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Sukharomana, Renu and Chang, Chia-Lin

Institute of Social and Economic Sciences, Dhurakij Pundit  
University, Department of Applied Economics and Department of  
Finance, National Chung Hsing University

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# **Demand for Narcotics in Thailand, with Policy Implications\***

**Renu Sukharomana**

Institute of Social and Economic Sciences  
Dhurakij Pundit University  
Bangkok, Thailand

**Chia-Lin Chang**

Department of Applied Economics  
Department of Finance  
National Chung Hsing University  
Taichung, Taiwan

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## **Abstract**

The paper examines the demand for narcotic drugs, based on Becker (1968), as purported rational behavior of human beings. The results from sampling surveys in eight provinces in Thailand in 2014, representing nationwide drug users/addicts, show that the demand for narcotics (amphetamines, ice drug, and marijuana) are price inelastic (between -0.533 and -0.701), as well as normal goods. The key econometric coefficients in models A and B are 0.192 and 0.0467, respectively, and an increase in income will lead to an increase in the demand for narcotics. In addition, factors affecting the demand for narcotics are the age and age squared of the user, friendship, family member relationship, social relationship, reasons for drug use, risk behavior, and expected punishment. Public policy implications are also proposed and analysed.

**Keywords:** Price elasticity of demand, Narcotics, Amphetamines, Ice drug, Marijuana, Policy implications.

**JEL:** K42, L65, Q21.

## **1. Introduction**

As in many other leading countries internationally, the Thai government has announced the narcotics problem to be in a significant national issue. At present, the emphasis has been on various forms of suppression to reduce the supply of narcotics, and providing opportunities to addicts in treatment programs. With the adoption of international concepts, the Thai government has defined narcotics addicts as patients to be treated by emphasizing the believe that, without addicts, there would be no dealers/traders. In short, a reduction in the number of addicts is better than a suppression of drugs (Secretariat of the House of Senate, (2015).

Economists generally agree that the narcotics market is a special type of black market, but estimating the demand for and the supply of goods in the black market can be singularly difficult (see Becker, 1981). Among the reasons for the difficulty in specifying supply and demand models is the fact that narcotics lead to dependence or addiction, which makes rational choices based on prices and income, among other factors, seriously problematic.

This paper conducts initial research applying economic concepts in Thailand to analyse the behavior of narcotic traders and addicts, with the intention of providing policy implication and recommendations. The results are given in the paper, which estimates the appropriate elasticities using survey data and a model of demand for narcotics (hereafter called “drugs”). The empirical results are taken from Sukharomana et al. (2015).

The remainder of the paper is organised as follows. A literature review is given in Section 2. Data collection and a sample survey are presented in Section 3. The results and analysis are conducted in Section 4. Concluding remarks and policy implications are presented in Section 5.

## **2. Literature Review**

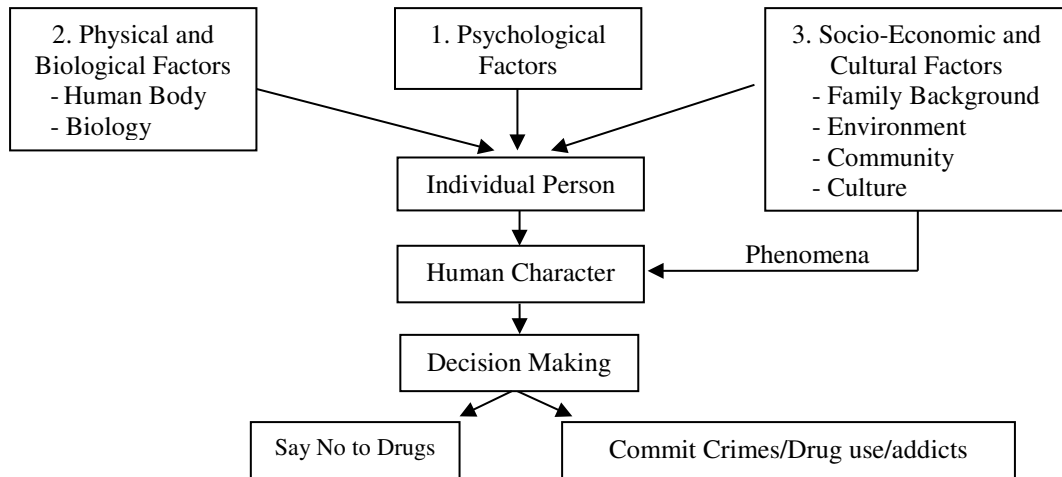
There are three possible factors determining crimes committed including narcotic drug crimes/users/ addicts, namely: (1) Psychological factors; (2) Physiological and biological factors; and (3) Socio-economic and cultural factors.

Diagram 1 summarizes these factors to aid in understanding drug behavior. Rational addiction theory, as developed in Becker and Murphy (1988), explains the major factors that determine the decision making of drug users and drug addicts, which is essentially based on rational utility maximization. Violence in the black market of narcotic drugs in the USA has occurred since the Harrison Narcotic Act of 1914 (Trebach, 1982; Friedman, 1991).

### **3. Data Collection and Sample Survey**

The data collection and analysis uses a mixed method, which allows double checking for reliability by using not only well-prepared questionnaires, but also using in-depth interviews. Both research tools have been certified by the Mahidol University Institute of Review Board (IRB), Thailand. The survey teams were comprised of 22 students who are in the Nursing Program of the School of Medicine under the supervision of staff for in-depth interviews and questionnaire surveys in eight provinces, representing the nation from June to August, 2014.

There were a total of 2,433 observations (Table 1), which cover two groups: (i) 1,347 samples ( $n_1$ ) of **drug addicts** in eight large provinces, namely Chiangmai, Nakornrachsima, Chonburi, Bangkok, Songkhla, Naratiwat, Pattani, and Yala; (ii) 1,086 samples ( $n_2$ ) of **pedestrians**, namely individuals who are randomly sampled, who were interviewed in public spaces (such as streets, markets, and public parks). Respondents in both groups were selected using the same snow-ball technique in the risk areas in eight provinces.



**Diagram 1. Factors determining drug crimes/users/addicts**

**Table 1**  
**Sample Surveys in Eight Provinces, Thailand, 2014**

Province	Samples from Survey		
	Drug Users/ DrugAddicts	Pedestrians	Total
1.Chiangmai	184	121	305
2.Nakornrachsima	195	197	392
3.Chonburi	287	103	390
4.Bangkok	410	428	838
5.Songkhla	173	100	273
6.Naratiwat	33	53	86
7.Pattani	33	46	79
8.Yala	32	38	70
Total	1,347	1,086	2,433

**Source:** Sukharamana et al. (2015).

**Note:** Drug addicts, as the target group, are in both the special treatment program under the Department of Juvenile Observation and Probation, and the program under the House of Detention and Training Center for Children and Youth.

## **4. Results and Analysis**

**4.1 Types of Narcotic Drugs:** The three types of drugs that are the most popular in Thailand among drug users/addicts are Amphetamines, Ice Drugs, and Marijuana. The main reason why respondents in this paper become drug addicts are as follows: 45.3% intend to try it for the first time, 40.5% say friends convinced them to join their gang, and 3.1% see nearby people use drugs, which makes them want to experiment.

The price of Amphetamines varies in different places, according to transportation costs, and access ability to drug dealer/delivery. The distance from the drug agency and/or place of drug production seem to be major factors that determine the market price. Chiangmai has probably the lowest price, as compared with other regions, (see Table 2). The average number of Amphetamines used per day is 7 tablets, whereas Ice Drugs and Marijuana are used in one gram and one set per day, respectively.

The average expenses of each type of drugs are shown in the last row in Table 2, which gives some idea of the expenses for drug users/addicts, with Marijuana having the smallest cost, as compared with 1.5 times higher for Amphetamines, and 2.5 times higher for Ice drugs.

### **4.2 Demand for Narcotic Drugs**

**4.2.1 Former Drug Users/ Drug Addicts, (n<sub>1</sub>=1347; Model A):** Demand for narcotics (Amphetamines) has a small response to price (between -0.533 and -0.701). Narcotics (Amphetamines) are a normal good, so that addicts consume more as their incomes rise. Legal punishment is not a major factor to describe the behavior of drug users or the quantity of drug use. However, social sanctions or impacts on people around them are factors that significantly decrease the number of drug users. A good relationship with the family is more likely to significantly reduce drug addiction. The degree of risk aversion of the individual also determines the behavior of drug users such that, the lower is the degree of risk aversion, the higher is the chance of drug use. Drug addicts with a lower degree of risk aversion would be significant in drug trafficking.



**Table 2**  
**Regions, Places and Prices of Amphetamine, Ice Drug and Marijuana**

Region : Province	Amphetamine us\$ / tablet	Ice Drug us\$ / g*	Marijuana us\$ / set
North: Chiangmai	3.0	33.41	5.0
Northeastern : Nakormrachsima	6.05	35.64	8.14
Central: Bangkok	3.70	49.42	1.27
East: Cholburi	3.50	41.62	1.65
South: Songkhla	5.22	52.57	2.95
Average price per unit	4.16	47.02	1.64
Average amount used per day	7 tablets**	1 g	1 set
Average expense per day	3.0 – 6.05	33.41 – 52.57	20.43

Note: \* one g weighs approximately between 0.8 and 1 gram, depending on the drug dealer's package for retail sales.

\*\* The average number used per day for amphetamines is 7 tablets, whereas ice and marijuana are one gram and one set per day, respectively.

The exchange rate is 37 baht = 1 US\$ in 2014 surveyed.

**4.2.2 Pedestrians, (n<sub>2</sub> = 1086; Model B):** The main objective of the paper is to calculate the price elasticity of demand, which requires a large sample survey. The research team was suggested by the expert committee from the Thailand Research Fund to use the catchment area of the School of Medicine, located for students in the Nursing Program. The respondents in the paper were located in Chiangmai, Chonburi, Songkhla and Bangkok. This paper finds that, in a sample of 1,086, 14% are drug dealers/drug delivery, 45% are drug users/addicts, while the rest (41%) were not associated with any kind of drug.

Males are significantly more likely to be drug dealers, or delivery to females. Age and education are statistically significant factors determining drug user/addicts (group A), but not for Pedestrians (group B). This might be because the respondents in group B are sampled from pedestrians who are interviewed in public places. Some respondents might not reveal their full information as they do not trust the interviewer, as shown in Table 3.

### **4.3 Price Elasticity of Demand: How does behavior change when prices change?**

#### **4.3.1 Scenario I: If price increases by 100% for Amphetamines**

The 455 respondents addicted to Amphetamines is the majority group in the sample. From their point of view, Amphetamines and Ice Drugs are a necessary good. It is hypothesised that they will not switch to other narcotic drugs because drugs impact on their health, nerves and the psyche. In addition, one study shows that drug addicts typically stick to their tastes.

When the price of Amphetamines increases, for example, by 100% of the previous price, we find that 59.2% of respondents do not change their behavior (which means they use the same amounts), whereas 35.2% of respondents use a smaller amount of drugs because they do not accept the higher prices. The figure of 59.2% is interesting as the results indicate price-inelasticity of demand. This message is very important for public policy makers.

**Table 3****Estimated Coefficients of Drug Users (Model A) and Pedestrians (Model B)**

Variable	Model A	Model B
	Coefficient (S.E.)	Coefficient (S.E.)
ln (price)	-0.533*** (0.0471)	-0.701** (0.3216)
ln (income)	0.192** (0.0754)	0.0467* (0.0281)
Economic status	-0.169** (0.0851)	
Age	-0.0646*** (0.0177)	0.00241 (0.00697)
Age squares	0.000770** (0.000313)	-5.14e-06 (9.3e-05)
Marital Status (0=Single)	0.0892 (0.0681)	0.0731* (0.0416)
Employment Status	0.0470 (0.0580)	-0.0787 (0.0497)
Family Relation	0.00203 (0.0249)	
Friendship	-0.0215 (0.0273)	
Social Relation	-0.00400 (0.0216)	
Expected Punishment	7.93e-07 (8.83e-06)	-1.78e-06*** (6.84e-07)
Age at First Use of Drug	-0.0124* (0.00672)	
Education Background (0=No Edu)	0.266 (0.229)	0.227*** (0.0433)
<b>Reason of Drug Use (0=Intend to try)</b>		
1.Accepted by Friend	-0.435* (0.258)	
2.Imitate People Nearby	-0.297* (0.156)	
<b>Risk Behavior (0=low risk)</b>		
1.Gambling	0.132 (0.0873)	0.0747* (0.0453)
2.Against the Traffic Light	0.133* (0.0686)	0.0663 (0.0447)
3.Fast Driver	0.145** (0.0626)	0.0839** (0.0385)
4.Extreme Activities	0.00242 (0.102)	0.0672 (0.0798)
Having Sex with Stranger without Condom	0.0202 (0.117)	0.147* (0.0844)
Constant	4.196*** (0.446)	3.245** (1.538)
Samples	1,008	1,066
R <sup>2</sup>	0.276	0.2237

**Source:** Sukharomna et al. (2015), Tables 7 and 9, pp. 66 -69 and 73-76, respectively.

**Note:** Figures in parentheses indicate standard errors.

\*\*\* denotes 99%, \*\* 95%, \* 90% confidence intervals, respectively.

**Table 4**  
**Price Increases by 100% Versus Price Decreases by 50%**

Type of drug	Scenario I Price increases by 100%				Scenario II Price decreases by 50%			
	n samples	Not buy*	No change	Buy less	n samples	Buy more	No change	Buy less
		%	%	%		%	%	%
Amphetamine	455	50.5	9.2	35.2	415	38.6	50.1	8.4
Ice drug	121	41.3	n.a.	52.1	121	29.8	54.5	7.4
Marijuana	73	24.7	20.4	16.4	73	34.8	52.2	8.7

Source: Sukharmna et al. (2015), pp. 44 and 45.

#### **4.3.2 Scenario I: If price increases by 100% for Ice Drug**

The 121 respondents have similar behavior to Ice Drug addicts, that is, 53.7% of respondents do not change their behavior as they are addicts. They still use the same amount of drugs when the price increases. Some respondents stated that they cannot reduce the amounts of drugs when the price rises. They will become sick and experience serious nervous symptoms, as it impacts on their neurological system and causes serious side effects. This group is sometimes called hard users. However, about 39.7% of respondents will use a smaller amount, and substitute it with other types of drugs. This group might be referred to as light users.

#### **4.3.3 Scenario I: If price increases by 100% for Marijuana**

The price of marijuana is relatively cheaper than the other two kinds of narcotics, Amphetamines and Ice Drugs. No matter how price changes, their behavior is still that of a normal good. Overall, the behavior of these types of narcotic drug users are confirmed as normal and necessary goods.

#### **4.4 Scenario II: If price decreases by 50%**

We hypothesize that drug users/addicts are rational (although some caveats were presented in the Introduction). Therefore, as the price falls, drug users/addicts should use more drugs to gain higher utility levels if narcotic drugs are normal goods. The results are shown in Table 4. Respondents from the survey are persons with rational behavior because, as price decreases by 50%, they buy more of all three types of drugs. For example, if we consider Amphetamines, about 38.6% buy more Amphetamines, while only 8.4% buy less.

However, it should be noted that respondents do not change the amounts used of all types of drugs because, as they are already addicted to a specific type of drugs, they have their own range of drug use. No matter how the price decreases, the amount of drug use will not change, or will change very little. Alternatively, drug addicts might buy another type of drug, as shown in the first scenario, which is in the column of “not buy”. This group displays price inelasticity with respect to demand. For the group that buys more when the price decreases, they display price elasticity with respect to demand.

## 5. Conclusion and Policy Implications

The paper provided information on factors determining drug users/addicts. Four issues were discussed and proposed, as follows:

(1) **Develop an educational program**, as well as **launch public relations program (PR)** focusing on the harm of drug addiction among risk groups, which covers not only children, youth, and the poor living in slums, but also those studying at all levels in education, including those who are in the labor force and/or shown in target areas.

(2) **Reduce recidivism**. Schools, colleges, and universities should organize special projects for children to spend time together in detention on field trips to a Supermax Prison, as well as allowing children and youth to gain greater experiences from detained prisoners. This project will help children and youth to experience examples of punishment for drug offenses.

(3) Governments should **implement specific economic measures** aimed at increasing direct income transfer payments, particularly to groups of drug addicts who are desensitized and risky, such that they prefer receiving additional income for necessary expenses (such as food, medicine, and clothes) to buying drugs.

Such transfer payment programs for those with low income to stimulate economic growth would be considered as exceptional cases for those who have been shown to be drug users or addicts.

(4) **Analyse the difficulty** of a pedestrian/ purposive target group earning less than 20,000 baht per month (approximately 540 US dollars at the exchange rate of 37 baht per US\$ in 2014 survey) to be the target group of drug users/addicts. A clear identifying profile as to who is likely to be a drug user/addict should be considered for further analysis in all income groups?.

## 6. Recommendations for Further Research

(1) The analysis of policy making for drug legalization/decriminalization for some selected types of drugs, Marijuana and Kratom is crucial, where Kratom is a tropical plant that can be found in common use as ingredients in some menus in the south of Thailand.

(2) The examination of social measures to initiate and develop strong relationships among family members and society may become an effective way of reducing risk involvement of drug users/addicts.

(3) Guidelines for improving the performance of police to increase the probability of arrest of the target group, particularly of drug traffickers is important based on the believe that it is better to increase the severity of the punishment.

(4) Alternative ways of reducing recidivism by job opportunities that might be created by specific government sectors and the private sector can contribute significantly to reducing drug addition and trafficking.

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