

ASSESSMENT OF THE UNOFFICIAL ECONOMY IN THE REPUBLIC OF CROATIA IN 1998 USING THE SYSTEM OF NATIONAL ACCOUNTS*

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Abstract

This article was motivated by the fact that the complete economic indicators are a necessary prerequisite for good economic policymaking. Therefore, it is useful to possess an estimate of the extent of economic activities that bypass the standard statistical system of a country. In the article, the method of discrepancy in the system of national accounts was applied to assess the scope of unofficial economy in the Republic of Croatia in 1998. The method is based on fundamental identity describing economic flows: the expenditure of one economic unit is the revenue of another. Therefore, the sum of total expenditures in national economy must be equal to the sum of total revenues. The total unofficial economy based on this estimate was between 9.3 percent and 12.8 percent of the officially recorded GDP, but the author stresses that this result should be interpreted with caution, since the method applied usually generates the lower limit of the estimate.

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INTRODUCTION

The prerequisite for conducting any economic analysis is a high-quality statistical and documentation foundation. The use of incomplete indicators which should reflect economic realities necessarily makes the analysis of economic phenomena difficult. It is even possible to make erroneous economic policy decisions on the basis of incomplete indicators. Therefore, it is useful to possess an estimate of the extent of a portion of economic activities that bypass the standard statistical system of a given country. Besides enabling the economic analysis of a higher quality, such an estimate can uncover unutilised potential for collecting public revenues that have a negative impact on the rest of the economy. There are numerous direct and indirect methods for evaluation of the unofficial economy. In this paper, the method of discrepancy in the system of national accounts was applied to the economy of the Republic of Croatia in 1998.

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DEFINITION OF THE UNOFFICIAL ECONOMY

Numerous authors have used various definitions to describe the phenomenon of the grey economy¹. Even if it is true that the use of terms such as the informal, unofficial or underground economy in everyday parlance does not create any problems in understanding the phenomenon, the consideration of various analytical or empirical problems in a scientific manner requires the use of a uniform framework in order to clarify the distinctions between different types of unofficial economies and to establish the interconnection between various terms.

Feige (1990) uses the framework of the new institutional economy in order to render operationally the term unofficial economy² in the sense of clarifying the definition and facilitating the application of specific

¹ For some of the terms and associated definitions, see Weeks (1975), and Gray (1987).

² In the original text, Feige uses the expression 'underground economy' as an all-encompassing term. In Croatian literature a more customary expression is 'unofficial economy' as a common term that encompasses various forms of the grey economy. 'Unofficial' can be interpreted with several meanings: a) as an activity that is officially not allowed, b) as income not reported to the officially authorised authorities, c) as income not registered by official statistics, and d) as an activity that evades various official regulation.

measurement methods. The author identifies four specific types of unofficial economic activities: illegal, unreported, unregistered and informal. The common measure used to quantify individual types of the unofficial economy is the income earned by a given activity.

The *illegal economy* covers income earned through the performance of activities that violate legal norms pertaining to permissible types of production or commerce. Participants in the illegal economy are involved in the production or distribution of legally-prohibited goods or services³.

The *unreported economy* encompasses those economic activities in which institutionally specified fiscal rules stipulated by a country's tax codes are violated. The collective measure of unregistered income is the amount of income that should have been reported to the tax authorities but was not. When defining the unreported economy, the difference between the legal avoidance of tax payment and tax evasion should be emphasized. Legal avoidance of tax payment is the use of all legally permitted methods to reduce the tax base, such as various tax exemptions and similar techniques. Tax evasion is the amount of income which should have been paid to the tax authorities after the deduction of all permitted exemptions, but which is not paid due to the existence of some amount of unreported income.

The *unregistered economy* consists of economic activities which circumvent the rules defined for the purpose of official statistical data reporting. The total value of the unregistered economy is the amount of unregistered income, i.e. the amount of income which should be recorded in the system of national accounts pursuant to effective rules and conventions, but remains unrecorded. This unregistered income is the difference between the total income earned in a given economic branch and the income encompassed by the statistics-gathering system.

Feige (1990) used the term *informal economy* to refer to those economic activities which - due to avoidance of costs or other reasons - are not encompassed in the system of rights and obligations governed by ownership laws, trade licenses, labour legislation, laws governing financial operations or the social security system. The collective measure of the informal economy is the income earned in economic activities that proceed informally.

³ The relationship between formal, informal and illegal activities is shown in Castells and Portes (1989), p.14.

It is apparent that activities defined in this fashion partially overlap⁴. To the extent to which different systems of data collecting for the purpose of national accounts are based on data obtained by the tax authorities to perform the collection of revenues⁵, the existence of unreported income will inevitably influence the existence of a portion of unregistered income. Even when special research is conducted by statistics bureaus which is then used to compute economic indicators, it is apposite to assume that a portion of income not reported to the tax authorities will not show up in statistical research either. This is the reason why a portion of income will remain unregistered in the system of national accounts. The reason for concealing actual data from statistics bureaus most often involves the fear of businesses that such statistical data will directly or indirectly be used for taxation purposes. For reasons that are easy to understand, the illegal economy is, as a rule, also the unreported economy.

The estimate of the unofficial economy in this study is based on the concept of the unregistered economy.

3 METHODS FOR ESTIMATING THE UNOFFICIAL ECONOMY

There are numerous approaches to the estimate of the unofficial economy. On the basis of the multitude and diversity of approaches used by various researchers, one can conclude that there is no universal approach that could be applied in several countries, nor even in the same country during different periods. The ideal assessment method depends on the specific aspects of the economy and the corresponding taxation and legal systems in each individual case.

On the basis of their shared features, applied methods can be classified as follows (Smith and Wied-Nebbeling, 1986):

- a) Direct methods
 - surveys
 - tax statistics
- b) Indirect methods
 - discrepancy between tax statistics and national accounts

⁴ See Feige (1989), p. 18, for a graphic presentation of such overlapping.

⁵ As is the case in the Republic of Croatia, the computation of income of sole traders and their employees.

- discrepancy between revenues and expenditures - macro-approach
 - discrepancy between revenues and expenditures - micro-approach
 - labour market
 - cash in circulation
 - large banknotes in circulation
 - transaction methods
 - input data usage method⁶
- c) Causal models
- cash demand
 - determinants/indicators

Other authors classify methods on the basis of their approach, which is either macro or micro. Some even classify methods by using applied sources of data. In this paper, the method of discrepancy in the system of national accounts is used, which in the aforementioned classification can be regarded as an indirect method. It is based on the difference between revenues and expenditures at the macro-level and at the level of an economic activity⁷.

3.1 Comparison of results using different methods

Any attempt to measure social phenomena whose sole purpose is to conceal activities, must necessarily confront a series of practical problems that render assessments of the grey economy's volume and trends subject to error. Besides this, numerous definitions indicate the need for caution when comparing various results. The ambiguity of the term 'unofficial economy' dictates the need to pay special attention when comparing results. The definition and coverage of individual measure must be clearly established: illegal economy, unreported economy, unrecorded economy or informal economy. In addition to this difference in definitions, attention should also be dedicated to recording methods⁸.

A comparison of results by country shows that the method of comparing total expenditures and total revenues produces a generally lower level of estimates for the unofficial economy than is the case with other

⁶ *Schneider, Ernste (2000).*

⁷ *On the advantages and disadvantages of individual methods see, for example Schneider (2000).*

⁸ *Barthelemy (1989) cites six recording possibilities.*

methods. On the other hand, the transaction method generally shows the maximum level of the unofficial economy, several times greater than the one that arises from the imbalances in the system of national accounts. The results of other methods usually fall between these two extremes.

Table 1

**COMPARISON OF ESTIMATED UNOFFICIAL ECONOMIES
FOR FIVE OECD COUNTRIES FOR THE 1981-1985 PERIOD
USING NINE DIFFERENT METHODS**

Size of the unofficial economy (as % of GDP)					
Method	Canada	Germany	Great Britain	Italy	USA
Household surveys	1.3	-	-	-	5.6
Tax audits	2.9	-	-	3.9	8.2
Expenditure & revenue discrepancy	-	13.4	4.2	4.3	6.1
Employment data	-	34.0	-	18.4	-
Input method ^a	11.2	14.5	13.2	19.3	9.9
Tanzi method	8.8	9.2	8.5	17.5	5.3
Gutmann method	11.2	-	6.2	29.3	14.6
Transaction approach (Feige)	15.4	29.3	15.9	34.3	21.2
MIMIC ^b	8.7	8.2	8.0	10.5	8.2

^a 1986-1990 period

^b multiple indicators-multiple causes

Source: Schneider, Enste (2000), p. 43.

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ESTIMATE OF THE UNOFFICIAL ECONOMY USING THE SYSTEM OF NATIONAL ACCOUNTS

The possibility of application the method of discrepancy in national accounts to estimate the size of the unofficial economy rests on the fundamental law of the circular flow of economy: what is an expenditure (outlay) to one entity in the economy is a revenue (income) to another entity in that same economy. In this manner, every economic transaction simultaneously encompasses at least two economic phenomena. Table 2 shows the circular flow of the economy, and from it one can discern the fundamental identities that will be used in the quantification of the unofficial economy.

Table 2

CIRCULAR FLOW OF THE ECONOMY

		Production	Consumption		Accumulation	Abroad
			Personal	Government		
Production		M ^d	C ^d	G ^d	I ^d	E
Consumption	Personal	W	-	TR	-	TRI
	Government	Tind	Tdir	-	-	TRG
Accumulation		O	S	B	-	L
Abroad		M ^u	C ^u	G ^u	I ^u	-

Source: According to Babić (1995).

Rows show revenues and columns show expenditures for each sector⁹.

For the domestic production sector, we can state the following revenue and expenditure equation:

$$M^d + C^d + I^d + G^d + E = M^d + M^u + W + Tind + O. \quad (1)$$

The left side shows the revenues of domestic producers. These consist of expenditure by producers for domestic intermediate products, domestic final personal consumption, domestic government consumption, and exports.

The right side shows production sector expenditure, that is the way in which total production is allocated into intermediate consumption, compensation to production factors and operating surplus. When intermediate consumption is subtracted from total production value, net production¹⁰, or the value added of a given economy, is obtained.

If we add, to both sides of the equation, the import component of personal, government and investment consumption, if we subtract M^d, and designate as U the total imports which encompass the import of intermediate goods, and products for personal, government and investment consumption, then equation (1) can be reformulated as:

⁹ The designations are standard: personal consumption C, government consumption G, investments I, exports E, intermediate consumption M, savings S, taxes T (ind = indirect, dir = direct taxes), transfers TR (i households, g government), wages W (here meaning the income of all production entities), B is budget deficit, and O is gross operating surplus. The superscript d designates domestic production, while u means export goods.

¹⁰ Net here means production in which intermediate consumption is subtracted, while fixed capital consumption is still encompassed - i.e. it is a matter of gross domestic product.

$$(2) \quad C + I + G + E - U = W + O + Tind$$

which means that gross domestic product, according to final consumption components, is identical to gross domestic product according to income approach. If total domestic producers' revenues ($M^d + C^d + I^d + G^d + E$) from equation (1) are designated as P, then we have

$$(3) \quad P - M = W + O + Tind = C + I + G + E - U.$$

Equation (3) actually means that conceptually gross domestic product must be equal, regardless of the approach used to measure it. If intermediate consumption is subtracted from the gross production values of all resident units, then gross domestic product according to the production approach is obtained.

According to the expenditure approach, the gross domestic product of a given country is defined as the sum of all categories of final and investment consumption, and these are personal, government and investment consumption plus net exports.

According to the income approach, gross domestic product is equal to the sum of primary incomes, represented by the sum of gross wages and salaries, gross operating surpluses and indirect taxes (taxes on production).

It is customary for the statistics bureaus of various countries to compute higher GDP levels according to the expenditure approach rather than the production or income approach based on independent sources of data¹¹. Such results follow from the fact that economic entities are less keen to conceal actual consumption in household surveys than revenues in tax returns. Assuming that the computation of gross domestic product derived from independent sources of data using the two methods yields different results, the difference can be interpreted as income generated in the unofficial economy.

Equation 3 can be reformulated in terms of total supply and total demand, so the total supply on one market is equal to total demand.

$$(4) \quad P + U = C + I + G + E + M.$$

¹¹ See Higgins (1989).

4.1 Methods and sources for computing Croatia's GDP according to the Central Statistics Bureau's production approach¹²

When computing GDP in the Republic of Croatia based on the types of reporting units, different research statistics are utilized for businesses, banks, insurance companies, non-profit institutions and budgetary funds. The gross value of production by businesses is calculated on the basis of annual statistical research conducted by the Payment Operations Institute¹³ for the Central Statistics Bureau (CSB), and the following positions are added: sales revenues, revenues based on the use of own products, goods and services, leasing revenues, compensations, subsidies and grants, while the procurement value of materials, waste and goods been sold, is subtracted, and then the change in inventories of unfinished and finished goods is counted¹⁴.

Intermediate consumption is computed by adding the following positions: *costs of raw materials and supplies, and other external costs (service costs)* which include transportation costs, external services in development and sales of goods and services, maintenance services not including investment maintenance, vehicle registration, leasing, marketing, sponsorships and trade fair costs, intellectual and personal services, utilities, entertainment costs and other external costs and a *portion of remaining operating costs* that include allowances for official travel and travel costs, compensation for use of personal automobiles for business purposes, insurance premiums, banking services, payment costs, contributions and membership fees to domestic and foreign associations, and other costs (professional training, scholarships, innovations and so forth), and costs for use of own products, goods and services for internal current needs.

The value added of individual units is defined as the difference between the gross value of production and inter-phase consumption. Since the value added of a product includes subsidies while taxes on products are excluded, the basic price concept is applied, which

¹² For more details on GDP computation methods in Croatia, see the *National Accounts series published by the Central Statistics Bureau*.

¹³ *Payment Operations Institute (Zavod za plati promet, ZAP)* was institution in Croatia in charge for conducting overall payment operations.

¹⁴ By use of the corresponding deflator, inventories are computed into the average current-year prices, so that changes in inventories signify the difference in the balance at year's beginning and end in average prices for that year.

complies with international recommendations¹⁵.

In a similar manner, taking into account the specific aspects of operations of individual legal and natural persons-value added is computed for sectors such as insurance, banking and other financial mediators, sole traders and independent farmers. During computation the amounts *reported* to the Payment Operations Institute or National Tax Administration are used (for sole trades and self-employment).

The specific aspect of computing value added pertains to non-profit institutions and central budget beneficiaries, for which, according to international standards, the gross production value is computed using the cost method, i.e. by summing up the intermediate consumption, gross wages to employees and fixed capital consumption. Intermediate consumption encompasses material and other outlays. Material outlays include outlays for materials used, energy, utilities and other services. Other outlays include outlays for current maintenance and financial and other external outlays. Gross wages to employees is obtained by adding employee outlays and employee outlay compensation. Fixed capital consumption is estimated as the fixed portion of value added (4 percent).

Intermediate consumption is distributed at the level of the *overall economy*; this pertains to banking services, i.e. the difference between active and passive interest, and the imputation of housing rents. Since this is a matter of computation of value added in basic prices, in order to obtain the value of gross domestic product at the level of the overall economy, the *amount of taxes on products and imports is added, reduced by the amount of product subsidies*.

4.2 Methods and sources for GDP computation according to the expenditure approach based on current CSB methodology

The computation of gross domestic product on the expense side according to CSB methodology is generally tied to the same sources of data (annual statistical reports) as the production approach. It can be done by direct use of the same sources of data as is the case of computation of government consumption, non-profitable institution consumption and inventory changes, or by special research which encompasses the same set of

¹⁵ See ESA 1995, pp. 3-48.

reporting units (computation of investment, exports and imports). Such segments are largely harmonized and consistent with the data from annual statistical reports, so that according to the current computation method for these items there is no room for imbalances in the entire system.

Sources for the computation of personal consumption are independent to a certain degree, such as data on retail turnover and estimates of personal consumption for services. Regardless the use of independent sources for the 1994-1997 period, total personal consumption was derived explicitly as the residual between GDP according to the production approach and all components of the expenditure approach, while the aforementioned independent sources served to formulate the general structure of personal consumption. For 1998, personal consumption from 1997 was extrapolated in later periods by means of indicators, and the computation of personal consumption in these periods largely depended on 1997 computations.

Practically the only possibility for the appearance of imbalances in the system ensued from independent methods of estimating the consumption of residents abroad and consumption of non-residents in the Republic of Croatia. However, the fact that these items were used to convert personal consumption according to the domestic concept into personal consumption according to the national concept nullified this source of potential imbalances, for the possible failure of reported income from non-resident consumption to correspond with actual income is reflected in the personal consumption item rather than the total GDP item.

4.3 Supply and demand tables for the Croatian economy in 1998

The basic identity (total supply is equal to total use) in national accounting at the level of the national economy is also valid at the level of individual activity or set of products. Therefore, in this section total supply by activity will be interfaced with total demand (use), while the difference, or "surplus" use over supply, will be treated as the grey economy.

4.3.1 Supply table for the economy of the Republic of Croatia in 1998.

The total supply of goods and services in a country consists of production by domestic residents and imports.

Domestic supply in basic prices

The CSB working table served as the starting point for the development of a supply table for the Croatian economy, as this table shows gross supply value (gross production) by activity according to basic prices. In order to interface supply with demand, it is necessary to adjust the evaluation to the purchase price concept, i.e. the value which the buyer actually pays for the use of a product.

Supply of imported goods and services

The supply of imported goods and services is based on data from the balance of payments compiled by the Croatian National Bank and the data on imported goods by activity which are based on the analysis of customs declarations by the Central Statistics Bureau of the Republic of Croatia. In the development of the supply table, imported goods have to be valued according to c.i.f.¹⁶ parity, which differs from the concept used when compiling the balance of payments. To ensure that the balance of exported and imported goods and services is identical in supply and demand and balance of payments tables, it is worthwhile to make corrections on the exported services side by a portion of value of imported goods, which pertains to services rendered by domestic residents. In this manner, the valuation of imports according to c.i.f. parity influences the presentation of greater imported goods than is the case in the balance of payments (as opposed to valuation of c.i.f. and f.o.b.¹⁷). At the level of total imported and exported goods and services, this difference will be levelled by reducing imported services (for that portion which has already been incorporated into the value of imported goods according to c.i.f. parity, and involving transportation services and insurance services rendered by non-residents), i.e. by increasing the exported transport and insurance services for that portion that pertains to resident services.

Data on imported goods by activity are taken directly from official reports, with adjustments that pertain to the distribution of non-allocated import category (approximately 4.8 percent of total goods exports). This portion of imports is categorized by activities through the use of the structure for that portion that is known.

Imported services in the balance of payments are shown at a very aggregate level, meaning that services are broken down into

¹⁶ *cost, insurance, freight*

¹⁷ *free on board*

transportation services, travel and other services. Therefore it is only possible to directly classify transportation services by activity, while the classification of other services is based on special partial research and additional assumptions¹⁸.

Distribution of VAT, other taxes on goods and services and subsidies by activity

Since the gross production value is shown in basic prices, in order to be able to compare it with total supply it is necessary to categorize taxes less subsidies on goods by activity. Only the non-exempt portion of the VAT is distributed when drafting supply and demand tables, as this portion generally pertains to final use. To determine the amount of taxes by activity only the data on the structure of the monetary portion of personal consumption were used, as well as the structure of exported services - meaning non-resident consumption in the Republic of Croatia.

Excise taxes, as a form of special taxes on goods in the Croatian tax system, which are paid upon production or import (depending on the product's origin), were charged in 1998 on petroleum derivatives, spirits and beer, certain non-alcoholic beverages, tobacco, coffee and motor vehicles, and they were added to the activities that were obliged to pay excise taxes. The sources of data to compute these items are annual financial statements submitted by businesses.

Data on customs for products or activities are not officially reported. A simple method was used to distribute customs proportionally over imports of goods.

Data on subsidies on goods are based on the annual financial statements submitted by businesses supplemented with special analyses in individual problematic cases¹⁹.

Distribution of trade and transport margins

The purchase price for a product paid by the end-user contains the value of trade and transportation services which is tied to the costs of the distribution channels from the seller to the end-user.

The total value of the trade margin is equal to the difference

¹⁸ For more details see Mikulić (2000).

¹⁹ An example of this is specific support from the central budget in the shipbuilding sector.

between the sales and procurement price of sold commercial goods, while the source of data is the annual financial statements submitted by businesses. The total trade margin can be broken down into the trade margin that follows from retail trade, wholesale trade and motor vehicle trade. The trade margin for motor vehicle dealers is categorized under motor vehicle production. The value of services of retail traders is distributed proportionally to the monetary portion of personal consumption by groups of products. A portion of products that are intended for personal consumption but do not pass through the market, such as natural consumption of agricultural products, is treated in this manner, i.e. the retail trade margin is not applied to it.

On the other side, wholesale trade involves products which are not exclusively intended for personal consumption, but their purpose may even be intermediate, government or investment consumption. Therefore the wholesale trade margin is distributed proportionally across the entire supply of goods on the domestic market, which encompasses domestic supply in basic prices and imports.

Since transport costs up to the border of the Republic of Croatia are included in product value in order to provide import values according to c.i.f. parity, the transport margin is distributed by products based on the fundamental structure of supply in basic prices²⁰. Only those transport margins are distributed which are assumed to be included in the price of any of the final products. A portion of transportation services, such as transport of passengers, is directly used for some forms of final consumption and as such it is not distributed by product with a view to transport margins.

Total supply in purchasing prices

The value of total supply in purchasing prices of the domestic market is obtained by summing domestic supply in basic prices, imported goods and services, net taxes on goods and trade and transport margins by activity.

Total supply shown at the aggregate level represents the reformulation of official data according to conventions for compiling supply tables, i.e. each piece of data at the level of the overall economy can be backed by some source and is fully in line with the annual computation of gross domestic product in the Republic of Croatia for 1998. The results of the computation of total supply by activity are shown in table 3 in the following section together with data on total usage.

²⁰ See table 4.2.

4.3.2 Usage table for the economy of the Republic of Croatia in 1998.

In this section of the study, based on the 1993 SNA recommendations and the 1995 ESA recommendations, usage tables will be shown based on the available sources of data.

Exports of good and services

As in the computation of imports, here the principal sources of data are reports from the Central Statistics Bureau on goods exchange and the Croatian National Bank's balance of payments for service exports.

Exports of goods based on f.o.b. parity are taken directly from CSB reports, while exports of services required a breakdown by activities which are shown at a very aggregate level in the balance of payments. As with imported transportation services, transportation services are directly distributed by types of traffic, and this breakdown is based on the structure of newly-organized research by the Croatian National Bank, whereby in 1999 this item is directly broken down into overland, pipeline, waterway, air and other transportation.

According to a test survey of consumption by non-residents in Croatia conducted in the second half of 1998²¹, i.e. non-resident consumption in the Republic of Croatia, only about 40 percent of the total tourism revenues accounts for tourism in the narrow sense, meaning consumption in hotels and restaurants. More than half of total consumption by non-residents consists of consumption by numerous Croatian citizens who work abroad, or citizens of neighbouring countries which pertains to specific aspects of unpaid bed-nights. Here it has been assumed that the structure of such consumption is identical to the structure of monetary outlays for personal consumption by residents.

Other services make up a very heterogeneous category, and they generally pertain to business services such as representation commissions, insurance services (which are not included in the value of exported goods), postal services and so forth.

Total exports of services, according to international conventions for the compilation of supply and usage tables, are higher than exports recorded in the balance of payments for the value of adjustments in

²¹ *The survey was conducted in co-operation with the Croatian National Bank and the Tourism Institute, and since the beginning of 1999 it has been used as the principal source for assessing consumption by non-residents in the Republic of Croatia or its residents abroad.*

c.i.f. and f.o.b. principles, which are related to the value of transportation services and insurance services rendered by resident companies. But this does not influence the difference in total exports and imports of goods and services²², because imported goods are greater by the same amount, which for the purpose of compiling such tables must be valued according to the c.i.f. principle.

Government consumption and non-profit institution consumption

The source of data for the computation of government consumption is the annual financial statements submitted by central budget beneficiaries and non-profit institutions, and it consists of gross production by such units less own revenues, with added government expenditure for goods and services which are generally provided to the household sector without transformation (medicines, for example). Units that can cover over 50 percent of their own costs with their own revenues are considered market producers, while the rest are categorized in the government sector. Within this group of non-market producers, a part of the units which primarily serve the household sector are categorized as the NPISH (non-profit institutions serving households) sector. The remaining portion is categorized into joint or individualized government consumption.

Changes in inventories

Changes in inventories are computed according to the following types of inventories: raw materials and supplies, production in progress inventories, finished goods, and commercial goods inventories. It is computed as the difference between the balance of inventories at the end of the year and the balance of inventories at the beginning of the year, which were previously brought down to average annual prices by using the corresponding deflators²³.

Certain categories of changes in inventories such as finished goods and production in progress represent a specific form of investment by the same units with which they appear. On the other hand they represent usage by the same unit, so it is not necessary to further distribute them by activity.

²² Compare with CNB balance of payments data.

²³ Detailed procedures for reducing to average annual prices are provided in Dragičević and Jukić (2000).

Another category of inventories pertains to the increase or reduction of commercial goods and raw materials and supply inventories. The unit that procures inventories in this case is different from the unit which delivers such products. The change in raw materials and supplies, and commercial goods must be distributed by the activities that produces these goods, and not the activities in which the inventory change occurs. The change in raw materials and supply inventories is distributed proportionally over the total supply of goods in basic prices on the domestic market. Commercial goods changes in inventories are distributed by activities on the basis of the structure of personal goods consumption.

Gross investment in fixed capital

Data on gross investments in fixed assets of legal entities were collected in special annual reports based on the National Classification of Activity. All data, broken down according to technical structure, refer to investments made during the year. Their value implies the value of completed construction, development and turnover of new facilities, equipment and other fixed assets, regardless of whether the facilities and equipment have been put into use or whether payment for their execution is completed. The method of valuation complies with relevant conventions of international organizations, i.e. the computation principle was applied.

Expenditure for personal household consumption

As opposed to other components of the expenditure side of GDP, the estimate of personal consumption entails the use of an independent source, i.e. the results of a consumption survey conducted in 1998. Personal consumption according to this survey encompasses expenditure for food and non-alcoholic beverages, spirits and tobacco, clothing and footwear, housing, furniture, health-care, transportation, telecommunications, recreation, culture, education, hospitality services, and other goods and services. Personal consumption groups are compiled by the classification of individual consumption by purpose, or COICOP.

The total population data are essential for projections of household survey results onto the entire economy. The total population of a country at a given moment consists of all persons, domestic and foreign citizens, who are permanently residing in the economic territory of that

country, even if they are temporarily absent²⁴.

Unfortunately, there are relatively large differences between various estimates of the population in 1998 based on different sources. The population estimate of the Central Statistics Bureau for the period from 1991 to 1998 is based on the results of the last census taken in 1991, external migration data, birth and mortality data, and data from the Office of Refugees and Displaced Persons. According to this CSB estimate, the population of the Republic of Croatia in 1998 was 4,501,000. On the other hand, the results of the study entitled "Current Population in the Republic of Croatia and its Counties Based on Age and Sex from the 1991 Census to 1998"²⁵ speak of an aggregate decline in the number of present residents in this period by approximately 300,000, such that in 1998 there were 4,224,418 persons present in the Republic of Croatia.

Personal consumption at the household sector level has thus been estimated in two versions, depending on the source of population data. In the first version data was used from the aforementioned study, while in the second official CSB data was employed.

The results of the survey on monetary consumption per household member were used, later corrected by natural consumption according to the standard processing procedures by the CSB National Accounts Sector. Natural consumption positions for agricultural households and imputed housing rents are not components of monetary household expenditure, and for the sake of a comprehensive computation, they need to be added to monetary outlays in order to obtain total personal household consumption.

Adjustment of the household survey results for obtaining total expenditure refers to the consumption of financial services and insurance institute services. Besides methodological adjustments tied to natural consumption, imputed housing rents, imputed banking services measured indirectly, and insurance services, further adjustments to survey results pertain to consumption of spirits and tobacco products. Namely, when comparing survey results on household consumption with data on consumption of spirits and tobacco products in many countries, statisticians discovered that for various reasons household members are apt to underestimate outlays for these groups of products.

²⁴ See ESA 1995, p. 11.05.

²⁵ Akrap, Gelo and Grizelj (1999).

Intermediate consumption in 1998

Intermediate consumption at the level of the total economy is taken from the annual computation of gross domestic product based on the items stated in the description of the production approach.

Total intermediate consumption, in accordance with available sources of data, was first broken down into the consumption of goods and consumption of services. Under intermediate consumption of goods, consumption of raw materials, supplies and energy were considered, while the remaining items were considered as the consumption of services. For small businesses and sole traders, where the intermediate consumption item cannot be directly broken down from the item in the annual statement into goods and service consumption, the structure of consumption for large and medium-size businesses was applied. In order to compare supply and usage based on purchase prices, the amount of the transport margin shown in the other external cost position (service costs) for business organizations, has been reclassified as consumption of goods.

Costs of using own products for internal needs were also carried over from consumption based on services²⁶ to intermediate goods consumption. Based on this approach, total intermediate consumption of approximately HRK 13.8 billion has been broken down into HRK 99.2 billion for goods consumption and HRK 39.1 billion for service consumption.

The share of services intended for intermediate consumption by activity has been estimated on the basis of data from the Payment Operations Institute on receipts of service activities rendered by legal entities. Government services²⁷ were treated separately as activities in which the appearance of the grey economy is unlikely due to direct government oversight and earmarked spending. Total intermediate consumption pertaining to services was distributed over other activities proportional to the receipts from legal entities (from Payment Operations Institute monitoring of cash flows).

²⁶ *Other operating (intangible) costs item.*

²⁷ *Public administration, education and health-care.*

Total demand in the Croatian economy in 1998

The total demand in a given economy is derived by summing up the components of usage, meaning personal consumption, government consumption, gross investments in fixed capital and inventories, exports and intermediate consumption,. According to applied definitions, all components of total demand were valued according to purchasing price, thus comparable to the supply valuation principle. Total usage is shown in two versions, depending on the estimate of personal consumption which in turn depends on the estimated population of the Republic of Croatia.

5

RESULTS - ESTIMATE OF THE UNOFFICIAL ECONOMY IN THE REPUBLIC OF CROATIA FOR 1998 ACCORDING TO THE METHOD OF IMBALANCES IN NATIONAL ACCOUNTS

The unofficial economy is defined according to the concept of unrecorded income, or as the difference between the officially recorded gross domestic product based on the expenditure and production approaches. This difference is identical to total supply less total demand^{28,29}.

The total unofficial economy based on this estimate for the Republic of Croatia in 1998 is between HRK 12.8 billion and HRK 17.6 billion, or between 9.3 percent and 12.8 percent of the officially recorded GDP.

In relation to domestic demand, the unofficial economy was between 5.1 percent and 7.1 percent. For an analysis of the unofficial economy broken down by activities, it would be more suitable to use indicators of the deviation in supply and demand in relation to gross production. This is because business units whose fundamental motive is to avoid payment of taxes also avoid other accounting items (above all the intermediate consumption) so that they can reduce the possibility of detection of their tax evasion attempts.

²⁸ For more details on components of total supply and demand, see Mikulić (2000)

²⁹ See the section on the circular flow of the economy.

Table 3

**ESTIMATE OF THE UNOFFICIAL ECONOMY
IN THE REPUBLIC OF CROATIA IN 1998**

- in thousands HRK

		Total supply in purchase prices	Total usage version 1	Total usage version 2	Difference between supply and usage, version 1	Difference between supply and usage, version 2
		(1)	(2)	(3)	(4)=(1)-(2)	(5)=(1)-(3)
A	Agriculture, hunting and forestry	27,887,735	28,158,083	28,182,699	- 270,349	- 294,964
B	Fishing	673,741	701,960	732,384	- 28,218	- 58,642
CA	Extraction of energy-producing raw materials	4,834,429	4,881,295	4,881,295	- 50,351	- 50,351
CB	Mining and quarries, excluding energy materials	1,310,866	1,323,574	1,323,574	- 9,223	- 9,223
DA	Food, beverages and tobacco products	43,888,725	44,314,190	46,353,429	- 425,465	- 2,464,704
DB	Textiles and textile products	10,078,806	10,176,512	10,433,180	- 97,706	- 354,374
DC	Leather and leather goods	3,414,343	3,447,442	3,532,076	- 33,099	- 117,733
DD	Lumber processing and products	3,718,686	3,754,735	3,761,152	- 36,050	- 42,466
DE	Pulp, paper, paper products, publishing	9,397,501	9,488,602	9,540,323	- 91,101	- 142,822
DF	Coke, petroleum derivatives and nuclear fuels	14,216,759	14,354,579	14,580,546	- 137,820	- 363,787
DG	Chemicals, chemical products and artificial fibres	17,285,085	17,452,650	17,691,202	- 167,565	- 406,117
DH	Rubber and plastic products	4,562,216	4,606,443	4,610,868	- 44,227	- 48,652
DI	Other non-metallic mineral products	6,226,963	6,287,329	6,295,903	- 60,365	- 68,939
DJ	Metals and metal products	12,164,528	12,282,453	12,367,309	- 117,925	- 202,780
DK	Machinery and equipment production, n.e.c.	9,724,515	9,818,787	9,818,787	- 94,271	- 94,271
DL	Electrical and optical equipment production	12,519,673	12,641,041	12,764,673	- 121,368	- 245,000
DM	Transport means production	20,696,101	20,896,733	21,140,402	- 200,632	- 444,300
DN	Other processing, n.e.c.n.	5,111,788	5,161,342	5,282,485	- 49,555	- 170,697
E	Electricity, natural gas and water supply	9,962,080	9,962,080	10,351,095		- 389,015
F	Construction	21,067,253	23,084,013	23,084,013	- 2,016,759	- 2,016,759
G	Wholesale and retail, vehicle and motorcycle sales					
H	Hotels and restaurants	10,899,282	13,786,047	13,963,336	- 2,886,765	- 3,064,054
I	Transport, warehousing and communications	13,789,805	13,797,068	13,985,421	- 7,264	- 195,616
J	Financial mediation	10,424,610	10,424,610	10,424,610		
K	Real estate operations, leasing and business services	17,414,278	21,633,738	21,845,904	- 4,219,461	- 4,431,627
L	Public admin. & defence, mandatory social insurance	21,238,323	21,238,323	21,238,323		
M	Education	6,357,141	6,357,141	6,388,118		- 30,977
N	Health-care and social welfare	8,971,514	8,971,514	9,027,937		- 56,423
O	Other social and personal services	9,570,992	11,214,162	11,441,205	- 1,643,170	- 1,870,214
P	Private households with employed staff	55,761	55,780	55,780		
Q	Imputed housing rents	9,129,651	9,129,651	9,129,651		
	TOTAL (A-Q)	346,593,151	359,401,877	364,227,680	- 12,808,708	- 17,634,529

This method shows the greatest representation of unofficial activities in hotels and restaurants (between 38 percent and 40 percent), real estate transactions, leasing and other business services (between 36 percent and 38 percent), and other social and personal services (between 26 percent and 30 percent). A high share has also been estimated in construction (approximately 9.6 percent of the total domestic supply), and fishing (between 5.5 percent and 11.5 percent). Alternative estimates of Croatia's population have a great impact on the unofficial economy estimates in leather and leather goods production, textile and textile goods production, and food, beverage and tobacco production, while the upper limit of estimates for these activities shows a relatively high share for the unofficial economy.

The probability of the appearance of the unofficial economy is expected to be lowest in public administration, education and health-care activities, in which the concentration of non-profit institutions and budgetary funds is the greatest. This method cannot directly assess the presence of the unofficial economy in trade and transportation activities due to the applied method whereby recorded transportation and commercial margins are distributed by products. A part of unreported revenues from these activities is thereby distributed to other products, as the difference between the price that economic entities pays and the value of the goods which encompasses transport and trade margins on top of producer prices, while one portion probably remained undetected in the application of this method.

The application of the method of imbalances in national accounts shows a relatively high share for the unofficial economy in the Republic of Croatia. When interpreting the results, it is worth keeping in mind that this method generates the lower limit of the estimate, while other methods generally produce a higher level for the unofficial economy. As such, this method detects only the difference between the estimated GDP according to the expenditure and production approaches, and it is also possible that an alternative assessment of the components of the expenditure side somewhat underestimates the actual level. It is highly unlikely that the household survey obtained responses on consumption of illegal products, such as drugs, illegal games of chance or prostitution. Besides, surveys normally investigate consumption in past periods, and their results depend on memories of the persons being questioned.

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