.049 and 2.536, respectively. The interpretations could be drawn on these results that most employers in both the formal and the informal sectors evaluated the cosmetic surgical candidates as more productive compared with the non-surgical candidates. This is congruent with Mobius and Rosenbalt's (2006) experiments as they suggested that beauty increased the productivity estimates. These might imply that in the asymmetric information setting where prisoner job candidates unopened their criminal history records, cosmetic surgery which enhanced physical attractiveness could also produce a greater beauty premium in the prisoners in both the formal and the informal sectors.

Compared with the non-surgical groups, *salary* variables are significantly negative at the 0.1% significance level for both the formal and informal sectors. These were not unexpected as the employers usually negatively respond to a higher level of the salary and preferred to pay the lower amount. However, the MWTPs in Table 6 and Table 7 show that, compared with the non-surgical group, the employers were willing to pay additional of 3,667 baht (114.34 U.S. dollars) and 3,370 baht (105.08 U.S. dollars) to the surgical groups in both the formal and informal sectors, respectively. This implies that cosmetic surgery not only increased job opportunities to the cosmetic surgical group but also provided additional incomes.

Finally, we followed Aizaki (2012) and Aizaki and Nishimura (2008) and conducted the additional models in which respondents' characteristics were considered by cooperating variables *surgery:female, surgery:age, surgery:experience, salary:female, slalary:age,* and *salary:experience* to equation (5) and run the regression for both the formal and the informal sectors. These are the variables that represent the effect of respondent's characteristics on their evaluation of the *surgery* and *salary* variables that were statistically tested in the Model 3 and 4. in which the main interests and all interaction terms with the respondents' characteristics were drawn into the analysis.

Model 3: Additional model in the formal sector

	coef	exp(coef)	se(coef)	z	p
ASC	25.04	7.493e+10	1.130e+03	0.022	0.982
Surgery	1.138	3.112	0.461	2.472	0.013*
Surgery:Female	0.395	1.485	0.148	2.657	0.008**
Surgery:Age	0.010	1.010	0.014	0.766	0.443
Surgery:Experience	−0.039	0.916	0.015	−2.665	0.008**
Salary	−2.668	0.069	1.534	−1.739	0.081
Salary:Female	0.028	1.028	0.496	0.057	0.955
Salary:Age	−0.027	0.973	0.454	0.057	0.546
Salary:Experience	−0.012	0.986	0.049	−0.238	0.882

Remark: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Note: Likelihood ratio test=2335 on 26 df, p=< 2.2e–16
n= 5400, number of events= 1800
Rho-squared = 0.59029
Adjusted rho-squared = 0.5771421
Akaike information criterion (AIC) = 1672.405
Bayesian information criterion (BIC) = 1815.289
Number of coefficients = 26
Log likelihood at start = −1977.502
Log likelihood at convergence = −810.2025
Source: Authors' estimations.

Model 4: Additional model in the informal sector

	coef	exp(coef)	se(coef)	z	p
ASC	0.232	1.129e+10	0.001	0.021	0.984
Surgery	1.12	3.042	0.237	4.698	2.63e–06***
Surgery:Female	0.246	1.279	0.120	0.206	0.040*
Surgery:Age	−0.007	0.993	0.006	−1.247	0.212
Surgery:Experience	−0.0006	0.999	0.088	−0.071	0.944
Salary	−4.182	0.015	0.790	−5.922	1.21e–07***
Salary:Female	0.183	1.200	0.340	0.457	0.648
Salary:Age	−0.034	1.05	0.020	1.70	0.087
Salary:Experience	−0.013	0.987	0.030	−0.450	0.653

Remark: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Likelihood ratio test=2335 on 26 df, p=< 2.2e–16
n= 5400, number of events= 1800
Rho-squared = 0.5068116
Adjusted rho-squared = 0.4936637
Akaike information criterion (AIC) = 2002.562
Bayesian information criterion (BIC) = 2145.446
Number of coefficients = 26
Log likelihood at start = −1977.502
Log likelihood at convergence = −975.281
Source: Authors' estimations

In Model 3 and Model 4, the female employers' preferences towards cosmetic surgical groups are more positively significant than that of male employers at the 0.05% level in the formal sector and 1 % significant level in the informal sectors, respectively. These findings suggest that the employers' gender in the data sets had a significant effect on their evaluations on the facial attractiveness of male job candidates, implying that female employers in our data sets might have better abilities to distinguish between attractive and unattractive male candidates. While the employers' age and experience in the informal sector had no significant impact on their evaluation on cosmetic surgery, there is a negatively significant impact of employers' experience on their evaluation on cosmetic surgery in the formal sector at 0.05% significant level.

5. Conclusion and discussion

This study investigates how the cosmetic surgery premium can mostly manifest in the ideal world of ex-prisoners where their potential employers are uninterested or unable to access their criminal histories information during employment process. We demonstrated the positive impact of cosmetic surgery on improving the success rate of the Thai prisoners' reintegration, especially in the legal labour market. The results of the CEs are congruent with those of Lee and Ryu (2012) that cosmetic surgery in non-prisoner population increased subjects' facial attractiveness, job opportunities, and incomes, respectively. These findings also support the concept of the beauty premium in the economics literature that more attractive workers are more economically successful. More importantly, we added on the new piece of knowledge where the reverse perspective for how workers achieved their physical attractiveness was under-researched and magnified the beauty premium concept that beauty is no longer the unchangeable variable. Even though the MWTPs show that the returns could not cover the cosmetic surgery cost in the short run (same as in Lee & Ryu, 2012), the positive impact of having greater ability to reintegrate into society, being accepted, having more self-satisfaction, and having less propensity to recidivate should also be considered (Klassen et al., 1996; Rankin et al., 1998). From the macro perspective, it could also be expected that the recidivism rate in Thai ex-prisoners would decrease indirectly owing to cosmetic surgery (See, e.g., Freedman et al., 1988). In turn, this can lighten the government burden and externality to the community as a whole.

However, we acknowledge the employment situation in the real world and try not to deny that covering the criminal background is inevitable in many cases. Therefore, further investigation has been conducted in which our studies corporate criminal histories, types of criminal offences, certificate of employment, and work readiness skills in the experiments. The pilot studies with 52 employers showed that the criminal record reduces the job opportunity and yields to significantly less effectiveness of cosmetic surgery compared with the model without the criminal record variable. However, when we divided 'criminal record' variable into different types of crime that contribute to the difference in severity and corporate it with 'certificate' and 'skill' variable, all variables are significant at least 1% significant level. In this model which comprises more prisoner's information, both negative and positive sides, it contributes to a better situation ofemployment opportunities. As the result let us know that cosmetic surgery, certificate of employment, and work readiness skills provide the positive impact to ex-prisoners' success of re-entry. Also, we know that the employers in the pilot experiments preferred ex-prisoners with properties without violence offence to body assault (or drug), and property with violent offences, respectively.

The limitation of current study exists where the non-disclosure setting prevents employers to access candidates' criminal histories in which the cosmetic surgery could mislead potential employers if an individual's feature can predict one's immoral, unethical, aggressive, or criminal behaviour. However, by observing their childhood photos, before imprisoning photos, and after imprisoning photos, we found that many of them have a slightly degraded in physical attractiveness between childhood photos and before imprisoning photos, and a large degraded in physical attractiveness between before imprisoning photos and after imprisoning photos. Many of them further expressed their uneasiness and low self-esteem due to their change in physical-appearance acquired from imprisoning and pointed out unreadiness for seeking employment without further explanation. It raises question whether the criminality comes from the genetic physical

features or actually develops through an individual's environment affecting their minds, therefore, affecting their behaviour in transforming their bodies.

Prisoners' bodies seem to be continuously degraded. It is evidenced in the photographs we collected from 27 newly released prisoners which showed some interesting pieces of evidence where these ex-prisoners were marked with tattoos, scars, rotten teeth, and ageing signs acquired in prison. This evidence, even a small in number, may not be weak since literature also suggested the prison system could be a cause of poor dental health when rotten teeth and toothless suggested being the good predictor of self-esteem. Also, female ex-prisoners expressed that having their lost teeth with a scarce resource after release, allowed people such as employers to label and discriminate them from those female bodies that were *fitter* to the employment: imposing the unequal treatment which consequently leads to the unequal outcome. (Moran, 2012 and 2014)

Moreover, Mocan and Tekin (2010) statistically exhibited evidence of how the 'becoming criminal' originated from the experience they had in their younger years. They demonstrated the larger propensity of criminal activities in the unattractive children and implied that treatments from people around them influenced how they became the criminals. The study has shown statistics that being attractive reduces young adult's propensity to engage in criminal activities while being unattractive increases it. The explanation has been drawn that this minority group, during school-age, were isolated by their teachers and peers for their low physical attractiveness. Of whom physical attractiveness suggested to associate with peer relations and academic competence (see. e.g., Hamermesh & Parker, 2003; Lerner et al., 1990). These resulted in the decrease of the ability to accumulate their human capital in school-age which then led to the difficulty to enter the legal labour market and sequentially resulted in more inclination to gain money illegally by burglary and theft. Therefore, all arguments made above require a reconsideration of whether a criminal is precisely genetically created. Or it could be the case that society expected a certain type of face to commit a certain type of crime (as in Bull & Green, 1980).

Finally, the current study *does not* precisely suggest that cosmetic surgery is *necessary*. Our results pointed out that beauty could not be omitted in the labour market for ex-prisoners. While at present days, prisoners as potential labourers are increasingly facing difficulties reintegrating. These findings could serve as new information for policymakers to develop their rehabilitation programmes. For instance, physical appearance improvement programme could be implemented with less cost while it still serves as an aid for rehabilitation. Other limitations exist when we used only male prisoners as subjects where the results might come out differently if female or both genders were used as subjects. Also, using cosmetic surgical simulation rather than the real operation might create some reservations to the study. Nevertheless, this approach helped us to firstly able to analyse the beauty premium effect of cosmetic surgery within the same individuals instantaneously.

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