



CENTER FOR ADVANCED ECONOMIC STUDIES

SERBIA`S ECONOMY: THE STYLIZED FACTS

Belgrade
January 31, 2006

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Special thanks to CEVES staff for valuable logistic and analytical assistance and to the institutions that have supported this study: USAID, the Fund for an Open Society-Serbia and the Royal Netherlands Embassy.

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Summary of the Study

This report presents a comprehensive assessment of Serbia's key macroeconomic statistics and aggregates, the essential economic information that can be derived from it with reasonable certainty, and a reassessment of the GDP level and expenditure structure. The assessment covers key price, exchange rate, production and output data, as well as all publicly available fiscal, monetary and external sector data. It documents the data and presents it in analytically useful formats; it documents the collection methodologies and inventories key weaknesses in it; it points to inconsistencies among the series, providing an assessment, where possible, of the likely actual dimensions of the aggregates. An alternative set of figures is offered for the GDP level and expenditure structure in 2003 and 2004.

We discriminate between the more and less likely or reliable aspects of the contents of the data which brings us to conclusions that in some key aspects differ substantially from the received wisdom. This is based on the identification of the problematic as well as the more reliable aspects of the data production process, and on the cross-validation of alternative and independent data sources. The weaknesses in the published data have long lost official statistics their credibility in the eye of the public as well as among well informed data users. However, only the IMF has offered alternative figures thus far, for a very limited number of aggregates, and without documenting the estimation procedures. Our estimates differ from the official figures to a substantially larger extent, but in the same direction, as the IMF's figures. We use our observations to deepen the understanding of Serbia's economic structure and the processes that have shaped it in the recent past.

The main report focuses on the national accounts data, and revises the official GDP level and expenditure structure providing a new macro framework for the analysis of the sustainability of Serbia's economic structure, its macroeconomic policy design, and the effects of policy on the economy of Serbia. Its main finding is that the GDP level and expenditure structure reflected in the official statistics appear substantially more unusual and unsustainable, as well as less advanced along the transition path, than they truly are. It is useful to state at the outset that this study does not delve into an estimation of the informal economy, and it deals with it only on the margins. We show that the economic activities of registered, taxpaying economic agents is understated and underrepresented.

The GDP that should have been recorded by statistics, without particular efforts to incorporate the grey (informal) economy, is at least 8 percent higher than the published data. Moreover, the official expenditure composition heavily understates the rate of domestic investment and national savings. Serbia's expenditure structure is skewed towards consumption, but not more than that of comparable countries in the region—domestic saving is not negative by 5 percentage points of GDP, as official data suggest, but, rather, positive by as much.

We reach these conclusions by relying on specific, in-depth, analyses of independent data sources. Some of these sources are used and some are not used in the production of official statistics. These data were cross-validated to reach reasonable certainty in the report's conclusions. The main report also points to key problems

causing the biases in official statistics, identified as common themes in the in depth-data analyses. The statistics on production volumes and other real sector aggregates, in particular, are systematically biased towards the representation of traditional economic agents, as opposed to those that have emerged in the transition process. However, problems exist in the full spectrum of economic statistics - not only the real sector, but also BOP, fiscal and monetary data.

The in-depth analyses efforts are documented in five appendices to this study as follows:

- Appendix I under the title "Gross Value Added of Serbia's Enterprise Sector: 2001-2004" presents a detailed analysis of the production, value added, wages and productivity information that can be derived from the detailed financial reports submitted annually by enterprises in Serbia to the Solvency Center. These data are in fact a key input in the production of the SNA GDP level figures, providing the source for the output of the non-financial sector in the official statistics. Their understanding allows us to understand the official SNA data better. Also, we offer an analysis of the behavior of different components of this aggregate—according to ownership structure and company size—in addition to the usual analysis by production sector. An analysis in line with these two breakdowns is of particular interest because in an economy in transition structural change happens primarily along these two dimensions. Indeed, the analysis in Appendix I shows that a substantially more radical structural change has happened in Serbia's economy over the period of analysis than is conventionally thought: some 335,000 jobs have been lost in the social-state-mixed ownership sector while 175,000 jobs were created in the private sector. About 100,000 of those jobs shifted from one to the other ownership category through privatization, the other 75,000 represents genuinely new private sector jobs. The total net loss in employment in the enterprise sector, hence, was approximately 160,000. Another striking finding is that production in the privatized enterprises took between 12 and 18 months to pick up, but when it did, the growth in their value added (VA) was the fastest of all, and they also attain the highest levels of productivity.
- Appendix II under the title "Macroeconomic Developments in Serbia: 2001-2004" presents the stylized facts of macroeconomic policy and stabilization in the title period. The focus of this appendix is on developments primarily in the fiscal and monetary areas. In this appendix we show that the stylized facts of Serbia's stabilization in this period correspond to a great extent to those described in the literature for exchange rate based stabilization programs. Moreover, it documents the revenue based nature of the fiscal adjustment undertaken in the early years of the period, and the expenditure expansion at the turn of 2003 and in early 2004 that was partly responsible for the acceleration of inflation that we still witness today. While most data used in this appendix are documented in Appendix IV. Section I.e. the fiscal analysis in the appendix relies mainly on published IMF data as current information available publicly does not yet allow for a reliable consolidation of public accounts.
- Appendix III under the title "Analysis of Investment in Serbia in 2003 and 2004" presents a detailed analysis of the official statistics compilation methods for investment data. It points to the problems in the compilation methodology that resulted in inadequate official data and it provides independent estimates of the investment level in 2003 and 2004. The

investment estimate provided by this study for 2003 is nearly 60% higher than the official figure, while for 2004 it is 30% higher than the much improved (still unpublished official statistics) figure. We were able to document the weaknesses in the investment data compilation procedures in greater detail than for other series, and as we consider them paradigmatic of the more general problems with the compilation of economic data, we document them in greater detail. Also, this analysis provides a cornerstone of the reassessment of the GDP level and structure, presented in the main paper.

- Appendix IV under the title "Serbia: Key Macroeconomic Data, 2001-2005" presents a detailed documentation of the compilation methodologies, issues and the data themselves for all key macroeconomic data and aggregates. These are: in the real sector, data for prices, production (focusing on the quarterly GDP in constant prices, industrial production, construction, transport, storage and communication, and agricultural production), wages and employment; in the external sector, a detailed monthly BOP and external trade broken down by commodity sector, use and region of origin/destination; the monetary sector data covers detailed monthly balance sheets for commercial banks (aggregated) and the National Bank of Serbia; and fiscal data, as publicly available, for each level of government and the social funds.
- Finally Appendix V under the title "An Assessment of the Household Sector Accounts in the Republic of Serbia, 2003" reports on a bridging exercise conducted between official National Accounts (SNA), the Statistics' Bureau of Serbia's (SBS) Household Budget Survey and a Living Standards Measurement Survey conducted for Serbia by the World Bank.

Serbia's Economy: The Stylized Facts

Volume I

Main Report

1. Introduction

1.1 Review

This study starts from the unusual macroeconomic structure of Serbia's economy as reflected by the official data (discussed in this Introduction) and a presentation of the methodology of compilation of economic statistics in Serbia (Section II). It proceeds to put the official SNA data under scrutiny against this background, deriving a reassessment of Serbia's GDP level and its production and expenditure structure in 2003 and 2004. The thus obtained expenditure structure appears substantially more sustainable and "normal" than that shown by the official or the IMF's NA figures. It also shows that Serbia is more advanced along the transition path than the official data suggest.

The study does not strive to assess the informal economy, but rather only the one that should have been recorded by focusing on the activities of the registered, formal, economic agents.¹ This GDP is at least 8 percent higher and national saving is about three times higher than the official figure (17,8% v. 6% of GDP), in 2003. We arrive at these assessments by pursuing the expenditure and production side of economic activity independently from one another (presented in Section III 3).

On the expenditure side we find the official investment and public consumption figures to be seriously inadequate. We assess investment to be about 60% higher than the official figure, based on independent estimates of investment components. We assess government consumption to be about 70% less than the official figure, based simply on uncovering internal inconsistencies in the SNA accounts. The actual size of the foreign trade deficit is also a major issue, as we believe it is certainly overstated by customs records, but have to make rather heroic assumptions to assess by how much. Finally, we also reconstruct private consumption as assessed by the official SNA, Household budget Survey (HBS), and the Living Standards Measurement Survey (LSMS) to cross-validate their assessments of overall private consumption, finding the official SNA figure to be lower (but the IMF figure to be higher) than true consumption likely is.

On the production side we find GDP to be higher than the official figure mainly on account of the increased disclosure of production over time—so we work backwards imputing the 2004 level of disclosure to 2003 data. We also find the official estimates of household sector production, including that of sole proprietors not treated jointly with enterprises in Serbia's records and statistics, as being implausibly low, and offer a very rough alternative estimate. The reassessment of GDP and its components is pulled together in a macroeconomic balances model to lend a different, more moderate and sustainable, picture of the investment-saving balance in the country (discussed in Section III).

The key problem causing the biases in the official statistics result from insufficient and skewed coverage (discussed in Chapter 2). The statistics' focus is on the traditional sector—neglecting small, private and new establishments, in particular sole proprietors but also small enterprises in general. Also present are problems of underreporting by economic agents, and a tradition of acceptance of reported information in source data at face value. The conclusion points to the need to

¹ Our estimates do include a lower bound of economic activity conducted by these formal, registered, economic agents that may not have been duly taxed as this activity is not fully disclosed to tax authorities.

overhaul Serbia's statistics and its philosophy, but that this requires the investment of greater resources in its development.

1.2 Serbia's Official Macroeconomic Structure in Comparative Perspective

While there is no such thing as a typical economy, it does raise doubts that, from a comparative standpoint, Serbia's macroeconomic structure as reflected in the official data is so very unusual². Table 1 presents the real GDP growth, and the GDP shares of investment, foreign trade (goods and services), current account balance, and gross national savings for selected transition countries and Serbia & Montenegro, according to the IMF's data. The table shows the averages for the most recent period (2002-2004) and for 1998-2000 for the comparator countries as they were then in a stage of transition more comparable to Serbia's transition stage today.³ The table presents figures from IMF reports for all countries to ensure methodological comparability. Judging by the figures in Table 1, Serbia has recently attained relatively high real GDP growth rates (about 4,6%) despite exceptionally low investment rates (about 16% of GDP).

Table 1. Selected Transition Countries: Macroeconomic Structure Indicators, 1998-2004

	GDP real growth	Gross investment ¹⁾	CA deficit	Trade deficit ²⁾	Gross national savings ³⁾
1998-2000 average					
Bosnia and Herzegovina	9,2	20,6	-21,9	-35,5	8,1
Bulgaria	3,9	18,1	-3,7	-5,0	12,8
Croatia ⁴⁾	1,9	24,8	-5,4	-5,2	19,5
Hungary	4,8	29,8	-5,9	-2,8	23,8
Macedonia	4,1	16,4	-3,5	-14,8	19,1
Romania ⁵⁾	-1,3	17,8	-4,9	-8,4	13,5
2002-2004 average					
Bosnia and Herzegovina	5,0	20,2	-18,9	-32,7	1,3
Bulgaria	5,0	21,7	-7,4	-9,0	14,2
Croatia ⁴⁾	4,4	33,5	-6,3	-8,4	27,1
Hungary	3,5	24,9	-8,3	-3,3	16,7
Macedonia	2,2	17,2	-6,7	-20,0	13,9
Romania ⁵⁾	5,0	23,7	-4,7	-5,3	18,9
Serbia & Montenegro (IMF)	4,6	16,6	-9,8	-26,6	6,0
Serbia (CEVES)	5,3	23,5	-5,6	-18,3	17,9

Source: IMF, various recent Country Reports.

1) For Bosnia earliest data available is for 2000. For Bulgaria and Macedonia earliest data available is for 1999.

2) For Bulgaria and Hungary earliest data available is for 1999. For Croatia earliest data available is for 2000.

3) For Bosnia earliest data available is for 2000. For Bulgaria and Macedonia earliest data available is for 1999 and 2000.

² While they differ from the official SBS data, we consider IMF's data as the received wisdom. They can be considered official in the sense that they are arrived at in discussions with the country's authorities and reflect in a way an "official revision" of the SBS data that, everyone knows, is too flawed.

³ 1998-2000 is the earliest period for which comparable data for all the countries could be obtained. It may still be a later stage of reform for some of the countries, but it may well be an ideal period to look in the case of Bulgaria and Romania, as that is when they engaged in more intensive reform.

4) Note by IMF: Domestic savings and investment statistics and staff projections are hampered by the large errors term in the national accounts estimates, particularly before 2002.

5) Last available data is for 2003.

Moreover, the low investment rate is accompanied with a foreign trade imbalance that would be unusual even for a country undergoing an investment boom. Since Serbia's data show no investment boom, it means the consumption rate is extremely high. Serbia's GDP per capita and evident living standards also do not seem to match up. Although the GDP per capita is among the lower ones among European transition economies, the rate of poverty (10 % according to the relatively recent Livings Standards Measurement Survey) is also among the lower ones in the region.

The national saving rate encapsulates all these relationships since it represents the part of total investment financed from own resources, instead of by foreign saving; the foreign saving, in turn, is a mirror image of the current account balance. Hence, Serbia's official data show a national saving rate that is extremely low – only 6 percent of GDP. With the exception of Bosnia and Herzegovina all other countries in the table have a rate more than twice that size, and even that is low by international standards.

The low saving – high trade deficit phenomenon is characteristic of nearly all SEE economies, and it does probably reflect their similar histories, but Serbia is much more extreme in this respect than the others, with the exception of Bosnia and Herzegovina. To gauge the figures presented for SEE in Table 1, Table 2 shows average saving rates over the past 30 years for different regions of the World. The World average has been around 22 percent, and the lowest regional average was reached by Africa, in the 1990s, with around 16 percent. In this context, a regional average of about 18 % (not shown)-excluding Bosnia & Herzegovina and Serbia & Montenegro—and 14 % if they are included (not shown), is clearly low by international standards.

Table 2. The World and Its Regions: Savings

	1978-1985	1986-1993	2000-2002
	Share in GDP		
World	23.3	22.9	23.4
Developed countries	22.0	20.9	20.5
Asia, new industrial countries	...	35.6	29.4
Developing countries	22.4	23.5	27.7
Africa	21.0	16.9	18.6
Asia, developing countries	25.1	28.7	33.2
Western Hemisphere	18.9	19.2	17.9

Source: MMF, WEO 2000 and 2003.

To some extent, also, the economic structure depicted by the official data is explained by Serbia's specific recent history. Serbia's is a recovering economy, with a GDP that has fallen substantially below historical levels. A recovering economy is capable of generating high growth rates with relatively little investment. Combined with consumption being propped up by foreign remittances, this would reduce the domestic saving rate and also the national one if remittances are not fully accounted for in the measured national disposable income.

However, all evidence suggests that Serbia's growth is not really being generated by a renaissance of the traditional economy, but rather by the other, newer, sectors of

the economy. Moreover, a recovery pattern should exhibit a strong tendency towards “normalization” of macro proportions in a relatively short time. According to the data shown for Serbia & Montenegro in the IMF’s reports, national savings continue to deteriorate despite the recovery, throughout the mid-2000s. Table 3 presents the evolution of Serbia’s macroeconomic structure in 2000-2004 according to the IMF and official SBS data. Clearly, the pattern depicted by the data, with a slow-growing rate of investment, high level of government consumption (and growing sharply according to the SBS), and a consistently declining saving rate, would be worrying if it were right. But is it right?

Table 3. Serbia and Montenegro: Savings and Investment, IMF Data

	2000	2001	2002	2003	2004
Real GDP growth	5.0	5.5	3.8	2.7	7.2
			In % of GDP		
Gross national savings	10.3	9.1	7.1	6.3	4.5
Domestic savings	-2.7	-7.2	-7.3	-5.9	-11.3
Private	-4.4	-7.8	-5.6	-5.9	-14.3
Public	1.6	0.6	-1.7	0.0	3.0
Gross investment	14.2	13.6	16.0	16.1	17.6
Private	12.2	11.7	12.3	13.3	14.6
Public	3.1	1.6	3.4	2.5	2.7
Current account balance, after grants	-3.9	-4.6	-8.9	-7.3	-13.1
Current account balance, before grants	7.1	9.7	12.9	12.3	15.5

Source: Country Reports 05/232 and 05/233.

Upon a detailed review of Serbia’s statistics sources and methodologies, we find that it is not. We focus on the latest year for which SNA data is fully available—2003 and extrapolate 2004 with some reliability and 2005 as a projection from it. We find a different macroeconomic structure, with a higher (formal) GDP, higher investment and lower current account deficit, all in all substantially increasing the estimated national saving rate. With such proportions, the macroeconomic structure of Serbia stops being alarming.

2. A Review of Serbia's Statistical System

Serbia has highly qualified statisticians and an institutional memory of excellent statistics. Former Yugoslavia's, and with it Serbia's, statistical system was adjusted to its peculiar economic system and where ideological or bureaucratic rigidities did not interfere, it produced extremely detailed and accurate data. However, since the early 1990s the combined effect of the changes in the economic system and structure, and a sharp decline in the capacity of public institutions, including the federal and republican statistics⁴ bureaus and the Payments Bureau (PB), resulted in a serious decay of the adequacy of the statistics produced.

2.1. Background

Serbia's statistics compilation effort in the past, especially as regards the production side of the economy, was to a very large extent an accounting, or data aggregation - rather than a process estimation - effort. This was possible because, other than the production of private farms, the private economy was almost negligible. To record the bulk of economic activity, Statistics needed but to aggregate the reports duly filed by all "socially owned" entities (including government institutions). The private sector (other than agriculture) consisted mostly of small shops and was estimated based on surveys and assessments, deservedly given little importance. The use of the more sophisticated tools of statistical observation was confined to, and developed, in the monitoring of household behavior, prices, and to a lesser extent, agriculture.

Such statistical observation may seem simple enough for a centrally-planned economy, but former Yugoslavia's was a market economy, including full autonomy of economic agents in the conduct of their day to day business. It would not have been possible without the amazing capabilities of the then omnipresent Payments Bureau (PB, in Serbian – *Služba društvenog knjigovodstva, SDK*). The PB was a mammoth-sized institution charged with effecting and monitoring all non-cash payments in the economy. In addition, all legal persons with the exception of sole proprietors⁵, filed detailed semi-annual and annual financial reports. In addition to effecting payments (controlling the legality of underlying transactions), enforcing and monitoring tax payment at the point of payment for any economic transactions, the PB's third explicit task was the compilation of all imaginable domestic value based and financial statistics.

The PB's statistics were reliable to the extent that the applied accounting methodologies made sense (they sometimes did not, for ideological or bureaucratic reasons), especially as no person responsible for a "socially owned" entity would have risked non-response or non-compliance with PB requirements, as sanctions

⁴ Serbia inherited the Federal Bureau of Statistics (FBS) from former Yugoslavia, as well as having its own Serbian Bureau of Statistics (SBS). The FBS has been sharply downsized and its role narrowed down in the administrative reshuffling that followed the latest redefinition of Serbia and Montenegro relationships in 2003.

⁵ The literal translation of the term used for this class of economic agents "*preduzetnik*" is "entrepreneur" so this term may be encountered in translated literature. This category is discussed in greater detail in the study "Private Sector Development Facts: A Survey Methodology". It mostly consists of sole proprietorships (craft, merchant, and repair shops, service salons) and agencies that did not chose to register as "enterprises". As referred to in this study, this category should be thought of as including the provision of individual professional services although its legal treatment is different.

were very strict. Upon the payment system reform of 2002, which abolished the PB and transferred the effectuation and settlement of payments to commercial banks, only the financial reports depository was left active, under the new role and name of Solvency Center (SC).

While the PB gathered and published summary reports on all these financial statistics, the Statistics system compiled the national accounts value statistics from separate annual financial reports filed by all "socially owned" economic agents with Statistics. However, as legal compliance among economic agents declined over the 1990s, reporting to Statistics deteriorated much faster than reporting to the PB (by then attached to the NBS). At some point statistics has had to turn to the use of the financial reports filed with the PB for the purpose of compilation of NA. At this point, conflicting information does not allow us to determine whether this is now an accepted methodology or a reluctantly admitted necessity.

In addition to compiling national accounts, and the already mentioned surveys of household expenditures, employment, wages and prices, two other major blocks of economic data collection covered by Statistics are production volume (and technology) and investment statistics. To our knowledge, in the past, any effort to cover a production aggregate was based on universal coverage of all "socially owned" economic agents.

The described statistical recording system became inadequate as deeply and as quickly as a cash economy and array of individual coping mechanisms to meet the economic crisis of the early 1990s. On the one hand, much of the existing economic activity went "underground"— with disclosure of financial reports deteriorating markedly. On the other, the agents of new economic activity were quite far from bothering to file statistical reports, even if their activities were not "grey", or at least not fully "grey". Considering the inherited practice and dwindling resources, Statistics was not ready to assess those activities, either. We will call the problem of inadequate reporting a "disclosure" problem, and the absence of a statistical observation, be it because of non-response or because of lack of any kind of observance/assessment by statistics, a "coverage" problem, for short.

The consequences of inadequate disclosure and coverage can be simply illustrated with an example. Stojan Stamenković reports the incongruence of the deep declines in the production of bread recorded within the index of industrial production in the mid-1990s. Clearly, such a decline could not have happened as bread is an inferior good whose consumption must have, if anything, increased - not declined - amid the economic difficulties of the 1990s. Indeed, what had happened was that large "socially owned" industries were having operating difficulties, while private bakeries were mushrooming and taking the market over.

Thanks to the SBS' intensive efforts since the early 2000s both problems are far less pronounced today than a few years or a decade ago. Nevertheless, we believe neither of these problems can really be eliminated, even if legal requirements and enforcement mechanisms are tightened. Yet, the SBS has not embarked, and it does not have the resources to embark, in a methodological overhaul that would adequately address these problems. Instead, the general attitude that we encountered conducting the in-depth research presented in the Appendices III and IV, is one of denial. We pay special attention, hence, to pointing out the consequences of inadequate coverage and disclosure.

3.2. Key Data Collection Agencies

We start with an overview of the economic statistics compilation system today and the information available for different kinds of economic agents. The main institutions producing economic statistics in Serbia are the Statistics Bureau of Serbia (SBS), the Solvency Center (SC), the National Bank of Serbia (NBS), and the Ministry of Finance⁶. Of course, other government institutions, in particular some ministries like the Ministry of Agriculture, also collect some original data. Currently a central Business Registry has begun operation but it has not yet completed the re-registration and processing of all businesses so it is not effectively in use for analytical purposes. Previously legal persons registered with local courts, meaning that the original information was decentralized and in heterogeneous formats. All legal persons receive a unique statistical ID number upon registration and are required to register with the SBS as well. The SBS registry appears to have been very unwieldy so the Solvency Center invested independent and additional efforts to create a registry of its own.

The SC collects detailed annual financial reports from all legal persons required to maintain double-entry book keeping (all, except "sole proprietors") classified into: enterprises, financial institutions and the non-profit sector ("associations" and "organizations" under Serbian regulations). Government institutions, i.e. all direct and indirect budget beneficiaries stopped submitting financial reports to SC in 2002 when the new Central Treasury System was created. Table 4 shows the number of entities registered in the SC's registry and their response rate. We have no information on the nature of companies that do not file reports, but the generally held view that they are very small and often not operational seems a reasonable one. In view of this, the SCs coverage appears to be reasonably good, with the exception of SPs, discussed below. The SC's success in obtaining broad coverage is more the result of a culture, developed in the past, in which non-compliance with PB requirements was simply not imaginable, than of any real enforcement power at the Solvency Center's disposal today. It does prosecute non-compliance, but courts appear to respond only slowly and with mild, mandatory, sanctions.

Table 4. Number of Entities Submitting Financial Reports to Solvency Center

	Number of entities required to apply financial reports						Total
	Enterprises	Associations and NPIs	Banks and other financial org.	Insurance companies	Stockbrokers	Entrepreneurs	
2005							
Required	85,654	27,833	112	39	86	88,738	202,462
2004							
Required	83,360	27,950	85	42	95	13,464	
Submitted	75,885	23,329	80	40	87	13,438	124,996
Complete reports	68,330	21,078	80	40	87	13,333	
Incomplete reports	7,556	2,251	(37 under liquid.)	(10 under liquid.)	(11 under liquid.)		
Did not submit	7,475	4,621	5	2	8	209	26

Source: NBS, Solvency Center.

⁶ Because the Solvency Center is now attached to the NBS, sometimes its data is cited as produced by the NBS. We make a strict difference between the two since they rely on different sources and derive from different traditions, and since it is possible that the SC will be organizationally detached from the NBS in the future.

Surprisingly little use is made of the data filed with the SC. The SC itself issues a report on the financial performance of the economy in very aggregate terms, and with little economic insight. Its focus is on processing the individual reports into indicators of creditworthiness that it then sells on the market. The SBS itself derives most gross material product and GDP figures and indicators (the gross material product in considerable more detail) in value terms from the SC, but it does not use the data for analyses of real flows, investment, or to publish more detailed sectoral breakdowns.⁷

In Appendix I we present a detailed analysis of the performance of enterprises reporting to the SC over the period 2001- 2004, focusing on their value added (VA) but also on output, productivity, and profits. We break down the enterprises first of all by ownership type (state, social, mixed, private, and cooperative), and by size (small, medium and large) and also by sector of activity. As the SC does not have more detailed information on company ownership, the SC data was matched with information from the Ministry of Privatization to extract the enterprises privatized and the big systems under pre-privatization restructuring, since 2001. Tabulating all these breakdowns, some 300 tables were produced, of which we present a more summary subset in the supplement to Appendix I.

We reach the conclusion that the SC data is valuable and that much can be learned from it. A key problem in the use of this information, however, is the complexity in the manipulation of the data. Since the SC will not relinquish the set of individual data even for research purposes (although the individual reports are public), data manipulation has to be requested from the Center and communication is rigid and laborious. Mistakes hence may be easily made yet establishing their existence is not easy. The user remains in doubts as to the veracity of all the observed phenomena⁸.

3.3. Statistics Bureau of Serbia (SBS) Data

The SBS is of course the central producer and repository of statistics in the country. Regarding economic data, in addition to the National Accounts, it produces real production statistics for the traditional activity sectors, (those that qualify as “material production” in the material product system, and services such as trade and transport). It also produces a number of price indices, wage and employment statistics, a household budget survey (HBS), a labor force survey, investment statistics and foreign trade statistics. The major gap in its data compilation program is the absence of any follow up of the development of non-traditional services—by traditional we mean, other than government, trade, transportation, and financial services. There is no regular observation of the very services that are likely to be most propulsive in an economy like Serbia's—IT services other than those provided by the large telecommunication companies, and other high-tech services, marketing, design, legal and financial consulting. Appendix IV presents the key economic series produced by the SBS, and documents in detail their methodologies and issues.

Monetary and External Sector Statistics are compiled by the NBS largely based on detailed commercial bank reporting of its accounts and payments operations.

⁷ We assume that one serious disadvantage of using the SC data for the estimation of real developments is in the absence of information on the actual activity that earned the revenues reported to the SC. SC has only information on the activity for which the reporting organization has been registered.

⁸ CEVES has made considerable progress in opening up institutions to share data over the previous few months. It is possible that a breakthrough is attained in this regard as well.

Financial and external payments transactions transiting through the formal financial system are hence reasonably well captured, although the NBS procedures are still being adapted to concord with international methodologies, although inconsistencies and large revisions to the data suggest there are still problems with the actual collection and classification of data, as well as with the appropriateness of the classifications in the original data sources. Much more problematic, of course, is the existence of an informal cash economy, or, for larger economic agents—the use of the international financial system for financial intermediation because of local restrictions on capital movements.

3.4. Disclosure and Coverage Problems

Disclosure and coverage problems plague all data but are least likely to be resolved in the near future regarding real sector data, i.e. we focus on the SC and SBS statistics collection efforts. Regarding the financial reports submitted to the SC, a turnaround seems to have happened in 2004 and can be expected to be reinforced in 2005. Until recently, enterprises had little to gain and much to lose with fair reporting. Profit taxes were higher, but more importantly, the success of rent-seeking activities depended heavily on showing weak business results. As the effectiveness of rent-seeking seriously diminished since the early 2000s, the accuracy of reporting is likely to have been increasing, especially for large enterprises. Moreover, in 2004 several factors converged to cause an evident and more radical change. Our analysis of the SC data for 2001-2004 shows a systematic jump in the value of output and even more so, of VA in 2004 compared to 2003, suggesting a jump of at least 15% in VA disclosed by enterprises (assuming the average real growth rate in activity is close to 10%). The jump is more marked in the case of smaller, than larger enterprises.

A number of factors converged to encourage fuller disclosure of economic activity in 2004, and the introduction of the VAT in 2005 is expected to lend an additional boost to this process. The main factor leading to increased disclosure has been the development of the financial market. With the growth and entry of foreign banks into the Serbian market, in 2004 obtaining business credit on the basis of a good business plan and good business results became a real, palpable possibility. However, banks require a record of good financial results, and we have heard accounts of companies now asking for a revision of their past financial reports. Also contributing was the reduction of the profit tax (to 10% in 2004). Serbia's profit tax is not only the lowest in the region now, but it is also the lowest domestic tax: both consumption and production are taxed at higher rates and finding loopholes and exemptions within the formal economy has become nearly impossible. If a company is reporting its activities, it pays for it to report as much profit as possible. 10% is not too high a cost to bring one's operation into the open.⁹ Finally, new international accounting standards introduced in 2004 and the broadening of the audit requirement to medium sized enterprises also contributed this change.

Disclosure is hence gradually becoming a problem of the "grey" economy and small economic agents. It cannot be resolved in any statistical compilation system but rather needs to be addressed with ingenious estimation techniques aimed at capturing the grey economy, and reduced through continued tightening of fiscal enforcement mechanisms.

⁹ This means that there is a risk now that profits are being overstated in relative terms—while input costs and retail sales may continue to be hidden because they are more highly taxed, profits may be more easily shown or even overstated.

Statistical coverage, however, is an acute problem that could be resolved. Possibly the most serious coverage issue both in the SC's and SBS' data collection efforts is the neglect of "Sole proprietors" (SP) or "entrepreneurs". This neglect to an important extent overlaps with a neglect of modern and professional services which are often likely, and in some cases obligatorily, SPs. These entities have had a special treatment reserved for very small, micro, economic units until the introduction of the VAT tax this year. Heirs to the small private shops in socialism, they have not been required to maintain double-entry book-keeping, or to file financial reports with the SC. This treatment would have been justified if their small size was actually somehow tested, rather than assumed. In fact, whether an establishment is an SP or an enterprise is really only a matter of choice of legal registration form; the limitations that accompany the SP choice do usually suit a small operation better than a large one, but SPs employing dozens of people are known to exist. It is estimated that there are some 180,000 SPs. Most of them are really micro operations helping individuals cope with loss of employment, but a good number are not.

Recent changes in regulations have begun to redress some of the neglect of SPs. All economic agents expecting a turnover higher than 2 million dinars (approximately 25000 euros) in a year, and this includes establishments or individuals providing professional services, are required to register with the VAT authority. 52000 SPs registered in the VAT tax registry ahead of its introduction, half of them reporting to expect an annual turnover of over the threshold 2 million dinars. All SPs registered with the VAT authorities are now required to submit reports to the SC as well. Some very lucrative businesses are conducted as SPs or professional services, (for example, marketing agencies, legal offices) and their income should not be neglected in a fast growing transition economy.

Another important problem of coverage arises because of Statistics' endeavor to regain the universal coverage it relied on in the past—albeit now this ambition is often confined to a subset of "large" or "larger" units within a population. The reminder of the population's behavior is truly estimated, and problems with that estimation is a different issue. The data compilation methodologies reported in Appendices III and IV on investment, industrial production, and wages give testimony to this effort which we believe can be generalized to most series. Typically, the SBS will identify a subset of the population of enterprises (in the case of these three series it focuses solely on enterprises; in other activities such as retail trade it does not) that it considers manageable (for example, some 2800 establishments in the case of industrial production and some 7000 in the case of investment) and it requires those enterprises to file reports. By law the enterprises are required to fill them, but there is absolutely no sanction enforced for non-compliance. What response the SBS receives is owed to the perseverance of regional statistical office staff who will call the larger reporting units in their charge and insist on their fulfillment of their responsibilities.

The SBS is characteristically unforthcoming regarding the exact response rates it obtains. The official answer is "95%" but upon further inquiry, it becomes clear that such response rates are "secured" by making assumptions about the non-respondents' reports. Without delving into speculations about the likely true response rate, it suffices to establish that considering the enforcement mechanism and resources at the disposal of the SBS, it has to be very significant in the case of monthly series.

Now, a population's behavior can be estimated based on a small sample if adequate assumptions and sampling techniques are being applied. However, the problem in

this case is that the subset of responses obtained from the target population is not treated as a sample. Valiant efforts are made to fill in the gaps—in some cases by assuming that non-respondents are in fact defunct companies (as in the case of the SC or investment) and in others by assuming that the observed variable has not changed since the last observation, as in the case of industrial production¹⁰. Such assumptions may or may not be good assumptions in the cases at hand, but as long as the SBS is in fact striving to attain, and behaving as if it was possible to attain, universal coverage, the assumptions are going to be inadequate, both because they are not put under scientific scrutiny and because they have not been constructed as sampling.

If non-response was truly random, i.e. if the probabilities of non-response were evenly distributed, the universal coverage assumption would not be a problem for variables measuring change, such as the industrial production index, although it would still be a problem for variables measuring levels. The confidence interval for the growth rates' true value would have to be broadened, but it would still be a consistent estimator, of its true value.

However, the probability of non-response is NOT the same for all establishments. Private enterprises are less likely to respond than traditional ones, because of several reasons, all of them compounding one another. Traditional enterprises have an already established communication with Statistics, knowledge of how to fill the forms from the past and excess resources to put to use by filling the forms. They may well have an employee whose primary responsibility is to fill out statistics forms. Moreover, traditional enterprises are better known to the SBS staff pursuing responses, and they are more likely to notice their absence and insist on it being filled. Private establishments also tend to be smaller, and since statistics focuses on size when selecting the subset of establishments for universal coverage, they are less likely to be put in the "universal coverage set" in the first place. This would not be a problem if the complementary set of establishments was later subject to an adequate observation method, and we return to this issue later.

If trends among the two groups with different probabilities of non-response were generally the same, the difference in probabilities of response across these two groups still would not matter. However, other characteristics of these two groups also tend to differ. Hence, the observed variables will be biased towards the values attained by the traditional sectors. In view of the traditional economy's underperformance compared with the private economy, indicators of growth would tend to be underestimated. However, this should not be generalized. In periods of the traditional sectors recovery, the measurements may overstate the economy's performance.

And, to end this discussion of statistics production in Serbia, we report a puzzling observation we have had repeated opportunities to make in the course of the present research. Economic agents and individuals in Serbia submit an overwhelming amount of data in numerous situations; public institutions require them and, evidently, duly store them. They are, hence, informed in all luxury of detail about individual cases and transactions. Yet, simple, aggregate series with analytical value for policy analysis usually are not produced, and cannot be produced without a significant adjustment to existing data input and processing

¹⁰ These concrete observations have to be taken with some reserve as we have had great difficulty obtaining firm methodological accounts and explanations. We were able to in fact have insight into the very source data and the way it is handled in only one instance and this was probably a particularly poor case of the SBS' methods.

procedures. For example, it is puzzling that Serbia's pension insurance fund for the employed is not capable of telling how many insured people it has or how many have paid their pension contributions in the last month. Yet, it is able to tell for each insured individual if all the contributions have been paid over their employment life span, or not!

The NBS' data collection practices are another striking example of this contrast between the availability of detailed individual data, and of analytical series. The NBS is, in fact, informed about every single international payment transaction made in the country, and it does, through the payments settlement system have detailed insight in domestic payments as well. Moreover, it imposes a truly onerous data reporting burden on banks who in addition to filing detailed monthly balance sheet reports file a slew of other information as well, or the same information, filed for different departments of the NBS. Yet, the number of analytical series the NBS is capable of producing at the moment is relatively small, as shown by the Monetary and BOP sections of Appendix V to this study, which gathers most of them. Moreover, processing this information into the analytically useful formats we present them in, was a non-trivial task.

We conjecture that such a pattern of availability of data in Serbia today reflects the pattern of demand for information inherited from the past, in which data was gathered to supervise the compliance with regulations, rather than for analytical purposes. The pervasiveness of the PB's capacity in the past may also explain to some extent the puzzling absence in data processing capacity of many agencies today—they used to rely on the PB to inform them of the transactions that involved them and that they cared about.

3. Reassessing GDP

To assess and cross validate the national accounts we analyze their internal consistency, the assumptions used in the assessment of key components against original data sources and compare these components with assessments based on alternative available sources. While the system of sectoral accounts comprising the SNA balances can be considerably more complex, for our purposes it suffices to focus on the composition of GDP by origin, expenditure and income type and to distinguish between the five institutional groups identified in Serbia's statistics: the non-financial institutions sector (we will call it "enterprise sector" for short and greater accuracy), the financial institutions sector, the state institutions sector, the household sector, and the non-profit institutions sector (NPI).

The three identities defining GDP can be expressed as follows. GDP by origin:

$$(1) \quad GDP = GDP_1 + GDP_2 + GDP_3 \dots GDP_N$$

Where GDP_i denotes the gross domestic product (at market prices) of the economic sector i .

$$(2) \quad GDP = C_p + C_g + I + E - M$$

Where C_p denotes personal consumption, C_g denotes consumption of public goods and I denotes investment, E denotes total exports of goods and services, M denotes total imports of goods and services. In the case of Serbia this identity has to be expanded to include D , deliveries of goods and services to other entities in Serbia & Montenegro (Montenegro and Kosovo), and P , purchases of goods and services from these entities.

$$(3) \quad GDP = W + Ti + OS$$

Where W denotes gross wages, Ti denotes indirect taxes plus employer's contributions for wages and OS denotes operating surplus. In addition, it may be useful to remember that national saving is derived as

$$(4) \quad GNS = GNI - C = GDP + F + TR - C = I + E - M + F + TR = I - CA$$

Where GNS denotes gross national saving, GNI denotes gross national income, $C = C_p + C_g$, F denotes net international factor payments (outflow negative), TR denotes net international transfers and CA denotes the balance on the capital account. The balance on the capital account is a measure of the foreign saving used by the economy. This set of transformations shows that, as mentioned in the introductory discussion, a country with an unusually low investment rate despite an unusually high negative trade balance must have an unusually low saving rate.

3.1. GDP Assessed from the Expenditure Side

As usual when income is hidden or hard to assess, one way to approach it is from the expenditure side. Other than the GDP level itself, the expenditure composition is really determined by the assessed trade balance and investment level. The

consumption level in a statistical system as weak as Serbia's, is pretty much obtained as a residual but we check it against microeconomic survey estimates of household expenditures. We focus first on an assessment of overall investment, as we find it is easiest to construct independent, robust estimates for this aggregate.

Once we establish that investment is undoubtedly substantially higher than the official SNA figures present, we review all other aggregates to establish what other aggregates must be revised for the identity $C+I = GDP - TB$ to continue to hold. We argue that enlarging the trade deficit is out of the question—we in fact believe it itself is overstated as it is. Reducing consumption is also out of the question—we in fact argue it itself also needs to be revised upwards, although in the case of consumption it is much harder to get to a robust estimate of its likely size. Hence, we arrive at the conclusion that GDP needs to be revised upwards. We further explore this possibility from the production side and find that the figures, and what we were able to find out and deduce about the methodology whereby they are produced, strongly supports this conclusion.

We discuss the respective aggregates in turn.

3.1.1. The Foreign Trade Balance

A major source of uncertainty, and the one where we have been able to reduce this uncertainty the least, is the highly likely but hard to assess overstatement of the foreign trade balance of Serbia. This issue is discussed in detail in the Annex to the External Sector Section of Appendix IV (pp. 192-205). We derive an estimate of the likely size of this overstatement (about 1 billion euros per year) based on observation of cash foreign exchange flows. This assessment is fragile as it relies on strong assumptions, and we do not actually anchor our key results on it.

The discussion in Appendix IV argues that both exports are likely to be understated and imports are likely to be overstated, largely as a method of taking capital out of the country. The data on the proportion of exports and imports that are actually not charged for/paid from the country suggest that the sum of these two misrepresentations is likely to be stable in absolute terms i.e. declining in relative terms. This stands to reason as the newly developing economy is unlikely to be heavily relying on these methods to export capital.

The cash foreign exchange purchases of the NBS represent the cash regularly entering the formal system and we know that all this cash regularly leaves the country as the NBS very seldom sells it back to local agents. This continuous outflow of cash from the economy has to be fed by inflows of cash that we assume are the same in size. These inflows, we assume in turn, should have been fed by the capital flight through underinvoicing/overinvoicing exports/imports. The assessment relies on numerous assumptions, such as that the stock of household foreign exchange cash holdings as well as the balances on illegal foreign accounts of domestic or closely related legal entities, are not changing, (or that their changes exactly offset each other).

It can reasonably be assumed that Serbia's customs over the past few years have adequately registered the crossing of goods over the country's borders—what smuggling still remains can be attributed to the grey economy which is not the subject of this study anyway. However, the trade deficit is overestimated because of the long-standing tradition of over invoicing imports and under invoicing export by traders in order to circumvent capital export restrictions. It is unlikely that further improvement in customs procedures would yield much improvement in the data.

We analyze this issue in greater detail based on an analysis of the incentives for this practice, trade figures and figures on payments for effected through the banking system for both imports and exports. Of particular interest is the effect that the VAT tax introduction had (starting with 2005) on the relationship between imports invoiced and imports paid. Greater certainty cannot be attained without a large and focused study, if at all.

In addition to providing a detailed documentation of this data and some of its problems, in Appendix IV we analyze and document to the extent possible, the use of over-invoicing of imports and under-invoicing of exports to extract capital from the formal financial system. Funds then return into the system through substantial net foreign exchange purchases by the NBS from the public. A firmer assessment of the overestimation of the trade deficit—of key importance to the assessment of the actual size of GDP—requires very substantial resources, if possible at all.

3.1.2. Investment

CEVES' assessment of investment activity in Serbia differs very substantially from that published in the RS SNA 2003. Table 5 presents the official SNA investment figures for 2003 (with the IMF's figures for both 2003 and 2004 among the memorandum items), and their technical and institutional breakdown according to the SNA and to our estimates. While the SNA put investment in 2003 at 157 billion dinars, CEVES puts it at 250 billion. This difference changes radically the view of the sustainability of Serbia's macro framework. Hence, we pay special attention to it. The assessment of investment was approached independently from the technical and institutional composition sides. A more detailed presentation of our entire estimation procedure and the many aspects that were considered, is presented in Appendix III. Here we present the official methodology and then our own estimates, by components, in summary terms.

Table 5. Serbia: Investment—Official Data and CEVES Estimates, 2003-2004

	2003			2004
	SBS	Solvency Center	CEVES	CEVES
In millions of dinars				
By technical structure				
Total investment	157,332	...	250,850	325,156
Structures	81,857	...	125,000	150,975
Equipment	63,780	...	105,850	149,181
Domestic	32,617	...	49,400	72,688
Imported	25,335	...	56,450	76,493
Private companies ¹⁾	5,927	...	...	...
Other	11,695	...	20,000	25,000
By institutional sector				
Total investment	157,682	165,516	250,850	...
General government	27,762	...	27,762 ²⁾	...
Non-private enterprises	88,250	92,006 ³⁾	92,006 ⁴⁾	...
Private establishments	12,986 ⁵⁾	73,510 ³⁾	84,083 ⁴⁾	...
Enterprises		68,706	68,706 ⁴⁾	...
Financial institutions		4,804 ³⁾	4,804 ⁴⁾	...
Farms		...	6,261 ⁶⁾	...
Sole proprietors		...	4,312 ⁶⁾	...
Residential construction	28,684		47,000 ⁶⁾	...
Memorandum items:				
Total investment, 2003, IMF ⁷⁾	191,429			
Total investment, 2004, IMF ⁷⁾	246,576			
New 2004 investment estimate, SBS ⁸⁾	252,000			

Source: SBS, SC, CEVES estimates.

1) The SBS does not show the breakdown of private companies investments in equipment to domestic and imported. However, this component is so small its distribution would not change the breakdown substantially.

2) Data from SBS.

3) Data for financial institutions is originally not split based on ownership, so we arbitrarily allocated 75% of financial institutions investments to private sector and 25% to non-private (total investments of financial institutions are 6.4 billion of which 5.4 are banks).

4) Data from SC.

5) Calculated as the difference of two SBS figures: total investments of private sector and residential construction.

6) CEVES estimate.

7) IMF data is for Serbia and Montenegro.

8) The figure for 2004 was obtained from informal communication.

The official SNA investment figure is produced by the SBS. It is based on several components, all of which are underestimated, both because of problems of coverage and because of unlikely assumptions used in the processing of source data to obtain investment figures.

Assessment of government plus mixed-ownership sector (non-private sector, for short) investment is based on an annual survey (INV-1) of the non-private sector, supposedly covering the entire sector (cca. 7000 registered units). Private establishment investment was an undocumented estimate¹¹ until 2004, but since 2004 the SBS has been able to add a survey of 600 private enterprises to its program (INV-2), and substantially improve its private establishment investment estimates. Based on informal communication, INV-2 has substantially boosted the estimate of the private establishment component (cf. the IMF figure for 2004), but the overall investment figure remains substantially below the likely true figure. These SBS investment estimates are a continuation of the traditional effort to assess investment independently from financial data, as mentioned above. Interestingly, no effort seems to be made to compare the thus obtained figures with SC data, now when the imprecision of financial figures seems to be a considerably lesser problem than the absence of robust alternative sources.

The main reason for the underestimation is private sector investment. It consists of private establishment investment and residential construction. Traditionally, in socialist Yugoslavia economy, the bulk of private sector investment was residential construction. This is still reflected in official SBS data¹². However, a simple comparison with the SC figures in Table 5 shows that private establishment investment is grossly underestimated by SBS: private companies that file reports with the SC report an increase in fixed assets that is 5.6 times larger in 2003 (73,5 versus 12,9 billion dinars), and that figure does not include investment by farmers and sole proprietors. There is no reason to believe that fixed asset values are particularly more misrepresented by private than they would be by non-private enterprise financial reports, so to the extent that non-private enterprise investment seems to be adequately captured by the financial reports, so should be private enterprise investment.

Table 5 shows, in the first column, SBS investment in 2003 broken down into two components derived from the INV-1 report—general government investment and non-private establishment investment—and two private sector investment components. In the second column, investment figures derived from the SC data are complemented with other reasonably reliable figures to gain a sense of how grossly understated is SBS investment.

Unfortunately, the method of estimation of investment shown in column 2 of Table 5 cannot alone be used for our needs. Relying on SC data and the other figures in that table, complemented with a back of the envelope estimate of farmers and sole proprietor's investment, would probably give a robust enough figure for investment

¹¹ The difference between the IMF's and SBS' investment figure is largely the result of a revision of this component of the investment figure, based on the work done by Stojan Stamenković editor of the Monthly Analyses and Trends, published by Belgrade's Economics Institute.

¹² The SBS figure for residential construction within investment is not published anywhere. We deduce it based on published figures for the value and structure of construction works whose total roughly corresponds to the published figure for investment in structures. Then obtain private establishment investment by subtracting this residential construction estimate figure from the published figure for total private sector investment.

in 2003. However, the SC data cannot be used to assess investment in 2004—the definition of fixed asset value in 2004 is not comparable to that in 2003 because of changes in accounting standards and the requirements of the financial reports.¹³ Hence, a simple difference between the fixed asset figures in the 2004 and 2003 reports could be seriously misleading, particularly as it—433 billion dinars—does seem to be improbably large.

Instead, we estimate a range of probable values of components of the technical structure of investment, both for 2003 and 2004, and additionally check 2003 results by comparing them with figures in Table 5.¹⁴ Also, the results of technical analysis for 2004 are confirmed by institutional analysis described in detail in Appendix III.

Table 6. Serbia: Derivation of Investment Estimate from Technical Structure Information, 2003-2004

	2003		2004	
	Min	Max	Min	Max
In billions of dinars				
Investment in structures, 3 estimation methods				
Consumption of cement	123,0	142,0	147,0	175,0
Employment	108,0	135,0	139,0	173,8
Construction sector output	104,0	126,0	...	188,0
Investment in equipment, 3 estimation methods				
Total 1, based on total imports of capital goods	82,4	...	131,5	...
Total 2	91,1	122,2	138,1	188,0
Imported equipment, adjusted declar. of use	43,6	64,8	75,7	112,4
Domestic equipment, production	47,5	57,4	62,4	75,5
Total 3	97,0	144,0	140,2	208,2
Imported equipment, adjusted declar. of use	43,6	64,8	75,7	112,4
Domestic equipment, from proportion to equipment imported	53,3	79,2	64,5	95,8
Selected range				
Total	239,1	269,8	312,2	394,5
Structures	123,0	126,0	147,0	175,0
Equipment	97,0	122,2	140,2	188,0
Other	19,1	21,6	25,0	31,6
Memorandum items:				
Ratio of foreign to domestic imports, INV-1	0,8	0,8	1,2	1,2

Source: CEVES estimates, SBS.

We derive a rough but robust estimate of investment in structures with several independent approaches. The most robust among them is based on the consumption of cement (produced by only three factories in Serbia, hence well known) and the assumption that this consumption stands in a similar proportion to the volume of construction in relatively similar countries. Taking Croatia as the similar country and assume, based on available information, that Croatia's structures' prices in euros are between 20% and 45% more expensive than Serbia's. Then, we deflate Croatia's investment in structures accordingly and correct it for the proportion between Croatia's and Serbia's consumption of cement to

¹³ The SC was not able to build a sufficiently reliable bridge and put out a series of figures for 2003 comparable with 2004.

¹⁴ It may be of interest to note that the ranges in the technical component of investment are truly independent from the estimates based on institutional sectors in Table 5, since they were estimated before we became aware that investment could be assessed from SC data!

obtain a range of 123 – 142 billion dinars in 2003, and a range of 147 – 175 billion dinars in 2004 (see Table 6). The lower estimate of the price differential is obtained by comparing statistics on residential prices by squared meter, while the higher estimate is obtained from consultations with Serbia's construction experts (see Appendix III).

Other estimation methods roughly support this range, and are obtained based on the number of people formally employed in the sector, and the value of official construction output with adequate adjustments. The set of thus obtained ranges is given in Table 6. A discussion of the sources of data and adequacy of each approach is given in Appendix III.

The next component of total investment is equipment –and we estimate separately the domestic and imported component based on domestic production of investment goods and capital import data.

We first discuss imported capital goods. Here we have to deal with three problems: (a) There are several different classifications of imports by use. At the two extremes, the highest figure for capital imports is obtained looking at the classification by sector of origin of the good, 2028 million euros in 2003. The lowest figure is obtained in the classification according the use «declared by the importer», 739 million euros in 2003; (b) the fact that capital imports are overstated, in line with (or more than), all imports; (c) accounting for the costs that need to be incurred before the capital imports recorded by customs are built into invested equipment: customs tariffs, transport from the border and installation.

We opt for an adjusted value of the most conservative definition of capital equipment imports, as “declared by the importer” as it is the only value that can be safely assumed to have been built into “imported equipment” investment. Other capital good imports may well have been parts used in the construction of what will eventually be considered “domestic equipment”. This figure needs to be further adjusted up by about 5%, as a result of two adjustments: subtracting 17% on account of the over invoicing of imports, and adding 25% to its value on account of item (c) above.

The upper and lower bound of domestic equipment imports can be obtained with three approaches: one is based on the value of investment goods produced in the country¹⁵ and the other two on assumed proportions to imported capital goods. One proportion refers to the ratio of domestic to foreign capital equipment observed in the INV-1 and INV-2 reports. The other simply assumes the value of total equipment invested in the country is unlikely to be higher than 1,4 of the value of total capital imports as measured by the BEC classification. These three approaches give the set of ranges shown in the middle section of Table 6.

We obtain a single range for each component and for total investment by picking the lowest common denominator range for each set (shown in the last section of Table 6) of ranges; i.e. we take the highest low value and lowest high value offered from each set of ranges offered in the previous analysis. Thus we obtain a range of 239-262 million dinars for the total value of investment in 2003. This fits in surprisingly well with the information derived in Table 5, which shows that investment of all institutional sectors other than farms and sole proprietorships

¹⁵ The production of investment goods is derived from data on the composition of the industrial production index. We give an error margin of +/-10% which gives the range in the table.

amount to 240 billion dinars in 2003. In addition to structures and equipment, investment consists of other items such as software, royalty rights etc. We estimate this component by assuming that it comprises 8 percent of total investment, which is the share observed in comparable countries.

Finally, we settle on a figure for total investment and its technical breakdown in 2003 by returning to the figures based on SC data in Table 5. The bottom section of the third column in Table 5 shows the institutional breakdown of investment from the second column, but now we add estimates for the two missing institutional sectors: farms are assumed to invest about 5% of the value of their GDP at factor cost (6.3 billion dinars) and sole proprietorships are assumed to invest on average 350 euros per year each (4.3 billion dinars). This gives a total of 250.85 billion dinars worth of investment in 2003.

For 2004, INV-2 survey results were provided to us, and combined with INV-1 survey allowed us to perform a more detailed institutional analysis. The figures we settle on for 2004 are obtained based on the ranges for technical components shown in Table 6 and cross referencing them with the results of institutional analysis.

3.1.3. Government Accounts

The general government's operations are recorded by both the SBS and by the Ministry of Finance (MoF), apparently independently from one another. We compare these two sources of information as well as the IMF's accounts and find that government output (as a proxy for government consumption) appears to be quite reliably recorded by the SBS at 220 billion dinars in 2003. We find, however, a large error in the SNA RS 2003 government consumption figure which is implausibly higher than government output, and we believe this is due to a confusion with the definition of government disposable income.

The first section of Table 7 below shows the consolidated government consumption expenditure according three sources: (a) the GoS most recent Memorandum on Economic Policies;¹⁶ (b) the IMF; (c) and the SNA. The SNA source information are annual financial reports submitted by budget users to the Treasury for the derivation of its fiscal data (see methodological remarks in Appendix IV). While we have not been able to make a direct assessment of the reliability of these data, the 2003 SNA government output figures—which would have been directly derived from these reports - match the MoF data convincingly. We show the SNA «output of government services» figure in the first line of Table 7, followed by the SNA government consumption figure, to contrast them. The latter is completely misleading and discussed separately below. In the remainder of this text we treat the SNA government output figure as an appropriate proxy for SNA government consumption.

Table 7. Serbia: Government Consumption, 2000-2003, Various Data Sources

	2000	2001	2002	2003
	In billions of dinars			
Output of government services, SNA ¹⁾	52.8	109.2	165.2	220.1
Government consumption, SNA ²⁾	78.7	191.5	288.4	347.3
Government expenditures individually consumed	28.1	62.1	90.5	69.1
Expenditures on collective consumption	50.6	129.4	197.9	278.2
General government consumption, IMF	...	123.5	170.7	208.1
General government consumption, Ministry of Finance ³⁾	...	121.8	171.9	198.3
Output of public service and other industries, SNA ⁴⁾				
Industries associated with general government activities	...	...	...	216.3
Government administration, social security	...	...	...	92.7
Education	...	...	...	49.6
Health and social protection	...	...	...	73.9
Other public sector and other services	...	...	...	45.4

Source: SNA RS 2003, IMF Country Report 05/233, Ministry of Finance: The Memorandum on the Budget and Economic Policy for 2006 with the Projections to 2009.

1) These output figures appear in the production account (Account No1) of the government sector in the SNA.

2) SNA RS, 2003, Table 6, Section I. Also in Section II, 2.3., Account No5 of the government's distribution of accounts.

3) Includes as well item other expenditures.

¹⁶ *The Memorandum on the Budget and Economic Policy for 2006 with Projections to 2009* is the only place in which the Government publishes the general government's consolidated fiscal accounts, and it does so only in a highly aggregated table with about 6 lines for revenues and as many for expenditures.

4) SNA RS, 2003, Table 2, Section III,4, listing output and intermediate consumption at factor cost by sector of production.

5) Other public sector includes: local utilities, gov. sponsored social organizations and other services.

The MoF and IMF figures have similar behaviours over the entire period, while the SNA figure appears to «catch up» with the other two over time. The IMF figure is somewhat larger than the MoF figure, as expected, since their figures include the the total consumption of some highly autonomous budget users that the MoF does not include in its accounts. However, the SNA figure in 2001 is substantially smaller than the other two and by 2003 it overtakes the IMF figure. We conjecture that this behaviour reflects a decline in non-response by budget users, especially since reports begun being submitted with the Treasury rather than the Payments Bureau, in 2002. Since on an individual institution's level the financial report has broader coverage than the MoF data, it is to be expected that the SNA figure should be higher than the others, as long as all, or most, institutions file the reports. Hence, in 2003 the value of government service production according to the SNA could well be a good reflection of the actual aggregate, incorporating the parts missed by the MoF and even the IMF (220 billion v. 208 billion in 2003).

Unfortunately, the SNA statistics do not use their production of government services as a proxy for the government's consumption expenditure, but rather derive the latter from misguided balances of government's formation and distribution/use of income. Thus derived, government consumption in 2003 sums up to 347 billion dinars, a figure well over 50% higher than the value of government output. Yet government output and consumption should differ only by the amount of „receipts from sales, [that are] deducted from gross output to obtain government final consumption expenditure” (UN SNA, 1993). In other words, output and consumption should be nearly identical, particularly since in Serbia government output is priced at „input prices”, i.e. by accounting for the incurred costs¹⁷. Essentially, the moment the cost has been incurred the output has been produced and consumed.

That the SNA government consumption figure does not make sense can also be seen from its composition. It is broken down into two components, collective consumption, (278 billion dinars in 2003) and individual consumption expended by the state (69 billion dinars in 2003, described more closely in footnote 17), both presented in Table 7. To give the reader a sense of the components of government consumption, the table also lists a few government service related industries' outputs. Those grouped under the heading «Industries associated with general government activities» total 216 billion dinars in 2003.

It is likely that the error in the SNA government's consumption figure was made in the derivation of its disposable income (Table III.2.3-4, RS SNA, 2003) when transfers were not subtracted from primary incomes¹⁸. The thus obtained government's disposable income has to be consumed or saved. Somehow, the difference was allocated into consumption. Establishing this with full certainty, however, requires direct communication with the SBS regarding this matter. In particular, there is no indication anywhere in the methodology as to the criterion

¹⁷ Strictly speaking, the 1993 SNA recommends that government services that can be individually consumed, otherwise called social transfers in kind—consisting largely of health and education expenditure - could and should be priced at market prices. This requires both a more developed market in these services and considerably more sophisticated statistics capabilities than those available to the SBS at this moment.

¹⁸ Disposable income is derived from the balance of primary incomes of an institutional unit or sector by adding all current transfers, except social transfers in kind, receivable by that unit or sector and subtracting all current transfers, except social transfers in kind, payable by that unit or sector; it is the balancing item in the Secondary Distribution of Income Account (UN SNA 1993, Glossary).

used to break government consumption expenditures into the collective and individual consumption figures. As mentioned, individual consumption of government services should consist of health, education, social protection and other industries' outputs. Yet, the figures on these industries' outputs, shown in Table 7, far outstrip the value of the suspicious individual consumption figure.

In our further analysis we do not attempt to distinguish anymore between collective and individual government consumption expenditure. The distinction between these two government consumption expenditure types is inconsequential for our analysis, and we proceed to consider them together in the further text; neither do, for our purposes, government expenditure, consumption and output need to be distinguished—we think of them simply as the «G» familiar in economic theory.

3.1.4. Personal Consumption

Strictly speaking, this section is about household expenditures, that for analytical purposes we equate with personal consumption.¹⁹ On a macroeconomic level, these are derived from overall balances of the availability and use of goods, checked but not necessarily identical with, information obtained from household expenditure or budget surveys. In this section we compare the SNA figures with the figures produced by Serbia's household budget survey conducted annually by the SBS (HBS) and the Living Standards Measurement Survey conducted in 2002 and 2003 by the World Bank in preparation for the drafting of the Poverty Reduction Strategy Paper for Serbia. We find that the personal consumption figure in the RS SNA is certainly lower than the likely true figure, but not inadequate, considering that Serbia's SNA do not attempt to incorporate the informal economy. However, we also find that the SNA have trouble with the derivation of household disposable income, an issue we do not delve into here. Appendix V discusses both the more detailed comparison between the SNA, HBS, and LSMS figures and some of the issues with the derivation of household disposable income.

Essentially, we use the LSMS as an independent source for the assessment of the SNA personal consumption figure which, according to the SBS' own account, is based on information from the HBS. Table 8 shows consumption, both per individual household and for the entire economy, based on the SNA, HBS and LSMS figures. The HBS figures have been substantially revised upwards in the SNA, based on balances of available consumption goods (production plus imports minus exports and investment and stock-building). The revision in 2003 amounted to over 20 percent of the HBS figure, and even more in 2002.

The LSMS is not geared to the measurement of household expenditures, but rather truly measures consumption. Hence the figure in Table 8 has been adjusted to be fully comparable with the household expenditure concept covered by the other two concepts. The LSMS measures accurately the consumption of goods and services, where a consumer durable gives services (as it is depreciated). The actual purchase of consumer durables is not relevant and does not need to be recorded. To convert the LSMS measure of consumption to one of expenditures, we subtract measured

¹⁹ Strictly speaking, personal or household consumption is composed of the portion financed by households and the portion expended by the state—social transfers in kind described in footnote 17. However, we speak here of consumption expenditures. In this case, the transfers in kind in the health, education and similar social services, belong to the government accounts, while only the household out-of-pocket expenditures on these services are included in the personal/household consumption expenditure accounts.

consumption of durables services, and add expenditures on new durables. The elements used in this derivation are shown in the Memorandum items of Table 7. The LSMS figure for total consumption as published at the time of its completion is also adjusted for a change in the total number of households, as assumed during the conduct of the LSMS and as later estimated/published by the SBS.

The SNA figure on household expenditures in 2003 suggests that the average household in Serbia spent about 28,180 dinars or 434 euros per month—a little over twice the net wage that the less than one formally employed household member brought home²⁰. Such an expenditure figure suggests a very large share of non-wage income in household accounts, but is the LSMS and all other information suggests the true figure is even higher.

The expenditure figure recorded by the LSMS is likely to, if anything, be an under—not an over-statement. First, all else being equal, a survey measuring household expenditures/consumption will miss to record some expenditures, not be likely to over-state them. Overstatements may be the result of methodological problems. For example, the observation could have been conducted at the wrong time of the year, when expenditures are seasonally higher than average. In the case of our LSMS the timing was May-June, when expenditures could only have been lower than typical: there were no pre-holiday season expenditures, no winter heating expenditures, and no beginning-of school or vacation expenditures. Other methodological problems, concerning individual items, could have happened, but again, they were more likely to suffer from omissions than overstatements. One likely insufficiency both in the LSMS and HBS is the inadequate measurement of consumption from own production. This is extremely broadly present in Serbia, even in highly urbanized educated households and its adequate accounting would likely substantially increase the household consumption/expenditures figures. This omission is present on the production side as well, so we will not deal with it.

In addition to reflecting corrections to expenditures on individual items as deducted from macroeconomic balances, the SNA figure incorporates imputed rents, not present in the HBS but present in the LSMS (the figure is the same in the SNA and LSMS). Since imputed rents are present on the production side as well, we keep the SNA estimates.

²⁰ We refer to the average wage paid out, as opposed to the published official figure which underestimates it.

Table 8. Serbia: Household Expenditures According to Various Sources, 2002-2003

	2002	2003
In millions of dinars		
All households, annual		
SNA figure	679,872	825,781
Household budget survey	462,782	670,828
LSMS, adjusted by CEVES	...	857,792
In dinars		
Per household, monthly		
SNA figure	23,270	28,180
Household budget survey	16,131	21,710
LSMS, adjusted by CEVES	...	29,273
Memorandum items:		
Elements for adjustment of household consumption LSMS to NA definition		
LSMS annual total, millions of dinars	754,060	795,660
LSMS, depreciation of consumer durables, annual total	14,818	18,932
Expenditures on consumer durables, mill euro	...	566
Number of households underlying LSMS analysis	2,434,706	2,441,973
Number of households, current statistics	...	2,574,919

Source: LSMS data, PRSP Unit; RS SNA 2003; SBS Statistics Yearbook.

4.2. GDP assessed by origin

We turn now to obtaining an indicative assessment of the GDP level in 2003 based on the examination of the components of GDP by origin, i.e. by institution and sector of production. We subsequently assess the 2004 GDP level by applying estimated sectoral growth rates and deflators to the 2003 figure. We reach the conclusion that GDP in 2003 must have been at least 8% higher than that recorded by statistics, and that nominal 2004 GDP was 18,5% higher—after growing about 8% in real terms. These are only rough assessments – more precise figures would require full access to the source data at the RZS—but they are robust on the lower bound. The assessment does not attempt to take full account of the grey economy, but rather captures a minimum that we believe should be captured or known by statistics based on the information available to the statistician today. Full accounting for the grey or untaxed economy would require some specific research aimed at it.

Table 9. Serbia: Decomposition of SNA GDP by Sector of Origin, 2003

Production sector	Institutional sector			Total
	Non-financial and NPI	Households & SPs	Others	
in billions of dinars				
Total, at market prices	...	...	...	1,095.4
Total, at factor cost	459.9	247.0	201.3	908.2
Agriculture, Forestry and Fishing	21.3	109.3	-	130.7
Mining and quarrying	17.3	0.0	-	17.4
Manufacturing	158.2	10.5	-	168.7
Electricity, gas and water supply	41.7	0.0	-	41.7
Construction	31.8	9.8	-	41.6
Wholesale and retail trade; repairs	59.3	29.2	-	88.5
Transport, storage and communications	74.7	5.8	-	80.6
Real estate and intellectual services	24.8	2.2	-	27.0
Imputed rents	...	73.1	...	73.1
Local utilities, NPI and personal services	30.6	7.0	-	37.6
Financial intermediation	-	-	57.4	57.4
Government	-	-	143.9	143.9

Source: RS SNA 2003, and CEVES estimates.

The difference relative to the official 2003 figure is the result of two adjustments. First, we impute to VA produced by enterprises in 2003 some of the production that became revealed, or disclosed, only in the reports for 2004. Second, we augment the production of the household sector, i.e. by sole proprietorships, compared to that assessed by SBS. We use simple assumptions based on official statistics for employment in the sole proprietorships and wages in the economy. We recognize that the line drawn in this way between the grey and unregistered economy is an uneasy one, but an improvement over this assessment requires research beyond the scope of this study which CEVES will seek to undertake in the future.

The RS SNA 2003 shows output and VA by production sector without decomposing them additionally by institutional sector. We decompose it (see Table 9) by starting from the SC output (enterprise output) figures that fully correspond to the SNA non-financial sector output totals and estimating the corresponding sectoral VA applying to it parameters from SBS figures on social product (material production method) published in the Statistical yearbook.²¹ With the obvious exceptions of the financial and government sectors, the difference between the total value added and that for the enterprise sector represents household production. Household production, with the exception of agriculture and imputed rents and possibly some small unidentified quantities of production for own consumption elsewhere, represents the production of sole proprietors.

3.2.1. Revising Non-financial Sector Output

Once decomposed we can assess the plausibility of the obtained VA levels by institutional sector. Total VA at factor cost produced by the non-financial sector

²¹ The growth of nominal value added by production sector for enterprises can be directly observed in Appendix I. However, these figures are even larger than the nominal growth of output and we are concerned that this increase may reflect some changes in the legal definition of the accounting components comprising VA. We find this estimation procedure more robust and conservative.

(459,9 billion dinars) is nearly twice as large as that by the household sector (247,0 billion dinars). We believe reporting and coverage is reasonably good in the financial and government sectors and adopt those figures. However, we believe both the non-financial and household sectors' VA are understated in 2003 and make a set of adjustments to each, both increasing the respective sectoral VA.

We adjust enterprise VA figures in 2003 for the factor of undisclosed VA, as revealed by an increase in VA disclosure apparent in the 2004 SC enterprise production figures. Namely, in 2004, (as in 2002) the growth of nominal output value compared to the previous year far outstrips the multiple of any plausible real growth rates and deflators in most sectors. The difference, we believe, reflects an increase in disclosure, as discussed earlier in this text. Nominal output value growth rates reflected in SC reports for 2002-2004, and deflated by adequate deflators, are shown in Table 10, and contrasted with the sectoral growth rates of VA in 2002 prices published in the SNA. The deflated nominal output reported to the SC increased by 10,6 % in 2002, 1,7 % in 2003 and 19,7 % in 2004, while the SNA puts the real growth rates for total VA in these years at, respectively, 1,0%, 1,1% and 9,4%. While one set of figures corresponds to enterprises and the other to all institutional sectors, and while we do not find the SNA growth figures fully credible themselves, the comparison serves to suggest an increase in disclosure of overall output (value added) in 2004 of approximately 10%.

Table 10. Serbia: Sector Growth Rates: Solvency Center v. SNA, 2002-2004¹⁾

	Solvency Center deflated as noted ³⁾			SNA		
	2002	2003	2004	2002	2003	2004
	In %					
Total	10.6	1.7	19.7	1.0	1.1	9.4
Agriculture, Forestry and Fishing	6.9	-5.1	10.0	-3.2	-7.0	19.1
Mining and quarrying	44.0	7.1	13.1	-0.1	5.1	1.3
Manufacturing	10.7	1.4	21.0	-2.8	-6.0	8.8
Electricity, gas and water supply	5.0	-10.0	4.8	-1.6	3.1	0.1
Construction	27.6	17.6	34.5	-7.4	10.8	3.5
Wholesale and retail trade; repairs	10.1	7.2	23.4	14.9	11.6	17.0
Transport, storage and communications	-3.3	-9.8	16.2	2.4	9.5	15.6
Real estate and intellectual services ²⁾	20.7	10.1	29.7	1.6	1.8	2.0
Local utilities, NPI and personal services	9.6	9.6	2.3	1.4	0.7	0.0
Financial intermediation	...	...	...	11.6	9.0	9.8
Government	...	...	...	1.7	1.0	1.8

Source: SC, SBS, CEVES.

1) SC data refers to output of enterprises only. SNA data are volume growth rates for VA in 2002 prices for all institutional sectors. The SC output levels fully correspond to totals for SNA Non-financial sector output.

2) Includes imputed rents.

3) Deflators used: Agriculture, Forestry and Fishing: agricultural producers prices; Mining and quarrying: IPI, mining and quarrying; Manufacturing: IPI, manufacturing; Electricity, gas and water supply: IPI, electricity, gas, and water supply; Construction: RPI; Wholesale and retail trade; repairs: RPI; Transport, storage and communications: transport. and telecom. services; Real estate and intellectual services: RPI; Local utilities, NPI and personal services: RPI; Financial intermediation: RPI; Government: RPI.

We adjust the 2003 sectoral enterprise sector VA with a factor for undisclosed output for each sector in 2003. The factor is obtained as the ratio of the deflated nominal growth rates for 2004 (column 3 of Table 10) and our estimates of likely real sectoral growth rates in 2004. The derivation of these growth rates is shown in

Table 12, and we return to it shortly. Table 11 shows CEVES' assessment of the structure of GDP by production and institutional sector of origin. The first column in this table presents the adjusted enterprise production by sector figures. In total, their production amounts to 513,4 billion dinars, approximately 10 percent higher than the SNA figure in Table 9. The biggest sectoral adjustment is made to the real estate and intellectual services sector (by about 50 %) and construction (by about 22%). Also high is the adjustment to wholesale and retail trade (14%). These are reasonable sectors in which to expect high increases in disclosures.

Table 11. Serbia, 2003: GDP by Sector and Institution of Origin, CEVES Estimate

Production sector	Institutional sector			Total
	Non-financial and NPI	Households & SPs	Other	
In billions of dinars				
Total, at market prices	...	...	...	1,183.0
Total, at factor cost	513.4	281.0	201.3	995.7
Agriculture, Forestry and Fishing	21.3	109.3	-	130.7
Mining and quarrying	18.7	0.0	-	18.8
Manufacturing	175.9	10.5	-	186.4
Electricity, gas and water supply	41.7	0.0	-	41.7
Construction	38.9	14.1	-	53.0
Wholesale and retail trade; repairs	68.0	46.2	-	114.3
Transport, storage and communications	80.7	10.1	-	90.8
Real estate and intellectual services	37.4	10.7	-	48.1
Imputed rents	...	73.1	...	73.1
Local utilities, NPI and personal services	30.6	7.0	-	37.6
Financial intermediation	-	-	57.4	57.4
Government	-	-	143.9	143.9

Source: Tables 9, 10 and 12, CEVES estimates.

3.2.2. Revising Production of Sole Proprietors

We turn now to the adjustment to sole proprietors' production. Once agricultural production by farmers and imputed rents are removed from the household sector production, we are left with some 65 billion dinars of value added by sole proprietors and free professionals in the country in 2003. In 2003 there were about 200 thousand individuals paying pension benefits for their own benefit to the entrepreneur's pension fund. In addition to true owners of small businesses, this figure includes independent professionals - performers, independent consultants, and similar. In addition, there were 230 thousand employees of sole proprietorships, for whom a sole proprietorship was paying pension contributions to the employees pension fund (See section on wages and employment in Appendix IV).

The SNA figure of 65 billion dinars unrealistically implies that the individuals engaged in registered sole proprietorships or as independent professionals were earning on average three quarters of the average gross wage per person. This figure may have been derived from tax returns by the SBS, but we see no reason to adhere to tax returns in this estimation. Assessed taxes are notoriously inadequate in the case of free professionals, and sole proprietors are known to often report paying only the minimum wage when higher cash wages are usually paid.

A more realistic set of assumptions for the value added generated by these individuals easily gives a figure nearly 50% higher than the SNA estimate, to a total of approximately 98 billion dinars. These assumptions are that the employed earn on average half the average paid out gross wage registered by statistics, that 1/3 of the entrepreneurs have a good operating surplus of 500 euros a month, that another 1/3 are closer to subsistence earning only 30% more than the average (paid out) gross wage, and that the remainder of contribution paying individuals are evenly divided between those truly earning the minimum wage, and those earning 1000 euros a month. We distribute this additional VA across production sectors as shown in the second column of Table 11, increasing "real estate and intellectual services" the most, but also substantially increasing trade and construction of the household/sole proprietors' sector.

3.2.3. Derivation of 2004 GDP

Once total GDP and VA by sector of production has been determined for 2003 we assess total and sectoral GDP in 2004 by applying the sectoral real growth rates and deflators presented in Table 12 below. This gives us a real growth rate of 8,0% and a nominal increase of 18,5% for GDP in 2004 compared with 2003.

Table 12. Serbia: Derivation of 2004 GDP Estimate

	2003	2004		
	GDP	Volume growth	Deflators ⁶⁾	GDP level
	in billions of dinars	in %		in billions of dinars
Total, at market prices	1,183.0	8.1	1.096	1,401.7
Total, at factor cost	995.7	8.1	1.096	1179.8
Agriculture, Forestry and Fishing	130.7	19.1 ¹⁾	1.100	171.2
Mining and quarrying	18.8	4.7 ²⁾	1.110	21.8
Manufacturing	186.4	8.8 ¹⁾	1.087	220.5
Electricity, gas and water supply	41.7	4.7 ²⁾	1.133	49.5
Construction	53.0	9.8 ³⁾	1.101	64.1
Wholesale and retail trade; repairs	114.3	7.7 ⁴⁾	1.101	135.5
Transport, storage and communications	90.8	7.7 ⁴⁾	1.065	104.1
Real estate and intellectual services	48.1	7.7 ⁴⁾	1.101	57.0
Imputed rents	73.1	0.5 ⁵⁾	1.101	80.8
Local utilities, NPI and personal services	37.6	7.7 ⁴⁾	1.101	44.6
Financial intermediation	57.4	9.8 ¹⁾	1.101	69.4
Government	143.9	1.8 ¹⁾	1.101	161.4

1) Growth from SNA.

2) Increase in electricity production. Source: Electric Power Utility (EPS), data on production.

3) Increase in cement consumption. Source: Serbian Cement Manufacturers Association.

4) Increase in electricity consumption of establishments with low voltage connections. Source: CEVES, Goran Radosavljević, *ibid.*

5) Increase in stock of completed dwellings in 2003. Source: SBS.

6) Deflators used: Agriculture, Forestry and Fishing: agricultural producers prices; Mining and quarrying: IPI, mining and quarrying; Manufacturing: IPI, manufacturing; Electricity, gas and water supply: IPI, electricity, gas, and water supply; Construction: RPI; Wholesale and retail trade; repairs: RPI; Transport, storage and communications: transport. and telecom. services; Real estate and intellectual services: RPI; Imputed rents: RPI (CPI housing rentals is also available but it is much higher (24.5%) since it relates mostly to urban areas and non-imputed rents, so RPI is used); Local utilities, NPI and personal services: RPI; Financial intermediation: RPI; Government: RPI.

The deflators used to bring the VA to 2004 prices are listed in the notes to Table 12 and their choice is rather obvious. The real growth rates in Table 12 are based on a combination of those published by SBS and other indicators that we found more plausible. We use the actual electric company real output growth rate as the growth rate of the VA in the electricity, gas and water production sector, and in the mining and quarrying sector as the latter largely consists of the extraction of coal for electricity generation. For construction we use the growth of cement consumption. For most services we use the growth rate of electricity consumption by establishments connected to low voltage supply, as we consider the official statistics highly unreliable. The exceptions are government and financial services, in which we use the SBS figure, and imputed rents, in which we use the increase in the stock of private dwellings. The arguments for taking alternative growth estimators to those published by the SBS are presented in the discussion of production statistics in Appendix IV.

3.3 Pulling the Assessments Together: A Macroeconomic Balances Model

We are now ready to piece the overall picture together in a simple macroeconomic balances model. The analysis of the individual components of GDP presented so far suggests a larger GDP, larger investment –by more than the increase in GDP, hence an increase in saving—and smaller trade deficit than that recorded by customs. For investment, GDP and consumption we believe we have established lower bound figures. Taking into account the informal economy could only make them larger, albeit we believe investment is unlikely to be much larger. Substantial uncertainty remains with regard to the true size of the trade deficit—it could be larger or smaller than the figure established above. Table 13 below shows our assessment of the most plausible expenditure composition of Serbia's GDP in 2003 and 2004. It fixes all components as described above, leaving private consumption as the balancing item. Derived in this way private consumption in 2003 is 3,4% higher than the figure established based on the LSMS survey. As argued in the section on private consumption, we find an upward adjustment of this figure very plausible.

Table 13. Serbia: GDP, Expenditure Composition, 2003-2004

	2003	2004	2003	2004	2004
	in billions of dinars		shares in GDP		real growth
GDP	1.183,0	1.402,0	100,0	100,0	8,1
Consumption	1.107,1	1.345,1	93,6	95,9	10,3
Public	220,1	262,3	18,6	18,7	8,2
Private	887,0	1.082,8	75,0	77,2	10,9
Investment in fixed assets	251,0	325,0	21,2	23,2	15,3
Public	29,7	40,9	2,5	2,9	22,4
Private	221,3	284,1	18,7	20,3	14,3
Inventories	0,0	36,3	0,0	2,6	-
Balance of trade	-175,1	-304,4	-14,8	-21,7	51,7
Exports, G&S ¹⁾	294,3	402,7	24,9	28,7	19,4
Imports, G&S	-469,4	-707,1	-39,7	-50,4	31,5

Source: CEVES estimates.

1) It includes the net balance of trade with Kosovo and Montenegro, as well as the entire adjustment for overstatement of trade deficit.

The expenditure composition obtained thus now looks both substantially more plausible and substantially more sustainable than the official figures. The GDP share

of gross investment amounts to 21,2% in 2003 and it climbs to 23,2% in 2004 - 25,8 % if the 2004 inventory build up of imports ahead of the introduction of VAT is taken into account. The 2003 figure is likely to be only slightly above a through probably attained in 2002, as most investment in the mixed and social ownership sector ground to a halt ahead of imminent privatization and the investment of privatized enterprises did not yet pick up. The 2004 figure is likely to be peak, as the inventory build-up was added to a tide in investment undertaken by large enterprises privatized over the previous 2 years.

The GDP and its expenditure composition in Table 13 gives the investment/saving balance presented in Table 14. Domestic saving is now positive, albeit low (6,4% and 4,1% of GDP in 2003 and 2004 respectively). National saving increases to the high teens because of a jump in transfers probably associated with an increased return in capital following the political stabilization.

Table 14. Serbia: Investment - Saving Balance, 2003-2004

	2003	2004	2003	2004
	in billions of dinars		shares in GDP	
Real GDP, growth rate	...	...	2,4	8,1
Gross domestic saving	76	57	6,4	4,1
Gross national saving	205	258	17,3	18,4
Private	211	227	17,8	16,2
Public	-6	31	-0,5	2,2
Gross investment & inventories	251	361	21,2	25,8
Current account balance, after grants	-46	-103	-3,9	-7,4
Current account balance, before grants	-74	-134	-6,2	-9,6

Source: CEVES estimates.

If the full GDP-including all informal production, i.e. household production for own consumption and production by non-registered economic units and individuals - was accounted for, it is private consumption that would pick up the brunt of the consequent increase in absorption. Investment and government consumption are unlikely to be much larger, and the BOP deficit is unlikely to be much smaller. Our sensitivity tests show that a likely adjustment to GDP of some 15% would keep domestic saving positive and reduce the GDP shares of investment and national saving by less than 2 percentage points. All in all, this would give a very plausible structure.

4. Conclusion

This study, based on a reasoned, systematic, cross-validation and deepening of the understanding of existing, available, data finds some serious biases in the official national accounts and production data. First, it finds that sectoral production statistics are biased towards the coverage of the traditional economy. Where this coverage is changing, as is the case in services where coverage of the traditional economy had become grossly inadequate, growth rates are overstated reflecting this increase in coverage. Second, it finds that SBS statistics grossly understate the investment level in the economy. Third, it finds the official SNA accounts inadequately account for both household sector and government sector disposable incomes, leading to grossly mistaken figures for government consumption. We produce a set of alternative figures for key GDP components from the expenditure and production side to facilitate a more adequate analysis of Serbia's macroeconomic structure and its sustainability.

There are important biases in the picture painted by the official statistics of Serbia that need to, and can, be removed in a relatively short time span. At the root of these biases are the gradual changes in the way the SBS has put the picture of Serbia's economy together—never quite adapting its methodologies to the fact that today's economy has a radically different structure compared to that in the heyday of Yugoslavia's statistics. The brunt of the economy today consists of much smaller agents unlikely to willingly file mailed statistical reports. What is more, if today's SBS were to attain the statistical report coverage (response rates) known in Serbia in the past, this would impose an unduly high cost on the economy now that it predominantly consists of small units. The overall statistics procedure has to be overhauled to rely on survey methods not as complements, but as the backbone of statistical assessments of production. Only together with such a changed philosophy would it also be advisable to legally bind economic agents to respond and cooperate with statistical inquiries.

The problems we identify do not arise because of ignorance of statistical methods or lack of qualified statisticians, as may be the case in other countries, but rather because of the combined effect of the absence of a comprehensive reform to adapt the statistical monitoring system to the new economy, and because of an acute lack in resources causing weaknesses at the level of implementation - at the very bottom of the data compilation hierarchy. Together, however, these problems breed biases, mostly against the recording of the behavior of new, and in favor of the registration of the traditional, economy. The behavior of these two economies often diverges, sometimes diametrically, and this produces systematically biased statistics.

Substantial resources are needed to overcome these problems, but they do not seem to be forthcoming. In fact, after suffering a linear staff cut of 10% just like all other government agencies, the SBS is in line for another linear staff cut that will be much harder to implement without harm. We believe the current insistence on linear cost and staff cuts by the authorities misses the point: institutions providing public services in Serbia need to be reformed to use their resources more effectively and in that process some of them will indeed generate true savings if not be eliminated altogether. But the whole point is to identify priorities and the needed reforms. Linear cuts are not going to attain either.

While CEVES is undertaking further research to increase empirical knowledge of Serbia's economy, a more substantial advancement can be attained only by

increasing the demand for adequate economic statistics and the economic feedback given to the SBS. The production of production statistics needs to be comprehensively reformed, based on a clearer notion of the changed economic structure that requires observing, and of the changed uses for the data being produced. This poses a bit of a “chicken and egg” problem as government institutions—whence most of this demand, and certainly the resources for the change, should be coming from - are unlikely to begin to use more statistics until their quality is improved.

An important improvement to current statistics capacity would be to re-orient the Solvency Center towards a function more clearly in support of research. At the moment, their orientation is towards the provision of a commercial service, providing financial reports processed into creditworthiness indicators.

Meanwhile, CEVES seeks to provide the demand trigger that, with adequate support, can draw statistics production and its use in the country out of the low-level-low-quality equilibrium. Given adequate resources, and considering available analytical capacity in the area of statistics in the country, it is possible for the SBS to address the weaknesses at the root of its problems in a relatively short time.

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