OXFORD ECONOMICS

Diia City:
A Review of the Impact of Reforms on the Ukrainian IT Sector

February 2021

INTERNATIONAL TAX AND INVESTMENT CENTER

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Executive Summary

Over the last decade, the Ukrainian IT sector has experienced rapid growth in output and employment. Supported by a large base of skilled labour and an initially favourable institutional framework, Ukraine has climbed the rankings of global IT outsourcing destinations.[1] Exports of IT services account for around one-quarter of Ukraine's services export revenues, helping to partially offset an historically large deficit in goods trade.

However, the sector is rapidly approaching a crossroads, and absent industrial upgrading or policy intervention, continued growth is at risk from disruption from emerging low-cost production centres such as Georgia and Kazakhstan. Business-to-business IT outsourcing is a cost sensitive and internationally mobile activity. Global demand is sensitive to underlying labour costs, and growing skills shortages in Ukraine are driving up wages in comparison with regional competitors, which over time will mean that domestic IT firms will need to move up the global value chain to remain viable in the face of lower cost competition.[2]

Firms in the Ukraine lack the managerial and organisation skills required to move up the global value chain, and absent policy interventions, business models based on outsourcing alone typically struggle to develop these skills.[3] The same institutional framework that supported the initial development of the sector is now holding back skills development, with the Simplified Tax System distorting firm behaviour, resulting in a fragmented sector composed of many small firms and the widespread use of freelance labour, prioritising short term objectives over long term development.

Diia City, a special legal framework for the IT sector, aims to better realign incentives towards supporting the process of moving up the value chain. Tabled by the Ministry of Digital Transformation, the reforms aim to simplify the tax system and provide incentives for resident firms to achieve scale, invest and increase formal employment, and attract FDI—all important drivers of industrial upgrading—as well as strengthening governance and improving the business operating environment, and providing a more equitable playing field across industry participants. Entry criteria are designed to tackle mass tax evasion through combatting the common practise of paying 'envelope wages' (defined later).

The reforms broadly align with the government's ambitions for increasing the value-added output of the IT sector. While evidence on the performance of similar tax and legal frameworks is somewhat mixed, Diia City reforms are consistent with past learnings in terms of supporting economic development—helping to boost domestic investment and attract FDI, create more formal employment opportunities, support global value chain participation, and offer indirect spillover benefits through advancing skills development and technology transfers. The Ukrainian economy benchmarks poorly across indicators of digitisation, and would benefit from a more sophisticated and integrated domestic IT sector.

Modelling, undertaken by Oxford Economics, suggests that Diia City reforms will have a modest impact on government finances, and could boost tax revenues under the right circumstances. Faced with a precarious fiscal outlook, IMF concerns centre around a potential decline in government tax revenues following implementation of the reforms. And while these concerns are not unfounded—Diia City incudes lower statutory tax rates for resident firms—the minimum wage eligibility criterion for Diia City residency

[1] The Ukraine ranks 20th in the 2019 Kearney Global Services Location Index (https://www.kearney.com/digital-transformation/gsli/2019-full-report), while an industry search of industry publications and participants often cite Ukraine as a top destination for IT outsourcing.

[2] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). Path for Ukraine's economic growth: Technology upgrading. Washington, D.C.: World Bank Group.

[3] ibid.

will boost the tax base for employee taxes and help to offset the decline in tax revenues due to other incentives. Furthermore, the low compliance rates of corporate tax payments imply that the impact of moving to a withholding tax on dividends is minimised.

A static tax model developed by Oxford Economics presents a series of alternative scenarios, varying according to assumptions on the proportion of firms becoming Diia City residents and the level of activity brought into the formal economy as a consequence. These scenarios present a range of potential outcomes, but highlight the relatively modest impact of Diia City on government revenues, and show that under circumstances of high residency uptake and formalisation of the employment of private entrepreneurs, the reforms could be fiscally positive.

Introduction

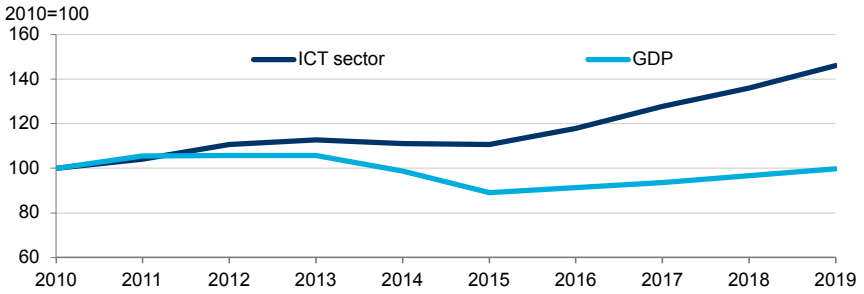
The IT sector has emerged as a bright spot for the Ukrainian economy, escaping the wider economic stagnation and developing into an internationally renowned base for outsourced business-to-business IT services. This success was built on a skilled labour force and competitive tax regime, but future growth is threatened by low cost competitors in other countries as wages accelerate in the Ukraine. And so, to remain competitive, the industry needs to move up the value chain. With this context in mind, the Ministry of Digital Transformation is proposing to establish a special legal framework (Diia City) to support the development of the IT sector. This report reviews the implications of the proposed Diia City reforms, covering the potential impact on government revenues, in addition to other potential channels of impact on the economy.[4]

Outlook for the IT Sector

Ukraine's IT sector has grown rapidly over the last decade, significantly outperforming other sectors of the economy. This success is underpinned by a number of factors both domestic—such as a skilled workforce (a legacy of the Soviet education system) and an institutional framework that provides operational flexibility and low statutory tax rates—and external factors, including the rapid globalisation of the IT sector and strong demand growth for software services.

Based on the wider Information & Communication Technology (ICT) definition, the sector's gross value added (GVA) contribution to GDP has risen by 4.3% per annum in real terms over the last decade, during a period when the wider economy has stagnated (Chart 1).[5] As a consequence, its share in GDP increased from 2.9% in 2010 to 4.2% in 2019, and now supports around 290,000 jobs. This growth was largely underpinned by exports of low value IT outsourcing services—total exports amounted to nearly US$ 4.2 billion in value in 2019 (one-quarter of total services exports), with Ukraine becoming the 12th largest exporter of IT services in the world.[6]

Chart 1: Ukraine total economy and ICT sector real GDP, 2010-19



Source: Oxford Economics/Haver Analytics

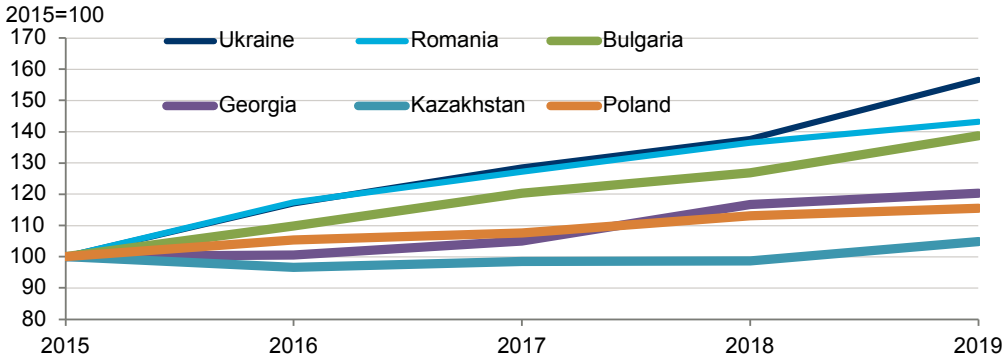
[4] We would like to thank NGO Digital Ukraine for their financial support and review and comments, and the Ministry of Digital Transformation of the Government of Ukraine for their cooperation, including assistance in providing data. The modelling and results presented here are based on information provided by third parties, upon which Oxford Economics has relied in producing its report in good faith.

[5] Due to data limitations, the figures are based on the Information & Communication Technology sector, NACE section J (State Services of Ukraine/Haver Analytics). Gross value added is a measure of the contribution to GDP made by and individual producer, industry, sector, or region, calculated as the value of gross output less the value of intermediate consumption (or equally, the sum of gross operating surplus and labour costs).

[6] IMF Database on trade in services, via Aridi, A., Hayter, C., & Radosevic, S. (2020) *Windows of opportunities for catching up: an analysis of ICT sector development in Ukraine.* The Journal of Technology Transfer.

However, the IT sector is approaching a crossroads. Rapid output growth has fuelled strong demand for IT engineers which is outpacing local supply, a trend that is compounded by continued outbound migration of the most talented engineers, generating shortages in skilled labour. This has manifested through accelerating wage growth—especially since the 2014/15 crisis, averaging nearly 12% per annum in real terms (based on data for the aggregate ICT sector)—gradually eroding Ukraine's competitive advantages over neighbouring economies (Chart 2).

Chart 2: Average real monthly wages in ICT sector, 2015-19



Source: Oxford Economics/Haver Analytics. In order to compare these series over time, we have adjusted the values by indexing the data to a common starting point (2015=100).

This trend is unsustainable given that the activities typically undertaken by Ukrainian IT firms are of low value and thus cost sensitive. And given the highly mobile nature of the global IT outsourcing market, future growth is at risk unless IT firms can successfully move up the value chain in production. Regional competition is fierce, all competing to gain a foothold in the large EU market—Estonia, Poland, and Romania already have well established IT clusters; Belarus offers significant incentives for firms to locate in their 'High Technology Park'; and new low-cost competition is emerging in Georgia and Kazakhstan. As outlined by the World Bank, *"the shrinking ICT labour supply has resulted in rapidly growing wages which, over time, will mean that most Ukrainian firms will no longer able to compete only on price".*[7]

But the Ukrainian IT sector is not well placed to combat this competitive threat. The World Bank argues that the sector has failed to develop the managerial and organisational capabilities needed to move up the global value chain,[8] and there has been little policy response to accelerate this process.[9] This is in large part a bi-product of the underlying institutional framework, and in particular distortions arising from the application (and misuse) of the Simplified Tax System (STS), which disincentivises the necessary industrial upgrading process.

The STS, which has existed now for over two decades, was designed partly to support innovative start-up and entrepreneurial activity in Ukraine, as well as to reduce the size of the shadow economy. It provides reduced tax rates and simplified administrative procedures for private entrepreneurs and small legal enterprises if they operate within certain financial and employment thresholds, including a limit on their annual income (US$ 250,000 in the highest group).

[7] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). Path for Ukraine's economic growth: Technology upgrading. Washington, D.C.: World Bank Group.

[8] ibid.

[9] Aridi, A., Hayter, C., & Radosevic, S. (2020) *Windows of opportunities for catching up: an analysis of ICT sector development in Ukraine*. The Journal of Technology Transfer.

In practice, while it does support some small businesses and private entrepreneurs, as noted by the IMF, it is now widely exploited by larger firms to reduce their tax liabilities, who can significantly reduce their labour costs by substituting regular employees with external contractors.[10] This behaviour is particularly pervasive in the IT sector due to the low value nature of the work and ease at which operations can be fragmented—entities that qualify for the STS account for 55% of industry revenue and nearly 70% of employment.[11] According to International Labour Organisation analysis, Ukraine ranks among the top globally in terms of the financial flows and number of tasks executed on digital labour platforms, and ranks first in *"IT freelance"*.[12]

The STS distorts firm behaviour and stifles the long-term development of the IT sector. While many firms benefit from reduced overheads and the operational flexibility of using a large base of contractors, it misaligns incentives that act as a detriment to industrial upgrading:

- Most firms in the IT sector are small, and so any potential productivity benefits typically associated with operating at scale are foregone. Firms are incentivised by the significant tax advantages of the STS to either remain small or shift profits between related parties ('business splitting').
- The IT sector has not developed the requisite managerial or operational skills required to support industrial upgrading. Firms typically prioritise short term returns—focusing on supplying low value elements of the global IT supply chain—over longer-term ambitions. And as argued by the World Bank, systems based on outsourcing typically struggle to develop such skills independently.[13]
- Larger firms are incentivised to fragment their operations or reclassify employees as entrepreneurs and/or employ a high share of contractors—data suggests that these payments represent around 50% of total turnover of registered legal enterprises in the IT sector.[14] As highlighted by the IMF, the STS provides *'amply opportunity for avoidance by employers who contract their workforce as independent entrepreneurs'*.[15] This gives rise to the *"working in caves"* phenomenon that can inhibit firm development and industrial upgrading; whereby IT engineers working in isolation do not integrate beyond their specific tasks, and therefore fail to consider the objectives of the project or enterprise.[16]

An immediate by-product of these distortions is the very low capital investment rate of firms in the IT sector. As illustrated in Chart 3, investment levels are very low in Ukraine, lagging both global and regional peers, as firms forgo long term development goals in favour of shorter-term objectives.

In addition to its impact on firm behaviour and incentives for tax avoidance, it is also understood that there is significant tax evasion in Ukraine.[17] Depending on the underlying source, estimates for the size

[10] Schatan, R., Caner, S., Waerzeggers, C., & Thurony, V. (2015). Reducing Social Security Contributions and Improving the Corporate and Small Business Tax System. Washington, D.C.: IMF Technical Assistance Report.

[11] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). *Path for Ukraine's economic growth: Technology upgrading*. Washington, D.C.: World Bank Group.

[12] International Labour Organization (2019). *Work on Digital Labour Platforms in Ukraine: Issues and policy perspectives*.

[13] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). *Path for Ukraine's economic growth: Technology upgrading*. Washington, D.C.: World Bank Group.

[14] State Tax Service of Ukraine.

[15] Schatan, R., Caner, S., Waerzeggers, C., & Thurony, V. (2015). Reducing Social Security Contributions and Improving the Corporate and Small Business Tax System. Washington, D.C.: IMF Technical Assistance Report.

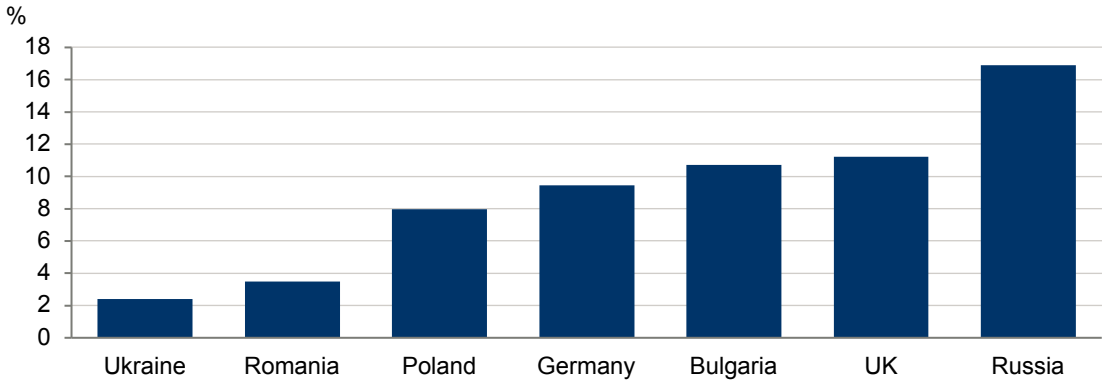
[16] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). *Path for Ukraine's economic growth: Technology upgrading*. Washington, D.C.: World Bank Group.

[17] See https://voxukraine.org/en/where-state-budget-loses-the-most-rating-of-the-main-avenues-of-tax-avoidance-evasion-in-ukraine/

of the shadow economy in Ukraine range from around 30-50% of total GDP.[18] And it is understood to be common practice in the IT sector, which is unsurprising given the highly competitive and cost sensitive nature of the IT services outsourcing market.

In particular, firms are understood to pay a large proportion of wages in cash (known as 'envelope wages'). Official data from the State Statistics Service of Ukraine suggest average wages in the ICT sector were equivalent around US$ 680 per month in 2019.[19] However survey data collected by the recruitment website DOU, and corroborated by the compensation software and data company PayScale, indicate that IT engineers can be expected to receive at least three times this amount.[20] Unreported income also represents a major source of shadow economic activity in Ukraine.[21]

Chart 3: Investment-output ratio in IT sector, 2015-2019 (average)



Source: Oxford Economics

The negative repercussions of a large shadow economy extend much further beyond the impact on the tax base. A large informal market can act to stifle productivity growth—by incentivising firms to remain small, reduce physical and human capital formation, and discourage R&D and innovation activity—as well as restrict access to finance and further limit capital investment spending, as identified by the IMF *"Banks tend to avoid lending or lend less to unregistered firms and borrowers without formal jobs or declared income"*.[22] A large shadow economy can also act as a deterrent to FDI through its impact on the wider business operating environment, such as reducing competition by creating an unequal playing field between domestic and foreign owned firms.

Proposals to Reform the IT Sector

Given current trends and fierce international competition, the Ukraine IT sector is likely to continue to see its competitiveness eroded over time and therefore needs to reinvent itself. To do this, wider incentives need to be realigned to encourage firms to invest, formalise employment, grow bigger to exploit scale economies, and increase productivity.

[18] Kyiv International Institute of Sociology (2019). Shadow Economies in Ukraine: Results of the 2019 Survey and Ministry for Development of Economy, Trade and Agriculture of Ukraine (2019). *General tendencies of the shadow economy in Ukraine*.

[19] State Statistics Service of Ukraine/Haver Analytics.

[20] Ministry of Digital Transformation in Ukraine (2020). *The Ukrainian IT Sector: An Overview of Publicly Available Data and Gaps in Market Knowledge*. Supported by the United States Agency for International Development (USAID) under the Competitive Economy Program.

[21] Kyiv International Institute of Sociology (2019). Shadow Economies in Ukraine: Results of the 2019 Survey.

[22] Kelmanson, B., Kirabaeva, K., Medina, L., Mircheva, B., & Weiss, J. (2019). *Explaining the shadow economy in Europe: size, causes and policy options*. IMF Working Paper.

To address these concerns, the Ukrainian Ministry of Digital Transformation is proposing a set of reforms to support development in the IT sector. Known as Diia City, the proposals on *"stimulating the Development of a Digital Economy in Ukraine"* will create a special legal framework throughout Ukraine for large sections of the IT sector, as well some ancillary services such as education and R&D (see Annex for more details), based on the following principles:

- To support technological and innovative businesses, and attract investment and talent;
- To stimulate the creation of domestic innovative products; and
- To develop digital infrastructure and shape a knowledge economy.

The reforms are also targeting a reduction in shadow economic activity, which if successful, should increase the tax base and help to offset any decline in fiscal revenues due to lower tax rates. This is principally achieved via two mechanisms (i) a minimum wage eligibility criterion of US$ 1400 per month, more than twice the 'official' prevailing wage rate (see Annex for more details), and (ii) a reduced corporate tax burden, with reinvested income tax free to encourage higher investment rates.

A key consideration for Diia City, and high on the list of IMF concerns, is its potential impact on an already deteriorating fiscal outlook in Ukraine. The government mobilised resources in the wake of COVID-19—providing additional income support, tax deferrals, and infrastructure spending designed to offset the negative shock from the pandemic. But these measures come on the back of already strained public finances and are expected to push fiscal deficit out to an anticipated 7% of GDP in 2020 and 5% in 2021.

However, with the current account expected to return to deficit in 2021, financing this deficit will require the resources made available through an IMF standby arrangement. But IMF support remains conditional on a set of criteria that include maintaining central bank independence and moving forward with key governance and anti-corruption measures. And given the focus on fiscal sustainability in the aftermath of the crisis, it is understood from the Ministry of Digital Transformation that there are concerns from the IMF that the Diia City reforms will negatively impact government revenues.

Modelling the Impact of Diia City on Government Revenues

In order to address these concerns, Oxford Economics developed a model to explore the impact of Diia City reforms on national tax revenues. It covers all applicable taxes, including employee and employer, replicating revenues generated by the IT sector by applying the statutory tax rates to the relevant tax bases. Through scenario analysis, the Oxford Economics model is used to simulate changes in tax revenues through the implementation of Diia City reforms by varying key assumptions across the level of uptake and successful de-shadowing of activity (see Annex for more details).

The key assumptions underpinning each scenario are presented in Table 1. There are four scenarios in total, and are separated into an 'implementation' phase and an 'established' phase. The implementation phase assumes that there is a limited uptake in Diia City when first implemented (possibly within the first year), and there is no change to the size of the shadow economy (i.e., the level of unreported income of firms). In the 'established' phase, the scenarios explore both a much larger residency uptake as Diia City becomes more established over a number of years,[23] as well as alternative assumptions on the level of

[23] By way of comparison, 10 years after its formation, High Tech Park in Belarus accounted for around 70% of total employment in the IT services and products segment. EY (2017). *The IT Industry in Belarus: 2017 and Beyond.*

de-shadowed activity. For the later, this includes previously undeclared income equivalent to between 10-20% of existing turnover.

The scenario assumptions were developed in conjunction with industry experts StrategEast to represent a set of plausible outcomes under both implementation and established phases.

Table 1: Key scenario assumptions for tax model

	Legal enterprises becoming Diia City residents (% total industry turnover)	Private entrepreneurs (157 basis) becoming employees of Diia City residents (% total)	De-shadowed turnover of Diia City residents (% total industry turnover)
Implementation phase			
Scenario 1	5	5	0
Scenario 2	10	15	0
Established phase			
Scenario 3	40	50	10
Scenario 4	60	80	20

Source: Oxford Economics. Scenario assumptions developed in conjunction with the industry experts from StrategEast. De-shadowed turnover expressed as a share of declared industry turnover, such that a value of 0 represents no-change to the size of the shadow economy. See Annex for more details on each underlying assumption.

In the implementation phase, the analysis finds that as more legal enterprises become Diia City residents, government revenues decline (all else being equal). This is primarily driven by lower corporation tax receipts, with resident firms realising a significant reduction in their tax burden from the 18% income tax rate on corporate profits, to a 9% withholding tax on profits paid out as dividends (with an assumed dividend share in profits of 20%).

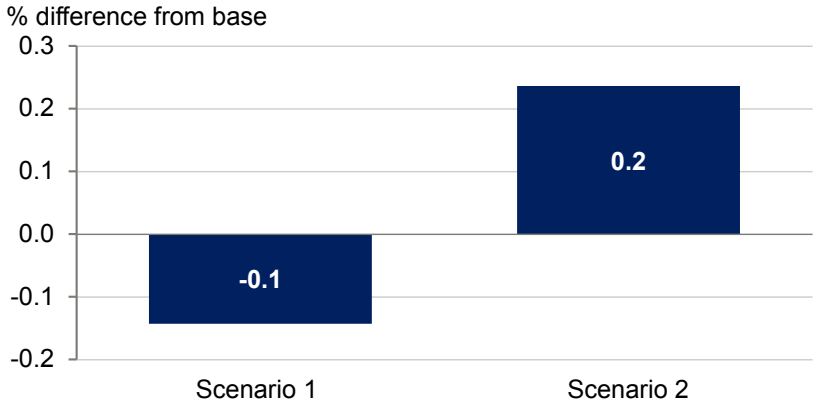
Similarly, employee income and social security contributions decline with the personal income tax rate cut from 18% to 5%, and the tax base for social security contributions reduced, although the impact is partially offset by the increase in declared average wages for employees to the Diia City minimum wage eligibility criterion of US$ 1400 per month (up from the current average wage of US$ 680 per month). This represents a more than doubling in the tax base and would imply a significant reduction in the practise of paying 'envelope wages' (see Annex for more details).

However, as more private entrepreneurs become official employees of the newly resident enterprises—reducing the widespread practise of tax avoidance by manipulating the STS—government revenues increase (all else being equal). This is due to an increase in the tax burden for these individuals from 5% under the STS (the group 3 simplified tax rate) to 6.5% under Diia City (personal income plus military tax).[24]

[24] For private entrepreneurs becoming employees of Diia City residents, we assume an average wage of US$ 1690 per month, which is equal to the average payment of legal enterprises to private entrepreneurs classified under 157 basis in State Tax Service declarations. Oxford Economics calculations based on State Tax Service of Ukraine.

The overall impact on tax revenues varies according to the assumptions across these two key dimensions, as illustrated in Chart 4. In scenario 1 where 5% of legal enterprises become Diia City residents, and these residents formalise the employment of a similar share of private entrepreneurs, revenues are found to decline by around 0.1% from base. However, this impact becomes positive in scenario 2 where 10% of legal enterprises become Diia City residents, but a higher share of private entrepreneurs become employees (15%).

Chart 4: Impact of Diia City reforms on tax revenues in Implementation phase



Source: Oxford Economics

During the established phase, while the same trade-off exists in terms of the negative impact on tax revenues of increasing the residency uptake of legal enterprises vs. the positive impact of the formalisation of private entrepreneurs as employees, the scenarios also include additional assumptions on the level of de-shadowed activity. This is driven by the presumption that, by simplifying tax laws and reducing the tax burden for employers, as well as strengthening the rule of law and increasing cooperation between industry and regulators, Diia City will reduce incentives for tax evasion and encourage a stronger culture of compliance. Again, these assumptions were developed in conjunction with industry experts StrategEast.

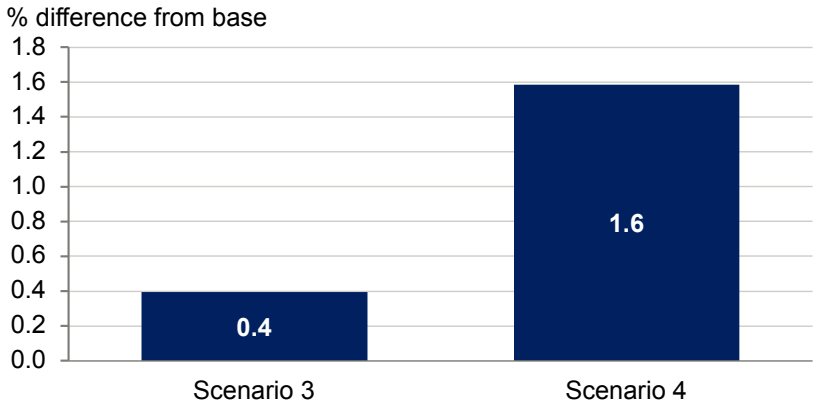
Given the lack of available data on the size of the shadow market in the IT sector in Ukraine (and difficulties in its estimation), the scenarios apply a conservative assumption on the level of de-shadowed activity during the established phase, equivalent to a 10% increase in the level of turnover and profits declared to authorities for the purpose of paying tax in scenario 3, and a 20% increase in scenario 4. This is below wider estimates on the size of the shadow economy in Ukraine.

In addition, while scenarios 1 and 2 (implementation phase) assume an increase in average wages for employees of legal enterprises to the minimum wage eligibility criterion of US$ 1400 per month, scenarios 3 and 4 assume that when established, average wages converge to US$1690, the same level as the average payment to private entrepreneurs under the STS (see Annex for more details). The results of the scenario analysis are illustrated in Chart 5, and range from an increase in revenues of 0.4% in scenario 3 to a rise of 1.6% in scenario 4.

While the scenarios are illustrative, one important conclusion is that the impact of Diia City on government revenues would be relatively modest. The final impact of Diia City hinges primarily on the level of residency uptake by legal enterprises and formalisation of private entrepreneurs as employees.

But given that residency is contingent on firms changing their existing employment practises (i.e., the widespread use of private entrepreneurs), the level of uptake will necessarily be accompanied by similar levels of formalising employment (of private entrepreneurs) as presented in these scenarios. The two effects thus largely net each other off and the result in a modest final impact on government revenues.

Chart 5: Impact of Diia City reforms on tax revenues in established phase



Source: Oxford Economics

Furthermore, one of the primary reasons for the modest impact of Diia City on government revenues is the existing low compliance of corporate tax payment. In 2019, corporate income tax payments of firms qualifying for Diia City residency amounted to UAH 900 million (US$ 35 million),[25] which based on the statutory income tax rate of 18%, would imply that just 20% of corporate profits are declared for the purpose of corporation tax, suggesting very low levels of compliance. As such, the impact of switching from the existing corporate tax regime to the proposed withholding tax on dividends is minimised (assuming better compliance rates).

Beyond the impact on fiscal sustainability, the Diia City reforms are broadly consistent with some of the wider IMF objectives. For example, they will promote a much-improved business climate (albeit at the sector level) by streamlining regulations, boosting property rights protection, and strengthening the rule of law, and will promote competition if successful in attracting FDI inflows and reducing the level of informal activity. They would also reduce the complexity of the tax laws and tackle existing distortions created by the STS—a reform widely promoted by other multilateral organisations and public policy bodies such as the World Bank and IMF—and should support external sustainability by promoting an activity that makes a strong positive contribution to the balance of payments.

If successful, Diia City will provide an interesting case study for wider application across the economy. While Ukraine has made progress in some areas of structural reform including central bank independence, efforts to improve the business climate have to date fallen below IMF's expectations.[26] This is in part driven by strong vested interests making structural reform process difficult to implement domestically. To overcome this, a more targeted approach such as Diia City is a common compromise for transition economies where similar binding constraints inhibit economic development.

[25] Based on the Ministry of Finance response to the proposed changes to the tax laws. Data supplied by the Ministry of Digital Transformation of Ukraine.

[26] IMF (2020). Ex-post evaluation of exceptional access under the 2015 Extended Arrangement—Press Release and Staff Report. IMF Country Report No. 20/204.

Diia City Impact on Wider Economic Development Goals

1) Boosting growth in the IT sector

While the tax model indicates a range of possible static outcomes from the implementation of Diia City, it is also pertinent is to consider potential growth dynamics in the future. For example, the Ministry of Digital Transformation's own forecasts anticipate that Diia City will support double-digit annual growth in nominal GVA over the next five years, twice the rate of recent growth. This would result in a near doubling in GVA output in just 6 years, providing a more optimistic outlook than some of the previously outlined concerns for the viability of the sector would suggest, and therefore implying a much more optimistic outlook for tax revenues. Given the scale of the budget deficit in Ukraine, fiscal sustainability will not be achieved through austerity alone, and therefore policies aimed at boosting the growth potential of the Ukrainian economy will be important as we look forward to the recovery from the Covid-19 economic downturn.

While this is ambitious, similar legal frameworks have been widely implemented across developing and transition economies in the past, predicated on similar ambitions of growth and industrial development. Under the right circumstances, the UNCTAD found that they can make important contributions to economic development—helping to attract inbound investment, creating productive jobs (and providing a mechanism for the creation of formal employment), and boosting exports.[27] And there are numerous examples of how similar regimes have supported global value chain participation and industrial upgrading, while offering indirect spillover benefits through advancing skills and technology transfers.

This is particularly true in the experience of China, as well as the rest of Asia, where they were instrumental in supporting the export-led growth models of the East Asian "tigers". Closer to home, the OECD found that the outcomes in the Western Balkan region have also been encouraging, particular in their ability to boost FDI.[28]

The wider evidence is more mixed, particularly when it comes to identifying spillover impacts, but this is often a result of poor design, unrealistic ambitions, or mismanagement issues. The literature also highlights difficulties in generalising across regimes, owing to the diversity in design and implementation, target sectors, and underlying economic and political backdrops. However, it does highlight the importance of the wider economic and institutional environment as well as the policy framework design.

In this regard, some of the ambitions for Diia City do broadly align with the wider learnings and recommendations outlined in the literature, for example, to build on existing competitive strengths and ensure commercial viability, implement strong institutions and good governance with an effective single administrative body, commit to long term development and stable policy making, act as a prototype for broader national reforms, integrate customised education and training to ensure strong human skills development, and integrate into wider economic development strategies to encourage backward and forward spillovers.

[27] UNCTAD (2019). World Investment Report 2019: Special Economic Zones.

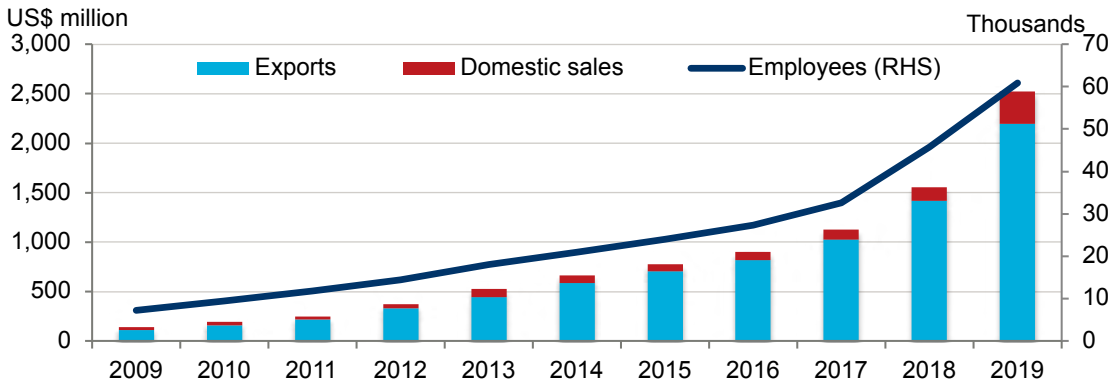
[28] Vallée, V. (2017). *Tracking Special Economic Zones in the Western Balkans: Objectives, Features and Key Challenges*. OECD.

Box 1: The experience of Belarus provides an interesting case study for Ukraine—as many of the ambitions of government interventions in Belarus are shared by the Diia City reforms. In 2005, the Belarusian government established High Technology Park (HTP) for the purpose of *"increasing the competitiveness of the national economy by developing the IT sector".* Supported by HTP, the IT sector flourished. In the last five years, GVA in the IT sector has risen by nearly 8% per annum in real terms, compared to the wider economy which has expanded by less than 0.1% per annum over the same period.[29]

However, much like in Ukraine, growth was predicated on providing low-value IT services to mainly US and European customers (around 90% of total output was exported), and no major international companies located production activities in Belarus. Even some of the major applications developed in Belarus located their HQ activities abroad—including Viber, World of Tanks, and Maps.me.[30]

This prompted the government to pass Decree number 8 "On Development of a Digital Economy" in 2017, extending the effective period for HTP and expanding the scope of the park in a bid to encourage industrial upgrading of the IT sector towards higher value product development activities.

Chart 6: Belarus HTP performance, 2009-19



Source: High Technology Part Adminstration

The initial results are very positive. Growth has accelerated, with the number of resident companies rising to 969 in 2019 from 192 just two years earlier, and exports from residents doubling in value over the same period (Chart 6). GVA of the wider IT sector hit double digit growth in real terms, but more importantly HTP managed to attract more than US$ 700 million in FDI, with foreign companies establishing more than 100 R&D centres in the park.[31]

2) Promoting digital upgrading of the wider economy

The wider context in Ukraine is also important when considering the ambitions of the Diia City reforms. The ubiquitous impact of IT investments and infrastructure on economic growth is well established, and economic development literature identifies the strong contribution of a thriving domestic IT sector

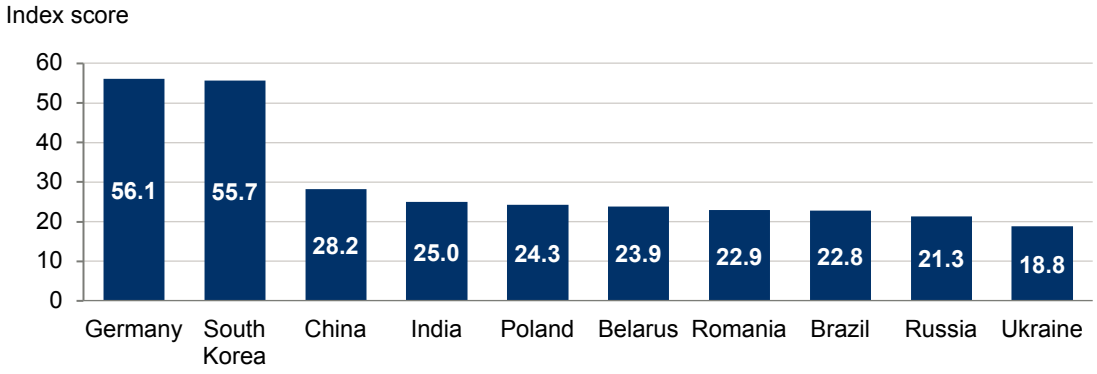
[29] Oxford Economics/Haver Analytics.

[30] Kolkin, D. (2018). Belarus: Comparative Research on Industrial Parks and Special Economic Zones. European Bank for Reconstruction and Development.

[31] See https://www.park.by.

in supporting technology adoption across the wider economy, driving productivity growth.[32] But the IT sector in Ukraine has developed largely in isolation to the domestic economy and is subsequently not well-linked to other sectors. Instead, the IT sector embodies *"what the literature calls an 'exclave' whereby companies make use of Ukrainian talent but locate other functions abroad."*[33]

Chart 7: World Bank Composite index of technological upgrading, 2019



Source: World Bank

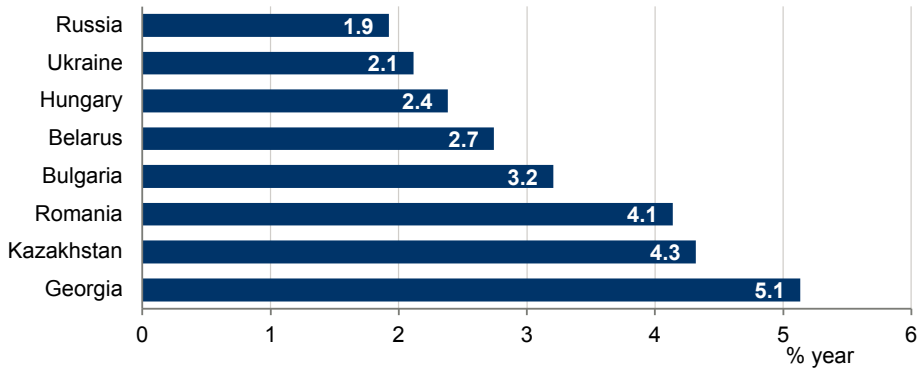
This is particularly pertinent given the Ukrainian economy compares very poorly across international benchmarks on competitiveness. In a composite index of technology upgrading developed by the World Bank, Ukraine ranks last across countries analysed, highlighting significant gaps to its peers around production, management, and R&D capabilities (Chart 7). Ukraine also ranks a lowly 85th in the latest World Economic Forum Competitiveness rankings, well below regional peers including Russia, Romania, Bulgaria, Georgia, and Hungary. And these disparities are reflected in Oxford Economics' forecasts for labour productivity growth over the next decade, which are relatively poor given Ukraine's level of economic development (Chart 8).

A more integrated IT sector would therefore support the process of technological upgrading of the economy and boost long term productivity growth. And in turn, stronger domestic demand would also help support growth in the IT sector. However, such a symbiotic relationship is contingent first on the IT sector developing capabilities beyond the existing provision of outsourcing services which provide little value to domestic firms.

[32] Jorgenson, D. (2005). *Productivity, Vol. 3: Information technology and the American growth resurgence*. Cambridge, MA: MIT Press.

[33] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). *Path for Ukraine's economic growth: Technology upgrading*. Washington, D.C.: World Bank Group.

Chart 8: Average labour productivity growth forecasts, 2020-30

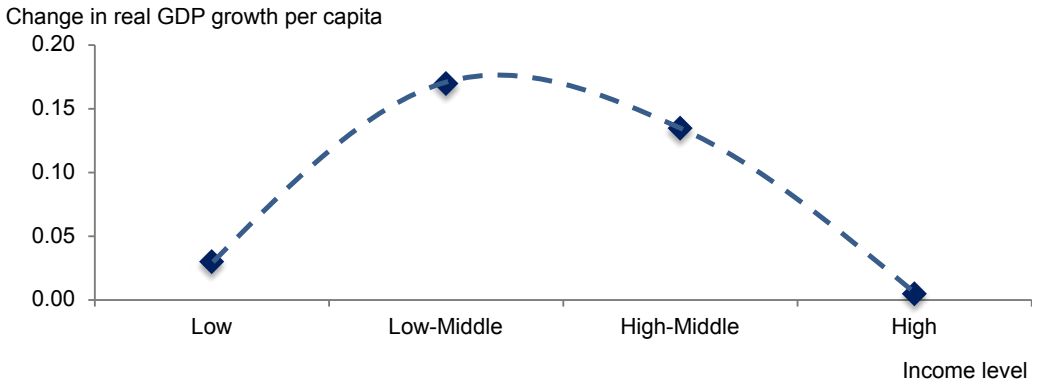


Source: Oxford Economics

3) Supporting FDI Inflows

In order to support the process of industrial upgrading, the World Bank identifies export orientated FDI as the *"quickest and the most effective way to achieve an improvement in Ukrainian firms' low level of participation in global supply chains"*.[34] FDI can promote productivity growth and support industrial upgrading by providing access to foreign capital (especially when the level of domestic savings is low) and management know-how (lacking in the Ukrainian IT sector), boosting competition, and supporting human capital development. As outlined in an European Investment Bank working paper, in general most empirical literature concludes that FDI has a positive impact on GDP growth (beyond the impact of domestic investment), particularly for countries such as the Ukraine in the lower-middle income group (Chart 9), while also highlighting the importance of the absorptive capacity and quality of institutions of the country.[35]

Chart 9: Estimated impact of a 1 percentage point increase in FDI:GDP ratio on real GDP growth per capita



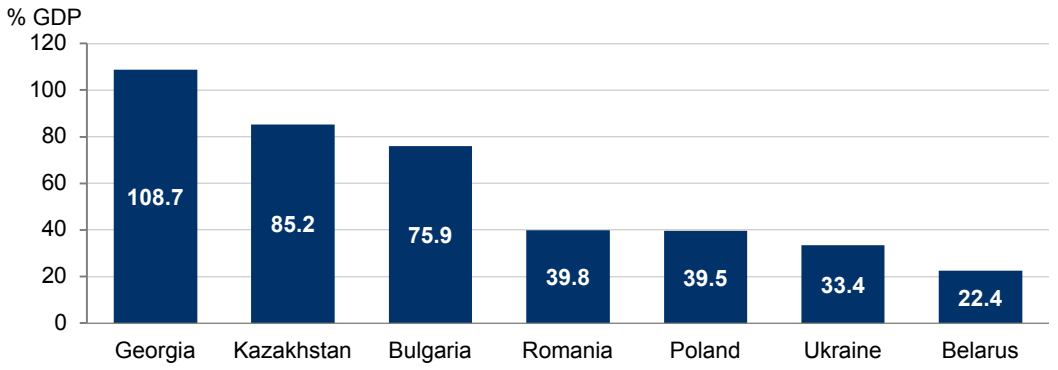
Source: Baiashvili & Gattini (2019)

[34] Radosevic, S., Bruno, R., Hayter, C. S., & Aridi, A. (2019). *Path for Ukraine's economic growth: Technology upgrading*. Washington, D.C.: World Bank Group.

[35] Baiashvili, T., & and Gattini, L. (2009). Impact of FDI on economic growth: the role of country income levels and institutional strength. EIB Working Paper 2020/02.

However, Ukraine has struggled to encourage FDI inflows in the past, and what remains is largely composed of 'round-tripping'—Ukrainian business owners using offshore jurisdictions to channel revenues and thus circumnavigate local tax obligations, before repatriating funds as FDI.[36] In 2019, the value of FDI stock in Ukraine was just over 33% of GDP, below most regional peers with the exception of Belarus, which has been hit by recent political turmoil (Chart 10).

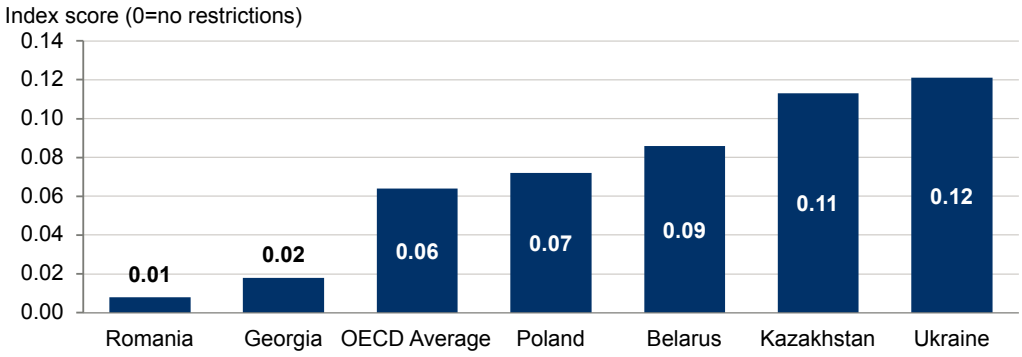
Chart 10: FDI Stock, 2019



Source: Oxford Economics/IMF CDIS

Academic literature identifies a range of potential impediments to FDI in Ukraine, including political instability, weak governance, and a lack of business-friendly reforms[37], and these factors are reflected in Ukraine's poor performance across international comparisons of FDI regulatory restrictiveness (Chart 11).[38] These trends were further compounded by the 2014/15 crisis—net FDI inflows, which averaged over 5% of GDP in the decade leading up to the crisis, collapsed in 2014 and have averaged 3.8% of GDP since 2016.

Chart 11: FDI Regulatory Restrictiveness Index 2019



Source: OECD

[36] Saha, D., Kravchuk, V., & Kirchner, R. (2018). *The economic impact of FDI on Ukraine*. German advisory group, Institute for Economic Research and Policy Consulting. Policy Studies Series [PS/01/2018].

[37] Getzner, M. (2019). *Regional development and foreign direct investment in transition countries: a case-study for regions in Ukraine*. Post-Communist Economies. Volume 32, 2020 - Issue 6.

[38] The FDI Regulatory Restrictiveness Index gauges the restrictiveness of a country's FDI rules by looking at the four main types of restrictions on FDI: 1) Foreign equity limitations; 2) Discriminatory screening or approval mechanisms; 3) Restrictions on the employment of foreigners as key personnel and 4) Other operational restrictions, e.g. restrictions on branching and on capital repatriation or on land ownership by foreign-owned enterprises. Restrictions are evaluated on a 0 (open) to 1 (closed) scale.

Nevertheless, research by the German Advisory Group found that FDI inflows make an important contribution to the wider Ukrainian economy—foreign firms are typically larger than domestic firms, employ more people, and crucially are more productive (even when controlling for higher levels of capital stock). In the IT sector, one of the largest beneficiaries of FDI, GVA output per employee in foreign firms is more than seven times higher than domestic firms, a finding that again holds when controlling for differences in the level of capital stock.[39]

The Diia City reforms are broadly consistent with the wider literature on drivers of FDI. In particular, most studies that examine cross-border capital flows find that FDI is sensitive to differences in tax rates—especially as capital flows have become more mobile over time as barriers have fallen.[40] This is particularly relevant for smaller countries where the domestic market is too small or immature to compensate for higher corporate tax rates, or where the output is also highly mobile (such as in the IT sector).

Beyond tax policy, the wider literature identifies a range of factors affecting the decision of foreign companies to invest abroad, ranging from the legal and regulatory framework, macroeconomic stability, labour market flexibility, access to skills, and a well-developed infrastructure. Included in this list is a predominant formal economy, with research identifying that more formal employment practises and better labour market standards are a positive determinant of FDI in so far as they signal stronger labour relations, higher productivity, and a more competitive and fair operating environment.[41] As such, to the extent that Diia City will support a deshadowing of activity in the IT sector, it should further enhance its credentials as a base of FDI.

The reforms should also help to boost domestic investment expenditure—by realigning invectives and creating an environment that encourages firm growth and supports long-term planning. In addition to strengthening the rule of law and improving property rights protections for residents, the new withholding tax on dividends implies a zero-tax rate on reinvested profits. As illustrated in Chart 3, investment levels are very low by international standards presently, and so there is plenty of catch-up potential for the IT sector.

A key objective of Diia City is also to encourage start-ups to first establish and then remain in Ukraine. And while research by the Ukrainian Venture Capital & Private Equity Association (UVCA) indicates that such activity is on the rise, with the total value of venture capital investments rising above US$ 0.5 billion in 2019 (+50% from 2018),[42] successful start-ups often relocate away from Ukraine (e.g., companies such as Gitlab and Grammarly were established in Ukraine but now headquartered in the US).

4) Boosting formal employment opportunities

Finally, increasing formal employment practises will also support better social outcomes, by providing individuals engaged in the IT sector with increased stability in earnings, greater job protection and security, and better access to social benefits. Typically, the work of freelancers falls outside the scope of existing labour regulations, and the majority of private entrepreneurs are not registered with authorities and so do not pay social security.[43] As eligibility for a State pension in Ukraine is contingent on establishing

[39] ibid.

[40] Bénassy-Quéré, A., Fontagné, L., & Lahrèche-Révil, A. (2005). *How does FDI react to Corporate Taxation?* International Tax and Public Finance and OECD (2008). *Tax Effects on Foreign Direct Investment*. OECD Policy Brief.

[41] Parcon, H. (2008). *Labour Market Flexibility as a Determinant of FDI Inflows*. Working Paper No. 08-07 University of Hawaii at Manoa, Department of Economics and Busse, M. (2002). Do transnational corporations care about labor standards. Journal of Developing Areas Vol. 36 (2003), No. 2, pp. 39-58.

[42] UCVA (2020). Ukrainian Venture Capital and Private Equity Overview 2019.

[43] International Labour Organization (2019). *Work on Digital Labour Platforms in Ukraine: Issues and policy perspectives*.

a track record of social security contributions, these individuals will not be able to draw upon a pension on retirement (just 36% of the working age population aged 16-64 contribute towards the state pension system).[44] Firms will also be more incentivised to invest in skills development, while research also identifies benefits in formalising labour practises through supporting wider labour gender equality.[45]

Conclusion

In summarising the main conclusions of this research, Diia City is expected to have a relatively modest impact on government revenues, while potentially stimulating dynamic growth and much needed technological spillovers. This is especially given that the share of Diia City qualifying sectors account for a relatively small share of less than 1.2% of total government revenues.[46] The underlying context is important—the existing growth model of the IT sector cannot be maintained indefinitely without reforming the existing institutional system, necessitating the type of public policy reform that has so far proven elusive at the national level.

The final impact of Diia City reforms are uncertain, and historical precedent suggests it will depend as much on the attractiveness of the underlying incentives as well as the effective implementation of the underlying legal framework, particularly around some of the legal and IP protections embedded in the draft laws. For the later, this report does not consider how effective the implementation and application of such reforms will be. However, the ambitions of Diia City broadly align with the recommendations and best practise as identified by the literature. And the impact on government finances will likely be modest, owing to the minimum wage threshold that necessitates an increase in the base for employment taxes for resident firms (assuming compliance and effect tax administration).

Global trends suggest there is significant upside potential to the Diia City reforms—the Covid-19 pandemic has accelerated technology adoption across the global economy, and is likely to be a fulcrum to any recovery, particularly in the EU (a major market for Ukrainian IT services) where digitisation is an integral strategy component of the recovery fund.[47] The IT sector has been a star performer of the Ukrainian economy in recent years, and while it is approaching a crossroads, under the right conditions it has the potential to capitalise on these global trends and continue to generate strong GVA and employment growth in the future.

The Ministry of Digital Transformation's own forecasts anticipate that Diia City will support double-digit annual growth in nominal GVA, twice the rate of recent growth. This would lead to a near doubling in nominal GVA output in just 6 years, from US$ 6.2 billion in 2019 to US$ 11.8 billion by 2025. Given the scale of the budget deficit in Ukraine, fiscal sustainability will not be achieved through austerity alone, and therefore policies that successfully boost output growth will also increase tax revenues over the long term. And a stronger IT sector, more integrated with other domestic sectors, could also help support the wider digitisation of Ukraine, creating important spillover impacts on the growth potential of the economy.

[44] International Labour Organization (2019). *Future of the Ukrainian Pension System: Adequacy, Coverage and Sustainability*. ILO Decent Work Technical Support Team and Country Office for Central and Eastern Europe.

[45] International Labour Organization (2011). *Policies and regulations to combat precarious employment*. Background Paper for the ACTRAV Symposium on Precarious Work.

[46] Oxford Economics calculations based on State Tax Service data Ministry of Finance data (via Haver Analytics).

[47] See https://ec.europa.eu/commission/presscorner/detail/en/ip_20_940

Annex

The Law of Ukraine *"on stimulating the Development of Digital Economy in Ukraine"* will create the legal regime of Diia City, which is currently set for a 15-year period. The draft includes amendments to 28 laws of Ukraine—which in addition to setting the conditions for residency, also cover business friendly reforms including IP protections, changes to the criminal procedure code, and implementation of elements of English law, etc. It also includes changes to the tax code by removing distortions created by the STS and reducing the tax burden for residents. Diia City will be run by a single administrative body (the Ministry of Digital Transformation of Ukraine).

Oxford Economics have designed a tax model that estimates the value of tax revenues across the list of permissible activities eligible for Diia City residency in Ukraine:

- Publication of computer games (NACE 58.21);
- Release of other software (58.29);
- Computer programming (62.01);
- Computer equipment management activities (62.03);
- Other activities in information technology and computer systems (62.09);
- Data processing, posting information on websites and related activities (63.11).

Excluded from this list but also eligible for Diia City residency include Research and experimental development on other natural sciences and engineering (72.19) and Advertising agencies (73.11), both of which were excluded due to data limitations, and Other education (85.59), which was excluded based on the assumption that very few firms would be able to meet the minimum average wage threshold. All data used to construct the tax model was supplied by the Ministry of Digital Transformation of Ukraine (sourced from the State Tax Service and the State Statistics Service of Ukraine)

The tax model is first used to produce historical estimates of tax revenues, covering employee income and military tax, social security contributions, corporation tax, VAT, and simplified tax. This is done by applying the statutory tax rates (detailed in Table 2) to the appropriate tax base across legal enterprises and private entrepreneurs (e.g., for employees of legal enterprises, the model uses the personal income tax rate of 18% and historical data on labour costs). These tax estimates are then compared with the data on actual tax revenues collected to calculate a set of scaling factors, equal to the ratio between the two.

Taking 2019 data as the base year (i.e., latest available data and avoiding potential distortions of Covid-19), the tax model is then used to simulate the impact of introducing the Diia City special legal framework on total government tax revenues. **This is done by undertaking scenario analysis—varying the number of firms that become Diia City residents, as well as other key assumptions such as the number of private entrepreneurs that become employees of Diia City residents—and reviewing the impact of these changes on tax revenues.** Again, this is done by applying the statutory tax rates (with Diia City proposals detailed in Table 3) to the appropriate tax base, applying the relevant scaling factor to ensure the scenarios are directly comparable with the base.

The tax model includes a series of simplifying assumptions as follows:

1. **All firms are assumed to be able to meet the entry criteria for Diia City residency** should they desire, with the exception Group 2 qualifying firms under the STS (unable to meet the 9+ employee entry criterion threshold).

2. Any Group 3 qualifying private entrepreneur under the STS that is currently engaged by as a contractor (i.e., based on the revenues paid by firms to private entrepreneurs classified under 157 basis in State Tax Service declarations) is able to be subsumed by the firm as an employee if the firm qualifies for Diia City residency.

3. **Average wages currently paid by firms are assumed to be much higher than the levels implied by official employment and labour cost data**. Survey data collected by the DOU recruitment website for Ukrainian developers, corroborated by the compensation software and data company PayScale and survey data collected by the Ministry of Digital Transformation, indicates that average salaries are much higher than this, implying that the difference is paid as cash ('envelope wages'). As such, firms are able to meet the minimum entry criterion threshold of US$ 1400 by 'de-shadowing' these envelope wage payments.

4. The dividend share in profits (for the purpose of estimating the withholding tax payments under the Diia City regime) is set at 20% in line with estimates provided by the Ministry of Digital Transformation. However, data on capital investment expenditure suggests a higher share of profits are distributed as dividends to shareholders in the Ukrainian IT sector. A higher share of dividends would increase tax revenues, all else being equal. A lower share of dividends would not necessarily be a bad outcome however, as it would imply a higher share of reinvested capital, a key objective of Diia City reforms.

The tax model incorporates a series of levers which were used to develop the scenarios outlined in the report. These levers are used to vary the uptake of the Diia City regime, and the tax base:

1. **Average wages:** To qualify for the Diia City regime, firms must pay a minimum average wage of US$ 1400 per month. While companies may choose to declare only the minimum threshold to qualify for Diia City residency, an increase in declared labour costs towards the actual prevailing wage rate will increase the tax base for employee income tax (reduce the practise of envelope wages). For the implementation phase, the scenarios assume that the average wage of existing employees exactly meets this threshold, while for those private entrereneurs who becomes employees of resident firms, the average wage is equal to the implied average payment to private entrepreneurs under the STS (US$1690). For the established phase, the scenarios assume that the average wage of employees converge to the the same level (US$ 1690).

2. **Share of firms and private entrepreneurs qualifying for Diia City:** While it is assumed that most firms will meet the criteria of eligibility for Diia City residency, not all will choose to become residents. Likewise, not all private entrepreneurs working as contractors for IT firms will become employees of those firms.

3. **Declaration of previously undeclared income:** According to their report "Modelling Effective Tax Burden for Diia City Residents in various scenarios", the Ukraine Economic Outlook (2020) group estimate that anything from 25-40% of IT sector output is either relocated to offshore low-tax jurisdictions, or undeclared and 'in the shadows'.[48] Wider estimates of shadow market activity for

[48] Kukhar, M., Kukurudza, H., Lesyk, M., & Pantiukhov, A. (2020). Modelling Effective Tax Burden for Diia City Residents in various scenarios. Ukraine Economic Outlook. Commissioned by the Ministry of Digital Transformation of Ukraine. English translation.

Ukraine range from 30-50%.[49] While this report does not seek to quantify the size of the shadow economy in the IT sector, or the means by which it is hidden from authorities, the tax model does include functionality to increase revenues and profits through this mechanism.

Table 2: Existing tax system[50]

Entity	Tax	Rate	Base	Notes
Legal enterprises	Corporate Income Tax	18%	20% of corporate profits	Historical data implies that around 20% of profit is "taxable".
	Social Security for employees	22%	Employee income, paid by employer, capped at 15x minimum wage	
	VAT	20%	Domestic sales plus imports	Based on input-output table—model estimates assume imports are negligible.
Employees	Personal Income Tax	18%	Total income	Includes employees of enterprises and private entrepreneurs.
	Military Tax	1.5%	Total income	Includes employees of enterprises and private entrepreneurs.
STS: Group 2 qualifying private entrepreneurs	Simplified Tax	20%	Minimum wage	
	Social security for employees	22%	Employee income, paid by employer, capped at 15x minimum wage	
	Social Security for private entrepreneurs	22%	Minimum wage	
STS: Group 3 qualifying private entrepreneurs and legal enterprises	Simplified Tax	5%	Total income (or 3% if paying VAT)	Model assumes 5% income for all Group 3 private entrepreneurs and legal enterprises.
	Social security for employees	22%	Employee income, paid by employer, capped at 15x minimum wage	
	Social Security for private entrepreneurs	22%	Minimum wage	

[49] Kyiv International Institute of Sociology (2019). Shadow Economies in Ukraine: Results of the 2019 Survey and Ministry for Development of Economy, Trade and Agriculture of Ukraine (2019). *General tendencies of the shadow economy in Ukraine*.

[50] While the table includes income and social security tax rates for employees of STS Group 2 and Group 3 private entrepreneurs, in practise this only covers a very small number of individuals and the majority of private entrepreneurs in the IT sector are also sole traders.

Table 3: Diia City proposals[51]

Entity	Tax	Rate	Base	Notes
Legal enterprises	Withholding tax	9%	Profits paid as dividends	
	Social Security Payments	22%	Minimum wage, paid by employer	
	VAT	20%	Domestic sales plus imports	Based on Input-Output table—model estimates assume imports are negligible.
Employees	Personal Income Tax	5%	Total income	Includes employees of enterprises and private entrepreneurs.
	Military Tax	1.5%	Total income	Includes employees of enterprises and private entrepreneurs.
STS: Group 2 qualifying private entrepreneurs	Simplified Tax	20%	Minimum wage	
	Social security for employees	22%	Minimum wage, paid by employer	
	Social Security for private entrepreneurs	22%	Minimum wage	
STS: Group 3 qualifying private entrepreneurs and legal enterprises	Simplified Tax	5%	Total income (or 3% is paying VAT)	Model assumes 5% income for all Group 3 private entrepreneurs and legal enterprises.
	Social security for employees	22%	Minimum wage, paid by employer	
	Social Security for private entrepreneurs	22%	Minimum wage	

[51] ibid.