

ESTIMATING VALUE ADDED OF ILLEGAL PRODUCTION IN THE WESTERN BALKANS

BY DEREK BLADES*

Consultant in economic statistics

Several economists continue to assert that the official national accounts of many countries do not cover a large “hidden” or “underground” economy. This article looks at one component of the underground economy, namely illegal activities. According to the UN System of National Accounts, production of goods and services that are illegal should be included in the Gross Domestic Product (GDP) if both the producers and consumers are willing partners to the transactions involved. We examine the estimates of illegal production recently made by several countries in the Western Balkans and conclude that, if illegal activities were fully included in their official GDP estimates, they would increase by about 1 percent. Trade in narcotics and prostitution are the two most important kinds of illegal activities in most countries and we look in detail at how estimates for these activities were made by the Western Balkan countries.

BACKGROUND: MEASURING THE UNDERGROUND ECONOMY

Peter Gutmann (1977) published what seems to have been the earliest study of a hypothetical underground economy¹—that of the United States for the year 1976. He assumed that there was no underground economy prior to World War II and that the growth in the ratio of currency to bank deposits since then was due entirely to the growth of the underground economy. With the additional assumption that the ratio of value added to money is the same in both the underground and regular economies, Gutmann then proceeded to calculate that in 1976 the value added of the underground economy amounted to \$176 billion or just over 10 percent of the United States GDP. Once this hare was started the hunt for the elusive underground economy was soon joined by a growing band of researchers from a growing number of countries.

Several researchers developed more complex models of the demand for money. Tanzi (1980) argued that a hypothetical underground economy was only one factor determining the demand for cash. His model used three variables—the tax burden, the share of wages in total household income, and per capita GDP—which he used as a proxy for urbanization, increase in travel, and other aspects of economic

Note: Derek Blades was formerly head of the National Accounts Division of the OECD Statistics Directorate. Since his retirement in 2002 he has been working as a consultant in economic statistics for various international organizations and national governments. The author is particularly grateful to David Roberts, OECD, for his comments and suggestions.

*Correspondence to: Derek Blades, 35 bis rue Brancas, 92310 Sevres, France (derekblades@wanadoo.fr).

¹While the term “underground” is used here, several synonyms are preferred by other authors including black, cash, dual, gray, hidden, informal, irregular, marginal, moonlight, non-observed, parallel, subterranean, twilight, unobserved, unofficial, and unrecorded. Many researchers do not seem to be clear about what their “underground, shadow etc” economy is supposed to cover but illegal activities are usually mentioned as one component.

development that might be expected to affect the demand for currency. Writing in this journal, Ahumada *et al.* (2007) focused on the income elasticity of the demand for currency. They argued that monetary methods only produced coherent results if the income elasticity of the demand for currency is unity, and suggested that the estimated size of the underground economy could be corrected when such elasticity is not one. Some of these more complex models incorporated variables that are difficult, if not impossible, to estimate, such as the velocity of circulation of currency (Feige, 1979) or tax morality (Frey and Weck-Hannemann, 1984). Several models also required bold assumptions about a time when there was no underground economy or about money/value added ratios in the underground economy.

A few researchers have played the role of hunt saboteurs ridiculing some of the more extravagant estimates of the underground economy as well as the methods used to make them. Using currency/money ratios for the United Kingdom, Dilnot and Morris (1981) offer a “proof” that the underground economy in the U.K. declined from 34 percent of GDP in 1952 to 7 percent in 1979. They commented that “if the changes in monetary behavior are really taken as indicators of the size of the black economy then the *prima facie* case is that the black economy is in steady decline and only a somewhat strained approach can yield different results. But we do not believe for a moment that these figures do in fact reflect a decline in the black economy; they reflect changes in the financial system which imply greater economy in the use of currency.” Blades (1982) looked at monetary models of the underground economy in the United States and pointed out that the U.S. dollar serves as an international currency. In a few countries the US\$ is used as the national currency and in many more it is a much preferred alternative to the official currency. As a result there is little point in relating dollars in circulation throughout the world to economic activity in the United States. More recently, Thomas (1999) has pointed out that macroeconomic estimates of the underground economy are of little practical use for policy purposes. Citing large and fluctuating macro estimates of the U.K.’s underground economy published by Feige, Thomas writes: “Rather than accepting these magic numbers we should ask the obvious microeconomic questions . . . Where was this all happening? Who was doing it and how were they hiding their activities?”

A common feature of macroeconomic estimates is that they produce very large estimates of the underground economy. (A cynic might conclude that if a study does not find an underground economy in double figures it is unlikely to find a publisher.) In their very useful review of methodologies and estimates of underground economies, Schneider and Enste (2000) give estimates of the underground economy as percentages of official GDP for a number of OECD countries. Averages for 1996 and 1997 go from 9 percent in Austria and the United States to 27 percent in Italy and 30 percent in Greece. Even Norway, Denmark, and Sweden—countries that are commonly perceived to be law-abiding and socially-cohesive—are shown as having underground economies amounting to 18 percent or more of GDP.

Government statisticians usually work in microeconomic mode and when they see estimates of this magnitude, they ask the kinds of questions posed above by doubting Thomas: “Where was this all happening? Who was doing it and how were they hiding their activities?” Unfortunately, their answers are mostly provided in documents for internal discussion groups or working parties and are not

for publication.² As a result, sensational macro estimates of the underground economy appear in the press but are rarely countered by those working at the micro level. The latter consider estimates of the kind given by Schneider and Este in the previous paragraph as simply impossible, but apparently do not have the time or incentive to contradict them publicly. The consequence is that these implausible macro-estimates based on dubious models remain in the public domain, and in the absence of a vigorous challenge from government statisticians the general public gradually absorbs the erroneous message that the national accounts statistics are missing large swathes of economic activity.

This paper is a modest attempt to correct the balance. It is firmly in the microeconomic camp and looks at a single component of the underground economy—namely the contribution to GDP of illegal activities. It shows how estimates of total illegal value added can be built up as the sum of its components. This involves looking at how these activities are carried out, evaluating alternative data sources, and assessing the plausibility of the resulting estimates. This detailed micro approach contrasts sharply with the broad-brush macro approach favored by many researchers but, in the author's view, micro methods are much more likely to unearth the truth and to do so in a way that is useful to policy-makers.

PURPOSE

The UN System of National Accounts (SNA) presents a set of rules whose purpose is to ensure the comparability of UN members' national accounts statistics. At the present time virtually all UN member countries have agreed to adopt the SNA rules for their official national accounts, the main exceptions being North Korea, Cuba, and the United States. The first two still use the Material Product System of accounts that was developed by the Soviet Union. The United States uses its own National Income and Product Accounts system, but this can be reworked to SNA standards, and the U.S. Bureau of Economic Analysis reports its national accounts data on an SNA basis to the United Nations and other international organizations.

Of course, the international comparability of national accounts depends mainly on the extent to which countries are able to observe the SNA rules in practice. The most important of these rules concerns the definition of Gross Domestic Product (GDP), and this article relates to one small part of these rules, namely the treatment of illegal activities. It describes those rules and explains how they were interpreted by a group of Balkan countries trying to improve the coverage of their accounts. We then show the detailed assumptions that were made in estimating two important illegal activities—trade in narcotics and prostitution. This provides a glimpse behind the scenes and demonstrates the ingenuity required of national accounts compilers in estimating the contribution to GDP of activities that by their nature are excluded from the usual kinds of data collection that underlie the national accounts.

SNA RULES FOR ILLEGAL ACTIVITIES

Neither the 1953 nor the 1968 versions of the SNA specified how countries should treat illegal activities in calculating GDP, but the 1993 SNA was quite

²For two rare exceptions, see Hayes and Lozano (1998) and Stapel (2001).

explicit about their treatment, and the same rules, in much the same language, are included in the 2008 version.³

Two kinds of illegal activities are mentioned in the latest versions of the SNA: activities which are not illegal in themselves but which become illegal if they are carried out by unauthorized persons, and activities that are against the law in a given country regardless of who carries them out. Examples of the first kind might include unlicensed abortionists in countries where abortion is legal but relatively expensive, or unauthorized lotteries such as the “numbers racket” which is popular in the United States. Examples of the second kind include illegal transportation in the form of smuggling of goods⁴ and of people, production and trade in narcotics, and prostitution.

The 2008 SNA (paragraph 6.45)⁵ explains that “Both kinds of illegal production are included within the production boundary of the SNA provided they are genuine production processes whose outputs consist of goods or services for which there is an effective market demand.” Proof of an “effective market demand” will usually be that the person acquiring the illegal good or service does so freely without any form of compulsion being applied by the supplier.

The same paragraph of the SNA explains why these illegal goods and services are to be included. “Transactions in which illegal goods or services are bought and sold need to be recorded not simply to obtain comprehensive measures of production and consumption but also to prevent errors appearing elsewhere in the accounts. The incomes generated by illegal production may be disposed of quite legally, while conversely, expenditures on illegal goods and services may be made out of funds obtained quite legally. The failure to record illegal transactions may lead to significant errors within the accounts if the consequences of the activity are recorded in the financial account and the external accounts, say, but not in the production and income accounts.”

An additional reason for including them in GDP is to preserve comparability both between countries and within countries over time. Goods and services that are illegal in one country may be legal in others. Trade in the chewable narcotic leaf qat is legal in Yemen, Somalia, and the United Kingdom, but illegal almost

³Bos (2008) neatly summarizes the development of the SNA as follows:

- 1947: Technical report by the UN containing recommendations; including the famous annex by Stone: the first detailed and fully worked national accounting system.
- 1951–53: First generation of international guidelines: OEEC guidelines of 1951 and 1952; UN guideline of 1953 (SNA53); very simple tables and accounts.
- 1968–70: Second generation of international guidelines: UN guideline of 1968 (SNA68), the European guideline of 1970 (ESA70), and the Material Product System of 1969 (MPS69) for communist countries.
- 1993–95: Third generation of international guidelines: joint guideline of 1993 by the international organizations (SNA93 by UN, IMF, World Bank, OECD and EC) and the European guideline of 1995 (ESA95).
- 2008–10: Fourth generation of international guidelines: updates of the joint and European guideline (SNA08 and ESA09).

⁴It might be argued that smuggling of goods belongs to the first category since importing, say, alcohol and tobacco is quite legal if done by persons authorized to do so. However, smuggling is the clandestine importing of goods with a view to evading customs duties and that is an illegal activity whoever does it.

⁵The complete 2008 version of the SNA is not yet available in print but can be consulted at: <http://unstats.un.org/unsd/sna1993/draftingphase/WC-SNAvolume1.pdf>.

everywhere else; abortion is illegal (though widely practiced) in most of Latin America but is a legal medical intervention in most of Western Europe and North America. Moreover, illegality is not fixed for all time but may be modified as the years go by; laws against prostitution, abortion, and trade in marijuana have been made less restrictive in most European countries over the last 30 years or so. On the other hand, trade in cocaine, opiates, and absinthe was quite legal in France at the turn of the last century but is now banned in that country.

It should be noted that the definition of illegality as defined above is probably much narrower than the one that many people might prefer because it does not consider that tax evasion transforms a legal activity into an illegal one. Businesses providing legal goods and services may choose not to register their activities with the authorities in order to avoid paying taxes or other social charges, and as tax evasion is against the law it would be quite reasonable to classify these goods and services as illegal. But the SNA does not do this. Legal goods and services are always legal regardless of whether they are provided by tax-paying or tax-evading enterprises.

ESTIMATES OF ILLEGAL ACTIVITIES IN COUNTRIES OTHER THAN THE WESTERN BALKANS

Estimates of illegal value added have been made by many countries since the 1993 SNA clarified the situation regarding illegal activities. This work has been supported by Eurostat because of their concern that the national accounts estimates of member states should be both comprehensive and comparable. This is important for the European Union because the national accounts are used as a basis for levying a tax on member states known as the “fourth resource.”

The Statistical Division of the Economic Commission for Europe (UNECE) works with its member countries to help ensure good coverage of the “informal sector,” and this has also touched on the measurement of illegal activities. Table 1 is taken from a paper presented by UNECE at a recent workshop in Kyrgyzstan and shows the relative size of illegal value added in nine countries. These are all official estimates, although in most cases they are described as experimental. Of the nine countries, only the Czech Republic, Hungary, and Poland include estimates

TABLE 1
SIZE OF VALUE ADDED OF ILLEGAL ACTIVITIES IN GDP: SOME OFFICIAL ESTIMATES

Country	Year of Estimate	Value Added of Illegal Activities as % of GDP
Bulgaria	1998/1999	1.3
Czech Republic	2000	0.2
Hungary	2000	1.4
Latvia	2000	1.5
Lithuania	2002	0.9
Poland	2002	0.6
Serbia	2003	1.0
Sweden	2005	0.2
Ukraine	2005	2.2

of illegal value added in their national accounts. Estonia (not shown in Table 1) is the only other country known to include illegal activities in their GDP figures at the present time.

As a percentage of GDP, illegal value added ranges from 0.2 percent in the Czech Republic and Sweden to 2.2 percent in Ukraine. These differences in part arise because the estimates cover different types of illegal activities. They all cover narcotics and prostitution but some also include human trafficking, trade in stolen vehicles, and copyright theft. The high figure for Ukraine includes illegal manufacture of alcohol, which was estimated at 1.1 percent of GDP in 2005.

ILLEGAL ACTIVITIES IN THE WESTERN BALKANS

In 2004, the OECD, with financial support from Eurostat and EFTA,⁶ launched a program of technical cooperation with the Western Balkan countries to help them improve the coverage (or “exhaustiveness” as it is termed by Eurostat) of their official national accounts. This was to be achieved by applying the Eurostat “tabular approach” to exhaustiveness,⁷ and by following the guidelines in the OECD handbook on measuring the non-observed economy.⁸ The biggest problem in achieving exhaustiveness is usually to estimate the value added of small, informal, enterprises that have escaped the survey net of the official statistical agencies. They mainly consist of small shops, cafes, taxis and road transport of goods, vehicle repair enterprises, and street traders. By comparison, illegal activities as defined here turn out to be a relatively small part of the exhaustiveness problem.

The Western Balkans program covered Albania and five successor states of the former Federation of Yugoslavia: Bosnia-Herzegovina, Croatia, Macedonia, Montenegro, and Serbia. Montenegro was formally part of Serbia when the program started but it had an independent statistical office as well as its own currency, and so it was treated as a separate country for the purposes of the program. Bosnia-Herzegovina consists of three provinces, or “entities” to use the official term—the Federation of Bosnia-Herzegovina, Republika Srpska, and Brčko District. The first two of these entities have independent statistical offices and each has developed its own approach to achieving “exhaustiveness” in their national accounts.⁹ In addition, the national statistical office of Bosnia and Herzegovina, the Agency for Statistics, was also involved in the program and, besides providing technical advice to the three entities, it combined their estimates of non-exhaustiveness to obtain estimates for Bosnia and Herzegovina as a whole and also made its own estimate for one illegal activity, trade in smuggled goods. In the event Albania did not make any estimates for illegal activities during the course of the project, so it is not included in the tables below which refer to estimates made by the seven statistical agencies listed in Table 2.

⁶Eurostat is the statistical office of the European Communities. EFTA is the European Free Trade Area consisting of Norway, Switzerland, and Iceland.

⁷The tabular method devised by Eurostat involves each country completing a set of detailed tables, each of which focuses on what are known from experience to be areas where it is difficult to ensure exhaustiveness. See Eurostat (2005).

⁸OECD (2002).

⁹The third entity, Brčko District, is much smaller than the other two. Its statistical office, although originally independent, is now a branch office of the Agency for Statistics for Bosnia and Herzegovina.

TABLE 2

COUNTRIES/ENTITIES AND STATISTICAL AGENCIES ESTIMATING VALUE ADDED IN ILLEGAL ACTIVITIES

Country/Entity	Statistical Agency
Bosnia-Herzegovina (country)	Agency for Statistics of Bosnia and Herzegovina (BHAS)
Federation of Bosnia-Herzegovina (entity)	Federal Office of Statistics (FOS)
Republika Srpska (entity)	Statistical Institute of the Republic of Srpska (SIRS)
Croatia	Central Bureau of Statistics of the Republic of Croatia (CBS)
Macedonia	State Statistical Office of the Republic of Macedonia (SSORM)
Montenegro	Statistical Office of the Republic of Montenegro (MONSTAT)
Serbia	Statistical Office of the Republic of Serbia (SORS)

The first task was to consider some borderline cases in order to clarify the SNA guidelines.

- In some Western Balkan countries official corruption is widespread. To take a common example, registration of a new business usually involves applying to several government agencies, each of which may take more or less time in processing the application. Rapid processing can be made more likely by payment of bribes. It could be argued that these are payments for a service in much the same way that extra payments to the post office are required for quicker mail delivery. After some discussion it was agreed that the element of compulsion involved disqualified these transactions from counting as purchases of genuine market services. Payments of bribes to government officials were therefore considered not to be purchases of illegal market services. They are treated as transfer payments between households and do not add to the GDP.
- The same conclusion was reached with respect to protection rackets such as “insurance” offered to stall-holders in markets to avoid having their property destroyed by those offering the “insurance.” While there is clearly a service being provided here—namely a security service to protect one’s property—it was agreed that the element of compulsion disqualified protection rackets from counting as genuine market services.
- In most of the Western Balkan countries, it is customary to reward doctors and other health workers by a payment or gift in kind in addition to the official charge. After some discussion, participants agreed that these payments were like a tip or service charge. They are not therefore treated as purchases of illegal goods and services but, like tips to waiters or taxi drivers, they are part of health workers’ wages and salaries and should be included in legal GDP.¹⁰

It was agreed that four kinds of illegal activities were significant in the region and should be included in the GDP estimates of the Western Balkan countries: narcotics, prostitution, smuggling cigarettes and alcohol, and people trafficking.

¹⁰Serbia is the only Balkan country that includes this item in its GDP at the present time.

TABLE 3
 ILLEGAL VALUE ADDED AS AN ADJUSTMENT TO BE ADDED TO OFFICIAL GDP (%) (2006 OR LATEST
 YEAR AVAILABLE)

Country/Entity	Narcotics	Prostitution	Smuggling Tobacco and Alcohol	Trafficking People
Bosnia-Herzegovina (BHAS)	–	–	0.24	–
Republika Srpska (SIRS)	0.16	0.02	–	–
Federation of Bosnia-Herzegovina (FOS)	0.14	0.05	–	–
Macedonia (SSORM)	0.74	–	–	0.02
Croatia (CBS)	0.26	0.56	–	0.04
Montenegro (MONSTAT)	0.30	0.20	–	–
Serbia (SORS)	0.27	0.52	–	–

Narcotics is treated as a trading activity.¹¹ The traders purchase drugs in bulk and resell them in small quantities to the end-user. The gross output of the traders is taken as their sales to consumers minus their purchases of drugs for resale—all of which are assumed to be imported by the countries shown in Table 4. Their value added is obtained by deducting their intermediate costs which are generally assumed to be very small or zero. Note that production of narcotics is not believed to be significant in any of the countries considered here. If it were, it would be necessary to consider the agricultural and manufacturing value-added from growing the crops and processing them into a useable form.

The gross output of *prostitution* services is the receipts from selling prostitution services; value added is obtained by deducting intermediate consumption. Most countries have assumed that intermediate consumption amounts to 20 percent of gross output and will consist of items such as rent for hotel rooms, purchases of provocative clothing, and condoms.

Smuggling tobacco and alcohol refers to the illegal importation of these goods for resale. This is again treated as a trading activity, with gross output equal to sales minus the value of illegally imported tobacco and alcohol. Value added is gross output less intermediate consumption, but this will be quite low or zero as the traders are usually itinerant and have none of the production costs incurred by shopkeepers with fixed premises.

Trafficking people is a transport activity. Balkan countries are one of the main routes for political and economic refugees from South Europe and Africa to countries in the North. Gross output is the sum of the payments by refugees to be clandestinely transported through a country minus intermediate costs incurred by the transporter. Note that this activity does not include the exploitation of young women from Balkan countries to work as prostitutes in Western Europe. Such exploitation creates value added in the countries where they work, but not in their countries of origin nor in the countries through which they are clandestinely transported.

Table 3 shows the size of value added in each activity relative to their official GDP estimates which, at present, do not include value added from these activities.

¹¹Drug dealers usually process the drugs by reducing their purity and packaging them. But processing of this kind is carried out by other kinds of retailers such as butchers, who convert an animal carcass into retail portions, or bakers, who process wheat flour into bread.

NARCOTICS

The assumptions underlying the estimates of value added in narcotics trading are explained in Table 4. Estimates of the contribution to GDP of trade in narcotics can be made by estimating either the supply of narcotics or the demand for them. Some statistical agencies used both methods, and when, as is usually the case, they produce two quite different estimates, they have not yet decided which estimate to use for their official GDP estimates.

Estimates from the supply side are based on the quantity of different kinds of narcotics that are made available for domestic consumption. Estimates of these quantities are usually derived from assumptions about the efficiency of the police in seizing drugs. In Republika Srpska, for example, it is assumed that the authorities succeeded in seizing 3 percent of the total quantity entering the Republic so that the quantities seized each year are multiplied by 33.3 (i.e. $100/3$) to estimate the total amount entering the Republic. This amount—less the 3 percent seized by the authorities—is then taken as the total supply, and the next step is to estimate how much is in transit to other countries and how much will be consumed domestically. Republika Srpska, for example, assumes that all the drugs entering the Republic are consumed domestically, while Serbia assumes that most heroin and cocaine entering the country is in transit. A third assumption is then required to convert the quantities imported into quantities sold to final consumers. This is needed because drug dealers usually “cut” the relatively pure imported materials into weaker doses for their customers. Serbia, for example, assumes that each kilo of imported heroin ends up as 4.4 kilos of heroin when sold to the final consumer.

Table 4 shows that there are enormous differences in the various assumptions underlying supply-side estimates. Efficiency of the authorities in detecting drug shipments varies from 1 percent for heroin in Serbia to 25 percent for all drugs in Croatia. Republika Srpska assumes that all heroin entering the country is for domestic consumption, while Serbia considers that only 10 percent of heroin imports are sold within the country. The purity adjustment ratios also vary considerably.

The demand side approach requires fewer assumptions. The starting point is an estimate of the number of drug users and in many countries there are government and non-governmental agencies that periodically make surveys of drug use among susceptible population groups, such as young adults or high-school and university students. In many countries government health departments maintain registers of persons considered to be addicted to the more harmful narcotics such as heroin and cocaine. Note that it is usual to assume that these registers contain only a small percentage of the total number of users—one eighth in the case of Macedonia and one tenth in the Federation of Bosnia-Herzegovina. The second assumption is about the average quantities consumed; Table 4 shows considerable variation here from, for example, 48 Ecstasy tablets per user per year in Montenegro to 255 in Macedonia.

The last column in Table 4 shows the estimated numbers of users of all types of drugs per 1000 population. The differences between countries are larger than might be expected given the common history and culture shared by these countries.

TABLE 4
DATA SOURCES AND ASSUMPTIONS UNDERLYING ESTIMATES OF VALUE ADDED BY TRADE IN NARCOTICS

Country/Entity (Agency) 2005 population (million)	Drug	Supply Method			Demand Method			Memorandum Item
		Seizure Rate (% of total imports seized by police or customs)	Domestic Use/Transit Adjustment (% of total imports for domestic use)	Purity Adjustment (ratio of the quantity sold to users to the quantity imported)	Source for Estimate of Drug Users	Number of Users	Average Quantity Consumed per Year	
Republika Srpska (SIRS) Pop: 1.40	Marijuana	3	100	1.0	10% of high school and university students	8368	433 g	6.0
	Heroin	3	100	2.5	Registered users × 5	3000	76.5 g	2.1
	Cocaine	3	100	2.5	0.1% of adult population	1000	36 g	0.7
	Ecstasy	3	100	1.0	5% of high school and university students	4184	52 pills	3.0
Federation of Bosnia-Herzegovina (BHAS) Pop: 2.70	All narcotics	5	100	1.0	Registered heroin users × 10 Occasional users of marijuana and Ecstasy based on expert opinion	2630 3370	115 g 155 g for marijuana	1.0 1.2
Macedonia (SSORM) Pop: 2.03	Marijuana				Registered users × 8	20427	1788 g	10.0
	Heroin				Registered users × 8	10655	402 g	5.2
	Cocaine				Registered users × 8	2141	219 g	1.1
	Ecstasy				Registered users × 8	10910	255 pills	5.4
Croatia (CBS) Pop: 4.55	All narcotics	25	?	?				
Montenegro (MONSTAT) Pop: 0.61	Marijuana				Registered users × 1	405	192 joints	0.7
	Heroin				Registered users × 1	2160	110 g	3.6
	Cocaine				Registered users × 1	135	48 g	0.2
	Ecstasy				Registered users × 1	405	48 pills	0.7
Serbia (SORS) Pop: 7.44	Marijuana	30	90	1.7	Police and medical reports; surveys of pupils in Belgrade schools;	80173	85 g	10.8
	Heroin	10	10	4.4	Institute of Addictive Disorders;	9634	182.5 g	1.3
	Cocaine	1	10	1.7	EMCDDA and UNDOC ^a	3647	45 g	0.5
	Ecstasy	10	100	3.3		3577	100 pills	0.5
	Amphetamines	10	90	2.0		10007	30 g	1.3

^aEMCDDA: European Monitoring Centre for Drugs and Drug Addiction; UNDOC: United Nations Office on Drugs and Crime.

PROSTITUTION

Table 5 shows the data sources and assumptions that countries have made to estimate value added from prostitution. The starting point is the estimated number of prostitutes, and a variety of official and non-governmental sources are used here. Croatia made an informal survey of taxi drivers, massage parlors, and escort agencies. Police records were consulted in other countries. In most cases prostitutes were classified according to their place of work, or whether they were full-time professionals or only working at weekends and holiday periods. The numbers of working days and numbers of clients per working day also have to be estimated. It will be seen that the end result of these two calculations—number of “client visits” per year (column 7 in Table 5)—varies from 100 for “high class” prostitutes in Serbia to 1000 or more for “street workers” in Serbia and Croatia.

The final column of Table 5 shows the numbers of prostitutes per 1000 population. While it seems plausible that ratios will be higher in countries where there are many foreign visitors, such as Croatia, Montenegro, and Serbia, and lower in Republika Srpska and the Federation of Bosnia Herzegovina, the range—from 0.1 to 0.7—is surprisingly large.

OTHER ILLEGAL ACTIVITIES

Only the national statistical office of Bosnia-Herzegovina tried to estimate the value added from trade in smuggled cigarettes and alcohol, although street peddlers selling cut-price (presumably smuggled) cigarettes and spirits are a common sight in several Balkan countries. Precise information is not available on their methodology, but Bosnia-Herzegovina sought information from the customs authorities on the extent of smuggling, and “expert opinion” on the likely numbers of traders and their annual turnover was also used.

Both Macedonia and Croatia estimated value added from people trafficking. Again precise details on methodology are not available but, as in the case of narcotics, information on “seizures” can be used, and when refugees are apprehended at border crossings they may give information about how much they have paid the traffickers.

SOME CONCLUSIONS

It seems probable that if estimates were made for all four illegal activities, the addition to GDP would not be more than 1 percent for most Balkan countries. This is in line with estimates of illegal activities in the countries shown in Table 1.

It is clear that the estimates made by the Western Balkan countries rely on a number of questionable assumptions, and it is equally clear that those assumptions vary greatly from country to country. In many cases they appear little better than informed guesses. But this does not mean that the exercise was a waste of time. Establishing a framework for estimating illegal value added is valuable in itself. The framework identifies the assumptions that are required, and as more information becomes available those assumptions can be refined and eventually replaced by firm numbers. At some point the statistical agency may decide that the

TABLE 5
DATA SOURCES AND ASSUMPTIONS UNDERLYING ESTIMATES OF VALUE ADDED FROM PROSTITUTION

Country/Entity (Agency) Population in Millions in 2005	Source for Estimated Numbers of Prostitutes	Types of Prostitutes	Number of Prostitutes	Number of Working Days	Number of Clients per Day	Client Visits per Year	Intermediate Consumption (% of gross output)	Number of Prostitutes of all Types per 1000 Population
Republika Srpska (SIRS) Pop:1.30	Ministry of the Interior	All	71	240	2	480	20	0.1
Federation of Bosnia- Herzegovina (BHAS) Pop:2.60	Expert opinion	Full-time	281	250	2	500	20	0.1
Croatia (CBS) Pop:4.55	Informal survey of taxi drivers, massage parlors and escort agencies in main cities	Part-time	65	100	2	200	20	
		Full-time	2100	250	4	1000	20	0.7
		Part-time	900	100	4	400	20	
Montenegro (MONSTAT) Pop:0.61	Expert opinion, media reports, and neighboring country estimates	Working in clubs Working on the street or from apartments	140 100			270 230	20 20	0.4
Serbia (SORS) Pop:9.86	Police records, internet, newspapers, anonymous surveys of suppliers and users	Street workers Hotels, escort services, advertising High class	2250 2900 258	260 200 100	5 3 1	1300 600 100	20 20 20	0.5

estimates are sufficiently well-based that they can be included in the GDP. To date only a handful of countries are doing so, but the number can be expected to grow as statistical offices improve their data sources.

Of the two methods used to estimate value added from trade in narcotics, the demand side approach seems the more reliable because it requires fewer assumptions. The key assumption that it does require is the number of drug users, but in most countries both government agencies and non-governmental organizations will have some information about this.

Estimates of value added from prostitution partly depend for their accuracy on distinguishing different forms of prostitution. The classification used will depend on circumstances in each country, but at a minimum it is clearly useful to distinguish between full-time professionals and those who have other jobs and only work intermittently as prostitutes.

A final lesson is that estimating value added in illegal activities is a hazardous operation, but it can be made less so by open exchange of methodological information and the assumptions contained therein. It is understandable that national accounts compilers avoid too much light being cast on the shadier aspects of their profession, but open exchange of information of the kind given here is a sure way to improve the reliability of the national accounts.

REFERENCES

- Ahumada, Hildegart, Facundo Alvarado, and Alfredo Canavese, "The Monetary Method and the Size of the Shadow Economy: A Critical Assessment," *Review of Income and Wealth*, 53, 363–71, 2007.
- Blades, Derek, "The Hidden Economy and the National Accounts," OECD (Occasional Studies), Paris, 28–44, 1982.
- Bos, Fritz, "Uses of National Accounts. History, International Standardization and Applications in the Netherlands," *Eagle Economic & Statistics Working Paper 2008-1*, Statistics Netherlands, The Netherlands, 2008.
- Dilnot, A. and C. N. Morris, "What Do We Know About the Black Economy?" *Fiscal Studies*, 2, 58–73, 1981.
- Eurostat, *Eurostat's Tabular Approach to Exhaustiveness: Guidelines*, Eurostat, Luxembourg, March 2005.
- Feige, Edgar L., "How Big is the Irregular Economy," *Challenge*, 22, 5–13, November–December 1979.
- Frey, Bruno S. and Hannelore Weck-Hannemann, "The Hidden Economy as an 'Unobserved' Variable," *European Economic Review*, 26, 33–53, 1984.
- Gutmann, Peter M., "The Subterranean Economy," *Financial Analysts Journal*, 33, 26–7 & 34, November–December 1977.
- Hayes, K. and E. Lozano, "Validating the Exhaustiveness of the GNP Estimates of the European Union Member States," *Proceedings of the Joint IASS/IAOS Conference, Statistics for Economic and Social Development*, International Statistical Institute, Voorburg, September 1998.
- OECD, *Measuring the Non-Observed Economy—A Handbook*, Organisation for Economic Co-operation and Development, International Monetary Fund, International Labour Office, and Interstate Statistical Committee of the Commonwealth of Independent States, Paris, 2002.
- Schneider, Friedrich and Dominik H. Enste, "Shadow Economies: Size, Causes, and Consequences," *Journal of Economic Literature*, 38, 77–114, March 2000.
- Stapel, S., "The Eurostat Pilot Project on Exhaustiveness with the Candidate Countries—Concepts and General Results," *Proceedings, Conference on National Accounts of the Candidate Countries*, Eurostat, Brussels, January 2001.
- Tanzi, Vito, *The Underground Economy in the United States: Estimates and Implications*, Banco Nazionale del Lavoro, Rome, December 1980.
- Thomas, Jim, "Quantifying the Black Economy: 'Measurement without Theory' Yet Again?" *Economic Journal*, 109, 381–9, June 1999.