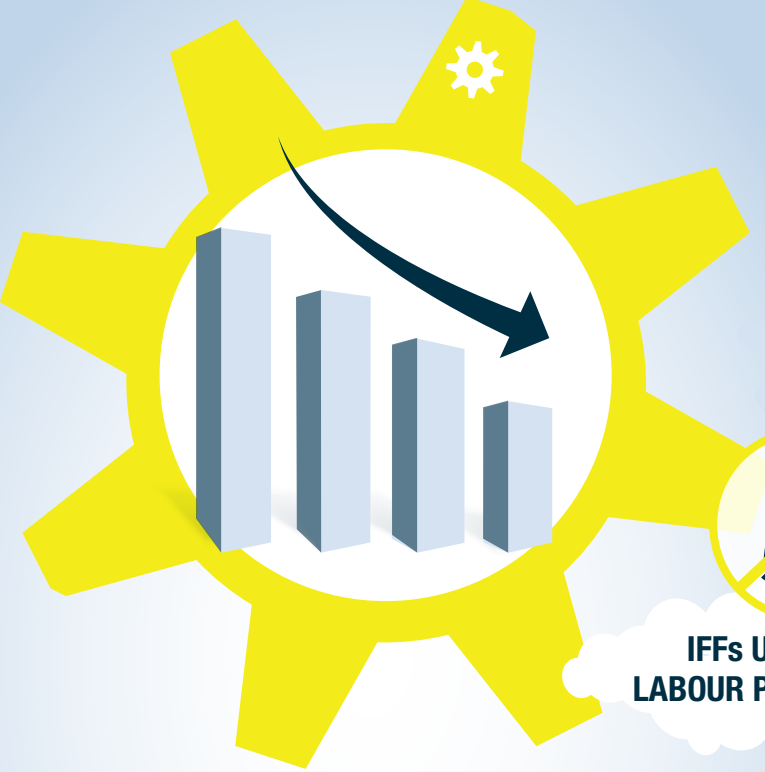
Chapter 5

Quantifying the impact of illicit financial flows on sustainable development

This chapter explores the potential relationship between IFFs, structural transformation and sustainable development. It examines how IFFs may be negatively associated with productivity increases across sectors and highlights the role of institutions in channelling such effects. Over the past decade, in most countries in Africa, productivity increases have been low, despite relatively high economic growth rates. The findings indicate how curbing IFFs could contribute to achieving higher levels of economic productivity (target 8.2), supporting productive capacities (target 8.3) and improving resource efficiency (target 8.4) in Africa.



IFFs UNDERCUT LABOUR PRODUCTIVITY

THE EXTRACTION OF NATURAL RESOURCES

consumes large amounts of energy,

increasing climate risks

Section 5.1 describes the methodological approach and model used to quantify the potentially harmful effects of IFFs. Section 5.2 presents the results of the model to show the association with inferior outcomes in sustainable development, followed by a discussion in section 5.3 of how inclusive institutions can reduce the harmful impact of IFFs. Sections 5.4 and 5.5 explore how IFFs can be harmful with regard to environmental performance in extractive sectors and agricultural productivity. Section 5.6 summarizes the key findings.

5.1 Channels of impact of IFFs: Empirical challenges and methodological approach

The analysis in this chapter builds on the existing evidence of the investment-inhibiting effect of IFFs on economic growth (Ndiaye, 2009; Fofack and Ndikumana, 2010; Ndikumana and Boyce, 2011; Mevel et al., 2013; Salandy and Henry, 2013; Dachraoui and Smida, 2014; Ndikumana, 2014; Nkurunziza, 2014; Ndiaye and Siri, 2016). However, it takes a more nuanced approach, focusing on the potential of curbing IFFs to increase productivity. In contrast to high economic growth rates, structural transformation and productivity increases have been insufficient to boost human development. Structural transformation is a complex process that requires a mix of human and physical capital accumulation and institutional quality (North, 1994; Hall and Jones, 1999). Institutional quality refers to, on one hand, the rules of a society that provide certainties for investments and, on the other hand, a system of institutions that sets rules, norms and the environment "within which individuals accumulate skills and firms accumulate capital and produce output" (Hall and Jones, 1999:84; see North, 1994; Vitola and Senfelde, 2015). Various concepts of structural transformation exist. Recent literature has stressed the role that productivity growth plays in achieving structural transformation within sectors. New concepts of structural change that consider the allocation of labour towards productive sectors have been discussed in the literature (McMillan et al., 2014; Martins, 2019; Mühlen and Escobar, 2020). In fact, few studies consider the role of IFFs in decreasing investments that promote productivity increases across and within sectors. Usman and Arene (2014), for example, show that capital flight can be negatively associated with agricultural growth and that it is impacted by macroeconomic and political instability.

The key channels through which IFFs have an impact on value-added growth, productivity increases and socioeconomic development as identified in the literature are capital accumulation, investments and Government revenue. The investment channel is at the centre of the analysis presented in this chapter to explain productivity levels across

countries in Africa. The potentially negative impact on social development through the lack of Government revenue and limited domestic resource mobilization is central to the analysis presented in chapter 6. Based on the conceptual framework of this report and the findings presented in the previous chapters, two additional channels are included as cross-cutting elements in explaining the impact of IFFs on sustainable development, namely, institutional harm and environmental sustainability.

IFFs lower the rate of capital accumulation through reductions in private investment that could have financed new production technologies, machinery and innovative production processes needed to increase labour productivity (see, for example, Ndiaye, 2009, 2014; Fofack and Ndikumana, 2010; Ndikumana, 2014; Nkurunziza, 2014). Slany et al. (2020) initially test the link between capital formation and capital flight as established in the literature, providing evidence of a negative correlation. However, this relationship seems to be subject to other variables that affect both capital formation and capital flight. A shortage of capital caused by IFFs increases the domestic interest rate and could put additional pressure on the high levels of external debt service in many countries in Africa. In addition, a potential depreciation of the national currency from capital outflows also increases the costs of investments and lowers the levels of productive investments and productivity growth (Ampah and Kiss, 2019). This chapter does not estimate the relationship between external debt and IFFs, but rather draws on existing literature to assess its developmental impact (Ndikumana and Boyce, 2018; Ampah and Kiss, 2019). In addition, the potentially negative impact on imports due to lower incomes could increase balance of payment pressures and reduce the rate of capital accumulation.

IFFs can affect Government revenue by lowering the tax base, which reduces public expenditure on soft and hard infrastructure, research and development, environmental protection and institutional development (Ndikumana and Boyce, 2011; Mevel et al., 2013; on the relationship with domestic resource mobilization, showing that IFFs can be associated with lower expenditures on health and education, see chapter 6). The accumulation of human capital is critical to increasing labour productivity through the acquisition of skills and knowledge. Public expenditure reductions have potential gender-unequal impacts, in particular if cuts affect expenditures on education and health (Musindarwezo, 2018).[60] Higher levels of public expenditures on education and health potentially reduce the time women spend caring for their families, giving them more time for decent work (Ndikumana and Boyce, 2011). A higher level of education among women boosts productivity growth, in particular in low productivity sectors with a large share of women's employment (Trenczek, 2016).

[60] See https://www.brettonwoodsproject.org/2019/04/debt-and-gender-equality-how-debt-servicing-conditions-harm-women-in-africa/.

IFFs with regard to criminal activities, bribery and corruption are likely to undermine the domestic rule of law and to harm institutional quality, as they tend to weaken mechanisms of accountability (Ndikumana, 2014). Good governance and strong institutions provide a more conducive environment for investment, increase economic efficiency and, thereby, help raise productivity (McMillan and Harttgen, 2014; McMillan et al., 2014; Martins, 2019).

In the analysis in this chapter, a fourth channel of impact is assumed that is important in explaining the link between IFFs and sustainable development. IFFs can originate in the illicit exploitation of environmental resources and are associated with the unsustainable use of finite natural resources, which can reduce economic growth (Nordhaus, 1974, 2014). Violations of environmental legislation may result in harm to human health and the environment and thereby reduce labour productivity. Environmental damage such as soil erosion may cause lower soil productivity, which impacts agricultural productivity. In particular, the estimate of IFFs in extractive industries may be associated with the illicit extraction of resources, leading to environmentally harmful impacts (chapter 2).

This report uses an integrated framework addressing economic, social, institutional and environmental harms due to IFFs. This framework is considered in the empirical analysis in this chapter. The methodology and results are based on Slany et al. (2020), showing that the relationship between IFFs and structural transformation is driven by the combined effect of different channels, rather than each channel separately. The analysis uses total labour productivity as the main indicator of productive capacity (data availability does not allow for measurement of sector-specific total factor productivity). In order to provide a quantitative analysis of the negative association between IFFs and sustainable development, the econometric approach takes into account different channels and types of IFFs (chapter 1). The applied econometric panel data approach is described in box 5. The quantitative analysis focuses on capital flight, the residual in the balance of payments method (Ndikumana and Boyce, 2010), as a proxy for IFFs. In addition, the empirical findings are discussed with regard to the trade-related estimates of IFFs (partner-country trade gaps, in which export underinvoicing is indicative of IFFs) that, in 2000–2015, accounted, on average, for 70 per cent of capital flight.

Institutions can be enablers of IFFs (chapters 3 and 4). By contrast, transparent and strengthened institutions can help provide an enabling environment for increases in productivity. Motivated by the interrelationship between IFFs, institutional quality and economic development, the extent of the harmful effects of IFFs depend to some extent on institutional quality (Slany et al., 2020). Therefore, a stable and transparent institutional environment increases the efficiency of economic transactions through the reduction of transaction costs. Illicit capital outflows affect socioeconomic development, depending on the overall level of transaction efficiency.

The lack of enforcement of laws makes a quantitative assessment of the quality of institutions difficult, but the use of a range of indices, for example showing the perception of good governance, provides a reasonable perspective of institutional quality. The choice of institutional variables is guided by the literature on IFFs (see, for example, Ndiaye, 2014; Ndikumana, 2014) and includes the following:

(a) Limited State capacity to ensure security and political stability is proxied by the State fragility index of the Centre for Systemic Peace: High levels of uncertainty due to political instability increase the marginal impact of each unit of lost capital;[61]

(b) The indicator on the perception of the control of corruption is obtained from the world governance indicators of the World Bank: High levels of corruption increase the costs of information and risks and reduce the efficiency of capital spending;

(c) The indicator for financial sector institutions is the financial sector rating in Country Policy and Institutional Assessment (CPIA) subindex No. 7 of the World Bank,[62] which serves as the proxy for financial stability and access to financial resources, beyond the measure of credit to the private sector: Loss of an additional unit of capital is expected to be less harmful given a greater spectrum of alternative financial resources.

The econometric panel data approach is supplemented by comparative statistics. In this chapter, countries for which data is available are classified into two groups with regard to the continental average of 5 per cent of GDP in 2000–2015, as follows: States with estimated low levels of capital flight; and States with estimated relatively high estimates of capital flight (table 8). The grouping of resource-dependent countries in table 8 refers to the following commodity exports: energy products and minerals, ores and metals (Schuster and Davis, 2020; for a comparison between resource-dependent and non-resource dependent countries to show how resource dependency and limited economic diversification are associated with developmental harm, see chapter 6).

[61] "A country's fragility is closely associated with its State capacity to manage conflict, make and implement public policy and deliver essential services, and its systemic resilience in maintaining system coherence, cohesion and quality of life, responding effectively to challenges and crises" (see https://www.systemicpeace.org/inscrdata.html).

[62] The index includes financial stability (vulnerability to shocks), efficiency and strength of the financial sector (competition, interest rates, capitalization and concentration of liquidity) and access to financial services (savings, credits, payments and insurance), and is based on qualitative and quantitative information drawn from a number of different sources (see https://databank.worldbank.org/reports.aspx?source=country-policy-and-institutional-assessment).

Due to methodological challenges in estimating the magnitude of IFFs and the multidimensional relationship with sustainable development, the magnitude of the results should not be treated as a definitive estimate, nor should the analysis be considered as establishing causality. Instead, the findings illustrate the negative association between IFFs and sustainable development indicators, rather than providing specific estimates of the magnitude of the relationship.

Table 8

Capital flight and natural resource dependency: Country groups

Capital flight estimates		Natural resource dependency	
High: >5 per cent of GDP	Low: <5 per cent of GDP	Non-dependent	Dependent
Benin, Burundi, Comoros, Congo, Djibouti, Eswatini, Ethiopia, Gabon, Guinea, Lesotho, Mali, Mauritius, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Togo, Uganda	Algeria, Angola, Botswana, Burkina Faso, Cabo Verde, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Egypt, Ghana, Guinea-Bissau, Kenya, Madagascar, Malawi, Mauritania, Morocco, Mozambique, Namibia, Nigeria, South Africa, Sudan, Tunisia, United Republic of Tanzania, Zambia, Zimbabwe	Benin, Cabo Verde, Central African Republic, Comoros, Côte d'Ivoire, Djibouti, Egypt, Eswatini, Ethiopia, Gambia, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Morocco, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Tunisia, Uganda, Zimbabwe	Algeria, Angola, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Gabon, Ghana, Guinea, Libya, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Sudan, Liberia, Rwanda, Sierra Leone, Togo, United Republic of Tanzania, Zambia

Source: UNCTAD secretariat.

Box 5

Estimating the marginal effects of illicit financial flows on cross-sector labour productivity

The main model discussed in this chapter is guided by a review of the existing literature and is described in the following equation:

$$ln\left(\frac{\text{value added}}{\text{employment}}\right)_{itk} = f(\text{illicit financial flows}_{it-1};\ \text{institutions}_{it-1};\ \text{illicit financial flows}_{it-1} \# \text{institutions}_{it-1};\ \text{control variables}_{it-1};\ \text{set of fixed effects})$$

where *i* is the country level, *t* refers to the period 2000–2015 and *k* to the following sectors: agriculture, mining and quarrying, manufacturing, construction, wholesale and retail trade, transport services and other services. The equation is estimated at the sector *itk* level. The set of fixed effects in the main specification includes country-sector (μ_{ik}) and sector-year (γ_{tk}) fixed effects. The sensitivity of the results to a different set of fixed effects is discussed in Slany et al. (2020). Considering within-sector

productivity increases as the main contributor to overall productivity levels, the dependent variable is value added in sector *k*, divided by sectoral employment in country *i* at time t (2000–2015). This approach allows for an estimate of sector-specific effects. Sectoral productivity is a function of the variables of interest (IFFs, institutions and interactions between institutions and IFFs) and control variables (macroeconomic variables, education levels and vulnerability to natural disasters).

Variables used in the econometric analysis and expected signs of estimated coefficients

Variable	Description	Data source	Expected sign
IFFs	Capital flight as percentage of current GDP; total trade export underinvoicing (extraregional) as percentage of current GDP	Balance of payments method from the Political Economy Research Institute	-
Institutional quality and interaction terms			
State fragility index	The index measures State performance with regard to effectiveness and legitimacy in addressing shocks and crises: 1=low level of fragility; 25=high level of fragility	Centre for Systemic Peace	-
Interaction of IFFs State fragility index*			
Control of corruption	The indicators are based on variables showing the perception of corruption: -2.5=high corruption; 2.5=low corruption	World Bank world governance indicators	+
*Interaction of IFFs*control of corruption*			
Financial sector rating in CPIA subindex No. 7	The subindex assesses financial stability and access to financial resources: 1=low financial sector rating; 6=high financial sector rating	World Bank	+
*IInteraction of IFFs*financial sector rating*			
Control variables			
Resource dependency	Share of value added in the mining and utilities sectors as percentage of total value added	UNCTAD Statistics	-
Gross capital formation	Gross capital formation as percentage of GDP	World Bank world governance indicators	+
Inflation	Change in annual consumer price index (percentage)	World Bank world governance indicators	-
Primary enrolment rate	Net enrolment rate in primary education	UNESCO	+
Natural disasters	Number of occurrences each year	Emergency events database	-

Negative values of capital flight estimates are deleted. In order to allow for an easier interpretation of the variables of interest, IFFs and the conditional effect on institutions (all independent variables) are centred at the mean. Endogeneity caused by omitted variable bias is partially controlled by the set of fixed effects and the control variables. Endogeneity from reverse causality is addressed in the first lag of all of the independent variables. Additional robustness checks with a higher lag are discussed in Slany et al. (2020). The equation is estimated using a fixed effects estimator, controlling

for autocorrelation and correlation across panels (Driscoll-Kraay standard errors). The results with regard to a selection bias (lack of or biased estimate of IFFs, low quality of data and low capacity to collect data) are discussed in Slany et al. (2020). All relevant results with regard to different interaction terms are shown in table 9. The results cover the period 2000–2015 and are only reported for a sample of 24 countries.

Source: UNCTAD secretariat.

Table 9

Regression results for fixed-effects estimation: Total cross-sectoral productivity, 2000–2015

	1	2	3	4	5	6
	State fragility		Control of corruption		Financial sector rating	
	No interaction	Interaction with State fragility	No interaction	Interaction with control of corruption	No interaction	Interaction with financial sector rating
Capital flight (percentage of GDP)	-0.00164***	-0.000995	-0.00202***	-0.00247**	-0.00224***	-0.00216**
	(0.000540)	(0.000736)	(0.000571)	(0.000901)	(0.000594)	(0.000706)
State fragility	-0.0202**	-0.0193**				
	(0.00937)	(0.00899)				
Interaction of capital flight with State fragility		-0.000528**				
		(0.000202)				
Control of corruption			0.157***	0.164***		
			(0.0325)	(0.0333)		
Interaction of capital flight with control of corruption				0.00233		
				(0.00203)		
Financial sector rating					0.152*	0.153*
					(0.0765)	(0.0768)
Interaction of capital flight with financial sector rating						-0.000624
						(0.00165)
Share of mining and utilities value added (percentage of total)	-0.000739	-0.00104	-1.78e-05	0.000188	0.00271	0.00253
	(0.00139)	(0.00144)	(0.00167)	(0.00166)	(0.00349)	(0.00384)
Gross fixed capital formation (percentage of GDP)	0.00267*	0.00300**	0.00239**	0.00233*	0.00403**	0.00400*
	(0.00141)	(0.00138)	(0.00109)	(0.00109)	(0.00179)	(0.00183)
Inflation (percentage change)	-0.00223	-0.00275	-0.00103	-0.00128	-0.00450	-0.00449
	(0.00264)	(0.00245)	(0.00355)	(0.00331)	(0.00349)	(0.00346)
Primary enrolment rate	0.00198	0.000443	0.00275*	0.00233	0.000651	0.000867
	(0.00145)	(0.00156)	(0.00145)	(0.00146)	(0.00107)	(0.00123)

Table 9

Regression results for fixed-effects estimation: Total cross-sectoral productivity, 2000–2015 *(continuation)*

	1	2	3	4	5	6
	State fragility		Control of corruption		Financial sector rating	
	No interaction	Interaction with State fragility	No interaction	Interaction with control of corruption	No interaction	Interaction with financial sector rating
Number of natural disasters	-0.0137*	-0.0135**	-0.0120*	-0.0121*	-0.00803	-0.00793
	(0.00701)	(0.00632)	(0.00635)	(0.00607)	(0.00922)	(0.00906)
Constant	7.939***	7.921***	7.831***	7.824***	8.376***	8.374***
	(0.0248)	(0.0193)	(0.0332)	(0.0277)	(0.0140)	(0.0172)
Observations	1 393	1 393	1 344	1 344	784	784
Number of groups	168	168	168	168	126	126
Adjusted R-squared	0.626	0.630	0.585	0.587	0.378	0.378

Source: UNCTAD secretariat.
Note: All independent variables are centred at the mean; country sector and sector year fixed effects are always included; robust Driscoll-Kraay standard errors are shown in parentheses; *, ** and *** indicate a 10, 5 and 1 per cent significance level, respectively.

5.2 Illicit financial flows associated with inferior outcomes in sustainable development

Lower productive investments for structural transformation

The regression results for the impact of capital flight on the dependant variable of productivity, showing the inclusion of the proxies for institutional quality and the interaction terms, are provided in table 9. An interaction term captures the effect on a dependent variable of a change in the variable of interest and is dependent on the level of a third explanatory variable. The results suggest that the loss of productive investments through all-inclusive capital flight significantly reduces productivity across sectors in Africa. This finding is robust across model specifications and the inclusion of different interaction terms. Resource dependency, measured by the share of value added in the mining and utilities sectors as a share of total value added, itself does not influence the magnitude of the harmful impact of IFFs, although IFFs are most pronounced in the extractive industries (Slany et al., 2020). The institutional environment is more important in explaining the extent to which IFFs are harmful for investments in productive capacities. The lower the level of State fragility, the more stable is the overall business environment and the less is the direct negative impact of IFFs on productivity (table 9, column 2). Lower State fragility, better

control of corruption and a higher quality of financial sector institutions directly promote productivity through a reduction of the transaction costs of economic activities and higher levels of economic efficiency. A comparison with export underinvoicing as a proxy for IFFs, accounting for the trade channel of capital flight, shows that corruption plays an important role in explaining the harmful effects of IFFs on productivity because of bribery and smuggling (Slany et al., 2020).

IFFs have multiplier effects on labour productivity through the investment inhibiting channel and the Government spending channel. Higher levels of both capital formation and primary education significantly promote productivity. However, the control of corruption plays a stronger role in explaining productivity levels, indicated by a greater statistical significance. The regression is able to explain 40–60 per cent of the variation in labour productivity; the model therefore captures a significant share of labour productivity changes over time (for a discussion of the extent to which curbing IFFs can be directly associated with better outcomes in education and health, accelerating human capital, see chapter 6). Moreover, with regard to additional indicators of IFFs, criminal activity in extractive industries (proxied by the indicator on non-renewable resource crimes in the organized crime index of the Enhancing Africa's Ability to Counter Transnational Organized Crime) is also closely related to lower levels of gross fixed capital formation.

The empirical results also indicate that the number of natural disasters that negatively affect human and physical capital reduces productivity. The unsustainable exploitation of natural resources, linked to IFFs, can contribute to the scarcity and finiteness of resources, eroding the productive base of an economy (Nordhaus, 1974, 2014). The loss of capital through IFFs creates a further challenge for the mobilization of resources in countries in Africa with regard to adapting to climate change (chapter 6).

The coefficient estimates for capital flight are somewhat lower when the empirical findings are compared with the literature on IFFs in Africa (Ndiaye, 2009; Fofack and Ndikumana, 2010; Ndikumana, 2014). First, the absolute increase in labour productivity has been much less than GDP growth. Second, a relatively low estimated correlation suggests that private and public investments (capital accumulation and public spending) have been less able to translate into structural transformation (Grigoli and Kapsoli, 2013; Gaspar et al., 2019; Kharas and McArthur, 2019).

Economic sectors are also impacted differently by drivers of structural transformation and IFFs, depending on the initial level of productivity. For example, sectors in which access to capital is crucial to boosting value addition in productive processes, such as agriculture and manufacturing, depend more on financial stability, access to finance and

stronger institutions to boost economic efficiency (section 5.5). The harmful impacts of IFFs are seen in the lack of private and public investment and are, on average, greater in lower productivity sectors such as agriculture and manufacturing (Usman and Arene, 2014; Slany et al., 2020).

Undermined progress on poverty reduction

Higher levels of output per worker are associated with poverty alleviation, in particular in the case of agricultural productivity. Productivity growth can reduce food prices, increase real wages and yield diversification as well as potential employment growth in the non-farm sector (Thirtle et al., 2001; Byerlee et al., 2005; Schneider and Gugerty, 2011; Asfaw et al., 2012).

IFFs imply an unequal distribution of wealth, which leads to higher levels of poverty and inequality (AfDB et al., 2012; Nkurunziza, 2014). Only a small share of the population has the power to engage in capital flight-related activities (AfDB et al., 2012). The negative impact on economic development arising from lower levels of investment and reduced Government spending is most keenly felt by the poor. The channels through which IFFs undermine efforts to reduce poverty mainly relate to a loss of Government revenue, leading to lower levels of expenditure on education, health and infrastructure, but also to negative externalities on labour productivity arising from export underinvoicing in extractive industries (section 5.5).

Higher levels of poverty are, on average, observed in countries with a higher level of resource dependency. In countries with high levels of capital flight, limited economic diversification and a large proportion of the population living below the poverty line (in the group of countries with high levels of capital flight, a poverty rate of 33 per cent of the population living below the poverty line of $1.90 per day is observed), only a small group benefit from natural resource extraction, which further drives inequality (AfDB et al., 2012; inequality measures between countries are not compared because of the lack of sufficient data). One of the key determinants as to whether natural resources are “a blessing or a curse” appears to be the efficacy of governance, in particular the existence of sufficiently good institutions, whereby the main channels of the curse are high levels of public and private consumption, low and often inefficient investment and an overvalued (strong) currency (Dutch disease; Collier and Goderis, 2008). However, the significant aspect is that all of these channels can be neutralized or ameliorated through appropriate policies and strategies and the resource curse can become a blessing through the deployment of resource rents towards enhancing productive capacities and diversifying the economy.

Some have questioned the resource curse hypothesis, highlighting examples of commodity exporting countries that have done well and stating that resource endowments and booms are not exogenous (Frankel, 2010). The existence of a potential resource curse has continued to be discussed, with some studies finding some positive linkages between mining activities and local development, yet also raising the point that this strongly depends on specific economic linkages to the regional economy.[63] For example, in Zambia, such linkages from mining companies can be confirmed, despite the absence of fiscal revenue or dividend income for the population of Zambia (Lippert, 2014). For example, von der Goltz and Barnwal (2019) show, for a sample of developing countries, that mining can boost local wealth, yet often have negative health and pollution-related impacts. Negative externalities arising from air pollution and water contamination may negatively affect agricultural productivity and increase inequalities, as not everyone can benefit from higher levels of investment (Amundsen, 2017). Among the most resource-dependent countries, Angola and Chad have experienced higher levels of inequality; the opposite is observed in Algeria, and Nigeria is also characterized by high levels of inequality between states (Amundsen, 2017). Onyele and Nwokocha (2016) show that there was a significantly negative impact of capital flight on poverty in Nigeria in 1986–2014. The persistent outflow of capital contributes to poor capital formation, lower levels of investment in infrastructure and domestic production that traps large parts of the economy in poverty. Taxation and redistribution policies can have a significant impact on the distribution of income (for the role of capital flight in domestic resource mobilization, see chapter 6).

5.3 How inclusive institutions can reduce the harmful impact of illicit financial flows

Section 5.2 provides evidence of how IFFs impact structural transformation through lower levels of productive investment. Domestic resources are one vehicle for sustainable development, yet good governance and inclusive institutions are crucial for deploying financial resources to meet development needs and boost the efficiency of financial resources. In this chapter, the models include institutional quality and interaction with IFFs, showing that capital flight harms economic development, in particular when institutional development and transparency are not adequate.

[63] Findings range from negative cross-country correlations between resource exports and economic development (Sachs and Warner, 1995; Sachs and Warner, 2001) to negative impacts on institutions and rent seeking (Mehlum et al., 2006; Besley and Persson, 2010) and evidence of increased conflict (Collier and Hoeffler, 2004), with all of the results subject to some endogeneity bias (Collier and Hoeffler, 2004).

Financial transparency and regulation

The findings detailed in this chapter suggest that improvements in financial stability and access to financial resources, proxied by the financial sector rating in CPIA subindex No. 7, promote higher productivity (table 9, columns 5 and 6). Strong financial sector institutions may make a country less vulnerable to the negative effects of capital flight. When companies and self-employed people such as farmers have better access to other financial resources, illicit financial outflows may be less of a constraint to capital accumulation and building productive capacity. Transparency in the financial sector and inclusive access to finance is key in tackling IFFs and economic development.

Financial transparency and regulation are a global multilateral task. For example, to increase financial transparency in States vulnerable to conflict, the United States has provisions that require companies to produce a compliance report on the use of minerals, namely, tin, tungsten, tantalum and gold, from the Democratic Republic of the Congo and any neighbouring countries.[64] However, companies often face difficulties in complying with these regulations and Parker and Vadheim (2017) and Stoop et al. (2018), for example, question whether the regulations have achieved their goals (chapter 4).

Financial transparency is important in monitoring money-laundering activities[65] and may be partially associated with higher levels of capital accumulation, proxied in the model by gross fixed capital formation. The anti-money-laundering initiative and the counter-financing of terrorism initiative, implemented by IMF,[66] require the preparation of suspicious transaction reports, used to detect, fight and prevent IFFs from criminal activities (Braun et al., 2016). The Intergovernmental Action Group against Money-Laundering in West Africa supports countries in Western Africa in complying with these initiatives. In 2018, countries in West Africa with a high number of suspicious transaction reports related to money-laundering, terrorism financing and other economic crimes (for example, Benin, Ghana and Nigeria) also tended to score highly on the index of non-renewable resource crimes (figure 13). Although such reports are considered an important identifier of criminal activity, of the 2,755 cases recorded in 2018, only 145 cases were juridically investigated (Intergovernmental Action Group against Money-Laundering in West Africa, 2018).

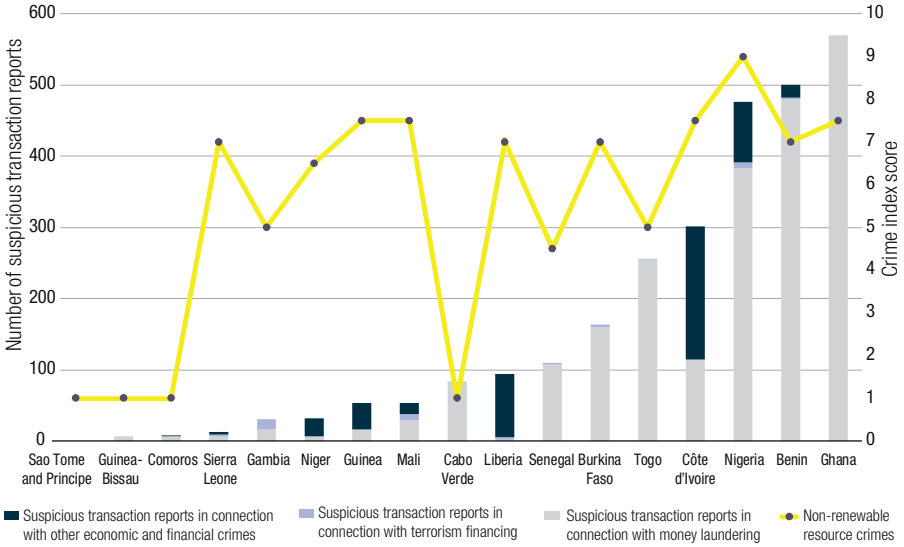
[64] See https://www.csis.org/analysis/dodd-frank-1502-and-congo-crisis.

[65] The ranking of a country on the anti-money-laundering index of Enhancing Africa's Ability to Counter Transnational Crime can serve as a proxy for the ability to monitor money-laundering.

[66] See https://www.imf.org/external/np/leg/amlcft/eng/.

Figure 13

Western Africa: Number of suspicious transaction reports received and non-renewable resource crimes, 2018



Source: UNCTAD calculations based on Intergovernmental Action Group against Money-Laundering in West Africa (2018) and the organized crime index of Enhancing Africa's Ability to Counter Transnational Crime.
Note: The index includes the incidence of illicit extraction, smuggling, mining and bunkering of a country's key resources, such as oil, gold, gas, diamonds, other gemstones and precious metals

Peace and security and control of corruption

Limited State capacity to ensure security and social and economic efficiency, as measured by the State fragility index, leaves a country highly vulnerable to capital flight from the proceeds of crime and money-laundering. Cobham and Janský (2018) provide evidence of how different indicators of IFFs impact State funds and State effectiveness. An increase in a country's fragility also lowers the level of productivity. Moreover, capital flight appears to be more detrimental to productivity at higher levels of State fragility (table 9, column 2).

Better control of corruption is associated with higher levels of productivity (table 9, columns 3 and 4). High levels of corruption create uncertainties about the institutional environment and reduce private investment, with harmful effects on productivity across

sectors. Corruption has been a major factor in enabling capital to cross borders illicitly and, at the same time, IFFs allow for the proceeds of corruption to be hidden. The negative impact of IFFs on productivity channelled through corruption is greater in the trade-related channel of capital outflows (export underinvoicing) due to bribery and smuggling (chapter 2).

In order to fight corruption and promote transparency in extractive value chains, 23 countries in Africa have implemented the EITI initiative. The empirical findings show that greater transparency can reduce vulnerability to IFFs and boost levels of productivity (section 5.2). Freedom of the press, gender equality and transparency are, on average, greater when there is better control of corruption (Kaufman et al., 2005). Recent literature on the impact of the EITI framework provides some evidence of the fact that membership has a weakly positive effect on non-oil revenue mobilization (Mawejje and Sebudde, 2019).

5.4 Illicit financial flows and environmental performance in extractive sectors

The impact of extractive industries and natural resource dependency has been widely discussed, yet the association of IFFs with environmental performance has received little attention. The world atlas of illicit flows notes that environmental crime is an important dimension of IFFs, through the illicit mining of minerals and the smuggling of fuel. Estimates on overall environmental crime, defined as "activities that breach environmental legislation and cause significant harm or risk to the environment, human health or both" range from $110 billion to $281 billion annually, of which illegal mining totals $12 billion to $48 billion (International Criminal Police Organization et al., 2018).[67] Environmental crime inhibits the ability of countries to achieve environmental goals such as with regard to biodiversity and to achieve sustainable development.

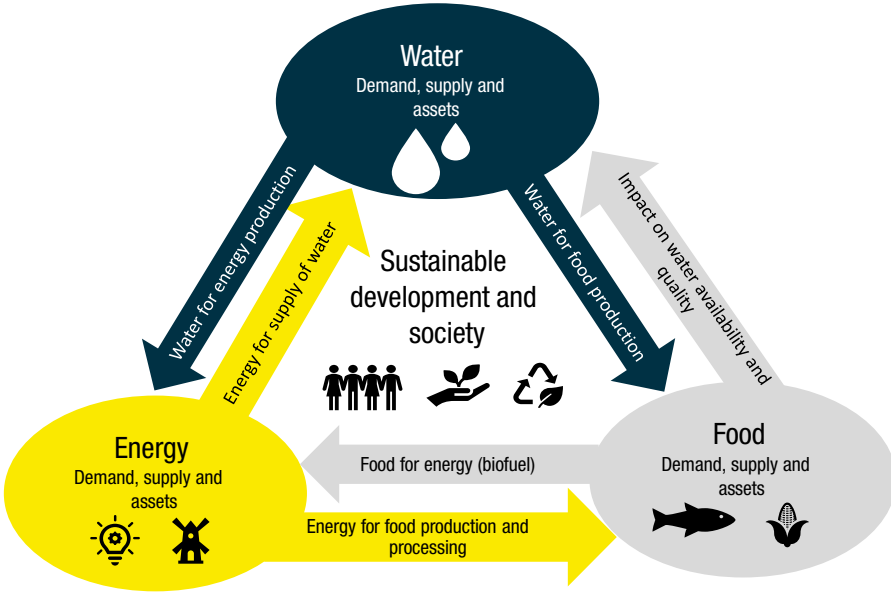
IFFs are most prevalent in energy-intensive extractive industries. The link between the sustainable use of resources, energy security and the supply of food and water, called the water-energy-food nexus, is shown in figure 14 (World Economic Forum, 2011; Biggs et al., 2015). A large-scale extraction of natural resources requires prohibitive amounts of energy, which can lead to the depletion of capital stocks and increase climate-related risks (Biggs et al., 2015). Higher levels of energy production require greater amounts of water, which can impact water quality and availability. Water is an essential input to

[67] See https://www.europol.europa.eu/crime-areas-and-trends/crime-areas/environmental-crime.

agricultural production, and limited access to water and/or poor quality water threatens food security. Extractive industry activity is not only energy intensive but can also create pollution and contaminate the soil, groundwater and surface water (Aragón and Rud, 2016; Woodroffe and Grice, 2019). Poor environmental performance, in particular with regard to water quality, negatively impacts human health, agricultural output and food security.

Figure 14

The water-food-energy nexus in resource extraction



Source: UNCTAD secretariat based on World Economic Forum (2011) and Biggs et al. (2015).

Chapter 2 provides a measure of commodity-specific export underinvoicing that may be associated with the unsustainable use of natural resources. The relationship is twofold. A low level of enforcement and control of environmental standards may facilitate the illicit exploitation and trade of natural resources. In addition, illegal logging, for example, can increase the proceeds of crime and money-laundering,

with often hazardous and severe environmental impacts (OECD, 2019c). Countries in which export underinvoicing in extractive industries is less pronounced perform better, on average, with regard to environmental policies, as shown by different indices for environmental performance.

The environmental performance index combines a number of indicators on environmental health and economic vitality, including the risk of exposure to air pollution and lead poisoning, which are closely related to mining activities.[68] In 2018, countries with higher values of commodity-specific export underinvoicing were associated with lower levels of environmental performance, for example, Angola, Benin and Burundi (figure 15). In contrast, as indicated by a simple linear regression of export underinvoicing and environmental sustainability (figure 15, blue line), countries with relatively higher scores in national environmental sustainability commitments and achievements had lower levels of commodity-specific export underinvoicing (figure 15, lower right-hand quadrant).

Stricter environmental standards and better enforcement of existing standards over time is proxied by the environmental sustainability rating in CPIA subindex No. 12.[69] IFFs are linked to environmental sustainability in two directions, as follows: inadequate environmental policies and weak enforcement of existing commitments may increase the incidence of illicit resource exploitation and capital outflows in extractive industries; and the loss of capital undermines public expenditures with regard to biodiversity and climate change mitigation.

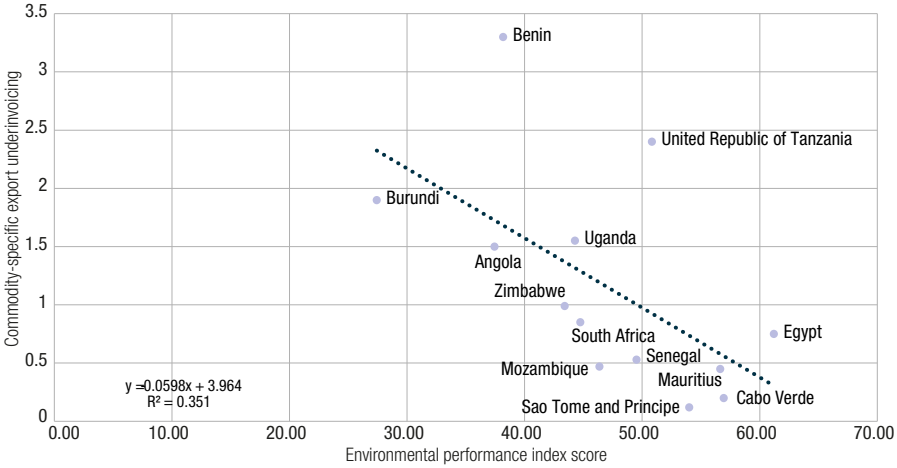
[68] The construction of the index acknowledges the tensions between environmental health (a lower level of environmental risk exposure), which is positively influenced by higher income levels, and ecosystem vitality (biodiversity and sustainable resource use), which is negatively impacted by industrialization and urbanization; and notes that good governance institutions are a critical factor in the overall performance of sustainability (Wendling et al., 2018; see https://epi.envirocenter.yale.edu/epi-downloads).

[69] The subindex assesses the extent to which environmental policies foster the protection and sustainable use of natural resources and the management of pollution (see https://databank.worldbank.org/reports.aspx?source=country-policy-and-institutional-assessment).

Figure 15

Commodity-specific export underinvoicing and environmental performance index, 2018

(Percentage of gross domestic product)



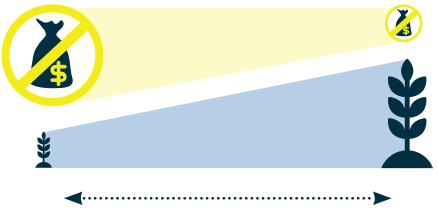
Source: UNCTAD calculations based on the environmental performance index.

Environmentally sustainable production processes that are less resource and energy intensive require a high level of investment and high-level technical capability. IFFs in the energy intensive mining and utilities sectors may divert capital away from countries in Africa in which financial resources are needed to reduce vulnerability to climate change through investments in climate change adaptation and mitigation (chapter 6). In addition, given limited energy supply in most countries in Africa, the high level of energy used in the mining sector may imply a lack of energy supply in other sectors. Energy represents 30–35 per cent of the operational costs of mining (Zharan K and Bongaerts, 2018; UNCTAD, 2019a). Negative externalities from the poor management of natural resources, causing competition over land use, greater air pollution, a high level of energy use and a loss of capital have adverse impacts across sectors and are particularly associated with negative outcomes in the agricultural sector (Aragón and Rud, 2016; Ouoba, 2018).

5.5 Poor resource management and negative externalities on agricultural productivity

The relatively low level of agricultural productivity in Africa is a major obstacle to poverty reduction, food security and gender equality (Nin-Pratt, 2015). Women farmers tend to have lower levels of productivity than men farmers due to lower levels of access to finance and agricultural inputs (UN-Women, 2019). Lack of access to land and access to capital are among the main reasons for why farmers are prevented from graduating from subsistence to higher productivity farming.

Countries with high IFFs
have only **1/3**
of the agriculture productivity levels
of countries with low IFFs



Poor management and an environmentally unsustainable use of natural resources negatively impacts agricultural productivity (Aragón and Rud, 2016). The simple mean comparison of agricultural productivity across countries by high versus low levels of capital flight suggests that countries with greater IFFs experience, on average, lower agricultural productivity (figure 16; for further econometric evidence of the negative relationship, see Slany et al., 2020). There are several channels related to environmental sustainability and access to capital, as follows:

(a) Mismanaged extractive industries, in combination with low environmental standards, can have a negative impact on water resources and soil productivity and also increase air pollution. Aragón and Rud (2016), using household-level data, estimate that in Ghana, large-scale gold mining has reduced agricultural productivity by 40 per cent in areas closer to a mine. The effect is mainly driven by high levels of pollution rather than the lack of inputs. The statistically negative impact of export underinvoicing in extractive industries on agricultural productivity is correlated with overall resource dependency (Slany et al., 2020);

(b) Negative externalities due to the activities of extractive industries that may impact agricultural productivity can arise from competition over land use, changes in land prices and expropriation (UNECA and African Union, 2011; Kotsadam

and Tolonen, 2016; Ouoba, 2018). Furthermore, this may also be linked to a deterioration in peace and security (Berman et al., 2017);

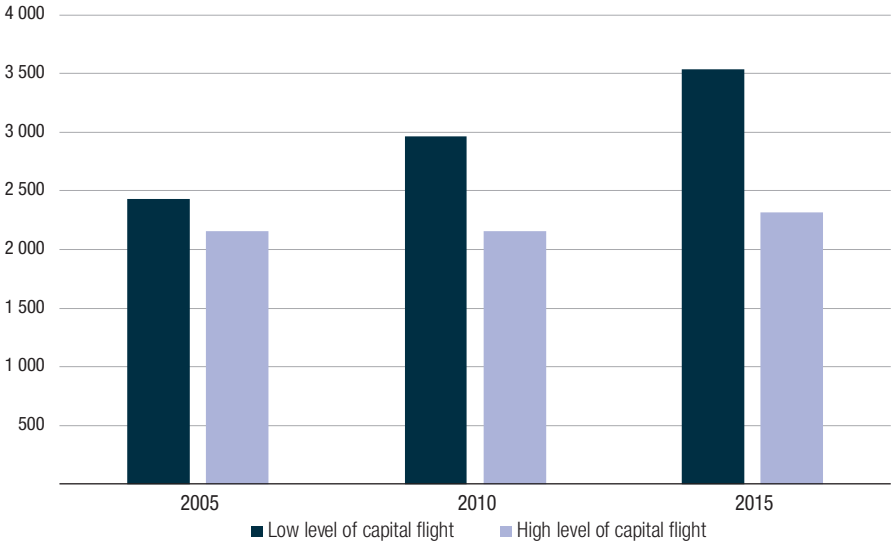
(c) The lack of investment and financial resources potentially reduces the availability of funds for agricultural activities. Inability to secure finance to raise productivity or innovate has been a major impediment to growth for smallholding farmers (McMillan et al., 2017);

(d) Financial outflows that can lead to a devaluation in local currencies further increase the relative price of imports. Imported fertilizer as an important source of enhanced productivity is, as a consequence, relatively low. This may also be due to rising international fertilizer prices.

Figure 16

Africa: Agricultural sector labour productivity by estimated level of capital flight

(Constant 2010 dollars)



Source: UNCTAD calculations.
Note: For the classification of low and high levels of capital flight, see table 8; labour productivity is defined as value added divided by employment.

In order to restore used land that has been damaged by mining activities, referred to as site rehabilitation, sufficient financial resources must be set aside by domestic and

international mining operators. If sound policies and regulations, including for rehabilitation, are lacking, companies may shift profits abroad through export underinvoicing, rather than investing in rehabilitation, which can severely impact agricultural productivity in the long term (International Finance Corporation, 2014). In some developing countries, regulations already require companies to provide a financial fund for site rehabilitation. With greater requirements for compensation schemes and other regulatory standards, companies in extractive industries are required to increase local savings and investments, which could potentially lower the amount of capital outflow. Tackling IFFs and investing in sustainable development could have a positive impact on and improve environmental performance.

5.6 Concluding remarks

This chapter provides evidence of the relationship between IFFs and sustainable development. It highlights the interlinkages between economic, institutional and environmental development and how curbing IFFs could enhance prospects for productivity increases in Africa. The empirical findings provide evidence of how capital flight can reduce productive investment, impacting institutional capacity to control corruption, weaken institutions with regard to environmental standards and lower financial sector ratings. Improving institutional settings can potentially boost productivity through efficiency increases. In addition, it can help reduce the marginal vulnerability of State development due to IFFs.

In light of the literature on environmental crime, the chapter further assesses the relationship between IFFs and environmental sustainability. Agricultural productivity, as output per worker, is particularly vulnerable to poor natural resource management and environmental performance. Countries with high levels of IFFs experience, on average, lower agricultural productivity. Higher estimated levels of export underinvoicing are negatively associated with lower levels of environmental sustainability. By contrast, good policies with regard to environmental sustainability and better enforcement of existing environmental laws can reduce the harmful effect of IFFs on productivity