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Implications for Public Policy

John Page and Finn Tarp

1. Introduction

Although natural resources make diversification and structural change more challenging, public policy matters. Tradable goods production will expand or contract according to whether it is internationally competitive. This depends both on relative prices and on the policy and institutional changes and investments that governments make to enhance competitiveness. This chapter draws together some lessons for the design of policies to promote structural change in the growing number of African resource exporters. We begin by addressing the three key themes that guided our research—managing the boom, the construction sector, and linking industry to the resource.

We then propose some ideas for widening the options for structural change. These include policy and institutional reforms to deal with Dutch disease, expanding the concept of structural change from a focus on industrialization to ‘industries without smokestacks’, and investing in knowledge. We argue that governments in resource-abundant economies can use institutional and policy reforms and public investments to mitigate the impact of Dutch disease. They can also broaden their options for diversification by promoting the growth of tradable services and agri-business, including horticulture. Creating and using knowledge—either specific to the resource or in areas where the economy may have localized competitive advantages—has been an important element in the diversification of several resource-rich economies, and African governments can learn from these successes. Finally, natural resources open new opportunities for spatial policies, such as resource-based Special Economic Zones (SEZs) and growth corridors that can catalyse resource-based infrastructure for national development.

2. Managing a modest boom

There is a common thread among the African resource exporters we have studied. In all these countries—except perhaps Mozambique—the impact of the resource on the economy will probably not be large enough to be transformative. None of

them is likely to become another Kuwait. At the same time, resource revenues could well be large enough to be potentially disruptive. Gas in Mozambique might bring a much larger windfall, though its timing and magnitude are uncertain. In short, most of the resource exporters we have studied face the challenge of managing a modest boom.

The fact that the revenue stream associated with the resource discovery may be more modest—and more volatile—than politicians and the public believe and that the extent of the resource may be limited raises important issues for public financial management. As Mark Henstridge reminds us in chapter 2, the production of a mineral is actually a sequence of asset transformations. While the labels ‘production’ and ‘revenue’ imply a flow of output or income, those transactions are mainly steps in the transformation of an asset from one form to another. Sustainable development depends on converting the rents from extracting resource assets into assets yielding other sources of income. One way to diversify income is by accumulating financial assets abroad. Prudent fiscal management, therefore, depends on identifying investments that have a high likelihood of yielding benefits to the domestic economy that exceed the opportunity cost of holding foreign assets.

In poorer economies, the needs of today’s poor should outweigh the needs of future—presumably richer—generations, and in principle, the returns to domestic investment should exceed those offered by foreign assets. The country studies, however, suggest that while using public expenditure to support current consumption or new investment makes sense in principle, it is challenging in practice. In Ghana, Mozambique, and Zambia pressures to spend without the institutions governing public expenditure in place have proved difficult to resist. Managing even a modest boom puts substantial pressure on public financial management in three areas: managing expectations, controlling the volume of public expenditure, and improving the quality of public investment.

2.1 Managing expectations

Ghana, Mozambique, Uganda and Tanzania share a common problem: both legislators and the public believed that the revenues from new resource discoveries would be larger and would come on stream sooner than they have done. In addition, despite a long history of copper revenue management, Zambia has ended up in debt distress, largely from relaxing fiscal discipline in the face of rising copper prices. Managing the expectations arising from any new resource discovery is essential to establishing the basis for prudent public financial management.

In Ghana, early oil revenue projections were bullish, and with the impending 2008 national elections in sight, the incumbent government did little to manage public expectations with respect to the volume and timing of revenues. As a

result, the petroleum discovery gave a false impression that there was more fiscal space than existed. This fiscal buoyancy also made it difficult to develop a political consensus for critical improvements in institutions such as fiscal rules and the independence of the central bank. In Mozambique, the EMATUM bond issue of 2013 had an obvious problem at the time of contracting the loan. The bond issue had a maturity date of 2020. Therefore, even if the very optimistic revenue projections had proven to be correct, the timing was clearly off. Full repayment of the loan had to happen *before* one dollar of gas revenues became available.

Despite projections that imply that production of gas is at least a decade away in Tanzania, expectations have been high, including in Mtwara—the onshore supply base for offshore exploration—where unrest resulted in several fatalities. Ironically, today the prospects of the energy companies reaching a final investment decision appear to be growing increasingly remote.¹ Since Uganda reached the commercial threshold of oil in 2008, the government, civil society, and the public have speculated regarding the size of the oil boom to come, and some of these expectations have already resulted in infrastructure investments. To date, none of the previous projections of the onset of production proved realistic.

Two vulnerabilities appear to have led to fiscal exuberance in the five case-study countries. First, early projections of revenues tended to use optimistic estimates of price trends, and of the extent of the resource. Second, the resource extraction agreements between the multinational companies and the government were not publicly available. Lack of public disclosure of the agreements forced analysts to use the limited published information available—together with some relatively standard features of production-sharing agreements—to make rough estimates of the level of resource revenues and extraction costs.

To address the first problem, governments need to make the public (and their political representatives) aware of the great uncertainty attached to estimating commodity prices and the extent of commercially extractable resources. In the case of Tanzania, for example, Henstridge notes that the initial optimism surrounding the extent of the undersea gas reserves has come up against the reality of declining natural gas prices, calling the commercial viability of liquefied natural gas (LNG) exports into question. There has been little public communication on the uncertainty surrounding when and how the projects may go ahead. This is an area where the international financial institutions could be helpful. Both the IMF and the World Bank have specialized staff dedicated to monitoring commodity price trends and making projections. In economies with new resource discoveries, governments should publicize these organizations' price projections and estimates of price variability.

In the case of resource extraction agreements, disclosure on the part of government and the extractive companies can reduce the uncertainty associated with

¹ See chapter 11.

the timing and scale of revenues. Most resource-extraction contracts around the world are confidential. Yet, Cameroon, Colombia, Ecuador, Kazakhstan, Kurdistan, Liberia, Morocco, and Timor Leste have all published their production-sharing agreements. Among the countries in our case studies, Ghana stands out for the extent to which it has made the content of its production-sharing agreements available to the public. Public access to the production-sharing agreements may also strengthen the incentives for the extractive companies to make accurate information available regarding the extent of commercially viable reserves.

2.2 How much spending?

Pressures to increase public spending are an unavoidable companion to resource discoveries. This raises the question of how to assess how much spending is too much. Regardless of whether spending is in the form of consumption or public investment, there is an absorption constraint. Getting feedback from the economy when the public investment programme moves forward will show whether the limits of absorptive capacity become binding. The most direct signals are inflation and the exchange rate. Some appreciation of the exchange rate is inevitable when spending out of resource revenue increases, but when inflation accelerates and the exchange rate is appreciating beyond manageable limits, the pace of spending needs scaling back.

The country studies underscore this point. In Ghana, there has been an upward trend in inflation since 2012, reaching 17.5 per cent in 2016. Fiscal slippages and aggressive capital investments, along with some overvaluation contributed to widening current account deficits through 2013. Although the cedi depreciated by 31 per cent against the dollar in 2014, IMF estimates suggest a real effective exchange rate overvaluation of around 8 per cent. In Mozambique, the inflation rate accelerated from 2 per cent in 2014–15 to an average of 17.3 per cent in 2016–17 and the exchange rate has appreciated in nominal terms by 24 per cent since October 2016. In Zambia, inflation responded to the recent spending surge by accelerating from 7.4 per cent in 2013/14 to 14 per cent in 2015/16. Following a doubling of the Kwacha value of the US dollar in November 2015, the currency has appreciated by about 70 per cent. Clearly, public expenditure exceeded the absorptive capacity of those economies. Tanzania and Uganda in contrast, have kept inflation in check in the five per cent range and sustained relatively stable exchange rates.

2.3 Improving the quality of public spending

The quality of public spending should determine the quantity of public spending. The key decision rule for a resource-abundant economy should be never to

finance an investment project where the return broadly and carefully assessed is less than that obtained from holding foreign assets. Applying this rule, however, is more complex than it appears at first sight. While it is possible to estimate the returns to investments in discrete domestic investment projects with some precision, it is considerably more difficult to appraise the benefits of efforts aimed at improving the competitiveness of the economy as a whole. Nonetheless, problems with addressing externalities should not be an excuse for failure to evaluate the great majority of investment projects. Once the overall volume of spending consistent with prudent public investment is set, governments should park any remaining revenue in investments overseas.

One of the critical failures of public expenditure management found in the country studies is the lack of effective systems to prioritize and select investment projects. Even Ghana, which attempted to introduce global best practices into the management of resource revenues, has had greater success in promoting transparency in accounting for revenues than in identifying priorities for public expenditure. Similar, although more extreme, issues have affected project selection in Mozambique, Tanzania, and Zambia. In all cases, accurate estimates of the returns to the projects financed out of resource revenues are not available.

Addressing this problem requires improving the quality of project appraisal. A major contributor to Botswana's success in translating diamond revenues into economic development was the requirement for appraisal of every public investment project. Chile, another resource-rich economy, followed similar rules. It is revealing that none of the countries among those we studied has systematic requirements for project appraisal. To improve project selection, governments need to build a cadre of economists with training in project appraisal and make them responsible for project preparation in each spending ministry. The finance or economics ministry—as the case may be—should have a prioritized list of projects meeting the agreed threshold rate of return. To succeed in changing the organizational culture, a prerequisite is that writing sound project appraisals become a required skill for officials to advance their careers, together with the capacity to identify and reject inadequate appraisals.

The country studies show that frequently public investments proceed without adequate provision in the budget for recurrent costs of maintenance. This is especially dangerous in the case of spending out of resource revenues. Lack of maintenance can seriously degrade project returns. Adam and Bevan (2014) show that the returns to operations and maintenance of existing, poorly maintained public infrastructure are higher, in terms of their contribution to growth, than building new infrastructure. Maintenance costs, themselves, also increase when routine maintenance is deferred (Burningham and Stankevich 2005).

Adopting a medium-term expenditure framework (MTEF) that incorporates multi-year maintenance plans can help make budget preparation more forward-looking. However, forward planning is only effective where inputs from line

departments are sound. Proper budgeting for maintenance needs good data on the condition of infrastructure assets and the scope and cost of work to be completed. This requires greater communication between sector managers in line ministries and budget decision-makers. Governments should also ensure that user fees are adequate to cover routine maintenance, as well as the operation of the infrastructure and its replacement.

Where reforms to institutionalize maintenance expenditures are difficult to implement, governments should consider earmarking resource revenue for the management of assets. Botswana, for example, used a rule of thumb that 18 per cent of the capital cost of any public asset—whether a school, medical facility, road, or bridge—needed to be budgeted for recurrent costs of maintenance. When they checked later, planners found that the ratio required was a bit higher and cut back the investment programme.

The rapid accumulation of debt in several countries introduces another public expenditure option—paying down the debt. Van der Ploeg and Venables (2011) argue that when a country faces debt-elastic foreign interest rates, it may be desirable to use a portion of the resource windfall to repay foreign debt. The positive empirical relationship between the stock of foreign debt and the credit spread means that where governments face external credit constraints, reducing foreign debt can boost domestic investment and growth. However, debt reduction will not be optimal in all cases. There should be persuasive evidence that the economy is credit constrained.² In any case, governments should avoid the temptation to relax prudent debt management practices in the face of pressure from domestic constituencies to front-load spending.

3. Construction and ‘investing to invest’

As the country studies demonstrate, high costs in the construction sector can act as a brake on the ability of the economy to transform investment effort into investment outcomes and limit the opportunities for the domestic firms to participate in the construction phase of natural resource projects. Paul Collier has emphasized the need for policies to reduce the marginal cost of construction: he terms this ‘investing to invest’ (Collier 2011). Because the speed with which construction can expand without driving up prices should determine the pace of public investment, the government needs a rapid flow of information from the construction sector to design the public investment programme.

² When van der Ploeg, Stefanski, and Wills (2012) analysed the potential uses of petroleum revenue in Ghana using the same model, they concluded that the government should give priority to reducing the stock of foreign debt. Similar conclusions are likely to hold for Mozambique.

This is not a trivial task—the history of public–private engagement in Africa has shown more failures than successes (Page and Tarp 2017)—but it is essential. Ghana, Uganda, and Zambia highlight the close links between macroeconomic management and price shocks to construction costs. The vicious circle of too much fiscal expenditure spurring rising construction costs in all three countries reinforces the argument that feedback from the construction sector is crucial for effective management of the public expenditure programme.

One reason why construction prices tend to rise in response to increases in demand is that construction requires organization, land, material inputs, skills, and finance. Each can potentially constrain the expansion of output. The case studies identify limited capabilities in domestic contracting firms, opaque or time-consuming regulations, lack of skilled labour, problems with the price and quality of material inputs and lack of access to finance as factors that increase costs and limit the supply response in the construction sector. Public policies can address many of these constraints.

3.1 Increasing the capabilities of local contractors

The great majority of firms engaged in construction in the country studies are micro, small, and medium enterprises (MSMEs). Business training is one of the most common forms of support to MSMEs around the world. While training programmes have traditionally targeted services and manufacturing firms, governments in economies with new resource discoveries may wish to focus first on the construction sector. Cheelo and Liebenthal, for example, conclude that there are potentially high pay-offs to establishing capacity-building programmes for construction firms in Zambia.³

Unfortunately, the results of most MSME training programmes have been disappointing (McKenzie and Woodruff 2012). Few studies find any significant impacts of training on firm performance. Paradoxically, the impact assessments find that the firms that most benefit from training are those with superior prior performance. Rather than training an untargeted range of micro and small firms, the government might consider running a business plan competition in which winners receive a substantial prize and access to training (McKenzie 2015). If the construction sector appears to be non-competitive overall, as in Zambia, policy changes to promote greater competition are also essential.

An alternative to training would be to assist business organizations in the construction sector to acquire good management practices and make them available to their members. In India, for example, the private sector almost wholly funds

³ See chapter 18.

the Confederation of Indian Industries, which provides services of this kind at fees that are within the reach of India's smaller manufacturing companies. These types of initiatives have lower fiscal costs and make the private beneficiaries bear a greater cost share than training. They also face a market test; if they do not deliver value, firms will abandon them.

3.2 Relaxing supply constraints

As Kirchbirger notes in chapter 3, frequently, the public sector, itself, is responsible for policy-induced constraints to construction. Sometimes, as in the cases of Ghana, Tanzania, and Uganda, urban land rights are confused, and this can delay projects. Similarly, planning permissions might be slow. In Zambia, dealing with construction permits takes more than six months.⁴ In Tanzania there are about twenty-four steps to obtain construction permits, including obtaining a location plan, registration with regulatory boards, and inspection by local government authority officers. In total, these procedures may take up to 184 days.⁵

Institutional and policy reforms can prevent these stages from becoming constraints. The Ghana Housing Policy, launched in 2017, for example, aims to establish a land register to provide information on land ownership and to establish a programme of land ownership confirmation and guarantee arrangements. In Tanzania, the government has directed municipalities to ensure that the planning and construction committee makes decisions on issuing permits within one month. This has reduced the statutory time to process permits from ninety to thirty days, although realizing this reduction will require improving the performance of local government authorities.

In each of the countries studied, contractors and clients pointed to problems with the cost and quality of material inputs. Poorly designed policy restrictions on imports, poorly performing institutions such as customs, or the poor performance of the port may become a bottleneck that requires policy action. In Tanzania, for example, the Port of Dar es Salaam is the most acute problem. The main symptoms of the port's inefficiency are long delays at anchorage and in the series of operations needed to remove merchandise from the port. McMillan et al. (2017) estimate the total cost of delays to be equivalent to a tariff of 22 per cent on every container of imports. A combination of economizing on their use and stimulating local production may be one way to relieve the constraints imposed by lack of non-tradable inputs, although as the cases of Ghana and Mozambique illustrate, stimulating local production of inputs requires developing the local construction value chain.

⁴ See chapter 18.

⁵ See chapter 12.

Because such skilled trades as bricklayers, welders, electricians, and plumbers are complementary to unskilled labour and capital, it is not surprising that all the country studies identified skills constraints as a major impediment to the expansion of construction. With planning, construction skills can be locally developed, and the government should allocate resources to training well before the construction phase of a resource boom. A significant number of the skills needed by the resource sector are transferable. These include metal works, building, civil engineering and infrastructure, and mechanical and electrical work. Therefore, a programme of vocational training to a standard good enough to permit trainees to work on the construction phase of a natural resource project will generate a more elastic supply of people with the skills that can also relieve constraints facing the public investment programme. Immigration policies that facilitate the temporary location of service providers can also reduce the cost of importing skilled labour. For East Africa's emerging resource exporters—Kenya, Tanzania, and Uganda—this could be done within the context of deeper regional integration in the East African Community (EAC).

When contracts are awarded on price only, local contractors are often unable to win bids due to lack of access to financing. Reforms to the financial sector may help to ease the constraints to smaller firms imposed by the inability to rent or lease equipment. Cheelo and Liebenthal, for example, suggest that in Zambia, the government explore options to mobilize affordable credit for the construction sector. Governments need to exercise care, however, in the design of targeted finance programmes. The assumption that breaking financing constraints will allow micro and small business owners to scale up their operations appears to be true only when business owners have the skill and resources to profit from the investment (Banerjee et al. 2010; Bauchet et al. 2011). For this reason, as Colonnelli and Ntungire suggest in chapter 15, improvements in leasing and factoring markets may offer greater pay-offs than credit interventions targeted at construction firms.

Some governments exacerbate the financing constraints faced by local firms by failing to make timely payments for work done. In Ghana and Uganda, for example, delays in payment for government construction projects often limit the participation of local firms and lead to delays in project completion.⁶ In Ghana, a new administration may not finish projects started by an outgoing government, and funding delays are common.⁷ These payment issues tend to favour larger, foreign firms since they are more likely to have the financing needed to remain in business in the event of delayed payments. One solution to this problem would be to enact a Delayed Payment Law (DPL), like those found in the United Kingdom, Singapore, and Malaysia, making it mandatory for government to pay interest on all delayed construction payments.

⁶ See chapters 6 and 15.

⁷ See chapter 6.

3.3 Dealing with corruption and collusion

Corruption and collusive behaviour are difficult areas to deal with. We have no more than an imperfect understanding of the mechanisms by which corruption flows through into higher costs. One obvious channel is ‘leakage’ of funds. Construction is the economic sector most dependent on public procurement. This, coupled with typically sizable average contracts, gives public officials and politicians opportunities to extract rent from the private sector. The use of inferior materials and failure to meet specifications are other likely mechanisms. These problems magnify when the government plays both the role of the client and that of the regulator.

A widely held view in Tanzania is that corruption during procurement and project execution is widespread. In Ghana, the large volume of funds earmarked for construction projects frequently obscures money included for bribery and kickbacks. In Uganda, only 37 per cent of audited procurement contracts were fully satisfactory in their allocation and execution. The same audit rated a significant number (26 per cent) as ‘high risk’—subject to severe violations including fraud and corruption. However, only 22 per cent of construction firm owners in Uganda believe that court enforcement works well in corruption cases.⁸

Collusive behaviour raises costs. By one estimate, overcharges due to cartels in developing countries lead to about 40 per cent higher construction prices on average. Common problems faced by the construction industry in the countries we studied included non-disclosure of the beneficial owners of construction companies bidding on contracts and rigging of tenders. In Zambia, in addition to oligopolistic pricing in the sector, politically connected groups specialize in the illicit capture and sale on illegal secondary markets of public tenders.

Some suggested mechanisms for dealing with corruption include strengthening the role and integrity of the project engineer and checking the wealth of key procurement agency officials. Countries could also experiment with different incentive contracts for engineers to encourage reporting of corruption and fraud. Collusion is difficult to detect. Building up and publicizing databases of unit costs of comparable construction activities can assist governments in ensuring that they are not overpaying (World Bank 2011). Transparency, however, comes with a risk. The same data may facilitate collusion among firms.

4. Linking industry to the resource

Natural resources change the balance of power between governments and foreign firms. In countries that are not resource-abundant, governments are engaged in a

⁸ See chapters 6, 12, 15.

global beauty contest to attract FDI. In resource-rich countries, the foreign investors are the contestants. This provides an opportunity for governments to broaden domestic industrial capabilities by integrating local companies into the supply chains of the multinational resource extraction firms (MNCs). In all the countries studied, governments have introduced local content and value addition initiatives along the natural resources value chain with the intention of diversifying by expanding the range of domestic firms participating in the resource sector.

John Sutton's *Enterprise Maps* of Ghana, Mozambique, Tanzania, and Zambia offer some insight into the state of current capabilities in the countries we studied.⁹ Such industries as food and beverages, cement, and building materials are fairly highly developed in each country. Metal and mechanical industries, engineering and assembly, and plastics are not. The crucial difference between these types of industries is that food, cement, and building materials all serve the local market and are subject to substantial 'natural protection' due to weight, perishability, or bulk. They are also products sold to consumers directly. Metals, engineering and assembly, and plastics are different. While all four countries studied by Sutton have some activity in each industry, it is generally limited to the least demanding segments of the market in terms of both quality and productivity. That is because these are intermediate goods for which the international quality standards are high and the demand on African capabilities is too great (Sutton 2012).

Metals, engineering and assembly, and plastics are also the sectors in which supplier linkages to the natural resource value chain offer the greatest prospects for capability building. Two of the key mechanisms through which higher capabilities build up in firms are through demanding buyers and repeated relationships. The first refers to exchanges of information between suppliers and buyers with a reputation for demanding high quality adding to the capabilities of supplying firms. The second is a close and continuing contractual relationship between buyer and supplier, which often involves a two-way movement of technical and engineering personnel. Demanding buyers and repeated relationships are characteristic of the resource MNC value chain. This implies that the objective of the Africa Mining Vision of improving the capabilities of domestic firms by linking them to the natural resources value chain remains valid. The question is how to do so.

4.1 Local content

Progress in increasing local content and value addition varies. Most of the countries we studied have succeeded in introducing and enforcing requirements for the employment and gradual skills upgrading of nationals. Local procurement

⁹ See for example Sutton and Landmead (2013), Sutton and Keptney (2012), or Sutton and Olomi (2012).

regulations have met with less success for several reasons, including the scarcity of enterprises capable of satisfying industry standards in the procurement of goods and services. The country studies show that in general, local companies have concentrated at the lower end of the natural resources supply chain. Firms lack the engineering expertise, production knowledge, and quality controls to move up the chain.

Poor implementation of local content development policies is also a common problem. Often, there is need for greater collaboration between different stakeholders and ministries, and in several countries, programmes aimed at the resources sector lack coherence with broader economic development policies. For example, the Vision 2030 and 2017 Seventh National Development Plan have guided Zambia's long-term development. While some policies support Vision 2030, Lombe argues that the underlying legislation lacks alignment to the Vision, particularly in mining and mineral resources. Ghana created the Petroleum Commission to improve the alignment of local content policies with broader development objectives, but there are concerns about its capacity.¹⁰

Dietsche and Esteves observe that in Mozambique, local content objectives are contained in a diverse range of policies, strategies, plans, laws, and regulations, aimed at achieving different impacts and targeting different beneficiaries. In Tanzania, many provisions for local content are unclear and not well enforced. Ellis and McMillan argue that while the National Economic Empowerment Council could provide increased coordination of local content initiatives, the continued authority of the Ministry of Energy and Minerals over the extractive industries may frustrate its efforts. In Uganda, Sen points out there is a lack of clarity regarding what constitutes a 'local' good or service, making it difficult for firms to comply with the regulatory environment.¹¹

4.2 A public–private partnership

Integrating local firms into the resource value chain depends on addressing the priorities and concerns of both the MNCs and the government. Politicians and public officials often have inflated expectations, and the MNCs that dominate resource extraction can be sceptical that any local firm has the capabilities to enter their value chain. Dietsche and Esteves argue that because international investors in mining, oil, and gas have limited experience in Mozambique, coordinated action by the public sector, the local private sector and the international investors is essential to bridge the gap between current standards and the standards demanded by the multinational companies. Ackah notes that in Ghana,

¹⁰ See chapters 7 and 19.

¹¹ See chapters 10, 13, 16.

MNCs have had difficulty in identifying and assessing the suitability of Ghanaian suppliers, most of which have relatively short track-records and lack reputation. Local SMEs also face an information gap regarding tendering opportunities. Lombe suggests that in Zambia, it would be useful to undertake an evaluation of lower-end technologies for inputs into mining and develop mechanisms to support local firms to acquire these technologies.¹²

Integrating domestic firms into the resource value chain is a more complex undertaking than legislating or regulating local content. It depends on the ability of government and industry to develop an effective public–private partnership. Most major resource extraction multinationals devote considerable resources to the management of local content development. In Uganda, anecdotal evidence from industry interviews and national supplier information workshops indicates that international companies are committed to finding ways to increase participation by local firms, including unbundling supply contracts and innovation in project design. However, the international oil companies and their lead contractors are also very clear about their high expectations from suppliers.¹³

On the public-sector side, well-designed institutions to negotiate and manage local participation are critical to success. Page advocates in chapter 4 creating a unit—located within the office of the head of state or government—to act as the broker between the multinational companies and domestic firms. Because the agency must have support at the highest political level during negotiations, he argues that the president or prime minister should take the lead. In addition, staff of the unit must understand both the requirements of the procurement divisions of the multinational companies and the range of capabilities of domestic firms to propose realistic targets for suppliers. Some staff should have industry experience, while others need a public-sector background to facilitate coordination across government agencies.

While several of the countries we analysed have created institutions to guide their local content initiatives, they have not been wholly effective. One of the concerns raised about the competence of the Ghana Petroleum Commission, for instance, is that it is relatively new and the exposure of Ghanaian technical staff to the oil and gas industry is limited. In Mozambique, the Institute for the Promotion of Micro, Small and Medium Enterprises (IPEME) has encountered similar problems because it lacks the knowledge and experience required to guide supplier development in the specialist areas of expertise demanded by the extractive industries. The Petroleum Authority of Uganda has compiled a National Suppliers Database to regulate the procurement of goods and services in the petroleum sector. Yet, the database does not convey any information on supplier capabilities.

¹² See chapters 7, 10, 19.

¹³ See chapter 16.

It is striking that none of the local content initiatives in the countries we studied, are subject to review and oversight. Programmes designed to promote selected activities—such as local content—should incorporate periodic reviews and be evaluated against observable outcomes, for example, the rate of growth of jobs. If they are failing to meet expectations, corrective actions should be undertaken. Interventions should also be subject to sunset clauses. Requiring that a programme expire unless a review recommends extension would place the burden on advocates to show why it remains relevant (Page and Tarp 2017).

4.3 Training

Training can raise the capabilities of local firms to the minimum level needed to allow them to enter the MNC value chains. To succeed, however, the government and the resource extraction companies must agree on the design of training, and on the qualification process through which a firm achieves approved vendor status. Supplying training without buy-in by both parties is unlikely to lead to success. Ghana is a case in point. Its Enterprise Development Centre (EDC) began in May 2013 as a five-year project jointly sponsored by the Jubilee Partners and the government. The EDC provides support to small and medium enterprises attempting to enter the oil and gas sector, through a range of services such as business training, capacity building, advisory services, and access to market information. It also acts as a focal point for coordination between SMEs and the oil and gas companies, their contractors and subcontractors. In August 2016, lack of funds led to the suspension of the activities of the EDC. At that time, only about twenty-two of the 400 SMEs registered with the Ghana Petroleum Commission had gained contracts after receiving training. Clearly, there was a breakdown in communications between the private- and public-sector partners in the enterprise.¹⁴ Mozambique's experience with the IPME has been broadly similar to that of Ghana.

In Tanzania, there is a lack of clarity surrounding plans for capacity development. Although the 2017 Petroleum Regulations provide fiscal incentives to encourage gas companies to develop local supplier training programmes, there has been no analysis of Tanzanian firms' capacity to engage in the natural gas sector. In Zambia, a collaborative public-private initiative, the Zambia Mining Local Content Initiative—under the joint leadership of the Chamber of Mines and the Zambia Association of Manufacturers—is attempting to increase the use of locally manufactured inputs in the mining industry. Past initiatives failed to achieve sustainable impact, largely because of the failure to address the minimum procurement standards of the mining companies.¹⁵

¹⁴ See chapter 7.

¹⁵ See chapters 13 and 19.

5. Widening the options

New discoveries of natural resources also offer opportunities. In addition to local content and value addition initiatives, governments can draw on several other options for diversification. This section explores three. The first is to deploy institutional and policy reforms and public investments to mitigate the impact of Dutch disease. The second involves broadening the options for diversification to include ‘industries without smokestacks’, such as IT-enabled services, tourism, agro-industry, and horticulture. Investments in knowledge—either specific to the resource or in areas where the economy has location-specific comparative advantage—can expand the opportunities for structural change. The third option exploits the close links between natural resources and the spatial economy. Developing resource-based SEZs and growth corridors can leverage the investments made by resource extraction firms for broader national development.

5.1 Dealing with Dutch disease

Although the relative price changes that occur in a resource-abundant economy make diversification more difficult, governments can enhance the productivity of private investments outside the natural resource sector through institutional and regulatory reforms and public investments. Well-designed regulatory reforms, reliable electrical power, lower costs of transport, and workers better able to perform their jobs make countries more competitive by raising the potential productivity of all firms. In short, governments can attempt to deal with Dutch disease by improving the ‘investment climate’.¹⁶

Regulatory reforms are an attractive place to begin. They have low fiscal costs and the potential to increase absorptive capacity. Surveys of firms in resource-abundant countries highlight a wide range of areas in which regulatory or administrative burdens raise costs and reduce competitiveness. In Mozambique, for example, business regulations—and the opportunities for corruption engendered by the regulatory regime—increase firms’ costs and reduce competitiveness (World Bank 2009).¹⁷ In Uganda, senior managers of manufacturing firms spend on average more than thirteen days a year dealing with government officials, and 40 per cent of the manufacturing firms surveyed complained that regulations were not interpreted consistently (Henstridge and Page 2012). In Tanzania, tour operators and other tourism service providers face a plethora of regulations

¹⁶ There is by now a large literature on the investment climate in Africa. See, for example, the *Africa Competitiveness Report* of the AfDB, World Economic Forum, and the World Bank (2017).

¹⁷ See also the 2017 survey of Mozambican manufacturing firms by Berkel et al. (2018).

and taxes (Ellis et al. 2016). Tour operators pay a minimum of twenty-nine taxes, levies, and fees, mostly to the central government. Hotel operators face fifty-five taxes, licenses, fees, and levies. Over 80 per cent of respondents reported that most regulatory procedures lacked transparency.

Reforms that encourage the entry and exit of firms can have a positive impact on productivity as well. The formal manufacturing sector in Africa enjoys highly concentrated product markets. In small open economies imports ought to provide contestability—and Africa's economies have become much more open to imports over the past twenty years—yet World Bank *Enterprise Surveys* often find that firms do not feel pressed by competition. About a quarter of large firms in Tanzania, for example, responded to the World Bank *Enterprise Survey* that there were no new competitors in the markets in which they operated (Yoshino et al. 2013). Changes to rules that make markets more open and contestable can reduce concentration and the likelihood of anticompetitive practices.

The revenues that flow from natural resources open fiscal space for governments of resource-abundant economies to address two of the fundamental constraints to competitiveness in Africa, lack of infrastructure and skills. The literature extensively documents the productivity penalty that African firms pay because of poor infrastructure.¹⁸ The quality of electricity service ranks as a major problem according to more than half of the firms in more than half of the African countries in the World Bank's *Investment Climate Assessments*. Transport ranks a close second. Global value chains in activities from manufacturing to horticulture are highly demanding of trade logistics; and resource-rich African countries rank poorly in the World Bank Trade Logistics Index (World Bank 2016). For these economies, investments in trade-related infrastructure are essential for the success of efforts to diversify exports.

Despite significant gains in average levels of schooling, lack of production-related skills remains a major constraint to African firms. A survey of country experts from forty-five countries for the *African Economic Outlook 2013* found that over half of respondents cited lack of skills as a major obstacle keeping African firms from becoming competitive (AEO 2013). Educational quality is a problem at all levels. Learning assessments in Africa show that most primary students lack basic proficiency in reading at the end of second or third grade. Employer surveys report that African tertiary graduates are weak in problem solving, business understanding, computer use, and communication skills (World Bank 2007). In an environment in which donor funding is becoming increasingly restricted, governments can use resource revenues to close the skills gap through improving educational quality and increasing access to post primary and vocational/technical education.

¹⁸ See for example Escribano, Guasch, and Pena (2010).

Investing to invest and linking industry to the resource are complementary to improving the investment climate. Investing resource revenues to expand infrastructure and education require—to some extent—the transformation of public expenditures into physical assets. Thus, construction will largely determine the success of public actions designed to boost competitiveness. In addition, construction plays an important role in mitigating a critical symptom of Dutch disease. A natural resource boom often leads to a real estate boom. The appreciation of the real exchange rate raises the returns to non-tradable activity, as well as to non-traded capital, mainly structures. If the construction sector is weak, the supply of structures is inelastic, which implies that the real estate boom will be reflected in rising prices rather than in new construction.

By increasing firm capabilities, well-designed programmes to integrate domestic firms into the resource value chain can increase the overall productivity of domestic manufacturing. Natural resources MNCs are demanding buyers and often engage in repeated relationships with their suppliers. Both contribute to the development of firm capabilities in linked domestic firms. As the number of higher capability firms expands, the potential for productivity spillovers increases.

5.2 Broadening the horizon: industries without smokestacks and investing in knowledge

Our understanding of industry is changing. Today, new technologies have spawned a growing number of services and agri-businesses—including horticulture—that share characteristics in common with manufacturing. They are tradable, have high value added per worker and can absorb large numbers of moderately skilled workers. Like manufacturing, ‘industries without smokestacks’ benefit from technological change, productivity growth, scale, and agglomeration economies.¹⁹ Where these industries have characteristics traditionally attributed to manufacturing—strong linkages, productivity growth, and innovation—they can act as an engine of structural change.²⁰ In fact, tradable services—such as ICT-enabled services and transport, and logistics—have become leading sectors in several countries (Lavopa and Szirmai 2014).

Because industries without smokestacks share firm characteristics with ‘smoke-stack’ industries, investment climate reforms apply equally to manufacturing, tradable services, agro-industry, and horticulture. In chapter 4, Page proposes that to spur structural change an ‘export push’ complements investment climate reforms. By using trade policies, public investments, regulatory reforms, and institutional change governments can support new exporters and diversify the

¹⁹ See Ghani and Kharas (2010) and Newfarmer, Page, and Tarp (2018).

²⁰ See, for example, Ghani and O’Connell (2014), Szirmai and Verspagen (2015) and Tregenna (2015).

export basket. Institutional reforms and investments to improve trade logistics are key elements of the export push. Another critical component is prudent macroeconomic management of the resource windfall. While some appreciation of the real exchange rate is unavoidable, government must manage public expenditures to reduce excessive upward pressure.

In addition to investing in general skills, resource exporters can attempt to build specialist knowledge linked to the extractive industries themselves. The South African mining supplier industry has developed globally competitive capabilities based on serving the domestic mining industry. South Africa is a world leader in a wide range of mining equipment products and its mining companies have in-depth knowledge of turnkey deep-level mine design and operation. The Norwegian government invested in building specialist knowledge about deep-sea oil exploration through its universities. Now, Norway's knowledge-based oil service industry is a major source of exports. A first initiative in building specialized knowledge might be to strengthen the geology and engineering departments of national or regional universities with the intention of developing more technically qualified staff and in the longer run, a services export industry.

Chile's successful transformation into a leading global producer of salmon and wine suggests that African resource exporters can use knowledge to diversify into industries without smokestacks. Because agro-industry, tourism, and tradable services often benefit from location-specific comparative advantage—for example, climate or languages—they may prove less vulnerable to real exchange rate appreciation than task-based manufactured exports. Success in establishing or expanding them, however, depends to a large degree on the knowledge of potential markets and production held by firms. Governments can develop three-way partnerships with the private sector, universities, and specialist research institutions to support the acquisition and dissemination of knowledge.

5.3 Spatial industrial policy

Natural resources, and the foreign investors and infrastructure they often bring, open new areas for spatial industrial policies. While most first-generation SEZs in Africa have focused on manufacturing, they are relevant to resource-based industries as well. By supporting specialist supply networks, the zones can reduce overheads, shorten delivery times, and increase innovation. In Zambia, the Chambishi Multi-Facility Economic Zone (MFEZ) focuses mainly on the copper supply chain, including copper smelting, manufacture of copper wire and cables, and the manufacture of mining equipment. The new Kafue Iron and Steel MFEZ around the Integrated Kafue Iron and Steel plant will focus on engineering, machinery and equipment manufacturing. The Shama EPZ in Ghana targets the petroleum

and petrochemical sector. It contains tank farms logistics and haulage contractors and firms manufacturing chemical inputs and accessories for the petroleum industry.

The challenges surrounding the development of resource-based SEZs are like those facing other SEZs. Infrastructure, institutions, and attitudes matter (Newman and Page 2017). Unless infrastructure and institutions are world class, it may prove impossible to draw firms into the zone. SEZ managers with business experience and a business outlook are critical to success. Because knowledge spillovers allow supplier firms to improve their production processes or products, resource-based SEZs are complementary to policies designed to build the capabilities of local firms through greater integration into the resource value chain. For this reason, the design of the institutions intended to foster value-chain relationships is critical to the success of the SEZ.

Minerals exports generally require large infrastructure investments such as roads, railways, power, and ports. Regional SEZs—often called ‘growth corridors’—can play a catalytic role in attracting investors to new locations around this infrastructure. Growth corridors are attractive for three reasons. First, they can help to solve coordination problems between investments in related projects, increasing the prospect of rapid private-sector response to infrastructure improvements. Second, it is possible that in resource-centered zones the bulk of capital spending on infrastructure for both transport and power can be financed by the resource projects, themselves. Finally, they highlight the possible complementarities between investment projects in the area.

Recent experience with growth corridors has been both positive and negative. The partnership between South Africa and Mozambique in the Maputo Development Corridor is widely regarded as a success. Based on that experience, Mozambique is developing integrated minerals transport and logistics systems in the Beira, Nacala, and Zambezi Valley Development Corridors. The corridors rely on commitments by government and the private sector to collaborate in infrastructure investment. By way of contrast, Tanzania joined Rwanda in 2005, to develop a Central Development Corridor (CDC) containing Tanzania’s cluster of gold mines and connecting the Dar es Salaam port with the Great Lakes region. An objective of the initiative was to grow the agro-industrial, manufacturing, tourism, mining, and service sectors in the corridor. However, progress has been slow due to lack of funding and poor institutional capacity.

Both cases suggest that governments should approach growth corridors with some caution. While narrow cost–benefit analyses often miss the role of infrastructure in triggering private investment, it is possible to exaggerate its catalytic effect and policymakers frequently have a tendency to do so. Governments need to take care to assess the costs and benefits of proposed spatial initiatives realistically and integrate them into broader national development plans.

6. Conclusions

There is a common thread among the five African resource exporters we have studied. In these countries—except perhaps in Mozambique—the impact of the resource most probably will not be large enough to be transformative. However, it could well be large enough to be disruptive. This puts substantial pressure on the need to improve public financial management in three areas: managing expectations, controlling the volume of public expenditure, and improving the quality of public investment. In all the country cases, public expectations of the size and timing of the resource boom were overly optimistic. Efforts to make information on the extent of commercial reserves, trends and variability of prices, and the terms of resource extraction agreements widely available can help to manage future expectations.

Three of the five countries succumbed to spending pressures—financed by the accumulation of debt—before resource revenues started to flow. All three now face significant debt management issues. Setting the boundaries on the volume of public spending and adjusting them using feedback from the economy are essential elements of prudent resource revenue management. Because the quality of public expenditure should ultimately govern the quantity, governments need to adopt better methods of project selection—including broad-based use of economic and social cost–benefit analysis—and develop budget institutions to ensure that new investments are adequately maintained.

The construction sector can act as a brake on the ability of the economy to transform investment effort into investment outcomes. Our country studies found that limited capabilities in domestic contracting firms, opaque or time-consuming regulations, problems with the price and quality of material inputs, lack of technical and skilled labour, and limited access to finance are factors that increase costs and constrain supply response. These are all areas in which public action can make a difference. The great majority of firms engaged in construction in Africa are micro, small, and medium enterprises (MSMEs). While training is one of the most common forms of support to MSMEs, we need new approaches to identify the types of construction firms that can most benefit from training. Frequently, the public sector is responsible for policy-induced constraints; it should address these through reforms.

Because they control access to the resource, governments can attempt to build firm capabilities in the larger economy by integrating local suppliers into the resource value chain. The country studies suggest that success largely depends on the ability of government and industry to develop an effective public–private partnership. Well-designed public institutions to negotiate and manage local participation are critical to success. Training programmes can indeed raise the capabilities of local firms to the minimum level needed to allow

them to enter MNC value chains. At the same time, country experience cautions that these programmes must be well designed and attuned to the needs of the industry.

Although discoveries of natural resources make structural change more challenging, they also offer new opportunities. Policy reforms and public investments can mitigate the consequences of Dutch disease by improving the ‘investment climate’. Institutional and regulatory reforms and investments in infrastructure and skills can boost the productivity of firms outside of the resource sector. ‘Industries without smokestacks’ and investments in knowledge, linked either to the resource itself or to industries with country-specific sources of comparative advantage, widen the options for diversification. Resource-based SEZs and growth corridors have the potential to leverage the investments made by resource extraction firms for broader development. At the same time, proper planning and effective policy design require realistically assessing their potential impact in the context of broader national development goals.

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