

Chapter 3

New Estimates for the Shadow Economies of 11 Asian Countries from 2000 to 2014

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Abstract The chapter presents estimations of the size of the shadow economies of Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand and Vietnam over the period 2000–2014. According to my estimation the average size (over 2000–2014) of the shadow economy of Bangladesh is 33.7%, of Cambodia 45.4%, of China 12.0%, of Indonesia 29.0%, of Japan 9.2%, of Laos 27.5%, of Malaysia 28.9%, of the Philippines 32.6%, of South Korea 15.1%, of Thailand 39.0%, and of Vietnam 15.2%. I find that an increase in the burden of indirect taxation and the unemployment rate and less business freedom are the driving forces of the shadow economies of these eleven countries.

3.1 Introduction

Information about the extent of the shadow economy, who is involved in it, the frequency of these activities, and their magnitude, is crucial for making effective and efficient decisions regarding the allocations of a country's resources in this area. For policy-makers, in particular, it is very crucial to know the size and the development of the shadow economy, because their decisions, for example, to reduce unemployment, quite often depend on figures from the official economy, and these figures may be misleading if there is a sizeable shadow economy. If a country has a shadow economy greater than 10–15% points, at least a third or even 40–50% of the officially registered unemployed may have a job in the shadow economy, and, due to this, the government might be spending more tax revenues in fighting unemployment than is actually necessary. Also, in order to obtain a realistic estimate of the tax losses caused by the shadow economy, the size and development of it is crucial. It is one thing to have a shadow economy of only around 8–10%, in which the tax losses are not so severe, it is quite another to have a shadow economy of between 18% and 20%, in which the tax losses are quite sizeable. Unfortunately, it is very difficult to obtain accurate information about shadow economy activities

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on the goods and labour market, because all the individuals engaged in these activities do not wish to be identified. Hence, doing research in this area can be considered as a scientific passion for knowing the unknown.

The goal of this chapter is twofold: (i) to undertake the challenging task of estimating the shadow economy for the 11 Asian countries: Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand, and Vietnam from the year 2000 to 2014; and (ii) to provide some preliminary insights into the main causes of the shadow economy.

In the following Sect. 3.2, some theoretical considerations about the shadow economy are made, including a short literature review. In Sect. 3.3, the size of the shadow economy of the 11 Asian countries, mentioned above is calculated. Finally, in Sect. 3.4, a summary and policy conclusions are given.

3.2 Some Theoretical Considerations About the Shadow Economy

3.2.1 Short Literature Review

Using the MIMIC¹ approach, there are only a few papers trying to estimate the size and development of the shadow economy of Asian countries. In a paper by Schneider et al. (2010), the authors present estimates of the shadow economies for 162 countries. According to their estimates, the average size and development of the shadow economies over 1999–2007 (in % of GDP), is 35.9% in Bangladesh, 48.7% in Cambodia, 12.7% in China, 18.9% in Indonesia, 11.7% in Japan, 29.6% in Laos, 30.9% in Malaysia, 41.6% in the Philippines, 16.1% in South Korea, 50.6% in Thailand, and 15.1% in Vietnam. Similar results of these countries are reached in Schneider and Williams (2013). Bajada and Schneider (2005) also measure the size and development of the shadow economies of 17 Asia Pacific countries.

In another study, Vo and Ly (2014) estimate the size of the shadow economy and its trend for countries in the Association of the South East Asian Nations (ASEAN), excluding Singapore and Brunei, for the period from 1995 to 2014. In their study, a MIMIC approach is adopted to estimate the size of the shadow economy and its trend for the ASEAN nations. In general, the figures of Vo and Ly are quite high for these countries, and, for some countries, they have a similar size to my results in this chapter.

¹The Multiple Indicator Multiple Causes (MIMIC) Approach is a latent estimation procedure for the size and development of a shadow economy. It is briefly explained in Sect. 3.3.1, entitled *Econometric Methodology*. The MIMIC method is based upon a statistical theory of unobserved variables, which considers the multiple causes and multiple indicators of the shadow economy to be measured. The MIMIC model uses multiple indicators and multiple causes in a structural equation model (SEM) with the latent variable shadow economy. The cause variables influence the shadow economy and the shadow economy activities are reflected in the indicator variables.

3.2.2 *Definition of the Shadow Economy*

One commonly used working definition of the shadow economy is that of *all* currently unregistered economic activities that contribute to the officially calculated (or observed) Gross Domestic Product.² Smith (1994, p. 18) defines it as “market-based production of goods and services, whether legal or illegal, that escapes detection in the official estimates of GDP”. In this chapter, the following more narrow definition of the shadow economy is used: the shadow economy includes all market-based production of goods and services that are deliberately concealed from the public authorities to avoid the payment of income, value added, or other taxes; to avoid the payment of social security contributions; having to meet certain legal labour market standards, such as minimum wages, maximum working hours, safety standards, etc.; and complying with certain administrative procedures, such as completing statistical questionnaires or administrative forms.

3.2.3 *Causes of the Shadow Economy*

Given this definition, the most important causal determinants of the shadow economy are described in the following sub-sections: I want to emphasise clearly that, while the following causal factors are mostly relevant for Asian countries, other factors might also be important, such as the political structure of a country (a strong federalist *vs.* a strong non-federalist country). However, as I am concentrating on the Asian countries in this chapter, only the following ones are put forward.

3.2.3.1 **Tax and Social Security Contribution Burdens**

It has been ascertained that the overall tax and social security contribution burdens are among the main causes of the existence of the shadow economy.³ The bigger the difference between the total cost of labour in the official economy and the after-tax earnings (from work), the greater the incentive is to avoid this difference and to work in the shadow economy. Since this difference depends broadly on the social security payment and the overall tax burdens, the latter are the key features of the actual existence and the increase of the shadow economy. As indirect taxes, and

²This definition is used, for example, by Feige (1989, 1994), Schneider (2005, 2010, 2015), Feld and Schneider (2010), Schneider and Williams (2013), Buehn and Schneider (2012), Schneider et al. (2010) and Williams and Schneider (2016). Do-it-yourself activities are not included. For estimates of the shadow economy and the do-it-yourself activities for Germany, see Buehn et al. (2009).

³See Schneider (1986, 2005, 2010, 2015), Johnson et al. (1998a, b), Tanzi (1999), Giles (1999), Giles and Tedds (2002), Feld and Schneider (2010), Schneider and Williams (2013), Williams and Schneider (2016), Buehn and Schneider (2012), and Schneider et al. (2010).

especially the value added tax (VAT), is charged on all components of a bill, indirect taxation also plays a role when calculating this total tax gap.

The concrete measurement of the tax and social security contribution burdens is not easy to define, because the tax and social security systems are vastly different among the countries. In order to have some general comparable proxies, I use the following causal variables: (1) indirect taxes as a proportion of GDP (positive sign expected); and (2) share of direct taxes including social security payments: direct taxes and social security payments as proportion of GDP (positive sign expected).

3.2.3.2 Intensity of Regulations

Increased intensity of regulations is another important factor that reduces the freedom (of choice) for individuals engaged in the official economy. One can think of labour market regulations such as minimum wages or dismissal protections, trade barriers such as import quotas, and labour market restrictions for foreigners such as restrictions regarding the free movement of foreign workers. Johnson et al. (1998b) find significant overall empirical evidence of the influence of (labour) regulations on the shadow economy; and this impact is clearly described and theoretically derived in other studies, for example, in Schneider and Williams (2013). Regulations lead to a substantial increase in labour costs in the official economy. Their empirical evidence supports the model of Johnson et al. (1997), which predicts, *inter alia*, that countries with more general regulation of their economies tend to have a higher share of the unofficial economy in total GDP.

To measure the intensity of regulation or the impact of such regulation on the decision of whether to work in the official or unofficial economy is a difficult task, and I try to model this by using the following two causal variables: (1) business freedom: it is a sub-component of the Heritage Foundation's economic freedom index; it measures the time and efforts of business activity. It ranges from 0 to 100, in which 0 is least business freedom and 100 is maximum business freedom (negative sign expected); and (2) regulatory quality: the World Bank's regulatory quality index, which includes measures of the incidents of market-unfriendly policies, such as price controls or inadequate bank supervision, as well as perceptions of the burdens imposed by excessive regulation in areas, such as foreign trade and business development. It scores between -2.5 and $+2.5$ with higher scores corresponding to better outcomes (negative sign expected).

3.2.3.3 Public Sector Services

An increase in the shadow economy can lead to reduced state revenues, which, in turn, reduce the quality and quantity of publicly provided goods and services. Ultimately, this can lead to an increase in the tax rates for firms and individuals in the official sector, quite often combined with a deterioration in the quality of the public goods (such as the public infrastructure) and of the administration, with the

consequence of even stronger incentives to participate in the shadow economy. The provision and, in particular, the quality of the public sector services is thus also a crucial causal variable for people's decision to work or not work in the shadow economy. If a government does not provide a high quality of public goods and services, such as poor infrastructure, the incentive for people to pay taxes and not to work in the shadow economy, is considerably lowered because people ask themselves why they should honestly pay so many taxes when they do not receive good quality services from the government in return. To capture this effect, I use the following variable: Government Effectiveness from the World Bank's Worldwide Governance Indicators. It captures the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The scores of this index lie between -2.5 and $+2.5$ with higher scores corresponding to better outcomes (negative sign expected).

3.2.3.4 Quality of Public Institutions

The quality of public institutions is another key factor for the development of the informal sector. In particular, the efficient and discretionary application of the tax code and other regulations by the government plays a crucial role in the decision to work underground, an even more important role than the actual burden of taxes and regulations. In particular, bureaucracy with a high level of corrupt government officials seems to be associated with larger unofficial activity, while effective rule of law which secures property rights increases the benefits of formal, legal activity through stability. A certain level of taxation, mostly spent in productive public services, characterises efficient policies. In fact, production in the formal sector benefits from higher provision of productive public services and is negatively affected by taxation, while the shadow economy reacts in the opposite way. An informal sector developing as a consequence of the failure of political institutions to promote an efficient market economy leads to the consequence of entrepreneurs going underground.⁴ The quality of public institutions is captured by two variables: the first is the control of corruption (percentile rank among all countries; 0 = lowest, 200 = highest) and the second is the rule of law (percentile rank among all countries; 0 = lowest, 200 = highest).⁵

⁴Compare here Schneider (2010), Buehn and Schneider (2012), Schneider and Williams (2013).

⁵These indices are compiled by the Heritage Foundation, Washington D.C., various years. The control of corruption ranks between 0 (lowest no-corruption) and 200 (highest possible corruption) and the rule of law ranks between 0 (no rule of law) and 200 (best rule of law).

3.2.3.5 Official Economy

As has been shown in a number of studies (Enste and Schneider 2006; Feld and Schneider 2010), the situation of the official economy also plays a crucial role in the decision to work or not to work in the shadow economy. In a booming official economy, people have many opportunities to earn a good salary and “extra money” in the official economy. This is not the case in an economy facing a recession, when more people try to compensate their losses of income from the official economy through additional shadow economy activities. In order to capture this, I will use the following two variables: (1) unemployment rate defined as total unemployment in percentage of total labour force (positive sign expected); and (2) inflation rate: GDP deflator (annual rate in percent); inflation is measured by the annual growth rate of the GDP implicit deflator, and shows the rate of price changes in the economy as a whole (positive sign expected).

3.2.4 Indication of the Shadow Economy

Because the shadow economy cannot be measured directly, I have to use indicators in which shadow economy activities are reflected. Here, I use the following ones:

3.2.4.1 Monetary Indicators

Given that people who engage in shadow economy transactions do not want to leave traces, they conduct these activities in cash. Over 80% of all shadow economy transactions are done by cash. Hence, most shadow economy activities are reflected in an additional use of cash (or currency). To take this into account, I use the following indicator: M1/M2. M1 corresponds to the currency outside the banks plus deposits; the usual definition for M2 is $M1 + \text{savings}$.⁶

⁶Cash is the most popular and frequent means for paying people in the shadow economy. Cash does not leave any traces (the opposite of a cheque or an electronic transfer) and, due to this, cash is the most easy means of payment for shadow economy transactions. In most countries, cash is used for shadow economy transactions in up to 80% of the cases. If one were to abolish cash, the transaction costs for shadow economy activities would rise, but they would not diminish because the causes of why people work in the shadow economy would not diminish. If one were to abolish cash, the first simulations for European countries show that the shadow economy would be reduced by roughly 10%.

3.2.4.2 Labour Market Indicators

Shadow economy activities are also reflected in labour market indicators. I use the following one: labour force participation rate: this is the proportion of the population that is economically active, supplying labour for the production of goods and services during a specified period.

3.2.4.3 State of the Official Economy

In addition, shadow economy activities are reflected in the state of the official economy. For this reason, I include the following indicator: growth rate of GDP *per capita*, i.e., the annual growth rate of the GDP *per capita*.

3.3 The Size of the Shadow Economy of 11 Asian Countries

3.3.1 Econometric Methodology

Estimating the size and trend of a shadow economy is a difficult and challenging task. Methods—designed to estimate the size and trend of the shadow economy—such as the currency demand approach, or the electricity approach, consider just one indicator that “must” capture all the effects of the shadow economy.⁷ However, it is obvious that the effects of shadow economy show up simultaneously in the production, labour, and money markets. A shadow economy directly increases the production of an economy because the shadow-economy produced GDP can, at least partly, be added to the official GDP; a shadow economy uses mostly labour, hence, the official labour market is actually higher with a shadow economy. And, finally, a shadow economy is also reflected in the money markets as most shadow-economy transactions are paid in cash.

The empirical method used in this chapter is based upon the statistical theory of unobserved variables, which considers the multiple causes and multiple indicators of the phenomenon to be measured, i.e., it explicitly considers the multiple causes leading to the existence and growth of the shadow economy, as well as the multiple effects of the shadow economy over time. In particular, I use a Multiple Indicators Multiple Causes (MIMIC) model—a Structural Equation Model (SEM) with one latent variable—for the empirical analysis.⁸ The main idea behind a SEM is to

⁷In this chapter, a detailed discussion about the various measurement methods is not attempted. See Schneider and Enste (2000), Feld and Schneider (2010), Schneider and Williams (2013) and Schneider (2015).

⁸The pioneers of this approach are Frey and Weck-Hannemann (1984), who applied this approach to cross-section data from the 24 OECD countries for various years.

examine the relationships among unobserved variables in terms of the relationships among a set of observed variables by using the co-variance⁹ information of the latter. In particular, a SEM compares a sample co-variance matrix, i.e., the co-variance matrix of the observed variables, with the parametric structure imposed on it by a hypothesized model. The relationships among the observed variables are described in terms of their co-variances, and it is assumed that they are generated by (a usually smaller number of) unobserved variables. In the MIMIC model presented in this chapter, the shadow economy is the unobserved variable and is analysed with respect to its relationship to the observed variables using the co-variance matrix of the latter. For this purpose, the unobserved variable is, in a first step, linked to the observed indicator variables in a factor analytical model, also called a measurement model. Second, the relationships between the unobserved variable and the observed explanatory (causal) variables are specified through a structural model. Thus, a MIMIC model is the simultaneous specification of a factor model and a structural model. In this sense, the MIMIC model tests the consistency of a “structural” theory through data, and has two goals: (i) estimating the parameters (co-efficients, variances, etc.); and (ii) assessing the fit of the model. Applying this to shadow economy research, these two goals mean: (i) measuring the relationships of a set of observed causes and indicators in the shadow economy (latent variable); and (ii) testing whether the researcher’s theory or the derived hypotheses, as a whole, fit the data used.

3.3.2 *Econometric Results*

Table 3.1 presents four different specifications for estimating the size and development of the Bangladesh, Cambodian, Chinese, Indonesian, Japanese, Laos, Malaysian, Filipino, South Korean, Thai, and Vietnamese shadow economies.¹⁰

I use a MIMIC estimation procedure over the period 2000–2014 (yearly data). If I first consider the cause variables, I realise that the variable indirect taxes have the expected sign and the estimated co-efficient is highly statistically significant for all four specifications. The variable direct taxes and social security contributions have

⁹The co-variance (cited from Wikipedia, the free encyclopedia, www.wikipedia.org, September 2016) is a measure of how much two random variables change together. If the greater value of one variable mainly corresponds with the greater value of the other variable, and the same holds for lesser values, i.e., the variables tend to show similar behaviour, the co-variance is positive. In the opposite case, when the greater values of one variable mainly correspond to the lesser values of the other, i.e., the variables tend to show the opposite behaviour, the co-variance is negative.

¹⁰These 11 Asian countries were chosen because I could compile a consistent data-set of the causal and indicator variables for them.

Table 3.1 MIMIC Model Estimations for 11 Asian Countries (standardised solution): Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand, and Vietnam, Period 2000–2014

Specification	1	2	3	4
<i>Cause variables</i>				
Indirect taxes (% of GDP)	+0.38*** (4.04)	+0.30*** (3.33)	+0.32** (2.53)	+0.34*** (2.82)
Direct taxes and social security contributions (% of GDP)	0.26** (1.86)	0.28 ^(*) (1.75)	–	–
Unemployment rate	0.20* (2.06)	0.21* (2.40)	0.28* (2.06)	0.29* (2.07)
Regulatory quality	–0.06 (0.59)	–	–	+0.10 (1.39)
Government effectiveness	–	–0.13 (1.49)	–0.20 ^(*) (1.90)	–0.10 (1.50)
Control of corruption	–	–	–0.15 ^(*) (1.86)	–0.23 ^(*) (1.74)
Rule of law	0.05 (0.35)	–0.06* (0.73)	–	–
Business freedom	–	–0.16** (2.06)	–0.16** (2.02)	–0.17** (2.03)
<i>Indicator variables</i>				
Ratio M1 to M2	1.00	1.00	1.00	1.00
GDP growth	–0.26** (2.36)	–0.31* (1.94)	–0.42* (1.70)	–0.20 (1.46)
Labour force participation rate	–1.07*** (3.51)	–1.05*** (3.46)	–1.23*** (2.62)	–1.17*** (2.93)
Observations	165	165	165	165
Degrees freedom	73	73	73	73
Chi-square	18.50	15.65	17.59	19.65
RMSEA	0.10	0.13	0.14	0.15

Note: Absolute z-statistics in parentheses. *, **, *** indicate significance at the 10%, 5%, and 1% level, respectively

Source: Own calculations

the theoretically expected positive sign and are just statistically significant.¹¹ The unemployment rate is also highly statistically significant and has the expected positive sign in all four specifications. The estimated co-efficients of regulatory quality are not statistically significant and have switching signs. The estimated co-efficients of government effectiveness have the expected negative sign, but are not statistically significant except for equation 3. Control of corruption has the expected negative sign and is just statistically significant. The estimated co-efficients of the variable “business freedom” have the expected negative sign and are statistically significant in equations 2, 3 and 4. If I turn to the indicator

¹¹ As these two tax variables are highly correlated in equations 3 and 4, the direct tax variable is left out, as the direct tax burden variable is of minor importance in these countries.

variables, the variables M1 to M2, GDP growth and labour force participation have all the theoretically expected signs and GDP growth and labour force participation are statistically significant.

To summarise: these are the MIMIC results for these 11 Asian countries over the period 2000–2014. They certainly could be improved, and, if one could add more countries, the results would most likely become more stable. However, I clearly realise that I have a more or less consistent and statistically significant result for most causal variables, but let me again explicitly mention that these results are somewhat unstable, because only 11 countries are captured and the estimation period from 2000 to 2014 is rather short.

3.3.3 The Size of the Shadow Economy of 11 Asian Countries (Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand and Vietnam)

The estimated MIMIC co-efficients allow me—only relatively—to determine the estimated sizes of the shadow economy, which describe the pattern of the shadow economy in a particular country over time. In order to calculate the size and trend of the shadow economy, I must convert the MIMIC index into “real world” figures measured in percentage of official GDP or in currency units. This final step requires an additional procedure: the so-called benchmarking or calibration. Unfortunately, no consensus exists in the literature of which benchmarking procedure to use. The methodology that we use was promoted by Dell’Anno (2007) and Dell’Anno and Solomon (2008). In the first step, the MIMIC model index of the shadow economies is calculated by multiplying the co-efficients of the significant causal variables with the respective time series.

Secondly, this index is converted into absolute values of the shadow economies, taking a base value in a particular base year. The base values necessary for this final step of the calibration procedure are from the year 2007 and are taken from Schneider et al. (2010), who estimated the shadow economies in 162 countries around the world using the MIMIC and the currency demand approach. Thus, the size of the shadow economy η^{\wedge}_t at time t is given as:

$$\eta^{\wedge} = \frac{\eta_t}{\tilde{\eta}_{2007}} \eta_{2007}^*$$

where η^{\wedge}_t denotes the value of the MIMIC index at t according to the above equation, $\tilde{\eta}_{2007}$ is the value of this index in the base year 2007, and η_{2007}^* is the exogenous estimate (base value) of the shadow economies in 2007. Applying this benchmarking procedure, the final estimates of the shadow economies of these countries can be calculated.

The size and development of the shadow economies of the 11 Asian countries (Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand and Vietnam) are shown in Table 3.2.

Let me clearly state that these are preliminary results and again I explicitly want to mention that, in my opinion, the MIMIC estimations shown in Table 3.1 are the first ones to be used for the calculations. If I discuss the size of the shadow economy of Bangladesh, it has a value of 35.6% in the year 2000, which more or less decreases up to the year 2014 to 31.6%. In Cambodia (China¹²), I have a value of 50.1% (13.1%) in the year 2000, which decreases to 41.5% (to 12.5%) in the year 2014. Indonesia has a size and development of its shadow economy of 29.4% in the year 2000, which increases to 37.0% in 2010 and then decreases back to 28.4% in 2014. In Japan (Laos), I have a size of the shadow economy in the year 2000 of 11.2% (30.6%), which decreases to 8.8% (27.3%) in 2008 and then decreases again to 8.2% (24.8%) in 2014. If I next consider Malaysia, it has a shadow economy of 31.1% in 2000, which decreases to 28.7% in 2008, increases to 29.1% in 2010, and then decreases to 26.4% in 2014. The shadow economy of the Philippines was 35.4% in 2000, decreases to 31.4% in 2010, and then decreases further to 29.0 in 2014. The shadow economy in South Korea was 17.5% in 2000, decreases to 15.1% in 2008, increases to 16.2% in 2009 and then again decreases to 12.4% in 2014. The shadow economy of Thailand was 42.6% in 2000, decreases to 37.1% in 2010 and then increases again to 40.9% in 2014. The shadow economy in Vietnam was 15.6% in 2000, decreases to 14.3% in 2008 and then increases again to 16.8% in 2014. In general, here we see no unique pattern of the size and development of the shadow economy. For most countries, we observe a decrease from 2000 to 2008, but, for the Philippines, Thailand, Vietnam and China, we observe later on, from 2010 to 2014, a renewed increase. The largest average shadow economy over this period was Cambodia with 45.4%, followed by Thailand with 39.0%, then Bangladesh with 33.7% and the Philippines with 32.6%. The lowest shadow economy was Japan with 9.2%, followed by China with 12.0%.

The empirical results can be summarised as follows: the OECD countries, Japan and South Korea, have the lowest shadow economy, which is not astonishing because they are highly developed countries, where, for most people, the official economy offers sufficient opportunities to work and to earn a high salary. In particular, Thailand, Cambodia and the Philippines, and maybe also Bangladesh and Indonesia, are countries with a stronger developing country “status” and where the official economy is not large or efficient enough to offer sufficient opportunities to earn a decent salary, and, hence, a lot of the people are engaged in shadow economy activities. To measure the size and development of the former Communist countries of China and Vietnam (and partly Laos) is quite difficult, because these countries are in the middle of a transformation process from a Communist system to

¹²China is an extremely difficult case, due to the fact that China is a mixture of a planned and market economy; these figures have to be interpreted with great care and may be not reliable.

Table 3.2 Size and development of the shadow economies in some Asian countries from 2000–2014 (in % of GDP)

Country	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Bangladesh	35.6	35.1	34.5	34.1	33.7	34.2	33.8	33.2	32.7	32.2	31.6	33.7
Cambodia	50.1	47.8	46.8	46.0	45.2	45.6	45.0	44.2	43.8	43.2	41.5	45.4
China	13.1	12.5	12.2	11.9	11.8	12.1	11.4	10.8	11.3	11.9	12.5	12.0
Indonesia	29.4	28.6	28.3	27.9	27.6	27.4	27.0	27.5	28.2	28.1	28.4	28.0
Japan	11.2	10.3	9.4	9.0	8.8	9.5	9.2	9.0	8.8	8.1	8.2	9.2
Lao PDR	30.6	28.9	28.4	28.0	27.3	27.6	27.7	27.1	26.3	25.4	24.8	27.5
Malaysia	31.1	30.4	30.0	29.6	28.7	29.3	29.1	28.4	27.8	27.2	26.4	28.9
Philippines	35.4	33.4	32.8	32.3	31.9	31.6	31.4	32.0	32.1	32.6	32.9	32.6
South Korea	17.5	16.3	15.9	15.6	15.1	16.2	15.6	14.8	13.6	13.0	12.4	15.1
Thailand	42.6	39.0	38.5	38.2	37.7	37.5	37.1	38.4	39.3	40.1	40.9	39.0
Vietnam	15.6	14.7	14.6	14.4	14.3	14.6	14.4	15.1	16.0	16.3	16.8	15.2
<i>Average</i>	<i>29.3</i>	<i>27.9</i>	<i>27.4</i>	<i>27.0</i>	<i>26.6</i>	<i>26.9</i>	<i>26.5</i>	<i>26.4</i>	<i>26.4</i>	<i>26.2</i>	<i>26.0</i>	<i>26.0</i>

Source: Own calculations, April 2016

a market system, so that it is not only the statistics that are misleading but also what type of economy is really captured here. Hence, the size and development of these three countries have to be interpreted with great care and should be taken as rough estimates.

3.4 Summary and Policy Conclusions

Writing this chapter, I realise that there are many obstacles to overcome when measuring the size of the shadow economy of these 11 Asian countries of Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand, and Vietnam. However, this chapter shows that I have made some progress. I provide estimates of the size of the shadow economy, of these 11 Asian countries over the period 2000–2014 by using the MIMIC procedure for the econometric estimation and the benchmarking procedure for calibrating the estimated MIMIC into absolute values of the size of the shadow economy of these 11 countries.

These new insights gained with regard to the size and trend of the shadow economies for these 11 Asian countries lead us to the following two conclusions:

The *first* conclusion from these results is that, for all 11 countries investigated, the size of the shadow economy is quite large, with an average value for Bangladesh of 33.7%, for Cambodia of 45.4%, for China of 12.0%, for Indonesia of 28.0%, for Japan of 9.2%, for Laos of 27.5%, for Malaysia of 28.9%, for the Philippines of 32.6%, for South Korea of 15.1%, for Thailand of 39.0%, and for Vietnam of 15.2%. Except for Japan, which is a highly developed OECD country, the sizes of the other Asian countries are considerably higher than that the United States, 9%, or in Central Europe, where the average size is between 10% and 12%. However, the size of the nine developing Asian countries is not higher than those in South America or Central Africa.

The *second* conclusion is that the shadow economies are a complex phenomenon that is present to an important extent in these 11 Asian countries. People engage in shadow economy activities for a variety of reasons. Among the most important are government actions, most notably taxation, regulations and the quality of public (government) services.

Considering these two conclusions, it is obvious that one of the big challenges for every government is to undertake efficient and incentive-orientated policy measures in order to make work in the shadow economy less attractive. And, hence, to make work in the official economy more attractive, successful implementation of such a policy may lead to a stabilisation or even a reduction in the size of the shadow economy, as can be seen in these eleven countries.

Finally, I offer six suggestions of incentive-oriented policy measures to reduce shadow-economy activities:

- (1) Reduction of indirect tax rates;
- (2) An exemption of the value-added tax on labour-intensive economic activities, such as the re-construction of old houses;
- (3) The firms which do demand or supply shadow-economy activities, should be excluded for 4–5 years from all public contracts;
- (4) Incentives to use credit cards for transactions (e.g., to reduce fees or taxes);¹³
- (5) Strong punishment if shadow economy activities are linked to organised crime (such as prostitution);
- (6) Good governance and a deregulation of the “official” economy.

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¹³Such an incentive would lead to more credit card transactions. The use of credit cards would provide us with a better documentation of the payment system because card payments are more visible and one clearly sees the type of payment that is used for a certain service or good. If credit cards were used more, this would certainly have a dumping effect on the size and development of the shadow economy.

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