

possible use of the offered mathematical model for solution of inverse task of ellipsometry.

SHADOW ECONOMIES: SIZE, CAUSES, AND CONSEQUENCES

A.S. Strizhak, PGS; A.G. Degtyrenko

Shadow or underground economic activity is a fact of life around the world, and there are strong indications that it is increasing. Most societies attempt to control these activities through various punitive measures or through education, rather than through reforms of the tax and social security systems which could improve the dynamics of the official economy. Gathering information about underground economic activity is difficult, because no one engaged in such activity wants to be identified. Obtaining accurate statistics about the allocation of a country's resources in the shadow economy is important for making effective economic policy decisions. Hence, it is crucial to know who is engaged in the shadow economy, and with what frequency and magnitude such activities occur.

The size, causes, and consequences of the shadow economy vary for different types of countries, but some comparisons can be made which might be useful for social scientists and politicians, who must deal with this phenomenon sooner or later.

Attempts to measure the shadow economy first face the problem of defining it. One commonly used working definition is: all economic activities that contribute to the officially calculated (or observed) gross national product but are currently unregistered.

A main focus of this survey is to give a comprehensive summary of available data on the size of the shadow economy, since there has been no consistent comparison of estimates on various countries generated using similar methods. An overview of some results, estimated with indirect or "indicator" methods, which provide approximate magnitudes of the size and development of the underground economy, defined as productive value-adding activities that should be included in the official GNP.

The growth of the shadow economy is caused by many different factors. The most important and often cited ones are: the rise of the burden of taxes and social security contributions; increased regulation in the official economy, especially of labor markets; forced reduction of weekly working time; earlier retirement; unemployment; and the decline of civic virtue and loyalty towards public institutions combined with a declining tax morale.

An interdisciplinary analysis of the causes of the increase of the shadow economy seems necessary, since economic factors can only partly explain the increase.

On the one hand, the shadow economy's effect on the official economy should be taken into account in setting tax and regulatory policies, and on the other hand, the existence of a shadow economy could lead to overstatement of the inflationary effects of fiscal or monetary stimuli. Another hypothesis is that a substantial reduction of the shadow economy leads to a significant increase in tax revenues and therefore to a greater quantity and quality of public goods and services, which ultimately can stimulate economic growth. In the neoclassical view, the underground economy, responding to the economic environment's demand for urban services and small-scale manufacturing, adds to the economy a dynamic and entrepreneurial spirit and can lead to more competition, higher efficiency, and limits on government activities. The informal sector may also contribute "to the creation of markets, increase financial resources, enhance entrepreneur-ship, and transform the legal, social, and economic institutions necessary for accumulation". The effects of the shadow economy on economic growth therefore remain ambiguous.

Over the last ten years, corruption has gained growing attention among scientists, politicians, and public officials. A more general definition is "that corruption is the intentional non-compliance with arm's length relationship from this behavior for oneself or for related individuals". Corruption is sometimes involved in: satisfying regulations and obtaining licenses to engage in particular activities; land zoning and similar official decisions; access to publicly provided goods and services; decisions regarding procurement or public investment contracts; control over the provision of tax incentives; and hiring and promotion within the

public sector. On the one hand underground is a substitute for corruption (bribery), and on the other hand the empirical results point more to a complementary process: Countries with more corruption and bribery have larger shadow economies.

THE GLOBAL ECOLOGICAL CATASTROPHES AND THE ENVIRONMENTAL PROTECTION

I.A. Telizhenko, PGS; O.F.
Balatskiy

Since ancient times Nature has served Man giving everything he needs: air to breathe, food to eat, water to drink, wood for building and fuel for heating his home. For thousands of years, people lived in harmony with the environment and it seemed to them that the resources of nature had no end or limit. With the industrial revolution our negative influence on Nature began to increase.

So, pollution is one of the most burning problems of nowadays. Now millions of chimneys, cars, buses, trucks all over the world exhaust fumes and harmful substances into the atmosphere. These poisoned substances pollute everything: air, land, water, birds and animals.

The greenhouse effect is unquestionably real, and is essential for life on Earth. It is the result of heat absorption by certain gases in the atmosphere (called greenhouse gases because they trap heat) and re-radiation downward of a part of that heat. Water vapor is the most important greenhouse gas, followed by carbon dioxide and other trace gases. Without a natural greenhouse effect, the temperature of the Earth would be about zero degrees F (-18°C) instead of its present 57°F (14°C).

Human activity has been increasing the concentration of greenhouse gases in the atmosphere (mostly carbon dioxide from combustion of coal, oil, and gas; plus a few other trace gases). There is no scientific debate on this point.

Relatively cool surface and tropospheric temperatures, and relatively warmer lower stratosphere, were observed in 1992 and 1993 following the 1991 eruption of Mt. Pinatubo. The warming reappeared in 1994. A dramatic global warming, at least partly associated with the