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September 2018

Revised Version

SHADOW ECONOMIES IN IRAN, HER NEIGHBORS AND AROUND THE WORLD: WHAT DO WE (NOT) KNOW?

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CONTENT

1. INTRODUCTION

(1) **There are many political statements that tax evasion and the shadow economy are important and cause severe damage on the official economy and on public (tax) revenues.**

(2) **Hence, the goal of this lecture has four goals:**

- (i) **To present the size and development of the shadow economy and of tax evasion in 158 countries all over the world.**
- (ii) **To present the size and development about the shadow economy in Iran and her neighbors**
- (iii) **To critically discuss the plausibility of the MIMIC-Macro-Estimates**
- (iv) **Finally, policy measures, to reduce the shadow economy are presented.**

1. INTRODUCTION

- *A shadow economy* **has many names, like cash, underground, grey or sometimes dark economy. There is no convention what the „correct“ name is.**
- **A** *shadow economy* **is** *more or less* **a** *parallel economy* **meaning, that additional “shadow activities” are: neighbors or friends help, do-it-yourself activities or family production (in general and) in the agricultural sector.**
- **Hence, the consequence is, that using macro-methods quite often a** *“large” shadow economy* **is measured.**

2. THEORETICAL CONSIDERATIONS
2.1 DEFINITIONS

(1) The *shadow economy* includes all legal production and provision of goods and services that are deliberately concealed from public authorities for the following four reasons:

(i) to avoid payment of income, value added or other taxes;

(ii) to avoid payment of social security contributions;

(iii) to avoid having to meet certain legal standards such as minimum wages, maximum working hours, etc.; and

(iv) to avoid complying with certain administrative procedures.

2. THEORETICAL CONSIDERATIONS
2.1 DEFINITIONS

(2) *Underground activities* **are all *illegal* actions that fit the characteristics of classical crime activities like *smuggling*, burglary, drug dealing, etc.**

(3) *Informal household and do-it-yourself* **activities are household actions that are not registered officially under various specific forms of national legislation.**

These two activities should not be included in the shadow economy activities, but to some extent they are.

(4) *Tax evasion* **is under- (or not) reporting capital and/or labor income, domestic or abroad.**

2. THEORETICAL CONSIDERATIONS

2.2 THEORIZING ABOUT THE SHADOW ECONOMY AND TAX EVASION

What are the main causes determining the size of the shadow economy and of tax evasion?

(i) Tax and social security contribution burdens;

(ii) Intensity of regulations; (iii) Public Sector Services;

(iv) Tax morale; (v) Unemployment;

(vi) Self-employment; (vii) Size of the agricultural sector;

(viii) Official income; (ix) Quality of public institutions;

(x) Federal (direct democratic) system

What are the main indicators, in which shadow economy activities are reflected?

(i) Official GDP; (ii) Cash; (iii) Official Employment

2. THEORETICAL CONSIDERATIONS

2.3 PROBLEM OF DOUBLE COUNTING

All ten cause factors, but especially

(i) tax burden, (ii) regulation,

(iii) unemployment, (iv) self-employment,

(v) and size of the agricultural sector are also major driving forces for smuggling, do-it-yourself activities and neighbours help.

Hence, in the MIMIC and Currency Demand Estimations these activities are (at least) partly included; hence, these estimates are higher than the „true“ shadow economy estimates.

3. ESTIMATION METHODS

THREE ESTIMATION PROCEDURES

(1) **Direct procedures using the micro level and aiming at determining the size of the shadow economy. Quite often this method is done by surveys and by "calculating" discrepancies in National Accounts.**

(2) **Indirect procedures that make use of macroeconomic indicators proxying the development of the shadow economy over time; e.g. the currency demand approach.**

(3) **Statistical models that use statistical tools to estimate the shadow economy as an "unobserved" or "latent" variable; e.g. the MIMIC (Multiple Indicator, Multiple Causes) Method.**

3. ESTIMATION METHODS

3.1 DIRECT APPROACHES – GENERAL REMARKS

(1) **These are microeconomic approaches that employ either well designed surveys or samples based on voluntary replies or tax auditing and other compliance methods.**

(2) **Estimates of the shadow economy can also be based on the discrepancy between income declared for tax purposes and the actual detected one by audits.**

Advantage of methods (1) and (2): Detailed knowledge about the shadow economy on an individual basis.

3. ESTIMATION METHODS

3.1 DIRECT APPROACHES: (I) USE OF SURVEYS OF COMPANY MANAGERS

(3) Use of surveys of company managers and miss reported business income (Putnins and Sauka, 2015):

(i) They combine miss reported business income and miss reported wages as percentage of GDP.

(ii) Their method produces detailed information on the structure of the shadow economy, especially in the firm sector.

(iii) It is based on the facts that company managers know how much business income and wages go unreported due to their unique position in dealing both of these types of income.

(iv) Their method combines estimates of miss reported business incomes, unregistered or hidden employees, and unreported wages in order to calculate a total estimate of the size of the shadow economy.

3. ESTIMATION METHODS

3.1 DIRECT APPROACHES: (II) MODIFIED CONSUMPTION-INCOME GAP METHOD

(4) Modified household data for the estimation of a shadow economy: Consumption – Income Gap - method:

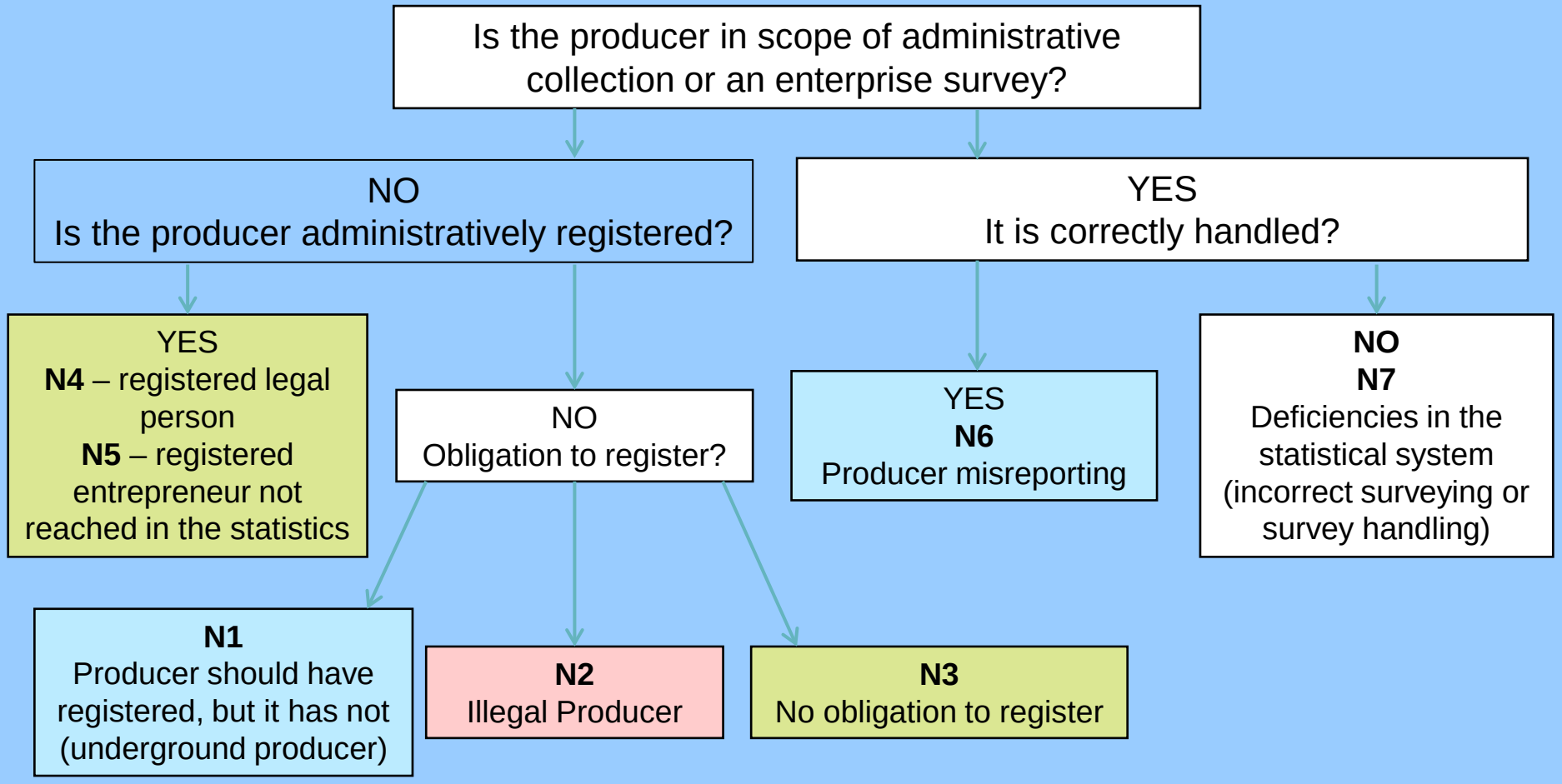
(i) The size of the shadow economy was estimated by Lichard, Hanousek and Filer (2014) based on microeconomic data without making the unrealistic assumptions which leads to under-estimating the size of the shadow economy by excluding underreporting among those who unjustifiably assumed to fully report their income.

(ii) The logical explanation is that employees being paid under the table or having a secondary, undeclared, source of income while not being officially classified as "self-employed" constitute a major source of unreported income, which is included in their approach.

3. ESTIMATION METHODS

3.1 DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Figure 3.1: Classification of NOE (non-observed economy)



Source: Van de Ven (2017), PowerPoint Presentation, OECD Paris, p. 8.

3. ESTIMATION METHODS

3.1 DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Concept of the NOE:

(1) Non-observed economy categories:

- **Economic underground: N1+N6 (non-registered producers + misreporting)**
- **Informal (and own account production): N3+N4+N5 (no obligation to register, registered legal person and registered entrepreneur not reached in the statistics)**
- **Statistical underground: N7 (deficiencies in the statistical system)**
- **Illegal: N2 (illegal producers)**

Source: Van de Ven (2017)

3. ESTIMATION METHODS

3.1 DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Table 3.1: NOE adjustments by informality type – percentage of GDP (share of adjustment type within total NOE); 2011–2012

	Underground N1 + N6	Illegal N2	Informal sector N3 + N4 + N5	Statistical deficiencies N7	Total NOE
Austria	2.4 (31.7%)	0.2 (2.1%)	1.5 (19.4%)	3.5 (46.8%)	7.5 (100%)
Belgium	3.8 (83.8%)			0.7 (16.2%)	4.6 (100%)
Canada	1.9 (88.2%)	0.2 (8.2%)		0.1 (3.6%)	2.2 (100%)
Czech Rep.	6.3 (77.6%)	0.4 (4.5%)	1.3 (15.6%)	0.2 (2.3%)	8.1 (100%)
France	3.7 (54.7%)		2.9 (42.7%)	0.2 (2.7%)	6.7 (100%)
Hungary	3.1 (27.9%)	0.8 (7.5%)	3.1 (28.6%)	3.9 (36%)	10.9 (100%)
Israel	2.2 (32.6%)		1.4 (21.8%)	3 (45.6%)	6.6 (100%)
Italy	16.2 (92.8%)			1.2 (7.2%)	17.5 (100%)
Mexico	5.5 (34.7%)		10.4 (65.3%)		15.9 (100%)
Netherlands	0.8 (36.6%)	0.5 (20.1%)	0.5 (20%)	0.5 (23.2%)	2.3 (100%)
Norway	0.5 (51.5%)	0 (0.3%)	0.5 (43.8%)	0 (4.4%)	1 (100%)
Poland	12.7 (82.6%)	0.9 (6%)	0 (0%)	1.8 (11.4%)	15.4 (100%)
Slovak Rep.	12.1 (77.3%)	0.5 (3%)	2.9 (18.7%)	0.2 (1%)	15.6 (100%)
Slovenia	3.9 (38.2%)	0.3 (3.2%)	2.8 (27.7%)	3.1 (30.9%)	10.2 (100%)
Sweden	3 (100%)				3 (100%)
U.K.	1.5 (65.6%)		0.5 (22.9%)	0.3 (11.4%)	2.3 (100%)

Source: Van de Ven (2017), PowerPoint Presentation, OECD Paris, p. 15.

3. ESTIMATION METHODS

3.2 THE CURRENCY DEMAND APPROACH

Basic regression equation for the currency demand from Tanzi (1983):

$$\ln (C / M2)_t = b_0 + b_1 \ln (1 + TW)_t + b_2 \ln (WS / Y)_t + b_3 \ln R_t + b_4 \ln (Y / N)_t + u_t$$

with $b_1 > 0$, $b_2 > 0$, $b_3 < 0$, $b_4 > 0$, where

ln	denotes natural logarithms,
C / M2	ratio of cash holdings to deposit accounts,
TW	average tax rate (to proxy changes of the shadow economy),
WS / Y	percentage of wages and salaries in national income (to capture changing payment and money holding patterns),
R	interest on savings deposits (to capture the opportunity cost of cash), and
Y / N	per capita income.

3. ESTIMATION METHODS

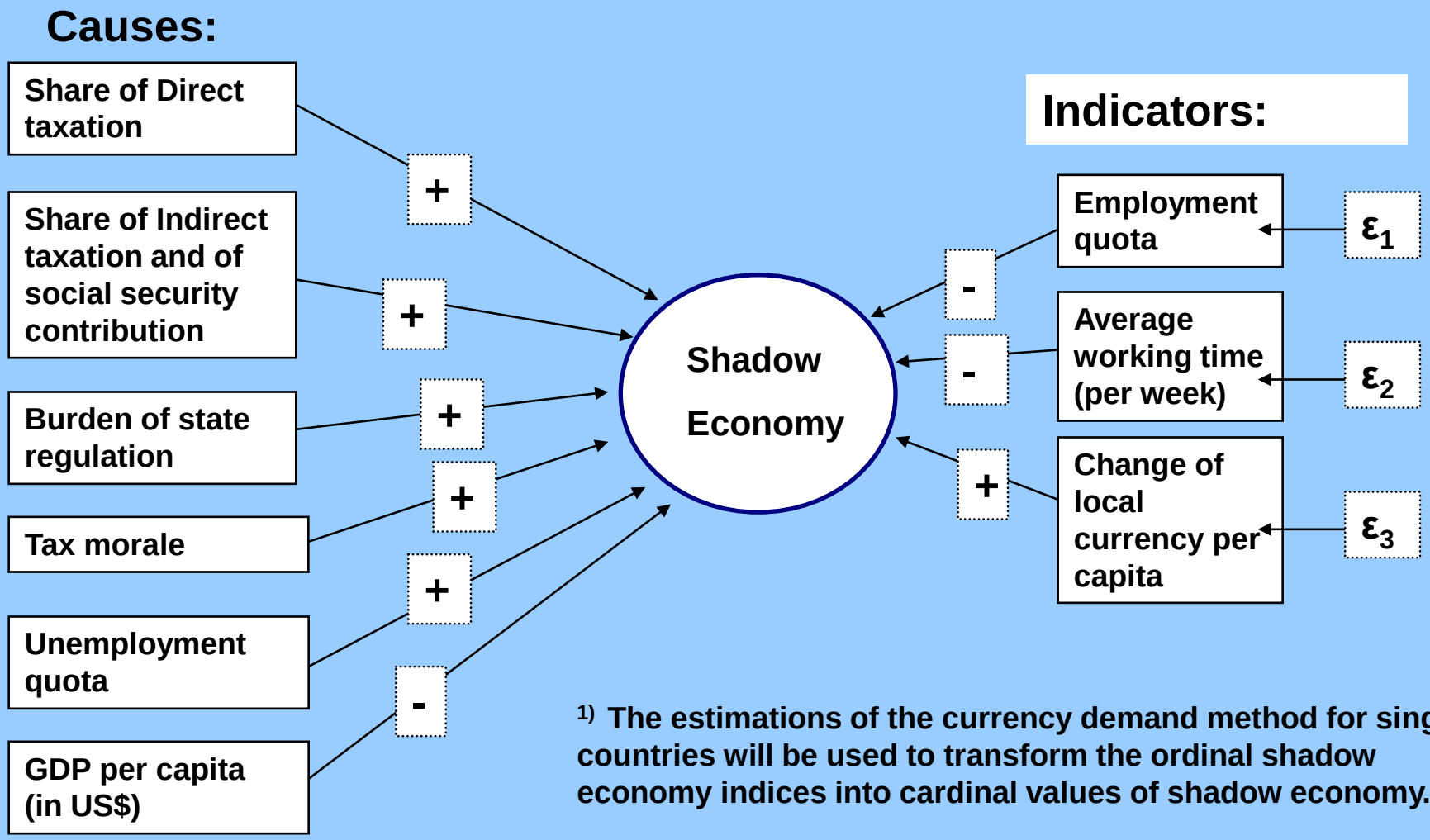
3.3 The Multiple Indicators Multiple Causes (MIMIC) Approach:

- **Modeling the shadow economy as an unobservable (latent) variable;**
- **Description of the relationships between the latent variable and its causes in a structural model:** $\eta = \Gamma x + \zeta$
- **Link between the latent variable and its indicators is represented in the measurement model:** $y = \Lambda_y \eta + \varepsilon$

η: latent variable (shadow economy)
X: (q×1) vector of causes in the structural model
Y: (p×1) vector of indicators in the measurement model
Γ: (1×q) coefficient matrix of the causes in the structural equation
Λ_y: (p×1) coefficient matrix in the measurement model
ζ, ε : error term in the structural model and ε is a (p×1) vector of measurement error in y

3. ESTIMATION METHODS

Figure 3.1: Path diagram of the MIMIC model[1)]



[1)] The estimations of the currency demand method for single countries will be used to transform the ordinal shadow economy indices into cardinal values of shadow economy.

3. ESTIMATION OF THE SHADOW ECONOMY –
3.5 EMPIRICAL RESULTS

Table 3.2: MIMIC Model Estimation Results: 1991-2015, 158 Countries (Part 1)

	1	2	3	4	5	6
Causes						
Trade Openness	-0.086***	-0.085***	-0.137***	-0.086***	-0.086***	-0.113***
GDP per Capita	-0.332***	-0.335***	-0.37***	-0.298***	-0.302***	-0.334***
Unemployment Rate	0.051**	0.054***	0.069***	0.053**	0.057***	0.069***
Size of Government	0.102***	0.102***	0.111***			
Fiscal Freedom				-0.131***	-0.134***	-0.147***
Rule of Law	-0.049***			-0.06***		
Control for Corruption		-0.042***			-0.046**	
Government Stability			-0.054***			-0.015

Source: Own calculations.
Note: *** p<0.01, ** p<0.05, * p<0.1

3. ESTIMATION OF THE SHADOW ECONOMY –
3.5 EMPIRICAL RESULTS

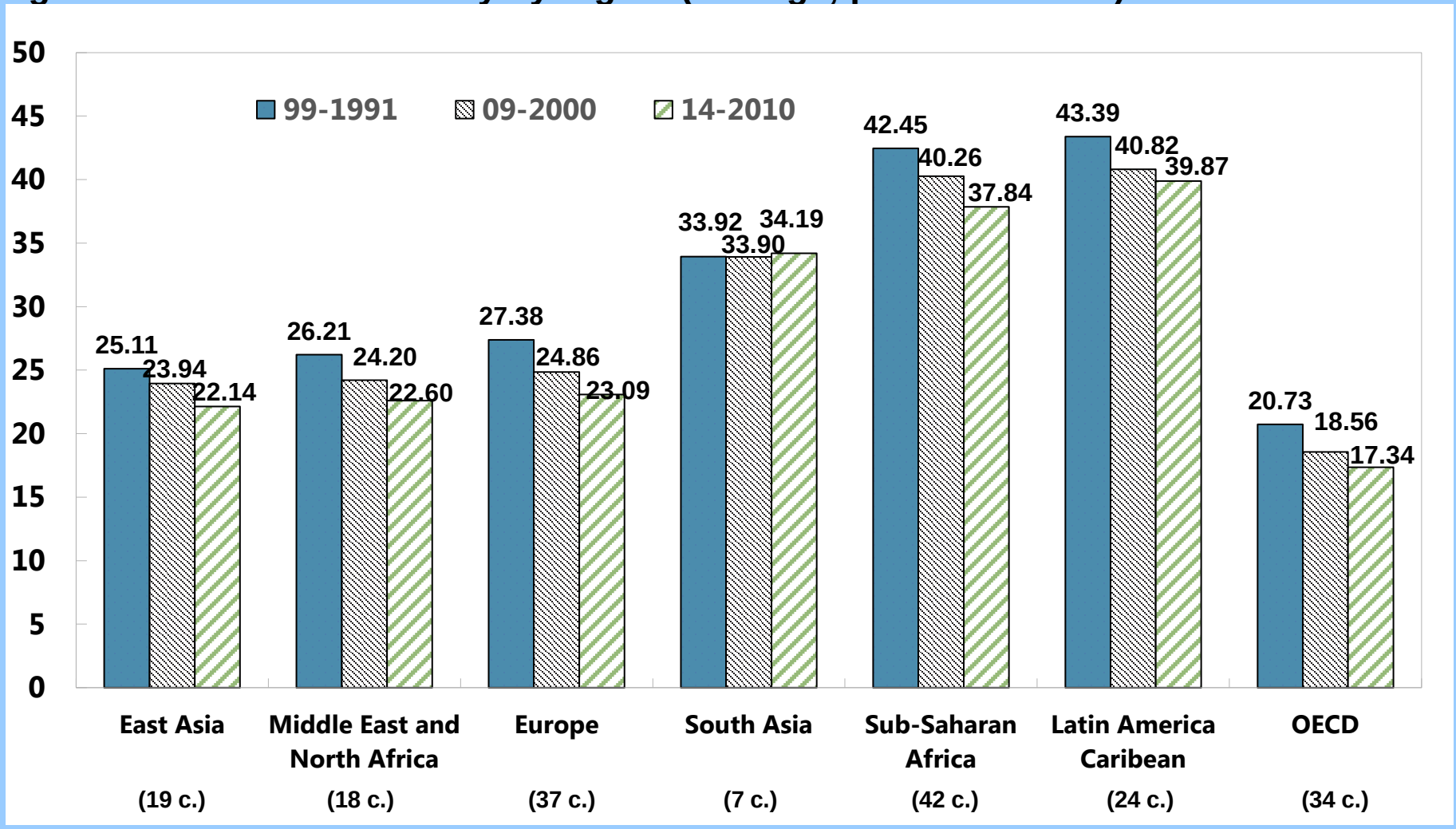
Table 3.3: MIMIC Model Estimation Results: 1991-2015, 158 Countries (Part 2)

	1	2	3	4	5	6
Indicators						
Currency	1	1	1	1	1	1
Labor Force Participation Rate	-0.521***	-0.532***	-0.31***	-0.452***	-0.468***	-0.249***
Growth of GDP p.c.	-0.208**	-0.245***	-0.386***	-0.113	-0.144*	-0.157***
Statistical Tests						
RMSEA	0.073	0.073	0.067	0.078	0.078	0.055
Chi-square	5.13	5.06	6.49	5.08	5.06	5.35
Observations	1897	1892	2350	1758	1757	1998
Countries	151	151	122	144	144	120

Source: Own calculations.
Note: *** p<0.01, ** p<0.05, * p<0.1

4. SIZE OF THE SHADOW ECONOMY

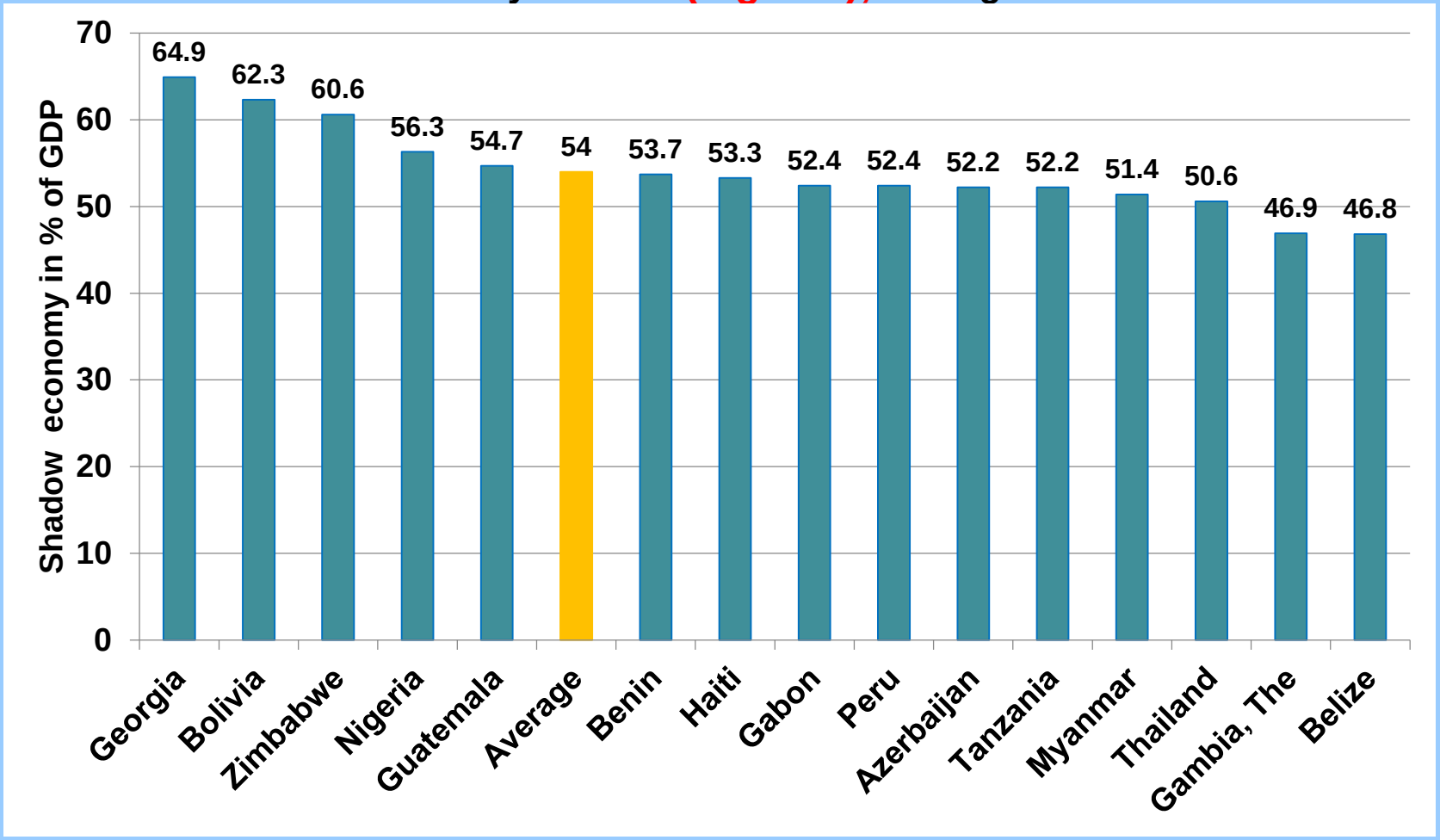
Figure 4.1: Shadow economy by region (average, percent of GDP)



Source: Own calculations.

4. SIZE OF THE SHADOW ECONOMY

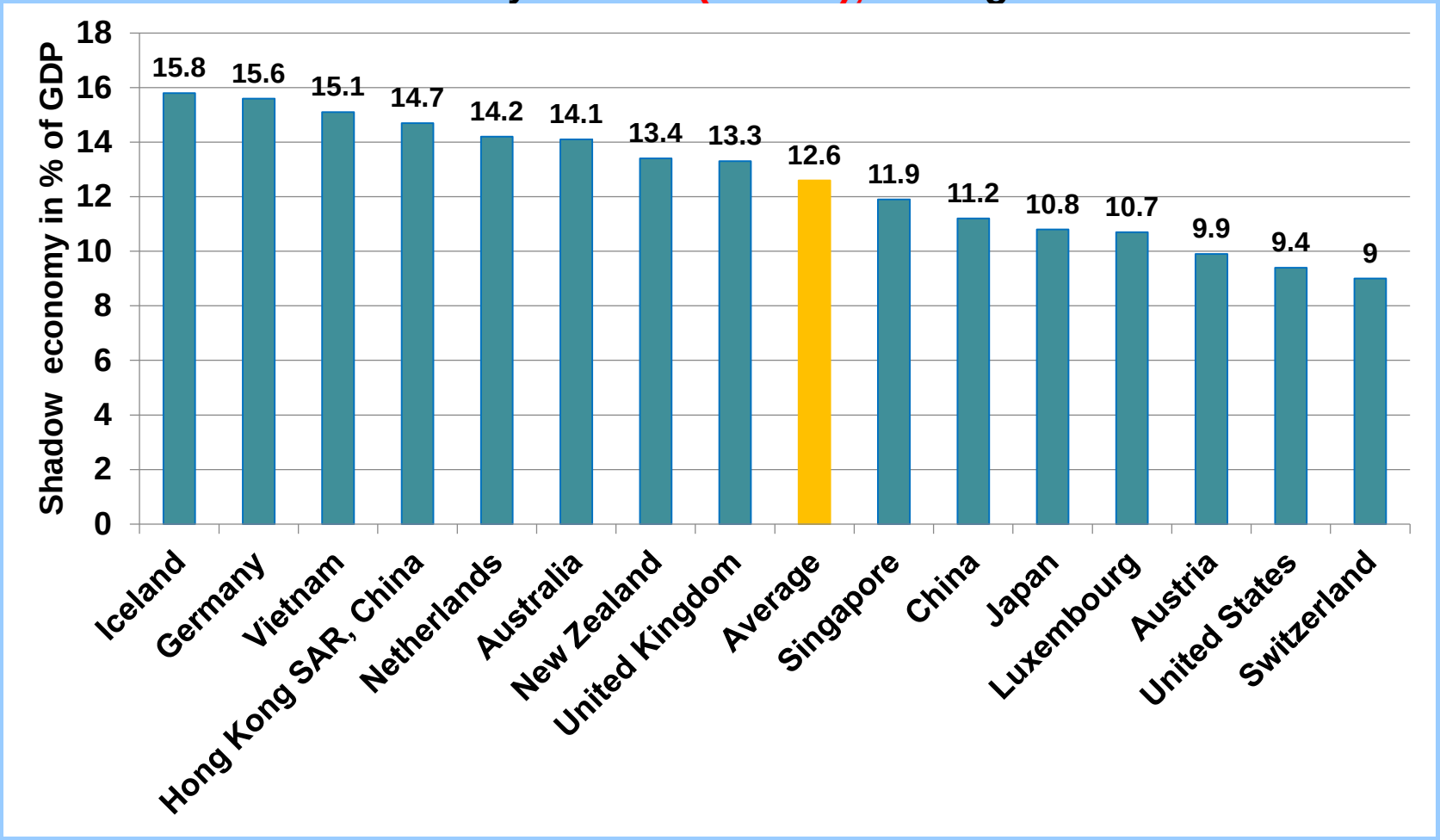
Figure 4.2: Size of the shadow economy in % of GDP of the 15 countries with the highest and the lowest shadow economy – Part I (highest); average over 1991 to 2015.



Source: Own calculations.

4. SIZE OF THE SHADOW ECONOMY

Figure 4.3: Size of the shadow economy in % of GDP of the 15 countries with the highest and the lowest shadow economy – Part II (lowest); average over 1991 to 2015.



Source: Own calculations.

4. SIZE OF THE SHADOW ECONOMY

Table 4.1: Decomposition of the shadow economy activities in Estonia and Germany

Kinds of shadow economy activities (rough estimates!)	Estonia		Germany	
	Size in % of official GDP average 2009-2015	Proportion of total shadow economy	Size in % of official GDP average 2009-2015	Proportion of total shadow economy
(1) Total (makro) shadow economy (estimated by the MIMIC and calibrated by the currency demand procedures)	28.0	100%	16.2	100%
(2) Legally bought material for shadow economy and DIY-activities	6.0	21%	3.1	19.1%
(3) Illegal activities (smuggling etc.)	2.0	7%	1.2	7.4%
(4) Do-it-yourself activities and neighbours help[1)]	2.0	7%	1.5	9.2%
(5) Sum (2) and (4)	10.0	35%	5.8	35.7%
(6) "Corrected" or "adjusted" shadow economy, but legal activities (position (1) minus position (5))	18.0	65%	10.4	64.2%

[1)] Without legally bought material which is included in (2)

Source: Own calculations, Linz, September 2016.

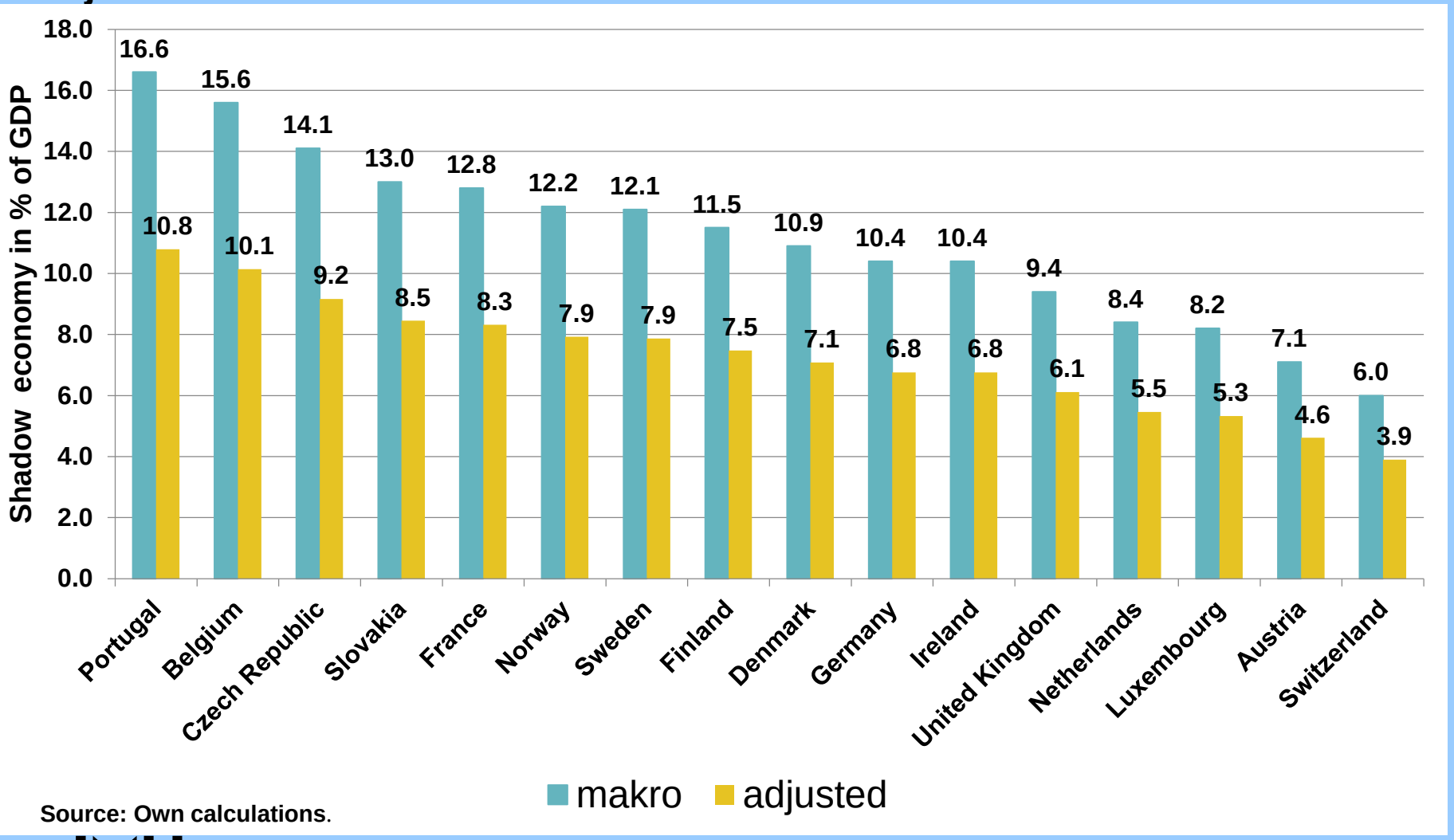
Table 4.2: Size of the shadow economies of different country groups *(Macro-MIMIC + adj. MIMIC)*

Country groups [adjusted values]	No. of countries	Size of the shadow economy[1)]			
		Years 1991-1999	Years 2000-2009	Years 2010-2015	Average over 1999 – 2015
East Asia	19	25.53 [16.59]	23.86 [15.51]	21.08 [13.70]	23.49 *[15.27]*
Middle East and North Africa	18	27.31 [17.75]	24.34 [15.82]	23.81 [15.48]	25.15 *[16.35]*
Europe	37	28.12 [18.28]	24.79 [16.11]	22.77 [14.80]	25.23 *[16.40]*
South Asia	7	34.75 [22.59]	32.31 [21,00]	27.58 [17.93]	31.55 *[20.51]*
Sub-Saharan Africa	42	42.36 [27.53]	39.98 [25.99]	36.13 [23.48]	39,49 *[25.67]*
Latin America Caribean	24	42.29 [27.49]	39.33 [25.56]	34.80 [22.62]	38.81 *[25.22]*
OECD	34	21.42 [13.92]	18.84 [12.25]	18.24 [11.86]	19.5 *[12.68]*
Average over all countries	*181*	*31.68 [20.59]*	*29.06 [18.89]*	*26.34 [17.12]*	*29.03 [18.87]*

1) Unweighted averages
Source: Own calculations.

4. SIZE OF THE SHADOW ECONOMY

Figure 4.4: Size of the Shadow Economy of 16 European Countries in 2017– macro and adjusted



Source: Own calculations.

4. SHADOW ECONOMY

Table 4.3: Comparison of the MIMIC (macro and adjusted) with National Accounts Method; 16 OECD countries, years 2011/2012 (av.)

Nr.	Country	NOE[1)] (1)	MIMIC		Difference (MIMIC-NOE)	
		% of GDP	Macro (2)	Adj. (3)	(2)-(1)	(3)-(1)
1	*Slovenia*	*10.2*	*23.9*	*15.5*	*13.7*	*5.3*
2	*Norway*	*1*	*14.5*	*9.4*	*13.5*	*8.4*
3	*Israel*	*6.6*	*19.7*	*12.8*	*13.1*	*6.2*
4	*Belgium*	*4.6*	*17*	*11*	*12.4*	*6.4*
5	Mexico	15.9	27.9	18.1	12	2.2
6	Hungary	10.9	22.6	14.7	11.7	3.8
7	Sweden	3	14.5	9.4	11.5	6.4
8	Canada	2.2	11.7	7.6	9.5	5.4
9	Poland	15.4	24.7	16	9.3	0.6
10	Czech Rep.	8.1	16.2	10.5	8.1	2.4
11	UK	2.3	10.3	6.7	8	4.4
12	Netherlands	2.3	9.6	6.2	7.3	3.9
13	France	6.7	10.9	7.1	4.2	0.4
14	*Italy*	*17.5*	*21.4*	*13.9*	*3.9*	*-3.6*
15	*Slovak Rep.*	*15.6*	*15.7*	*10.2*	*0.1*	*-5.4*
16	*Austria*	*7.5*	*7.6*	*4.9*	*0.1*	*-2.6*

1) NOE calculated by National Account Stat. using the discrepancy method.
Source: Non observed economy OECD (2014): Papers; MIMIC: own calculations.

4. SIZE OF THE SHADOW ECONOMY

Table 4.4: Comparison between National Accounts Statistics and MIMIC Results of 8 Sub-Saharan African countries over 2010-2014

Country	Methods (averages over 2010-2014)			Differences	
	(1) National Accounts Statistics[1)]	(2) MIMIC	(3) MIMIC Adjusted	(2)-(1)	(3)-(1)
Guinea-Bissau	53.4	38	31.8	-15.4	-21.6
Mali	55	40.4	26.3	-14.6	-28.7
Togo	40.1	28	24.7	-12.1	-15.4
Guinea	48.1	37	24.1	-11.1	-24
Burkina Faso	43.1	32	26	-11.1	-17.1
Senegal	47.5	40	20.8	-7.5	-26.7
Benin	55.6	49	18.2	-6.6	-37.4
Cote d'Ivoire	34	35	22.8	1	-37.4
Correlation: 0.73 Spearman's Rank Correlation: 0.857***					

1) Discrepancy method

Source: Medina et al. (2017), p.28

4. SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

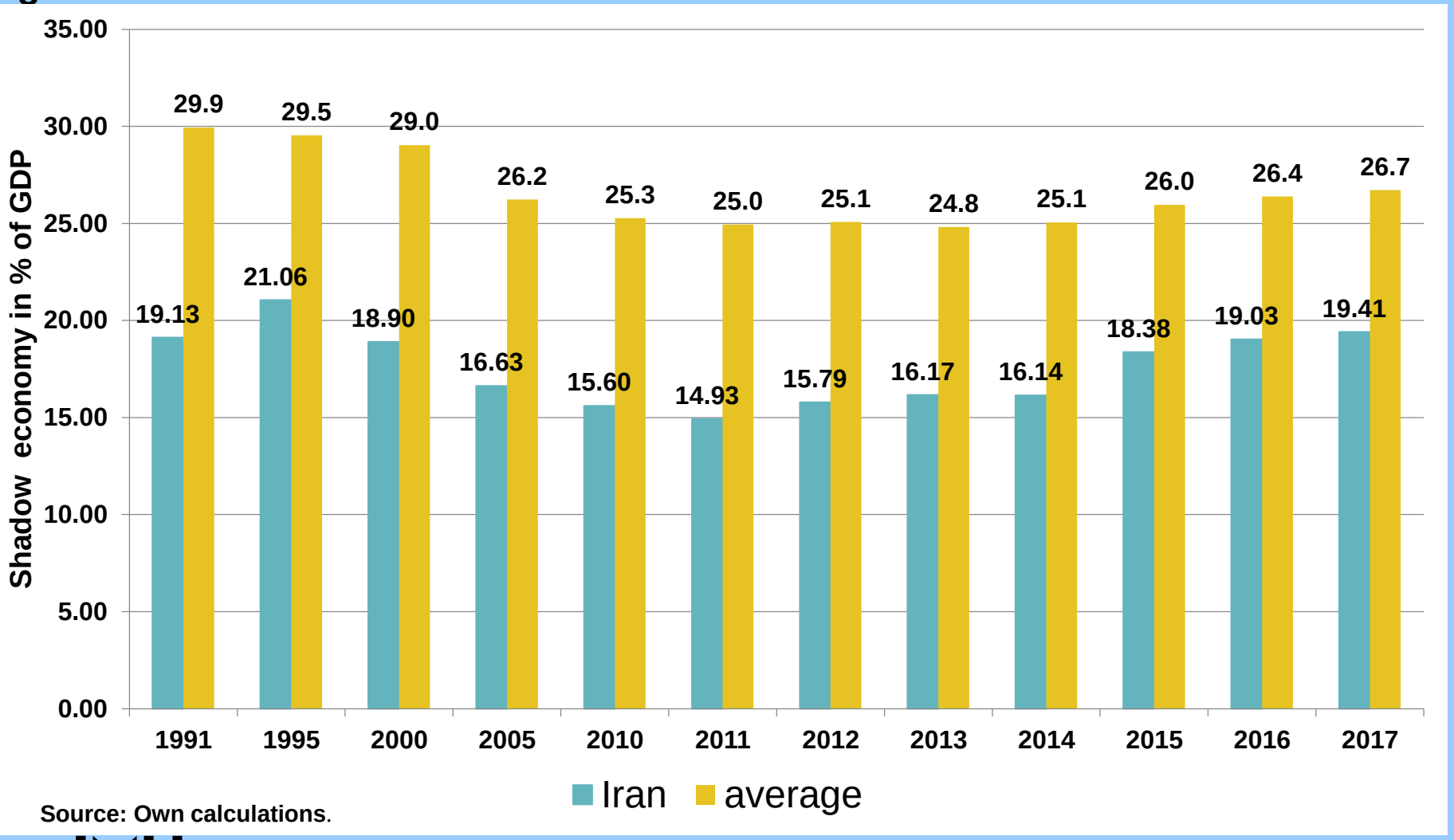
Table 4.5: Size and development of the shadow economy of eight countries from 1991 to 2017 in percent of official GDP

Country	1991	1995	2000	2005	2010	2015	2016	2017	*Av. over years*
Azerbaijan	54.69	59.95	60.60	50.01	44.20	43.66	44.12	44.78	***52.61***
Bahrain	22.49	19.64	18.40	17.54	20.30	16.63	17.70	17.41	***19.54***
Iran, Islam Rep.	19.13	21.06	18.90	16.63	15.60	18.38	19.03	19.41	***17.98***
Kuwait	18.55	19.39	20.10	16.33	19.75	21.72	21.43	20.95	***19.45***
Oman	23.41	21.99	18.90	20.38	16.76	23.91	24.12	24.34	***20.25***
Pakistan	37.55	34.48	36.80	31.19	30.28	31.62	32.28	33.06	***33.68***
Turkey	35.99	32.84	32.10	29.77	30.21	27.43	26.42	27.50	***31.25***
United Arab Emirates	27.74	27.00	26.40	27.99	25.09	24.26	25.41	26.09	***26.48***
av. over countries	***29.94***	***29.54***	***29.03***	***26.23***	***25.27***	***25.95***	***26.39***	***26.72***	***27.39***

Source: Own calculations.

4. SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

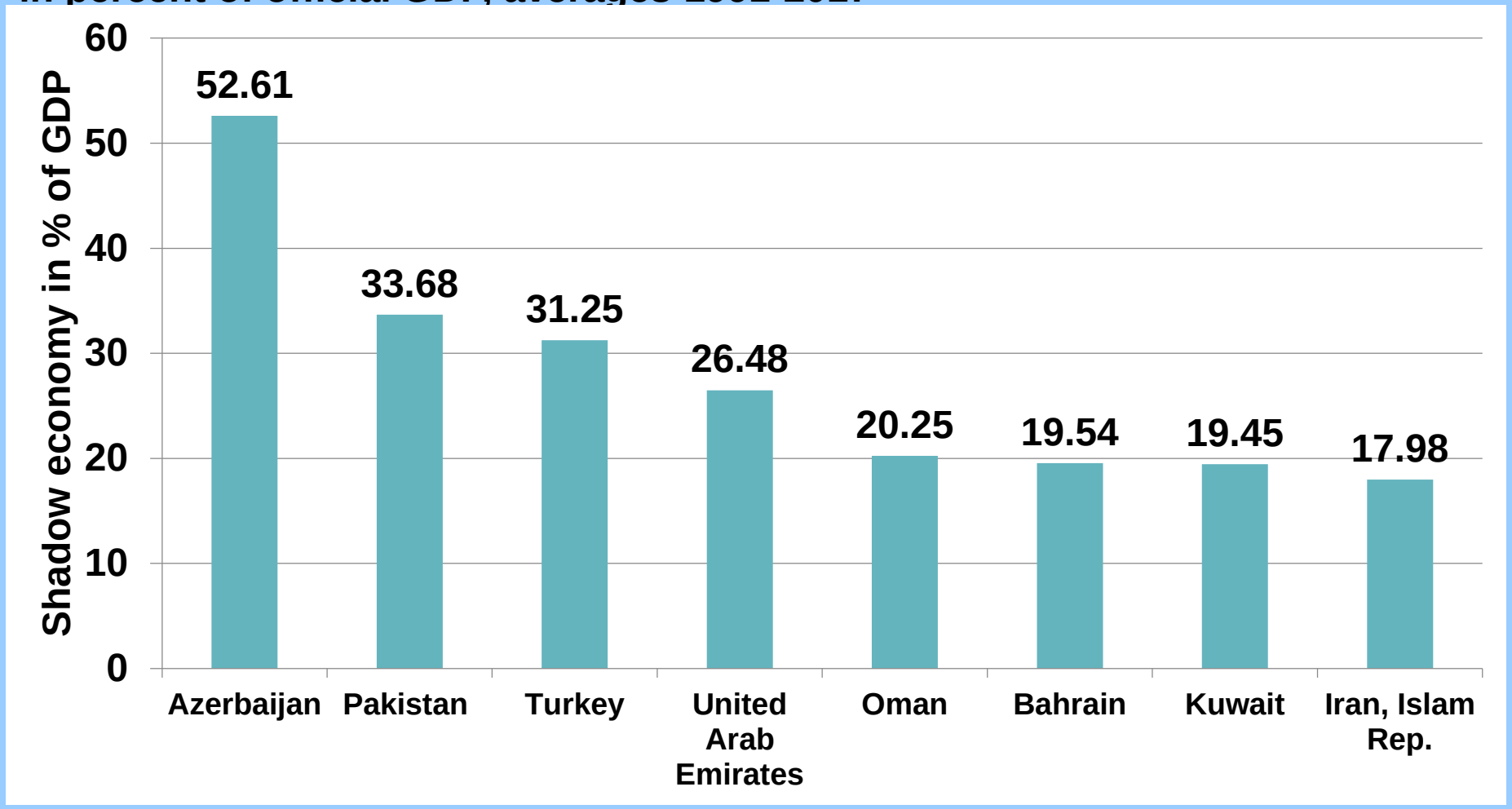
Figure 4.5: Development of the Shadow Economy of Iran and the Average of her neighbors over 1991 to 2017



Source: Own calculations.

4. SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

Figure 4.6: Size and development of the shadow economy of eight countries in percent of official GDP, averages 1991-2017



Source: Own calculations.

4. SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

Table 4.5: Size and development of the shadow economy of Iran in percent of official GDP, comparing different studies

Year	Khandan and Nili (2013) MIMIC-model	Hosseini et al. (2015) MIMIC-model	Schneider and Medina (2017) – MIMIC macro	Difference (absolut) between Schneider and Medina and the others	Schneider and Medina (2017) – MIMIC adj.
1993/1994	18.80	-	20.64	+1,84	13.42
2003	-	15.98	17.02	+1,04	11.06
2008/2009	22.19	-	15.17	-7,02	9.86
2010	-	21.70	15.60	-6,01	10.14

Source: Khandan and Nili (2013), Hosseini et al. (2015) and own calculations.

5. HOW DO WE ESTIMATE THE SHADOW ECONOMIES? – A RÉSUMÉ

5.1 Surveys

(1) Quite often only households are considered;

(2) Non-responses and/or incorrect responses;

(3) Results of the financial volume of „black“ hours worked and *not* of value added.

(4) New methods are promising

5.2 Discrepancy Method

(1) Combination of meso estimates/assumptions;

(2) Calculation method often not clear;

(3) Documentation and procedures often not public.

5. HOW DO WE ESTIMATE THE SHADOW ECONOMIES? – A RÉSUMÉ

5.3 Monetary and/or Electricity Methods

(1) Some estimates are very high, only macro-estimates and a double counting problem.

(2) Are the assumptions about the size of the shadow economy and it's activities plausible?

(3) Breakdown by sector or industry not possible!

(4) Great differences to convert millions of KWh into a value added figure when using the electricity method (Lackó approach).

5. HOW DO WE ESTIMATE THE SHADOW ECONOMIES? – A RÉSUMÉ

5.3 Monetary and/or Electricity Methods

(5) Not all transactions in the shadow economy are paid in cash. → larger shadow economy

(6) Blades and Feige, criticize that the US dollar is used as an international currency.

(7) The assumption of the same velocity of money in both types of economies.

(8) Ahumada, Canavese and Canavese criticize that the assumption of equal income velocity of money in both economies is only correct, if the income elasticity is 1.

(9) Finally, the assumption of 0 or x-percent shadow economy is open to criticism in a base year.

5. HOW DO WE ESTIMATE THE SHADOW ECONOMIES? – A RÉSUMÉ

5.4 MIMIC (Latent) Method:

(1) **Only relative coefficients, no absolute values.**

(2) **Estimations quite often highly sensitive with respect to changes in the data and specifications.**

(3) **Difficulty to differentiate between the selection of causes and indicators; little theoretical "guidance".**

(4) **The use of the calibration procedure and starting values has great influence on the size and development of the shadow economy.**

(5) **High macro values of the shadow economy and again a double counting problem**

5. HOW DO WE ESTIMATE THE SHADOW ECONOMIES? – A RÉSUMÉ

5.5 Open Research Questions and Recommendations

(1) No ideal or dominating method – all have serious problems and weaknesses.

(2) If possible use several methods.

(3) Much more research is needed with respect to the estimation methodology and empirical results for different countries and periods.

(4) Experimental methods should be used to provide a micro-foundation.

(5) A satisfactory validation of the empirical results should be developed so that it is easier to judge the empirical results with respect to their plausibility.

5. HOW DO WE ESTIMATE THE SHADOW ECONOMIES? – A RÉSUMÉ

5.5 Open Research Questions and Recommendations

(6) **An internationally accepted definition of the shadow economy is still missing. Such a definition is needed in order to make comparisons easier between countries and methods; also to avoid a double counting problem, e.g. legal bought material.**

(7) **The link between theory and empirical estimation of the shadow economy is still unsatisfactory.**

In the best case theory provides us with derived signs of the causal and indicator variables.

However, which are the "core" causal and which are the "core" indicator variables is theoretically „open".

6. POLICY MEASURES
6.1 GENERAL STATEMENT

In every country the government faces the challenge to undertake policy measures which reduce a shadow economy and tax evasion.

However, the crucial question is: "Is this a blessing or a curse?"

Answers:

(1) If one assumes, that roughly 50% of all shadow economy activities complement those of the official sector (i.e. those goods would not be produced in the official sector) the development of the total (official + shadow economy) GDP is always higher than the "pure" official one.

6. POLICY MEASURES
6.1 GENERAL STATEMENT (CONT.)

(2) A decline of the shadow economy will only increase the total welfare in every country if the policy maker succeeds in transferring a shadow economic activity into the official economy.

(3) Therefore, a policy maker has to favour and choose such policy measures that strongly increase the incentives to transfer the production from the shadow (black) to the official sector.

→ Only then the decline of the shadow economy will be a blessing for the whole economy.

6. POLICY MEASURES

6.2 POLICY MEASURES AGAINST THE SHADOW ECONOMY AND TAX EVASION

Seven **policy measures:**

(1) ***Unemployment*** **is either controllable by the government through economic policy in a traditional Keynesian sense; or the government can try to improve the country's competitiveness to increase foreign demand.**

(2) **The impact of *self-employment* on the shadow economy is only partly controllable by the government. A government can deregulate the economy or incentivise *"to be your own entrepreneur"*, which would make self-employment easier, potentially reducing unemployment and positively contributing to efforts in controlling the size of the shadow economy.**

6. POLICY MEASURES

6.2 POLICY MEASURES AGAINST THE SHADOW ECONOMY AND TAX EVASION (CONT.)

(3) These two policies need to be *accompanied* with a *strengthening* of *institutions* and *trust* in *public institutions* to reduce the probability that self-employed shift reasonable proportions of their economic activities into the shadow economy, which, if it happened, made government policies incentivising self-employment less effective.

(4) Besides these measures, policy makers should focus to *reduce overall taxation* (especially indirect taxation and custom duties).

6. POLICY MEASURES

6.2 POLICY MEASURES AGAINST THE SHADOW ECONOMY AND TAX EVASION (CONT.)

(5) *Equally important* **is the** *quality of institutions*; **i.e. creating democratic and transparent institutions with lesser regulatory burden, corruption and bureaucracy in order to be able to restore the trust and confidence of the people in the public institutions.**

(6) *Reducing administrative burden* **on businesses by simplifying the procedures for obtaining licenses, accelerating the release of documents required for entrepreneurship, reducing bureaucratic barriers for such documents and increasing transparency of the whole process.**

6. POLICY MEASURES

6.2 POLICY MEASURES AGAINST THE SHADOW ECONOMY AND TAX EVASION (CONT.)

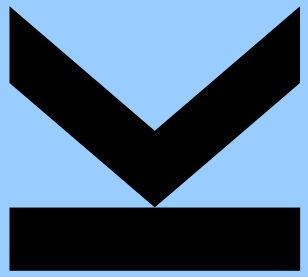
(7) *Discouraging* **the** *use* **of** *cash* **by** *increasing* **popularity of** *electronic payments*. **Key measures in this regard should focus on:**

(i) *development* **of** *adequate infrastructure* **for** *bank cards* **and other electronic payments, particularly in the service sector and in rural areas;**

(ii) *creating incentives* **for companies that encourage their customers to use electronic payments, and to pay the salaries of their employees into a bank account;**

(iii) *organizing unscheduled inspections* **in companies to verify that card terminals and other related infrastructure work correctly.**

THANK YOU VERY MUCH FOR YOUR ATTENTION!



APPENDIX A1: SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

Table A1: Size and development of the shadow economy of eight countries from 1991 to 2017 in percent of official GDP (Part 1)

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999
Azerbaijan	54.69	53.67	60.46	64.66	59.95	59.22	58.85	61.13	59.52
Bahrain	22.49	21.83	19.65	19.80	19.64	19.72	19.18	19.37	18.84
Iran, Islam Rep.	19.13	19.54	20.42	20.85	21.06	20.65	20.07	20.35	19.88
Kuwait	18.55	21.40	20.35	19.83	19.39	19.03	19.18	19.22	20.66
Oman	23.41	22.56	22.42	22.42	21.99	20.72	20.11	19.88	20.04
Pakistan	37.55	34.92	34.40	34.90	34.48	32.81	34.58	34.63	35.35
Turkey	35.99	35.89	35.30	34.51	32.84	32.95	31.01	32.03	33.26
United Arab Emirates	27.74	28.05	28.50	27.47	27.00	26.76	26.98	27.72	28.54
av. over countries	***29.94***	***29.73***	***30.19***	***30.55***	***29.54***	***28.98***	***28.74***	***29.29***	***29.51***

Source: Own calculations.

APPENDIX A1: SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

Table A1: Size and development of the shadow economy of eight countries from 1991 to 2017 in percent of official GDP (Part 2)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008
Azerbaijan	60.60	58.29	55.95	54.18	52.45	50.01	48.02	45.32	43.70
Bahrain	18.40	18.76	18.67	18.35	17.64	17.54	18.12	18.79	18.16
Iran, Islam Rep.	18.90	19.89	18.39	17.02	16.01	16.63	16.34	14.52	14.60
Kuwait	20.10	20.67	20.91	18.79	17.63	16.33	15.85	15.71	16.45
Oman	18.90	18.82	19.82	20.17	19.90	20.38	19.55	18.18	15.52
Pakistan	36.80	35.12	34.97	33.58	33.87	31.19	30.94	30.84	30.49
Turkey	32.10	32.75	33.74	32.07	30.80	29.77	29.47	30.38	29.14
United Arab Emirates	26.40	28.15	27.81	27.46	27.53	27.99	28.81	27.36	26.77
av. over countries	*29.03*	*29.06*	*28.78*	*27.70*	*26.98*	*26.23*	*25.89*	*25.14*	*24.35*

Source: Own calculations.

APPENDIX A1: SIZE AND DEVELOPMENT OF THE SHADOW ECONOMY OF IRAN AND HER NEIGHBORS

Table A1: Size and development of the shadow economy of eight countries from 1991 to 2015 in percent of official GDP (Part 3)

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	*Av. over years*
Azerbaijan	44.82	44.20	43.71	43.30	42.26	42.15	43.66	44.12	44.78	***52.61***
Bahrain	20.33	20.30	21.01	21.11	20.03	19.21	16.63	17.70	17.41	***19.54***
Iran, Islam Rep.	15.73	15.60	14.93	15.79	16.17	16.14	18.38	19.03	19.41	***17.98***
Kuwait	18.98	19.75	19.81	19.86	20.55	22.07	21.72	21.43	20.95	***19.45***
Oman	16.83	16.76	17.65	18.25	19.07	21.07	23.91	24.12	24.34	***20.25***
Pakistan	31.28	30.28	30.91	31.12	30.62	30.29	31.62	32.28	33.06	***33.68***
Turkey	32.33	30.21	27.65	28.03	27.33	27.45	27.43	26.42	27.50	***31.25***
United Arab Emirates	25.54	25.09	23.92	23.11	22.44	22.02	24.26	25.41	26.09	***26.48***
av. over 8 countries	***25.73***	***25.27***	***24.95***	***25.07***	***24.81***	***25.05***	***25.95***	***26.39***	***26.72***	***27.39***

Source: Own calculations.

6. APPENDIX: FURTHER EMPIRICAL RESULTS

Table A2: Size of the shadow economy *in Germany in the year 2005* using two different estimation approaches

Estimation approach	In % of off. GDP	In bill. euros	In % of the total shadow economy (Macro-MIMIC)
Survey about black labor as value-added provided by Feld and Larsen (2012a)	3.6%	70	22.5%
+ correction of the survey, see Feld and Larsen (2012a, p. 61)	5.1%	112	32%
+ material used	3.0-4.0%	65-90	19-25%
+ illegal activities	4.3-4.8%	90-105	27-30%
+ shadow economy activities already included in the GDP	0.1-0.2%	2-4	1%
Shadow economy using the MIMIC procedure (and for calibration the currency demand approach)	15.5-16.0%	340-350	100%

Table source: Enste and Schneider (2006), Table 2, p. 188.
Sources of representative survey: Feld and Larsen (2005, 2012a, 2012b) and Pedersen (2003).
The source of illegal activities and official material used are based on survey of TNS-Emnid (2004) ordered by the German research institute IW, Cologne.

Table A2: A comparison of the size of the shadow economy (in % of GDP) in the Baltic countries 2009 – 2015 by Putnins and Sauka with Zukauskas and Schneider, and Schneider (Macro and adjusted).

Year	Estonia				Latvia				Lithuania			
	Putnins and Sauka	Zukauskas and Schneider	Schneider		Putnins and Sauka	Zukauskas and Schneider	Schneider		Putnins and Sauka	Zukauskas and Schneider	Schneider	
	Firm Managers	Survey	MIMIC		Firm Managers	Survey	MIMIC		Firm Managers	Survey	MIMIC	
			Macro	Corr. Adj.			Macro	Corr. Adj.			Macro	Corr. Adj.
2009	20.2%		29.6%	19.4%	36.6%		27.1%	17.6%	17.7%		29.6%	19.2 %
2010	19.4%		29.3%	19.1%	38.1%		27.3%	17.7%	18.8%		29.7%	19.3 %
2011	18.9%		28.6%	18.6%	30.2%		26.5%	17.2%	17.1%		29.0%	18.9 %
2012	19.2%		28.2%	18.3%	21.1%		26.1%	17.0%	18.2%		28.5%	18.5 %
2013	15.7%		27.6%	17.9%	23.8%		25.5%	16.6%	15.3%		28.0%	18.2 %
2014	13.2%		27.1%	17.6%	23.5%		24.7%	16.0%	12.5%		27.1%	17.6 %
2015	14.9%	15.0 %	26.2%	17.0%	21.3%	11.7 %	23.6%	15.3%	15.0%	9.8 %	25.8%	16.8 %
Average 2009 - 2015	17.4%		28.1%	18.3%	27,8%		25,8%	16.8%	16.4%		28.2%	18.4 %

Source: Putnins and Sauka, 2016, Table 1, p.12 and Schneider, Zukauskas and Schneider, own calculations, Linz, September 2016.

6. APPENDIX A2: FURTHER RESULTS

DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Table A 2: NOE adjustments by industry – percentage of total GDP (larger than 0.5% highlighted) – Part I

ISIC 4	SWE	POL	CZE	AUT	SVK	NOR	SVN	BEL	ISR	NLD	MEX	CAN
A – Agriculture, forestry and fishing	0.1	0.7	0.7	0.1	1.9	0.1	0.3	0.0	0.2	0.2	0.9	0.0
B – Mining and quarrying	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
C – Manufacturing	0.1	1.0	1.0	0.9	2.1	0.0	1.1	0.3	0.0	0.0	0.0	0.1
D – Electricity, gas, steam and air conditioning supply	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	3.1	0.0
E – Water supply; sewerage; waste management	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F - Construction	0.7	2.2	1.8	1.3	4.3	0.7	2.1	1.2	1.0	0.3	1.1	0.7
G – Wholesale and retail trade; repair of motor vehicles and motorcycles	0.3	5.4	1.5	1.7	2.8	0.0	1.5	0.9	0.9	0.3	5.9	0.4
H – Transportation and storage	0.3	0.7	0.2	0.3	1.0	0.0	0.4	0.1	0.2	0.0	1.3	0.1
I – Accommodation and food service activities	0.2	0.2	0.8	1.2	0.5	0.2	0.6	0.4	0.2	0.2	0.7	0.3
J – Information and communication	0.2	0.3	0.2	0.2	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.0

Source: Van de Ven (2017), PowerPoint Presentation, OECD Paris, p. 16.

6. APPENDIX A2: FURTHER RESULTS

DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Table A 2: NOE adjustments by industry – percentage of total GDP (larger than 0.5% highlighted) – Part II

ISIC 4	SWE	POL	CZE	AUT	SVK	NOR	SVN	BEL	ISR	NLD	MEX	CAN
K – Financial and insurance activities	0.0	0.0	0.1	0.3	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0
L – Real estate activities	0.2	0.0	0.4	0.1	0.3	0.0	0.1	0.1	2.3	0.4	0.4	0.0
M – Professional, scientific and technical activities	0.2	1.3	0.4	0.3	0.9	0.0	1.5	0.6	0.0	0.0	0.3	0.1
N – Administrative and support service activities	0.1	0.0	0.2	0.3	0.3	0.0	1.2	0.2	0.0	0.0	0.1	0.1
O – Public administration and defense; compulsory social security	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
P – Education	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Q – Human health and social work activities	0.1	0.2	0.1	0.2	0.3	0.0	0.3	0.4	0.2	0.2	0.1	0.2
R- Arts, entertainment and recreation	0.1	0.0	0.1	0.2	0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0
S – Other service activities	0.2	0.2	0.4	0.2	0.5	0.1	0.4	0.1	0.8	0.1	1.8	0.2
T – Activities of households as employers; activities of households for own use	0.0	0.5	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.4	0.0	0.0

Source: Van de Ven (2017), PowerPoint Presentation, OECD Paris, p. 16.

6. APPENDIX A2: FURTHER RESULTS

DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Table A 3: NOE adjustments by industry – percentage of Gross Value Added of the industry (larger than 10% highlighted) Part I

ISIC 4	SWE	CZE	AUT	SVN	BEL	ISR	NLD	CAN
A – Agriculture, forestry and fishing	7.5	39.5	3.5	15.7	2.8	10.0	12.8	1.6
B – Mining and quarrying	0.5	0.0	1.4	3.0	0.8	0.0	1.9	0.8
C – Manufacturing	1.1	4.9	4.9	5.3	2.1	0.0	1.9	0.8
D – Electricity, gas, steam and air conditioning supply	0.0	0.6	4.8	1.4	0.8	1.7	0.8	0.0
E – Water supply; sewerage; waste management	4.6	6.9	1.8	3.1	1.1	0.0	0.3	0.2
F – Construction	15.9	28.5	20.5	29.0	23.1	22.4	5.7	9.9
G – Wholesale and retail trade; repair of motor vehicles and motorcycles	2.5	15.4	14.5	13.6	8.0	11.6	2.4	4.3
H – Transportation and storage	5.3	3.7	7.0	7.8	2.0	3.4	0.6	1.3
I – Accommodation and food service activities	11.9	44.2	27.7	31.0	24.3	9.2	12.3	12.4
J – Information and communication	3.6	5.1	5.5	4.8	3.2	0.0	0.0	0.4

Source: Van de Ven (2017), PowerPoint Presentation, OECD Paris, p. 17.

6. APPENDIX A2: FURTHER RESULTS

DIRECT APPROACHES: (III) NATIONAL ACCOUNTS METHOD

Table A 3: NOE adjustments by industry – percentage of Gross Value Added of the industry (larger than 10% highlighted) Part II

ISIC 4	SWE	CZE	AUT	SVN	BEL	ISR	NLD	CAN
K – Financial and insurance activities	0.3	2.9	7.0	1.4	0.4	3.5	0.6	0.1
L – Real estate activities	2.9	6.5	1.2	1.9	1.7	8.5	2.1	0.0
M – Professional, scientific and technical activities	4.2	9.5	7.5	28.7	7.1	0.0	0.0	2.2
N – Administrative and support service activities	2.9	12.5	8.7	51.1	5.9	0.0	0.0	3.7
O – Public administration and defense; compulsory social security	0.0	0.0	1.0	0.2	0.0	1.4	0.2	0.0
P – Education	1.3	1.7	1.9	2.0	0.1	5.9	0.2	0.3
Q – Human health and social work activities	1.2	2.3	3.1	7.9	5.7	2.8	2.5	2.4
R- Arts, entertainment and recreation	10.3	12.9	19.7	13.2	8.7	0.0	0.0	4.5
S – Other service activities	12.1	34.5	16.2	46.4	6.8	30.1	4.7	7.8
T – Activities of households as employers; activities of households for own use	28.9	0.0	0.0	99.7	100.0	0.0	100.0	0.0

Source: Van de Ven (2017), PowerPoint Presentation, OECD Paris, p. 17.

6. APPENDIX A2: FURTHER RESULTS

Table A 4: The Size of the Shadow Economy in Germany According to Different Methods (in % of official GDP) – Part 1

Method/Source	Shadow economy (in % of official GDP) in:							
	1970	1975	*1980*	1985	1990	1995	2000	2005
Survey (IfD Allensbach, 1975) (Feld and Larsen, 2005)	-	3.6[1)]	-	-	-	-	-	-
	-	-	-	-	-	-	4.1[2)]	3.1[2)]
	-	-	-	-	-	-	1.3[3)]	1.0[3)]
Disrepancy between expenditure and income (Lippert and Walker, 1997)	11.0	10.2	*13.4*	-	-	-	-	-
Discrepancy between official and actual employment (Langfeldt, 1983)	23.0	38.5	*34.0*	-	-	-	-	-

1) 1974.
2) 2001 and 2004; calculated using wages in the official economy.
3) 2001 and 2004; calculated using actual "black" hourly wage paid.

6. APPENDIX A2: FURTHER RESULTS

Table A 4: The Size of the Shadow Economy in Germany According to Different Methods (in % of official GDP) – Part 2

Method/Source	Shadow economy (in % of official GDP) in:							
	1970	1975	*1980*	1985	1990	1995	2000	2005
Physical input method (Feld and Larsen, 2005)	-	-	*13.5*	14.5	14.6	-	-	-
Transactions approach	17.2	22.3	*29.3*	31.4	-	-	-	-
Currency demand approach (Kirchgässner 1983; Langfeldt, 1982, 1984; Schneider and Enste, 2000)	3.1	6.0	*10.3*	-	-	-	-	-
	12.1	11.8	*12.6*	-	-	-	-	-
	4.5	7.8	*9.2*	11.3	11.8	12.5	14.7	-
Latent (MIMIC) approach (Frey and Weck, 1983; Pickardt and Sarda, 2006; Schneider 2005, 2007)	5.8	6.1	*8.2*	-	-	-	-	-
	-	-	*9.4*	10.1	11.4	15.1	16.3	-
	4.2	5.8	*10.8*	11.2	12.2	13.9	16.0	15.4
Soft modelling (Weck-Hannemann, 1983)	-	8.3	*8.3*	-	-	-	-	-

6. APPENDIX A3: ESTIMATION PROCEDURE OF TAX EVASION

Table A 5: The calculation of tax evasion

Kinds of shadow economy activities	Size in % of official GDP	Proportion of the overall shadow economy
(1) Total shadow economy (estimated by the MIMIC and calibrated by the currency demand procedures)	15.0	100%
(2) Legally bought material	3.0–4.0	20–26%
(3) Illegal activities (goods and services)	1.0–2.0	7–13%
(4) Do-it yourself and neighbours help without material	3.0-4.0	20-26%
(5) Already in the official GDP included illegal activities	1.0–2.0	7–13%
(6) Sum (2) to (5)	8.0–12.0	53–80%
(7) Explicit shadow economic, but legal activities (position (1) minus position (5))	3.0–7.0	20–47%
(8) Tax evasion (approx. 35% of the explicit shadow economy, driving forces: indirect taxation and self-employment)	1.4–2.5	10–16%

Source: Buehn and Schneider (2013), p. 12.

6. APPENDIX A3: THE AMOUNT OF TAX EVASION IN 31 EUROPEAN COUNTRIES

Table A 6: The calculation of tax evasion

Kinds of shadow economy activities	Size in % of official GDP	Proportion of the overall shadow economy
(1) Total shadow economy (estimated by the MIMIC and calibrated by the currency demand procedures)	15.0	100%
(2) Legally bought material	3.0–4.0	20–26%
(3) Illegal activities (goods and services)	1.0–2.0	7–13%
(4) Do-it yourself and neighbours help without material	3.0-4.0	20-26%
(5) Already in the official GDP included illegal activities	1.0–2.0	7–13%
(6) Sum (2) to (5)	8.0–12.0	53–80%
(7) Explicit shadow economic, but legal activities (position (1) minus position (6))	3.0–7.0	20–47%
(8) Tax evasion (approx. 35% of the explicit shadow economy, driving forces: indirect taxation and self-employment)	1.4–2.5	10–16%

Source: Buehn and Schneider (2013), p. 12.

6. APPENDIX A3: THE AMOUNT OF TAX EVASION IN 31 EUROPEAN COUNTRIES

Table A 7: Size of tax evasion in % of GDP of 31 highly developed European countries in 2017

Country	Tax evasion	Tax Evasion Adj.
Bulgaria	3.8	2.5
Turkey	3.5	2.3
Croatia	3.4	2.2
Romania	3.4	2.2
Estonia	3.2	2.1
Lithuania	3.1	2.0
South-Cyprus	3.1	2.0
Malta	3.1	2.0
Slovenia	2.9	1.9
Hungary	2.9	1.9
Poland	2.9	1.9
Greece	2.8	1.8
Latvia	2.8	1.8
Italy	2.6	1.7
Spain	2.2	1.5

Source: Own calculations.

6. APPENDIX A3: THE AMOUNT OF TAX EVASION IN 31 EUROPEAN COUNTRIES

Table A 8: Size of tax evasion in % of GDP of 31 highly developed European countries in 2017 (cont.)

Country	Tax evasion	Tax Evasion Adj.
Portugal	2.2	1.4
Belgium	2.0	1.3
Czech Republic	1.8	1.2
Slovakia	1.7	1.1
France	1.7	1.1
Norway	1.6	1.0
Sweden	1.6	1.0
Finland	1.5	1.0
Denmark	1.4	0.9
Germany	1.4	0.9
Ireland	1.4	0.9
United Kingdom	1.2	0.8
Netherlands	1.1	0.7
Luxembourg	1.1	0.7
Austria	0.9	0.6
Switzerland	0.8	0.5

Source: Own calculations.