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A CONCEPTUAL MODEL OF THE RELATIONSHIP BETWEEN SUSTAINABLE DEVELOPMENT AND THE SHADOW ECONOMY

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Abstract. This article analyzes the theoretical and methodological foundations of the interrelationship between sustainable development (SD) and the shadow economy (SE) and proposes an integrated conceptual model that explains their connection. The aim of the study is to characterize the influence of the shadow economy on the Sustainable Development Goals (SDGs) not as a one-directional effect, but as a bidirectional, multi-channel system moderated by the institutional environment. Drawing on an international empirical base covering the years 1991–2025 (data from Schneider, Medina, the IMF, and the World Bank) as well as on indicators from Uzbekistan's state statistics, the study employs comparative-analytical and conceptual-synthesis methods. As a result, five principal transmission channels linking the shadow economy with sustainable development (fiscal, labor-social, investment-productivity, institutional, and ecological) were identified, a four-state typology of the SD–SE relationship was developed, and twelve theoretical assumptions (hypotheses) were formulated. The model shows that the shadow economy serves a protective (shock-absorbing) function in the short term, while in the long term it acts as a factor constraining sustainable development. The findings have practical significance for designing public administration, fiscal-budgetary policy, and formalization strategies.

Keywords: sustainable development, shadow economy, informal economy, conceptual model, Sustainable Development Goals, institutional quality, fiscal channel, formalization, transmission mechanism, Uzbekistan.

1. INTRODUCTION, In modern economic development theory, the idea of sustainable development occupies a central place. The 2030 Agenda, adopted by the United Nations in 2015, set out 17 Sustainable Development Goals and 169 targets. These goals interpret economic growth, social justice, and environmental balance as a single, interconnected system. In practice, however, one of the most serious yet often inadequately assessed obstacles on the path to achieving these goals is the part of the economy that remains outside official accounting and is hidden from state oversight — that is, the shadow economy.

The phenomenon of the shadow economy is extremely widespread on a global scale. According to research conducted within the IMF under the leadership of F. Schneider and L. Medina, between 1991 and 2015 the average size of the shadow economy across 158 countries amounted to roughly 31.9 percent of gross domestic product (GDP). The highest figures were observed in developing and transition economies: in the Europe and Central Asia region this level exceeded 36 percent on average, whereas in high-income OECD countries it stood at around 13–16 percent. These figures show that the shadow economy is not merely a marginal phenomenon but a structural component of the world economy.

In the case of Uzbekistan, this problem likewise remains relevant. According to data from the Statistics Agency, the share of the non-observed economy (the sum of the informal and shadow sectors) amounted to 34.8 percent of GDP in 2024 and to 33.3 percent over the first nine months of 2025. According to World Bank and IMF estimates, the average





size of the shadow economy in the country was in the range of 36–39 percent during 2010–2020. A scale of this magnitude directly affects tax revenues, the social protection system, and the capacity to finance public services — that is, it complicates the achievement of the Sustainable Development Goals.

The relevance of the topic is reinforced by another important aspect. According to the UN and international financial institutions, developing countries face an enormous annual financing gap for achieving the Sustainable Development Goals. A significant portion of this gap is linked precisely to tax revenues lost because of the shadow economy. In other words, reducing the shadow economy is not only a matter of fiscal discipline but also a means of unlocking an internal source for financing sustainable development. For this reason, the systematic study of the interrelationship between these two phenomena becomes a priority task that is theoretical as well as practical and political.

The theoretical roots of the concept of the shadow economy go back to the second half of the twentieth century. While it was initially studied in the context of tax evasion and informal employment, researchers later began to examine it as a broad economic phenomenon. E. Feige introduced the concept of the “unobserved economy” into scholarly discourse, defining it as a concept encompassing all activity that remains outside tax and statistical reporting. F. Schneider and D. Enste, in turn, systematically analyzed the causes, scale, and consequences of the shadow economy and developed econometric methods for measuring it. This research showed that the shadow economy is not a random deviation but a stable phenomenon that arises as a response to the formal institutional environment.

The idea of sustainable development, for its part, grew out of a different theoretical tradition. The definition formulated in the 1987 report of the Brundtland Commission tied sustainable development to the principle of intergenerational equity. Subsequently, this idea developed through the 1992 Rio Conference, the 2000 Millennium Development Goals, and finally the 2015 Sustainable Development Goals. Scholars such as J. Sachs substantiated sustainable development as an independent scientific field that analyzes the interconnectedness of economic, social, and environmental systems. In this way, the shadow economy and sustainable development took shape as two independent yet, in practice, closely linked research traditions.

In recent years, attempts to integrate these two strands have been observed in World Bank and IMF reports. In particular, the World Bank's research on informality has shown that a high level of the informal economy reduces labor productivity, constrains state revenues, and curtails investment in human capital. However, these works are oriented more toward measuring empirical associations and do not fully provide a theoretical model that explains the relationship between the phenomena. The present study is aimed at filling precisely this theoretical gap.

The scholarly problem of the topic is that, in the economic literature, the shadow economy and sustainable development are often studied as separate objects of research. While one group of works is devoted to methods for measuring the size of the shadow economy (MIMIC, currency-demand, and energy-consumption approaches), another group analyzes sustainable development indicators and policy. Yet an integrated conceptual model that unites these two phenomena within a single causal-functional system, and that consistently explains the channels through which their interaction takes place, has so far not been sufficiently developed. It is precisely this theoretical gap that defines the scholarly novelty of this study.





The aim of the study is to develop a conceptual model that explains the relationship between sustainable development and the shadow economy as a bidirectional, multi-channel system moderated by the institutional environment.

To achieve this aim, the following tasks were addressed: first, the theoretical essence and mutual boundaries of the concepts of the shadow economy and sustainable development were defined; second, the principal transmission channels linking these phenomena were identified; third, a typological classification of the relationship was developed; fourth, theoretical assumptions (hypotheses) were formulated for testing the model; fifth, the practical and policy significance of the model was substantiated.

The scholarly novelty of the study is manifested in the proposal of an integrated conceptual model that characterizes the impact of the shadow economy on sustainable development not as linear, but as staged (short-term shock absorption, long-term constraint) and as a two-directional process with feedback.

2. MATERIALS AND METHODS. By its nature, the study belongs to the theoretical-conceptual direction and is based on a qualitative analysis methodology. The methodological core of the work is deductive conceptual modeling: existing theories and empirical evidence are generalized, and from them a logical structure describing the relationship between the shadow economy and sustainable development is derived. This approach is widely used in analyzing socioeconomic phenomena within a system of causal relationships and makes it possible to formulate hypotheses suitable for empirical testing.

2.1. Data Sources. The empirical base of the analysis was composed of three categories of sources. The first category comprises international comparative data: shadow-economy estimates published within the International Monetary Fund (IMF) by F. Schneider, L. Medina, and co-authors, as well as reports on informal employment by the World Bank and the International Labour Organization (ILO). The second category comprises official statistics at the national level: annual and quarterly data of the Statistics Agency of the Republic of Uzbekistan on the share of the non-observed economy. The third category comprises indicators from the UN global monitoring system for the Sustainable Development Goals.

In selecting the sources, the criteria used were their methodological transparency, breadth of coverage, and the length of their time series. In estimating the size of the shadow economy, various methods (the multiple-indicator multiple-cause MIMIC model, the currency-demand approach, the electricity-consumption method, and direct surveys) were considered as mutually complementary, since each method has its own strengths and weaknesses.

2.2. Methods of Analysis. The study used the following set of methods. Through a systematic literature review, scholarly sources on the shadow economy and sustainable development were grouped and the principal causal mechanisms within them were identified. The comparative method made it possible to compare the ratio between shadow-economy and sustainable-development indicators across groups of countries (developed, transition, and developing). With the help of logical-structural analysis, the channels linking the phenomena were identified and combined into a single model. The





typological classification method served to place the various states of the relationship within a two-dimensional matrix.

In constructing the conceptual model, a “cause – transmission mechanism – consequence” scheme was followed. This scheme distinguishes, as separate blocks, the factors (drivers) that give rise to the shadow economy, the intermediary channels through which these factors influence the dimensions of sustainable development, and the final outcomes. Feedback elements were also incorporated into the model, since sustainable development policy itself can exert a reverse influence on the size of the shadow economy.

Limitations of the study. Because this work is conceptual in nature, the proposed model has not been fully tested econometrically. In addition, estimates of the size of the shadow economy contain methodological errors and may differ across sources. For this reason, the figures cited should be interpreted not as absolutely precise values but as orders of magnitude that indicate trends.

2.3. Variables of the Conceptual Framework. To construct the model, three categories of variables were operationalized. The share of the shadow economy in GDP was taken as the independent variable, reflecting the relative size of the non-observed economy. As dependent variables, a group of indicators representing the three dimensions of sustainable development was defined: for the economic dimension, GDP per capita and the investment share; for the social dimension, the level of formal employment and social protection coverage; for the environmental dimension, indicators of resource efficiency and waste management. Institutional quality (rule of law, control of corruption, and effectiveness of public administration) was chosen as the moderating variable.

Such operationalization ensures that the model is suitable for empirical testing. The relationships among the variables were distinguished as direct effects (from the independent variable to the dependent variable) and intermediary effects (through the transmission channels). The inclusion of a moderating variable, in turn, makes it possible to explain why the same level of the shadow economy leads to different consequences in different institutional environments. This framework may in the future be tested using structural equation modeling (SEM) or panel regression methods.

3. RESULTS

3.1. Theoretical Boundaries of the Concepts

The results of the study begin first with a clarification of the principal concepts. In a broad sense, the shadow economy denotes all economic activity that is not registered by the state, is not taxed, and is not reflected in the official calculation of GDP. In a narrow sense, it denotes the part of lawful activity that is concealed from taxation. In statistical practice, the non-observed economy is divided into two parts: the informal sector (the activity of unregistered small businesses and households) and the shadow sector (the partial concealment of income by lawful enterprises). According to Uzbekistan's statistics for 2025, the informal sector accounted for 25.6 percent of GDP and the shadow sector for around 8 percent.

To understand the internal structure of the shadow economy, it is important to break it down into components. In the literature it is divided into four principal categories: activity that produces lawful goods but is concealed from taxation; unregistered informal small business; non-monetary production within the household; and illegal activity. In this study, the main attention is focused on the first two categories, since it is precisely





these that have the strongest connection with the Sustainable Development Goals. Because illegal activity requires separate legal analysis, it was left outside the scope of the model.

The methods for measuring the size of the shadow economy also affect the interpretation of results. The most widespread multiple-indicator multiple-cause (MIMIC) model interprets the shadow economy as a latent (unobserved) variable and estimates it through causes (tax burden, regulation, unemployment) and indicators (currency demand, labor participation). The currency-demand approach relies on anomalies in monetary circulation, while the energy-consumption method relies on the discrepancy between electricity consumption and official GDP. Direct surveys provide micro-level data. The results of these methods often differ from one another, which necessitates a cautious approach to estimates. For this reason, the model relies not on specific figures but on trends and causal relationships.

Sustainable development, in turn, implies meeting the needs of the present generation without compromising the ability of future generations. It rests on the balance of three dimensions — economic, social, and environmental. The Sustainable Development Goals translate these dimensions into measurable indicators: ending poverty (Goal 1), decent work and economic growth (Goal 8), industrialization and innovation (Goal 9), reducing inequality (Goal 10), responsible consumption (Goal 12), climate action (Goal 13), and strong institutions (Goal 16). It is precisely these goals that constitute the points where the influence of the shadow economy is most strongly felt.

3.2. The Five Transmission Channels of the Relationship

The central result of the study is the identification of five principal transmission channels linking the shadow economy with sustainable development. These channels constitute the core of the model, and each pertains to specific Sustainable Development Goals.

First – the fiscal channel. The shadow economy narrows the tax base and reduces the revenue side of the state budget. As a result, the funds directed to education, healthcare, infrastructure, and social protection are curtailed. This, in turn, limits the capacity to finance Goals 1, 3, 4, and 9. When the tax burden falls on a single group of formal payers, it intensifies a sense of unfairness and prompts even more entities to move into the shadow.

Second – the labor and social protection channel. Informal employment deprives workers of pension provision, social insurance, and the protection of labor rights. This directly contradicts Goal 1 (poverty) and Goal 8 (decent work). Those employed in the informal sphere often work under conditions that lack stability, are poorly paid, and provide no safety guarantees.

Third – the investment and productivity channel. Enterprises operating in the shadows prefer to remain small in order to avoid visibility, and cannot make use of formal credit and capital markets. This impedes their attainment of economies of scale and their technological modernization, and as a result overall labor productivity declines (Goals 8 and 9).

Fourth – the institutional channel. The expansion of the shadow economy weakens trust in state institutions and enters into a mutually reinforcing relationship with corruption and the weakening of the rule of law. This poses a serious threat to Goal 16 (strong institutions and justice) and operates as a systemic factor that amplifies the impact of all the other channels.





Fifth – the ecological channel. Producers operating outside oversight do not comply with environmental standards, waste-management rules, or the rules for the rational use of resources. This has a negative impact on the tasks under responsible consumption (Goal 12), climate action (Goal 13), and terrestrial ecosystems (Goal 15). This channel is often overlooked in the literature, yet it is directly linked to the environmental dimension of sustainable development.

The combined impact of these channels intensifies in proportion to the size of the shadow economy. Considering that on a global scale roughly one-third of economic activity (around 30 percent on average) lies outside official accounting, the scale of the lost fiscal, social, and environmental potential is extremely large. In developed countries, the relatively low level (13–16 percent) constrains the impact of the channels, whereas in developing and transition economies the high level (36 percent and above) activates all the channels simultaneously. For this reason, the impact of the shadow economy on sustainable development intensifies non-linearly depending on the stage of development — this is one of the model's important empirical predictions.

The following table summarizes the identified channels together with the relevant Sustainable Development Goals and the direction of impact.

Transmission channel	Principal mechanism	Related SDGs
Fiscal	Narrowing of the tax base, reduction of budget revenue	1, 3, 4, 9
Labor and social protection	Informal employment, lack of social guarantees	1, 8, 10
Investment-productivity	Limited access to capital, low productivity	8, 9
Institutional	Decline of trust, corruption, weak rule of law	16
Ecological	Non-compliance with standards, unmonitored production	12, 13, 15

Table 1. Channels of the shadow economy's impact on sustainable development (developed by the author).

An important point is that these channels do not operate in only one direction. Advances along the path of sustainable development also exert a reverse influence on the size of the shadow economy — that is, the relationship is bidirectional (two-way). For example, the expansion of the social protection system and the encouragement of formal employment reduce the shadow sector through the labor channel. An increase in the quality of public services and the strengthening of institutional trust, in turn, set the fiscal and institutional channels in motion in the reverse direction: citizens and businesses become more interested in paying taxes. For this reason, the model must be analyzed not as a static but as a dynamic system.

3.3. The Four-State Typology of the Relationship

The relationship between the shadow economy and sustainable development is not uniform — it changes depending on a country's stage of development and institutional quality. On this basis, a two-dimensional typological matrix was developed (size of the





shadow economy — high/low; institutional quality — high/low). This matrix distinguishes four characteristic states.

- First state – “sustainable equilibrium”: a low shadow economy and high institutional quality. Under such conditions, the formal economy is dominant, and the resources needed to achieve the Sustainable Development Goals are sufficiently provided.
- Second state – “shock-absorber regime”: a high shadow economy but a relatively stable social situation. Here the shadow sector, in the short term, cushions social shocks by serving as a source of jobs and income, yet it erodes the foundation for long-term development.
- Third state – “institutional trap”: a high shadow economy and low institutional quality. This is the most dangerous state, in which the shadow economy and weak institutions turn into a negative spiral that reinforces one another.
- Fourth state – “transition stage”: a low shadow economy but institutions that are not yet consolidated. This state is characteristic of countries in which reforms are ongoing and the formalization process has become active.

According to the available indicators, Uzbekistan is located in the transition zone between the second and fourth states: the share of the shadow economy remains high (around 33 percent), yet in recent years a downward trend in it and active formalization reforms have been observed. This shows that the model can be applied as a tool for practical analysis.

The practical value of the typology is that it defines different policy priorities for each state. Whereas in the “institutional trap” state it is necessary first of all to strengthen institutions, in the “shock-absorber regime” the main attention is directed toward gradually formalizing informal employment. For countries in the “transition stage,” it is pressing to consolidate the results achieved and to prevent backsliding. In this way, the model performs not only a descriptive but also a normative (policy-orienting) function. The fact that a country's position in the matrix may change over time once again confirms the dynamic nature of the model.

3.4. The Conceptual Model and Theoretical Assumptions

On the basis of the results above, an integrated conceptual model was formulated. The model consists of three blocks. The first block comprises the drivers (tax burden, complexity of regulation, institutional weakness, deficit of trust). The second block comprises the five transmission channels described above. The third block comprises the outcomes in the three dimensions of sustainable development. The blocks are connected by a feedback loop: sustainable development policy (digitalization, improvement of tax administration, strengthening of trust) can exert a reverse influence on the drivers and thereby reduce the size of the shadow economy.

The central idea of the model is that the impact of the shadow economy on sustainable development is two-staged depending on the time dimension. In the short term, the shadow economy performs the function of a social shock absorber: by being a source of income for those who cannot find work in the formal market, it cushions social tension. In the long term, however, it erodes the tax base, weakens institutions, and limits investment — that is, it systematically blocks sustainable development. It is precisely this two-stage character that constitutes the model's main theoretical contribution.

To understand the shock-absorbing mechanism more deeply, it is necessary to distinguish the conditions under which it operates. During periods of economic crisis or structural





change, workers and small entrepreneurs who have left the formal sector find temporary shelter in the shadow sector, which prevents mass unemployment and sharp impoverishment. Yet this “protection” comes at a cost: an economy that lingers in the shock-absorber regime for too long falls into a trap of low productivity, limited investment, and weak social protection. Therefore, the model recommends a policy aimed not at abruptly and instantly eliminating the shadow economy, but at transferring it gradually to the formal sector — that is, at replacing the shock-absorber function with stable institutional mechanisms.

Proceeding from the model, a number of theoretical assumptions were formulated for future empirical testing. Among them, the following occupy a central place:

- As the share of the shadow economy rises, the state's capacity to finance the Sustainable Development Goals declines (the fiscal assumption).
- In countries with high institutional quality, the negative impact of the shadow economy on sustainable development is manifested more weakly (the moderation assumption).
- The relationship between the shadow economy and sustainable development is not linear but has a staged character along the time dimension (the staging assumption).
- The expansion of digital payment systems and electronic tax administration reduces the size of the shadow economy (the technological assumption).
- A high level of informal employment narrows social protection coverage and slows the achievement of the poverty-reduction goal (the social assumption).
- Enterprises operating in the shadow sector remain in a low-productivity trap because of their limited access to formal credit resources (the productivity assumption).
- An increase in the share of unmonitored production lowers resource efficiency and the degree of compliance with environmental standards (the ecological assumption).
- An increase in the tax burden and the complexity of regulation raises the probability of moving into the shadow economy (the incentive assumption).

Overall, within the framework of the model, twelve theoretical assumptions were formulated across the five transmission channels. They encompass direct, intermediary, and moderating effects and ensure that the model is suitable for empirical testing. The assumptions cited above constitute the central and most readily testable part of this set.

3.5. The Block Structure of the Model and Its Operating Logic

The proposed conceptual model is conceived as a single system consisting of three interconnected blocks and a feedback loop that joins them. The first block — the drivers (the factors that set the system in motion) — aggregates the causes that give rise to the shadow economy: a high tax burden, excessive complexity of regulation, the high costs of registration and licensing, institutional weakness, and a deficit of trust in the state. These factors serve as the initial impetus that prompts economic agents to move from the formal sector to the shadow sector. An intensification of the drivers leads, at the model's entry point, to an increase in the size of the shadow economy.

The second block — the transmission mechanisms — is the core of the model and consists of the five channels described in detail above. It is precisely in this block that the size of the shadow economy is converted into sustainable development outcomes. Each channel exerts a separate effect, yet they are interrelated: for example, the weakening of





the institutional channel amplifies the negative impact of the fiscal and investment channels. This inter-channel interaction shows that the model is non-linear and has a systemic character. The third block — the outcomes — encompasses the final consequences in the three dimensions of sustainable development: economic growth and investment, social protection and equality, and environmental balance.

The most important structural element of the model is the feedback loop directed from the third block to the first. Achievements in the area of sustainable development (high income, strong institutions, broad social protection) change the drivers in the reverse direction: a culture of tax payment is strengthened, the attractiveness of formal activity increases, and the incentive to move into the shadow economy weakens. It is precisely this loop that enables the model to explain two self-reinforcing alternative trajectories — a positive one (in which formalization and sustainable development support one another) and a negative one (in which the shadow economy and institutional weakness deepen one another). Which trajectory a country falls into is determined in large part by institutional quality and political will.

4. DISCUSSION

The findings of the study make it possible to reconcile the seemingly contradictory interpretations of the relationship between the shadow economy and sustainable development. In the traditional literature there are two opposing points of view. The first assesses the shadow economy as an absolutely negative phenomenon — a factor that erodes tax revenues and weakens institutions. The second sees it as a mechanism of market flexibility and social protection, that is, as a shock absorber during periods of crisis. The proposed model unites these two views through the time dimension: both interpretations are partly correct, and their applicability depends on the time horizon.

This conclusion has particular significance for transition economies, including Uzbekistan. The high share of the shadow economy in the country is explained in part by structural changes amid rapid economic growth and by the fact that a large part of the population is employed in agriculture and the service sector. Statistical analysis shows that the highest level of non-observed economic activity is concentrated precisely in agriculture, services, and construction. This means that the model's ecological and labor channels operate most actively in these sectors.

When the proposed model is compared with the existing literature, its distinctiveness becomes clear. The works of Schneider and Enste focused on the causes and consequences of the shadow economy but did not directly link them to the system of the Sustainable Development Goals. World Bank research empirically measured the impact of informality on development but was confined mainly to the economic dimension. The present model, by contrast, first brings all three dimensions of sustainable development (economic, social, and environmental) into a single framework; second, separately distinguishes the often-overlooked ecological channel; and third, formalizes at the theoretical level the time-dependent two-stage character of the impact. With these features, the model generalizes existing knowledge and raises it to a new synthetic level.

The theoretical significance of the model is manifested in several respects. First of all, it interprets the shadow economy not as a statistical anomaly to be considered in isolation, but as an internal element of the sustainable development system. Second, the inclusion of institutional quality in the model as a moderating variable explains the context-dependence of the phenomenon: the same level of the shadow economy can lead to different consequences in different institutional environments. Third, the presence of the





feedback loop shows that sustainable development policy can itself exert an influence on the shadow economy, which provides policymakers with concrete points of leverage.

From a practical standpoint, the model advances several policy recommendations. First, measures aimed at reducing the shadow economy must rely not only on coercion and punishment but on incentives that make formalization irreversibly advantageous: simplifying tax administration, reducing registration costs, and expanding digital services. Second, budgetary policy must combine the financing of the Sustainable Development Goals with the broadening of the tax base. Third, raising institutional quality — strengthening the rule of law and combating corruption — is the fundamental condition that enhances the effectiveness of all other measures.

Sectoral analysis further clarifies the practical significance of the model. According to Uzbekistan's statistics, the highest level of non-observed economic activity is concentrated in agriculture, forestry, and fishing (roughly 69 percent of gross value added), followed by the services and construction sectors; in industry this share is at its lowest. This distribution shows that the model's channels operate with different intensity in different sectors. In agriculture the labor and fiscal channels predominate, while in construction the investment and ecological channels do. Hence, formalization policy must rely not on a single universal approach but on targeted measures that take into account the specific features of each sector.

The channel structure of the model can also serve as a basis for improving the monitoring system. If separate indicators are tracked for each channel (broadening of the tax base, the share of formal employment, credit coverage, institutional quality indices, and the degree of compliance with environmental standards), the state can assess the impact of the shadow economy on sustainable development in real time. This makes it possible to measure the effectiveness of policy measures and to introduce necessary adjustments. In this sense, the model has the potential to become not merely a theoretical construct but a practical management tool.

Proceeding from the model, a step-by-step policy road map can be proposed. In the initial stage, the institutional foundation is strengthened: the rule of law is ensured, the fight against corruption is intensified, and trust in the state is restored, since this factor determines the effectiveness of all other measures. In the second stage, formalization is encouraged: tax administration is simplified, registration costs are reduced, digital services are expanded, and graduated tax regimes for small businesses are introduced. In the third stage, the additional revenues from the broadened tax base are directed toward financing the Sustainable Development Goals — toward education, healthcare, social protection, and ecological infrastructure. These targeted investments, through the feedback loop, further increase the attractiveness of the formal sector.

Thus, the model shows that the goals of ensuring sustainable development and reducing the shadow economy are not contradictory but mutually supportive. Reducing the shadow economy enables the state to finance sustainable development; in turn, achievements in sustainable development encourage formalization. This positive mutual relationship provides a strategic anchor point for reforms and substantiates the need to design policy as a single, coherent system.

In addition, the model's ecological channel emphasizes that the state requires a policy that integrates environmental regulation and sustainable development. Formalizing production that lies outside oversight increases not only fiscal but also ecological efficiency, since the formal sector is subject to environmental standards. This aspect once





again confirms the link between the economic and environmental dimensions of sustainable development.

The limitations of the study must also be acknowledged. First, the model is conceptual, and its hypotheses have not yet been fully confirmed empirically. Second, estimates of the size of the shadow economy differ considerably depending on the methodology, which limits the reliability of quantitative conclusions. Third, because the model was developed as a general theoretical framework, it does not fully capture the specific institutional and cultural features of each country.

A comparative review of countries' experience once again confirms the validity of the model. In high-income OECD countries, the relatively low level of the shadow economy (around 13–16 percent) is combined with strong institutions, effective tax administration, and a broad social protection system — which corresponds to the “sustainable equilibrium” state. By contrast, in many developing countries a high share of the shadow economy comes together with weak institutions and gives rise to the “institutional trap” state. In the transition economies of Central Asia, meanwhile, a level averaging above 36 percent is unfolding together with a reform process. These comparisons show that the model's four-state typology is valid for various countries.

A particularly noteworthy aspect of the model is the dual role of digitalization. On the one hand, electronic payments, digital tax services, and online registration systems reduce cash circulation, make transactions transparent, and encourage formalization. In Uzbekistan, the digitalization of public services and the introduction of open instruments of oversight are precisely steps in this direction. On the other hand, digital platforms can also give rise to new types of informal employment and forms of undeclared income. For this reason, digitalization policy must be managed consciously and consistently as a tool for reducing the shadow economy. This brings the model's technological assumption onto the plane of practical policy.

The directions for future research follow from these limitations. First of all, it is advisable to test the proposed hypotheses econometrically on the basis of panel data. Second, it would be useful to make the model more concrete in the cross-section of individual sectors (agriculture, construction, services). Third, it is pressing to study separately and in depth the relationship between digitalization and the shadow economy, since the digital economy can be both a tool of formalization and a source of new forms of shadow activity.

Fourth, a promising direction is the quantitative assessment of the model's feedback loop with the help of dynamic analysis methods — for example, system dynamics or time-series modeling. Such analysis makes it possible to determine how long it takes for formalization policy to produce a noticeable result. Fifth, operationalizing the institutional-quality dimension through various indicators and comparatively studying their moderating effect would further strengthen the model. Together, these directions constitute the necessary basis for transforming the proposed conceptual framework into a fully empirically confirmed theory.

5. CONCLUSION

The study conducted made it possible to describe the relationship between sustainable development and the shadow economy through an integrated conceptual model. The model considers these two phenomena not separately but as an interconnected, multi-channel system moderated by the institutional environment. The principal findings of the study are summarized as follows.





First, five principal transmission channels linking the shadow economy with sustainable development — the fiscal, labor-social, investment-productivity, institutional, and ecological channels — were identified, and their impact on specific Sustainable Development Goals was shown. Second, a four-state typology based on the dimensions of the size of the shadow economy and institutional quality was developed, providing a tool for analyzing the various situations of different countries. Third, as the central idea of the model, the two-stage character of the shadow economy's impact — short-term shock absorption and long-term constraint — was substantiated.

The study abandons the simplified views that assess the shadow economy as absolutely negative or absolutely beneficial, and proposes instead to see its impact as a complex process that depends on context and time. In the case of Uzbekistan, the model showed that the country is located in the transition zone and that the shadow economy is still high but has a downward trend. This confirms the necessity of a consistent policy for formalization, the improvement of tax administration, and the raising of institutional quality.

Theoretically, the proposed model creates a single framework linking the theories of the shadow economy and sustainable development, while practically it can serve as an analytical tool for decision-makers in the areas of public administration, fiscal-budgetary policy, and environmental regulation. Empirically testing the model's hypotheses is defined as the main task of future research.

Summing up the theoretical contribution of the study, it seeks to bridge the gap between the theories of the shadow economy and sustainable development. The multi-channel approach, the moderating role of institutional quality, the two-stage character of the impact, and the feedback loop — these four elements together make it possible to see the phenomenon not as a static indicator but as a dynamic system. Such a systemic view requires policymakers to rely not on a single instrument but on a set of interrelated measures.

From a practical standpoint, the study advances the following conclusion: ensuring sustainable development and reducing the shadow economy are not contradictory goals. On the contrary, they are mutually supportive processes that can be turned into a positive spiral by raising institutional quality, encouraging formalization, and directing the broadened resources toward the Sustainable Development Goals. For Uzbekistan, this conclusion confirms the strategic logic of the economic reforms being carried out and provides a guiding framework for future policy. At the same time, as a general theoretical foundation, the model can also be adapted to the experience of other transition economies, which further increases its scholarly value.

REFERENCES

1. United Nations. Transforming our World: The 2030 Agenda for Sustainable Development. – New York: UN General Assembly, 2015. – Resolution A/RES/70/1.
2. Medina L., Schneider F. Shadow Economies Around the World: What Did We Learn Over the Last 20 Years? // IMF Working Paper WP/18/17. – Washington: International Monetary Fund, 2018. – 76 p.
3. Schneider F., Buehn A., Montenegro C. E. New Estimates for the Shadow Economies all over the World // International Economic Journal. – 2010. – Vol. 24, No. 4. – P. 443–461.





4. Schneider F., Enste D. H. Shadow Economies: Size, Causes, and Consequences // Journal of Economic Literature. – 2000. – Vol. 38, No. 1. – P. 77–114.
5. World Bank. The Long Shadow of Informality: Challenges and Policies. – Washington, DC: World Bank Group, 2021. – 354 p.
6. International Labour Organization. Women and Men in the Informal Economy: A Statistical Picture. 3rd ed. – Geneva: ILO, 2018. – 164 p.
7. Feige E. L. The Underground Economies: Tax Evasion and Information Distortion. – Cambridge: Cambridge University Press, 1989. – 392 p.
8. Williams C. C., Schneider F. Measuring the Global Shadow Economy: The Prevalence of Informal Work and Labour. – Cheltenham: Edward Elgar Publishing, 2016. – 224 p.
9. Statistics Agency of the Republic of Uzbekistan. Data on the Share of the Non-Observed Economy in Gross Domestic Product. – Tashkent, 2025.
10. Sachs J. D. The Age of Sustainable Development. – New York: Columbia University Press, 2015. – 543 p.
11. Elgin C., Oztunali O. Shadow Economies around the World: Model Based Estimates // Bogazici University Working Papers. – 2012. – No. 2012/05. – 48 p.
12. La Porta R., Shleifer A. Informality and Development // Journal of Economic Perspectives. – 2014. – Vol. 28, No. 3. – P. 109–126.

