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MILLENNIUM CHALLENGE CORPORATION
UNITED STATES OF AMERICA

NIGER CONSTRAINTS ANALYSIS

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ACRONYMS

AADT	Annual Average Daily Traffic
AfDB	African Development Bank
AHA	Medium-to-large Managed Irrigation System (*Aménagement Hydro-Agricole*)
ANPE	National Employment Promotion Agency (*Agence Nationale pour la Promotion de l'Emploi*)
ASECNA	Agency for Aerial Navigation Safety in Africa and Madagascar (*Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar*)
AUC	African Union Commission
BCEAO	Central Bank of West African States (*Banque Centrale des Etats de l'Afrique de l'Ouest*)
CNAM	Niger Mediation and Arbitrage Center (*Centre de Médiation et d'Arbitrage du Niger*)
CNUT	Nigerien Council of Public Transport Users (*Conseil Nigérien des Utilisateurs des Transports Publics*)
DGI	Directorate General of Taxes (*Direction Générale des Impôts*)
DHS	Demographic and Health Survey
DREIN	Development of an Electrical Interconnection Network
DTIS	Diagnostic Trade Integration Study
GDP	Gross Domestic Product
GNI	Gross National Income
GON	Government of Niger
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization
FCFA	CFA franc
FDI	Foreign Direct Investment
FSDP	Financial Sector Development Project
HIPC	Heavily Indebted Poor Countries Initiative
HRV	Hausmann, Rodrik, and Velasco (see References)
ICT	Information and communications technology
IDA	International Development Association
IFC	International Finance Corporation
IMF	International Monetary Fund
INS	Nigerien Statistics Institute (*Institut National de la Statistique*)
ITU	International Telecommunication Union
MCC	Millennium Challenge Corporation
MCA	Millennium Challenge Account
MDG	Millennium Development Goal
MFI	Microfinance Institution
MDRI	Multilateral Debt Relief Initiative

NIGELEC	Nigerien Electricity Society (*Société Nigérienne d'Electricité)*
PCS	Dry season perimeter (*Périmètre de contre-saison*)
PERREN	Extension and Reinforcement of the Nigerien Electric Network (*Projet d'Extension et de* R*enforcement des Réseaux Electriques du Niger*)
PREM	Poverty Reduction and Economic Management
OECD	Organisation for Economic Co-operation and Development
OHADA	African Organization for Harmonization of Business Rights (*l'Organisation pour l'Harmonisation en Afrique du Droit des Affaires*)
PIP2	Private Irrigation Promotion Project (*Projet de Promotion de l'Irrigation Privée*)
PRASE	National Program for Access to Modern Electrical Services (*Programme National de Référence d'Accès aux Services Energétiques Modernes*)
UN	United Nations
UN Comtrade	United Nations Commodity Trade Statistics Database
UNECA	United Nations Economic Commission for Africa
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WAEMU	West African Economic and Monetary Union (*Union Economique et Monétaire Ouest Africaine*)
WAMU	West African Monetary Union (*Union Monétaire Ouest Africaine*)
WHO	World Health Organization

EXECUTIVE SUMMARY

Methodology

This constraints analysis for Niger represents a combined effort by the Millennium Challenge Corporation (MCC) and the Government of Niger (GON) to identify potential sectors for investment as part of the compact development process in Niger. It is based on the *growth diagnostics* approach, pioneered in 2005 by Ricardo Hausmann, Dani Rodrik, and Andrès Velasco (HRV).

As HRV point out, all developing countries face an array of economic and development challenges, but not all of these challenges are equally restrictive to growth. Prioritizing among potential investments and interventions is especially important given that the country's implementation capacity, political space, and financing necessary to address these challenges are frequently scarce and valuable. A particular strength of HRV's *growth diagnostic* methodology, compared with other diagnostic tools, is its recognition that every country is different. The tool, which has been refined based on a wide range of experience inside and outside of MCC, is designed to sift through the available evidence to identify country-specific binding constraints.

The method starts from two simple propositions. First is the recognition that private investment and entrepreneurship are the primary drivers of sustained economic growth. Private investment includes the process of identifying profitable business opportunities, productivity improvements, and innovations; entrepreneurship is the application of resources for the creation of value. Sustained economic growth depends upon adequate rates of return to the investor. Understanding the reasons for inadequate growth and private investment requires an analysis of the factors that affect the returns and constraints that private entrepreneurs face. Incentives for private investment fall into three broad categories:

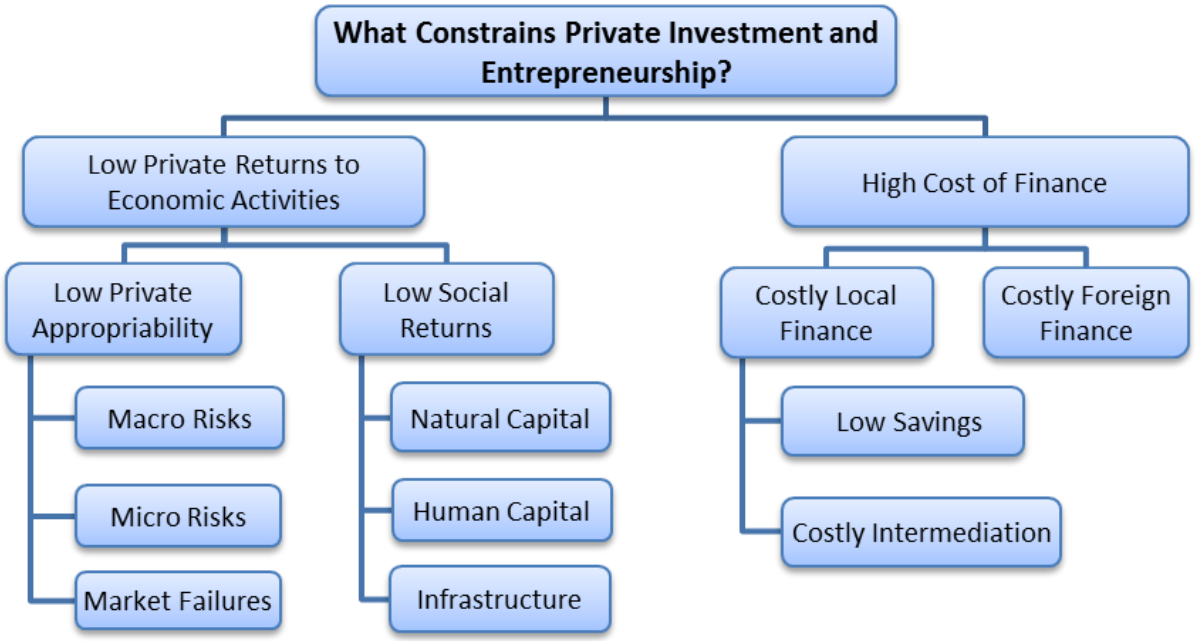
(i) the overall expected return to an investment;
(ii) the share of the return an investor can expect to keep; and
(iii) the cost of financing the investment.

The methodology requires an investigation of the influences of each of these three factors in a country-specific context. The diagnostic tree in Figure 0.1 provides a visualization of this investigation, with factors affecting investor returns on the left branch and factors affecting financing costs on the right.

Second is that sub-optimal economic outcomes must be the result of either constrained supply or of limited demand. Poor economic outcomes include low levels of investment, consumption, employment, or credit. The most binding constraints are those for which the *supply* of a productive factor or condition of the business climate is severely constrained, while at the same time being highly *demanded* by businesses. Utilization of a factor within an economy may be low because of a low supply of the factor or low demand for the factor. For example, the quantity of credit could be low, but this alone does not indicate a constrained supply of finance. The low quantity of credit may be the result of low demand because potential borrowers are constrained by an inadequate

supply of other factors such as infrastructure or an unsupportive business environment. Only in the case of low supply and strong demand is a factor a candidate to be a binding constraint to investment and growth.

Figure 0.1 -- The HRV Growth Diagnostic Tree



Source: HRV, 2005

Supply and demand dynamics can be difficult to disentangle. Hausmann, Bailey Klinger, and Rodrigo Wagner (2008) suggest the following four tests to evaluate whether a binding constraint exists within a particular sector:

(i) The shadow price of the constraining factor is high;[1]
(ii) Changes in the availability of the constraining factor are correlated with changes in investment or growth;
(iii) Economic agents are incurring costs or risks to circumvent or bypass the constraint; and
(iv) The economy includes few economic actors that rely heavily on the constraining factor.[2]

The feasibility of fully applying each of the above tests depends on the nature of the factor being examined as well as the availability of data. Therefore, the data-driven examination of these

[1]A shadow price is the value to the economy of an additional unit of the factor.
[2] This has come to be known as the "camels and hippos" test. In the same way that you expect to see more camels than hippos in an environment lacking water, you would also expect to see more firms that are not heavily dependent on the existence of the constraining factor.

supply-demand dynamics is often complemented with other available evidence and perception-based survey information, taking potential sources of bias into account.

The HRV framework requires a sequential approach, starting at the top of the tree and working down. As such, the first question addressed is whether private investment is primarily limited by: (i) the high cost of finance, arising from financial market constraints in the presence of high investment demand; or (ii) weak investment demand by potential entrepreneurs, because they see few opportunities to earn an adequate return. Based on the response to this initial question, the diagnosis then proceeds to identify the source of the problem – either the high cost of finance or the low private returns to investment.

Assessing the relative scarcity of factors of production or environmental conditions requires a baseline or a set of comparator countries against which the economy in question can be evaluated. To be informative, the comparison countries should be somewhat similar in geography and income levels. In the case of Niger, a variety of criteria were used to select the comparison countries, including GDP per capita, key economic sectors and industries, geography and land area, climate, and population. Special attention was paid to include landlocked countries among the set of comparators, as the economic realities facing these countries differ from those facing coastal countries. The team ultimately agreed upon a set of eight comparator countries: Benin, Burkina Faso, Chad, Ghana, Malawi, Mali, Nepal, and Zambia. In some cases, aggregate data from lower income and Sub-Saharan African countries or scatterplots of all available data points were also used.

Data sources and limitations

The Niger constraints analysis presented unique challenges to the team. A significant amount of data is required to effectively conduct a growth diagnostic. Data on areas such as household activity structures, the informal and agricultural sectors, and *de facto* rather than *de jure* practices of governments at the regional, national, and local levels were limited and in certain cases unavailable or unreliable.

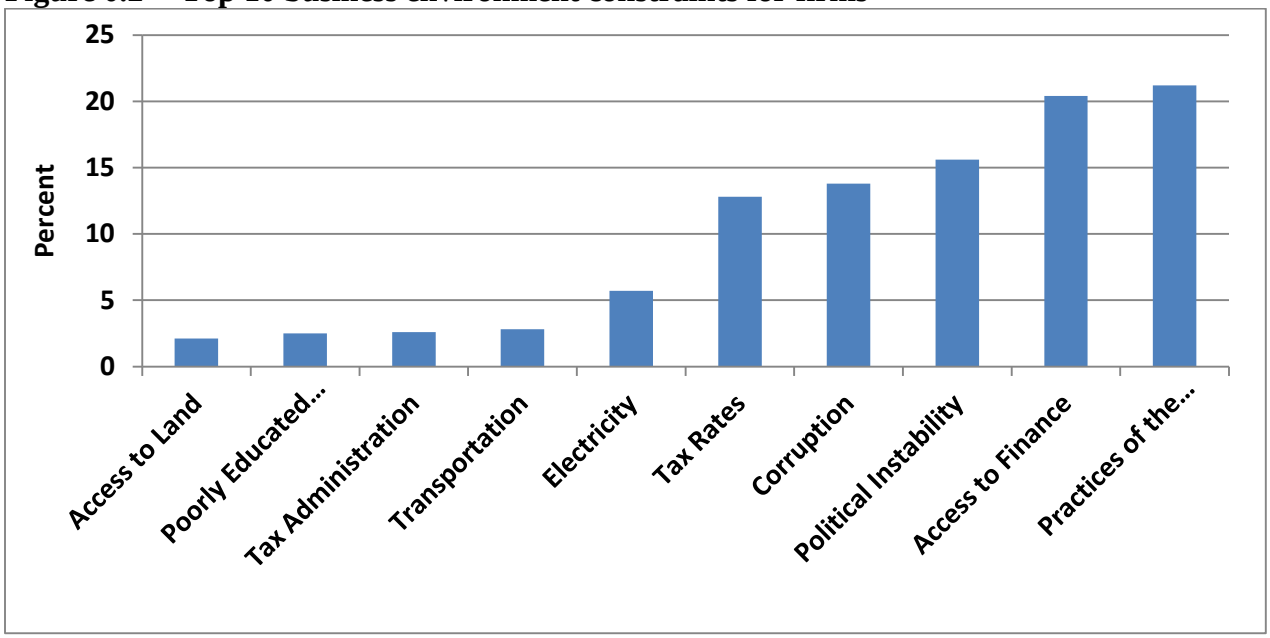
The team also identified inconsistencies across data sources. GDP data prepared by the Nigerien Statistics Institute (INS) differed from those published by the World Bank. Similarly, the total population calculated by the INS differed from that calculated by the United Nations Population Fund (UNFPA).[3] The team decided to use INS data where feasible, but to use data from international institutions for the purposes of international benchmarking or when a longer time series was required. Consequently, the present analysis uses two different GDP series, with different base years (INS base year 2006, World Bank base year 2000).

Portions of the analysis rely substantially on data from the World Bank's Enterprise Surveys. These firm-level surveys are conducted in countries around the world with the goal of capturing "perceptions on the biggest obstacles to enterprise growth, the relative importance of various constraints to increasing employment and productivity, and the effects of a country's business

[3] Statistical capacity in Africa is low, frequently resulting in data that vary widely depending on the source. (Jerven, Morten (2012) *Poor Numbers: How We Are Misled by African Development Statistics and What to Do About It* (Cornell University Press); Devarajan, Shanta "Africa's Statistical Tragedy," World Bank Blog, October 2011).

environment on its international competitiveness."[4] The last such assessment of Niger was completed in 2009 and consisted of a representative sample of 150 firms located in Niamey and Maradi. The Enterprise Surveys focus on formal sector manufacturing and service firms located in key urban centers, and thus, the data collected may not reflect the realities encountered by informal sector firms or firms engaged in other types of activities or located in different geographical regions.[5] In addition, the experiences of firms that were unable to survive under the prevailing conditions in the country will not be reflected in the data, potentially leading to selection bias. Nonetheless, the Enterprise Surveys are widely accepted as an important starting point,[6] and Figure 0.2 displays the results of the top constraints to businesses in Niger in 2009. Practices of and competition from informal sector actors were identified as the largest constraint by formal firms, followed closely by access to finance.

Figure 0.2 -- Top 10 business environment constraints for firms



Source: World Bank Enterprise Survey, 2009

Many sections of the analysis also include a discussion of Niger's performance on the World Bank's Doing Business Indicators. Doing Business evaluates the overall quality of the business environment in a country and also provides rankings on ten broad subcategories. The 2013 edition of Doing Business included 185 countries, and Niger's performance is summarized in Table 0.1.

Key Nigerien data sources include the INS, various government ministries, and public and private entities. Additional international data was culled from sources such as the World Health Organization's (WHO) Global Data Observatory, the International Monetary Fund's (IMF) International Financial Statistics and World Economic Outlook, the World Bank's World

[4] World Bank, "Niger Indicator Survey Data Set," 2009

[5] Periodically, the Enterprise Surveys conducts parallel surveys of informal firms to understand their main constraints and the reasons for which they remain in the informal sector. The World Bank conducted a survey of this nature in Niger in 2005.

[6] The Enterprise Surveys are highlighted by Hausmann, Klinger, and Wagner (2008) and have been employed in a large number of growth diagnostics.

Development Indicators and Africa Infrastructure Country Diagnostic program, and databases maintained by various divisions of the United Nations.

Table 0.1 -- Niger's performance on the 2013 Doing Business Indicators[7]

Indicator	Niger's Rank (out of 185)
Overall	176
Starting a Business	167
Dealing with Construction Permits	160
Getting Electricity	118
Registering Property	87
Getting Credit	129
Protecting Investors	158
Paying Taxes	151
Trading Across Borders	176
Enforcing Contracts	140
Resolving Insolvency	130

Source: World Bank Doing Business, 2013

Key findings

Using the available data complemented by a variety of other research, resources, interviews, and surveys, the following areas have been identified as binding constraints in Niger:

- Access to Water for Agriculture and Livestock,
- Government Regulation of Business, and
- Regulatory and Institution Barriers to Trade

[7] Subsequent to the completion of the Niger Constraints Analysis, the World Bank recalculated the Doing Business 2013 rankings to reflect changes to the methodology and revisions of data due to new information. The 2013 rankings listed in Table 0.1 and used throughout this report are the original Doing Business 2013 rankings released by the World Bank in October 2012. For information, Niger's recalculated rankings in Doing Business 2013 are as follows: Overall – 174; Starting a Business – 168; Dealing with Construction Permits – 167; Registering Property – 83; Getting Credit – 126; Protecting Investors – 156; Paying Taxes – 158; Trading Across Borders – 177; Enforcing Contracts – 142; and Resolving Insolvency – 133. Niger's performance on the Getting Electricity indicator did not change.

1. Access to water for agriculture and livestock

There is robust and compelling evidence that poor access to water for agriculture and livestock is a binding constraint. The shadow price of unreliable and inadequate access to water is high.[8] Periods of drought correspond to low output; output rebounds with adequate rains. In addition, evidence suggests that farmers are circumventing the lack of access to water.

Niger's economy relies heavily on rain-fed agriculture, which employs the majority of its citizens. Yet as a Sahelian country, it is subject to unpredictable and unreliable rainfall levels and suffers through increasingly frequent periods of drought. It has endured several famines in recent years, and the variation in its annual agricultural output significantly impacts GDP. Given this combination of factors, inadequate and unreliable access to water for agriculture and livestock presents an obstacle to economic growth and stability.

One of Niger's main water resources is the Niger River, located in the west of the country. Along Niger's southern border with Nigeria, where a significant portion of the population is concentrated, the primary water sources are seasonal rivers, dry river-beds with shallow underground streams called *dallols*, and smaller rivers and streams flowing into Lake Chad.[9]

Niger's irrigation potential is limited. Previous estimates placed the number of hectares of irrigable land in Niger at approximately 270,000 hectares, of which 100,000 hectares are currently irrigated.[10] However, efforts are underway to recalculate Niger's total irrigable land and preliminary indications are that the total number of hectares of irrigable land will increase to close to 600,000 hectares.[11] Even with the projected increase in the number of hectares of irrigable land, less than 14 percent of the 4.5 million hectares[12] currently under cultivation in Niger are potentially irrigable.

The best evidence to date of irrigation's impact is provided by another World Bank project, *Projet du Petit Irrigation Privé II* (Small Private Irrigation Project II or PIP2). This project supplied training and inexpensive pumps to farmers spread out along *dallols* near the border with Nigeria, dug wells, and established a value-chain of artisans capable of manufacturing and repairing the pumps. The success of the pilot phase in the early 2000s resulted in an application of the project to 15,000 hectares.[13] An evaluation of the impact of PIP2 shows that yields in treatment areas increased substantially. In particular, onions, which are Niger's fifth most valuable export, experienced yield increases from 26 tons per hectare to 41 tons per hectare.[14]

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[8] Since there is no available data on water markets in Niger, irrigation is used as a proxy. The shadow price refers to the cost to the economy of not having reliable and sufficient access to water for agriculture and livestock, and is therefore approximated by the marginal benefit of irrigation.

[9] In certain areas of the country, the cost of accessing deep underground water reserves may be excessively high relative to the expected increases in crop yields and agricultural output.

[10] FAO Aquastat

[11] Conversation with World Bank representative in Niamey, Niger in July 2013

[12] FAO Aquastat

[13] The World Bank is now funding a follow-on project called PRODEX (Agro-Pastoral Export and Market Development Project), which focuses on providing support services to farmers (training, access to credit, market facilitation, and technical assistance). (World Bank website, http://www.worldbank.org/projects/P095210/niger-agro-pastoral-export-market-development-project?lang=en)

[14] *Niger*, UN Comtrade, 2009-2011 and PIP2 Completion Report

The costs imposed on the Nigerien economy as a result of unreliable and inadequate access to water for agriculture and livestock have been high. As highlighted by the World Bank, the 2004 drought[15] "led to about a one percent drop in real GDP growth, and a 4 percent decline in per capita GDP, reflecting a decline of more than 13 percent in agricultural production."[16] The impact on the livestock and herding subsector has been equally stark. In the aftermath of the 2009 drought, 2.7 million head of livestock perished and the herding sector suffered losses of approximately 805 million USD from animal deaths, distressed sales, or other means.[17] Evidence also suggests that farmers are going to great lengths to overcome the lack of access to water by expanding their use of irrigation despite the high costs incurred, and anecdotal evidence from the PIP2 project appears to indicate that when costs are subsidized by the government, farmers invest in substantially more irrigation infrastructure. [18]

2. Government regulation of business

The study of the business environment in Niger in general and government regulation of business more specifically was affected by the limited availability of data. Nonetheless, the available data strongly suggests that government regulation of business is a binding constraint to broad-based[19] economic growth in Niger. The shadow price of the fragmented and inefficient business regulatory system is high. The inequitable two-tiered tax system provides a disincentive for economic actors to invest, expand or formalize and reduces the tax base and government revenues, hindering the government's ability to make necessary investments and increasing the burden on formal sector firms. A significant number of firms[20] and entrepreneurs in Niger use informality to circumvent the constraint.

The high shadow price of the fragmented and inefficient business regulatory system is reflected in the time devoted by Nigerien businesses and entrepreneurs to dealing with the requirements of government regulations. Nigerien firms report spending an average of 21 percent of their time on a weekly basis, dealing with regulatory requirements as compared with an average of 6.8 percent for Sub-Saharan Africa and 7.3 percent for low income countries. The amount of time devoted to dealing with the regulatory burden is even higher for medium firms (29.1 percent) and large firms (24.4 percent) in Niger.[21]

[15] The 2004 drought was compounded by a locust infestation.
[16] World Bank. "Niger - Accelerating Growth and Achieving the Millennium Development Goals : Diagnosis and the Policy Agenda," Report No. 41408-NE, September 2007, pp. vii
[17] Republic of Niger, "Evaluation rapide de l'impact de la crise pastorale 2009-2010 sur la décapitalisation du cheptel et les moyens de subsistance des populations pastorales et agro-pastorales du Niger", Preliminary Report, June 2011
[18] Niger Ministry of Agriculture; World Bank, " Agricultural Sector Risk Assessment in Niger: Moving from Crisis Response to Long-Term Risk Management," report no. 74322-NE, January 2013
[19] The definition of broad-based growth generally used by MCC is "growth that benefits a substantial share of the population through increased access to employment and investment opportunities, rather than through pure redistributive effects. Such growth is not limited to growth of narrowly defined productive sectors, but occurs across sectors in which the country has a comparative advantage." ("Towards a New Economic Model for Tunisia: Identifying Tunisia's Binding Constraints to Broad-Based Growth," a joint study by the African Development Bank, the Government of Tunisia and the Government of the United States (2012), represented by the MCC (CA))
[20] In the context of this report, we use the term firm in the broad sense to refer to economic units or actors.
[21] Enterprise Survey

The two-tiered tax system causes additional economic losses and provides a disincentive for economic actors to invest, expand or formalize while also reducing the tax base. All economic actors in Niger are required to register with the local municipality or the National Tax Office, la Direction Générale des Impôts (DGI). Firms and individuals in the informal sector previously satisfied this requirement by obtaining a *patente synthètique,* which was created in 1995 with the objective of incorporating the country's large informal sector into the tax base.[22] Informal sector entities were required to register with the appropriate authorities and pay an annual low flat tax calculated as a fixed percentage of their declared revenues. The *patente synthètique* underwent several changes beginning in 2012 including a reduction in tax rates[23] and a change to its name and is now known as the *impôt synthètique*. Annual revenues are self-declared by economic actors subject to the *impôt synthètique*, with no accounting documentation required, and are subsequently verified by the DGI on a case-by-case basis. Those entities whose annual revenues surpass the threshold established by the *impôt sythètique*, which is currently set at 50 million FCFA, are subject to the significantly higher tax rates outlined in Section 6.3.

Economic actors in Niger use informality to circumvent the heavy regulatory burden and inequitable tax treatment faced by formal sector firms. The practices of competitors in the informal sector were ranked the most severe obstacle by formal sector firms in Niger (see Figure 0.2), with more than one in five firms citing informal sector operators as their biggest constraint. Further, 73.6 percent of firms listed practices of the informal sector as either a major or severe constraint to their operations, almost double the Sub-Saharan African average of 37.7 percent. Similarly, 86 percent of firms in Niger reported having to compete against informal firms, as compared with an average of 64.9 percent for Sub-Saharan Africa. Moreover, over 90 percent of formal sector firms reported that they had begun operations in the formal sector, meaning few informal sector firms are making the transition to the formal sector.[24]

The last national census of the informal sector in the country was conducted in 1995 and estimated that the non-agricultural informal sector accounted for approximately 30 percent of Nigerien GDP. This figure has not fluctuated significantly in recent years; between 2000 and 2011, the non-agricultural informal sector constituted between 23 percent and 29.5 percent of GDP.[25]

In 2005, the World Bank surveyed 108 urban informal sector firms located in Niamey and Maradi. The self-reported profitability of survey participants was relatively high, with mean "net profit as a share of sales" of approximately 20 percent. This is consistent with the results of the 1995 informal sector census, which also found average net profits of 20 percent for urban informal sector firms. The World Bank survey also noted a low rate of investment among informal sector actors and highlighted their small average size.[26] The combination of relatively robust profit levels, small

[22] Loi no 95-015 du 03/07/1995 portant loi de finances pour l'année budgétaire 1995, section IX, Patente Synthètique

[23] The percentage of annual revenues that much be paid in the form of the *impôt synthètique* depends on the specific sector but do not exceed three percent.

[24] World Bank Enterprise Survey 2009

[25] When informal agricultural production is included, these percentages rise to 62.5 percent and 70.6 percent respectively. (INS)

[26] The average number of employees (including family members, paid and non-paid workers, apprentices, interns, etc.) was 5.25, with a maximum of 24.

average firm size, and low investment rates is indicative of an informal sector with low productivity.

Many developing countries have large informal sectors.[27] The informal sector can serve an important role by providing employment opportunities and income to individuals unable to participate in the formal labor market and by serving as a testing ground for new technologies and activities. However, due to the nature of their operations, informal sector firms are generally less able to access essential factors of production than their formal sector counterparts, which has a negative impact on the productive capacity and growth potential of these informal actors. If, as in the case of Niger, the regulatory framework and costs of operating in the formal sector are excessively burdensome and sufficiently outweigh the benefits associated with formality, the result is a large informal sector that suffers from low investment and productivity and hinders economic growth in the country.

3. Regulatory and institutional barriers to trade

The analysis of regulatory and institutional barriers to trade was impacted by data availability, and the team relied largely on the Doing Business indicators and several recent studies from the World Bank and USAID's West Africa Trade Hub[28]. Based on the available evidence, regulatory and institutional barriers to trade constitute a binding constraint to economic growth in Niger. They not only hinder the flow of goods to and from a country but also significantly increase the cost of production within the country and reduce the competitiveness of domestic firms seeking to operate in international markets.

It may take an inordinate amount of time to file paperwork, there may be costly delays at border crossings, and bribes or informal payments may be expected. Additional delays may be created or payments solicited at road blocks and check points along major transportation arteries. Domestic and international regulation of the transportation and trucking sector may distort or limit competition within the sector, resulting in high prices and poor quality service.

Niger ranks 176th out of 185 countries on the Trading Across Borders indicator in Doing Business 2013. This is not simply a function of being landlocked, since Niger performs worse than the other landlocked comparator countries with the exception of Chad.

A recent study of trucking in Niger released by the World Bank indicates that customs clearance costs paid at the final destination are large, amounting to an estimated 20 percent of logistics overhead costs faced by truckers.[29] A potentially higher cost to firms is lost time associated with importing and exporting. The World Bank study found that truckers along the Cotonou-Niamey

[27] The International Labour Organisation defines the informal sector "as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organisation, with little or no division between labour and capital as factors of production". (International Labour Organisation, "Resolution concerning statistics of employment in the informal sector, adopted by the Fifteenth International Conference of Labour Statisticians," January 1993)

[28] For more information on the USAID West Africa Trade Hub, please see http://www.watradehub.com/.

[29] Nathan Associates, Inc., "Logistic Cost Study of Transport Corridors in Central and West Africa," interim report, submitted to the Africa Transport Unit, World Bank, August 2012

corridor paid approximately 30,000 FCFA in bribes.[30] While this represented a smaller share of overhead costs for truckers than did customs fees, the unpredictability created by the payment of bribes and the presence of numerous checkpoints creates a risk that is likely factored into economic decisions. The 2008 Diagnostic Trade Integration Study by the World Bank[31] found that there were 152 informal checkpoints or roadblocks on the 975 kilometer route from Zinder to Niamey. While efforts have been made by the Nigerien Government to combat this problem, data from the first quarter of 2013 reveal that Niger still suffers from a high number of checkpoints, both official and informal, relative to its West African neighbors.[32]

Domestic and international regulations affecting the trucking sector are of particular concern. The 1972 ECOWAS Inter-State Road Transportation Convention allows pairs of West-African states (one maritime, one landlocked) to negotiate bilateral treaties of freight-sharing along transport routes between the states. The agreement between Benin and Niger classifies goods bound for Niger into two types – strategic and non-strategic. Goods designated as strategic are only eligible to be carried by Nigerien trucks, and non-strategic goods are divided between Beninese and Nigerien truckers, with one-third of the total allocated to Beninese truckers and the remaining two-thirds reserved for their Nigerien counterparts. Loads have traditionally been assigned in the port of Cotonou through a first come, first served queuing system.

This system has been the focus of much criticism for the market distortions it creates. It has been accused of creating a "double oligopoly," whereby truck operators are discouraged from improving their efficiency first by a fixed limit to the number of loads they are eligible to carry (based on nationality) and secondly based on an inability to compete for direct contracts with shippers (based on the queuing system). This results in poorly maintained and overloaded trucks, and leads to numerous hidden costs as, given the opportunity, truckers will pay to get around the restrictions imposed by the system.[33]

The extent to which this system is still broadly implemented is subject to debate. A 2008 World Bank Study of the transportation sector in West Africa found these distortions to be very large, such that improvements to transport infrastructure in West Africa would be of limited use until the rules governing the double oligopoly system are modified.[34] A study by the USAID West Africa Trade Hub in 2010 investigated this claim and found that the restrictions were loosening along numerous corridors in the region, with the exception of the Cotonou-Niamey and Lomé-Niamey corridors.[35] In contrast, a 2012 Nathan Associates report concluded that the quota system was less

[30] Ibid
[31] Niger: Modernizing Trade During a Mining Boom, World Bank DTIS, Dec. 2008
[32] USAID West Africa Trade Hub, "23rd Road Governance Report: Results of surveys during the first quarter of 2013"
[33] Nathan Associates, Inc., "Logistic Cost Study of Transport Corridors in Central and West Africa"; Nathan Associates, Inc., "Impact of Road Transport Industry Liberalization in West Africa," submitted under the USAID Worldwide Trade Capacity Building (TCBoost) Project, February 2012; USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries: Market Structure and Conduct," September 2010
[34] Teravaninthorn, Supee and Gael Raballand, "Transport Prices and Costs in Africa: a Review of the Main International Corridors," World Bank, 2008
[35] USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries: Market Structure and Conduct"

rigidly enforced and that while strategic cargo must still be carried by trucks registered in Niger, there were instances of foreign operators registering trucks in Niger to bypass this constraint.[36]

The domestic and international regulatory and institutional structures governing the trucking and transportation sector in Niger have combined to create a sector that is small and provides service that is of poor quality at a high cost. The cost of these market distortions and inefficiencies is born by the Nigerien economy in the form of price premiums on the goods it imports and reduced ability on the part of its exporting sectors to compete in regional and international markets. For a country such as Niger, which is already at a geographical disadvantage with regards to access to international markets, the additional costs imposed by an inefficient and costly transportation sector appear in many cases to be insurmountable, with this reality being reflected by the very low levels of manufacturing and industry present in the country.

[36] Nathan Associates, Inc., "Logistic Cost Study of Transport Corridors in Central and West Africa

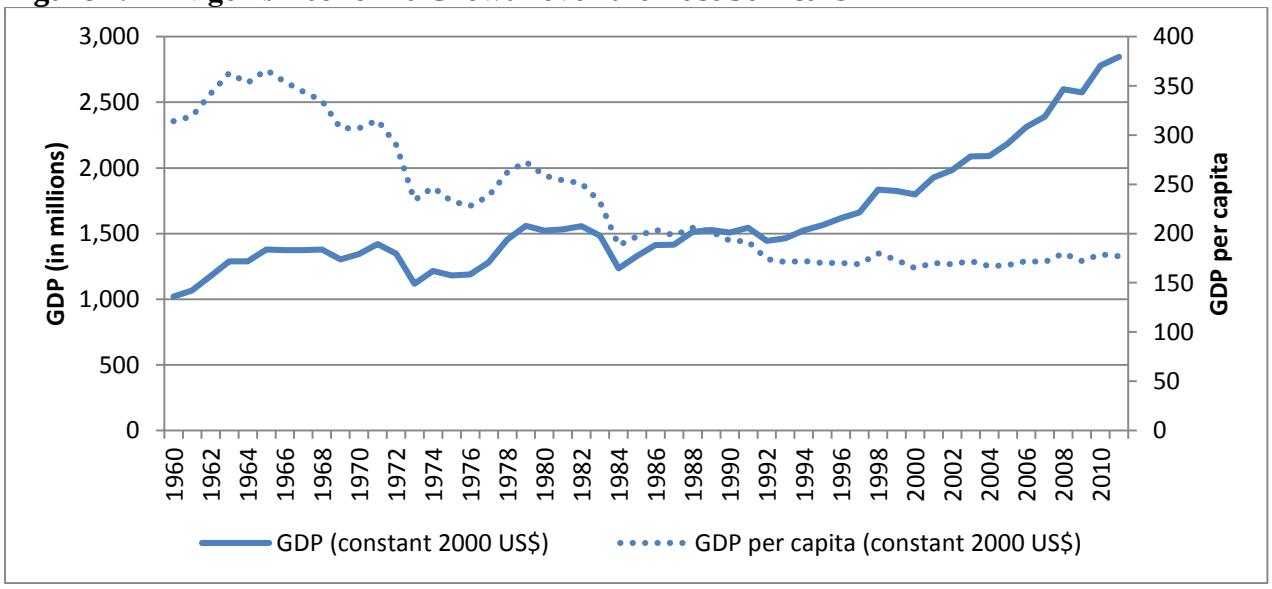
1. OVERVIEW

The Republic of Niger is the sixth largest nation in Africa and the largest nation in West Africa. Its territory spans the Sahara Desert and the Sahel zone. Niger's 17 million inhabitants are concentrated in the fertile band along the southern border with Nigeria and in the Niger River valley in the west. Approximately 80 percent of the country's population is engaged in agriculture[37] and more than 80 percent live in rural areas.[38] Niger participates in a number of regional institutions including the West African Economic and Monetary Union (WAEMU), an eight country customs and currency union in which all members use the CFA franc (FCFA). Niger is also a member of the Economic Community of West African States (ECOWAS), a broader organization that promotes regional peace, stability, and justice.

1.1. Niger's economic and political history

Since gaining full independence from France in 1960, Niger's economy has experienced booms, busts, and periods of sustained growth. On average, its GDP grew more than 3 percent per year between 1960 and 2010. However, rapid population growth has eroded its GDP per capita (see Figure 1.1), leaving it with one of the lowest per capita incomes in the world. Additionally, Niger is characterized by low levels of human development, tying with the Democratic Republic of the Congo for the lowest score on the United Nations' 2012 Human Development Index.

Figure 1.1 – Niger's Economic Growth over the Last 50 Years



Source: World Bank, World Development Indicators

In the early 1960s, the new country experienced steady economic growth largely due to advancements in the agricultural sector, particularly in commodities like groundnuts and cattle. However, in 1968 a long period of drought set in, and the agriculture sector struggled, leading to

[37] Economist Intelligence Unit, "Niger Country Report," generated August 2012
[38] International Development Association (IDA), World Bank, "Niger – Building Resilience to Vulnerabilities and Sustaining Reforms for an Inclusive Growth," May 2012

several consecutive years of negative growth and what is still known locally as "the great famine." Niger began exporting uranium in 1969, and growing exports of this commodity helped the country out of that depression. The uranium boom began in 1975 (due to renewed worldwide interest in nuclear energy generation in the aftermath of the 1974 oil-price crisis) and lasted until 1982, when prices collapsed. Niger had grown dependent on the commodity during the boom years, and as its price dropped the economy again collapsed.[39] The period from 1988 to 1999 is known in Niger as "the lost decade," for the instability it brought to the country.[40] During this time Niger experienced several coup d'états, a banking crisis, and a currency devaluation. In 1999, democracy was restored.

Niger experienced relative political stability until the late 2000s, when then-president Mamadou Tandja introduced a new constitution, significantly increasing his powers. Mr. Tandja's party won by a landslide in legislative elections boycotted by the opposition, and an August 2009 referendum extended the president's term of office indefinitely. In February 2010, Mr. Tandja was overthrown in a military coup, with the military junta promising a prompt return to democratic rule of law. By April 2011, the current president, Mahamadou Issoufou, was inaugurated after having won the presidential election that was validated by international observers as free and fair.[41]

Despite Niger's political recovery following the 2009 constitutional crisis, the country is facing renewed instability due to numerous internal and external security threats. Insecure borders with northern neighbors Mali, Libya, and Algeria have exacerbated threats to Nigerien security, with trafficking and smuggling operations and spillover effects from the recent military actions in northern Mali against Al-Qai'da in the Islamic Maghreb (AQIM) and other affiliated violent Islamist groups. In the south, Niger faces the looming threat of Nigeria's violent and extremist Boko Haram, members of which have been arrested within Nigerien borders. Moreover, other extremist groups, like the Movement for Unity and Jihad in West Africa (MUJAO), which kidnapped five Nigeriens in October 2012, constitute an ongoing threat to Niger's security. Niger has worked with its neighbors on many counterterrorism initiatives, and hosted the Global Counterterrorism Forum Working Group on Border Security in the Sahel in May 2012.[42]

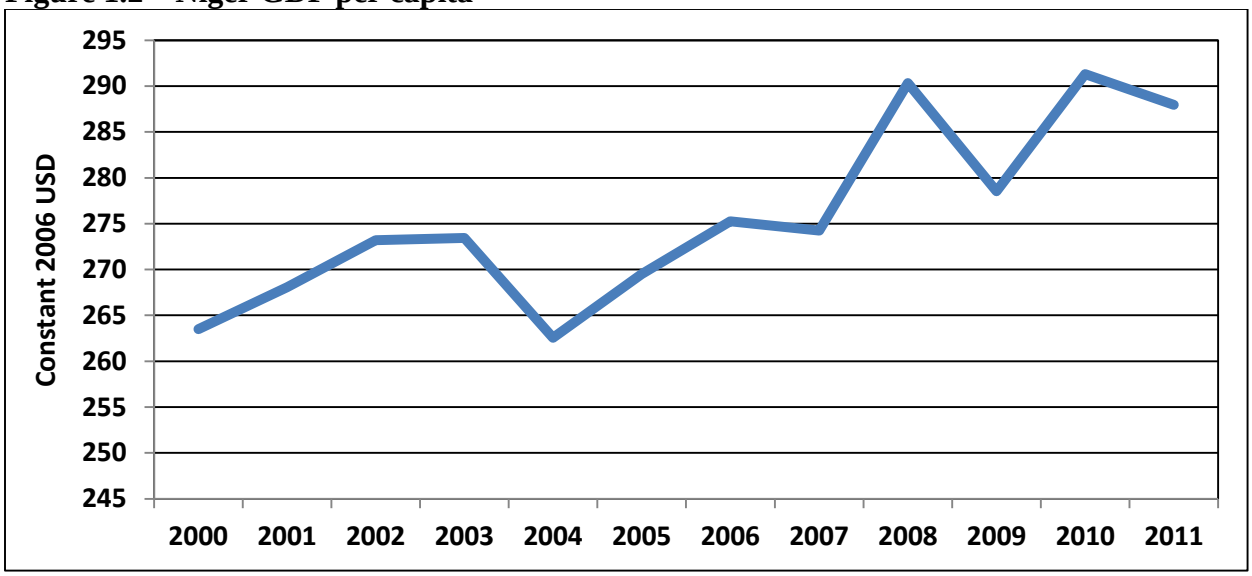
1.2. Recent trends in GDP

In recent years, the country has experienced positive though very limited growth in GDP per capita. Figure 1.2 shows Niger's GDP per capita over the last decade. From 2000 to 2011, Niger grew an average of 0.86 percent per annum in per capita terms. From 2005 to 2011, the average annual growth rate was 1.38 percent. This has occurred despite the very high rate of population growth. Since 2000, Niger's population has grown more than 3 percent per annum, one of the highest growth rates in the world, and increased by more than 5.2 million people.[43] This represents a 50 percent increase in total population in 11 years. As a result, the Nigerien economy must grow at a

[39] World Bank. "Niger - Accelerating Growth and Achieving the Millennium Development Goals : Diagnosis and the Policy Agenda"
[40] Ibid
[41] Economic Intelligence Unit, "Niger Country Report," generated November 2009, August 2010, and August 2011
[42] US Department of State, "Niger Country Report on Terrorism 2012," generated May 2013
[43] The United Nations Population Division estimated the annual population growth rate for Niger for the period from 2005-2010 at 3.54 percent. *The World Factbook* published by the U.S. Central Intelligence Agency (CIA) estimated Niger's population growth rate at 3.32 percent for 2013, ranking it fifth in the world.

matching rate to simply ensure that its level of GDP per capita does not deteriorate. This places tremendous pressure on a country such as Niger, especially given its low levels of human development.

Figure 1.2 – Niger GDP per capita



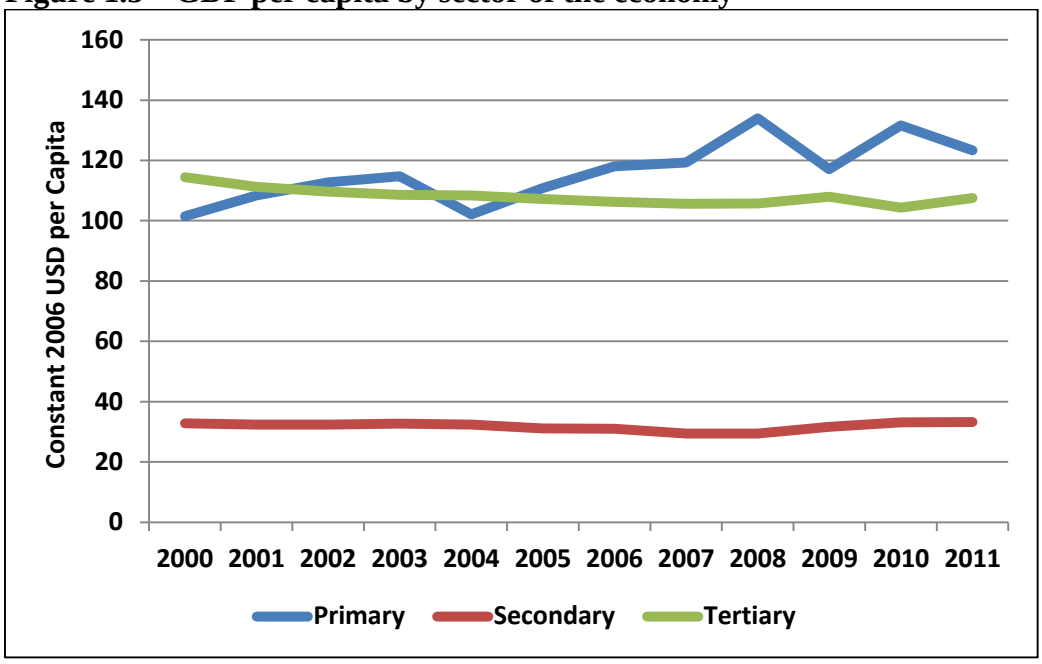
Source: Niger National Statistics Institute (INS), National Economic Accounts, 2012

An initial look at the sectoral composition of GDP reveals that the improvement in per capita GDP witnessed over the last decade was derived almost completely from the primary sector. This speaks to the importance of agriculture in the Nigerien economy. Figure 1.3 below highlights the relative weight of agriculture[44] in the economy and shows that agricultural output is trending upwards.

The agricultural sector is the main driver of output in Niger, accounting for 47 percent of GDP in 2011. This sector is primarily rain-fed, with agricultural production closely tracking annual rainfall. This introduces considerable volatility in both agricultural output and GDP. Since 2000, the major reductions in GDP (in 2004, 2009, and 2011) have occurred during drought years.

[44] For the purposes of this document, the definitions of the primary, secondary, and tertiary sectors as established by the INS are used. The primary sector includes agriculture, livestock, fishing, and forestry. The secondary sector is composed of extractive industries, manufacturing, construction, and the production and distribution of electricity, gas, and water. The tertiary sector encompasses the service and hospitality industries, wholesale and retail sales, and public administration. This differs from the generally used definitions of these three sectors.

Figure 1.3 – GDP per capita by sector of the economy

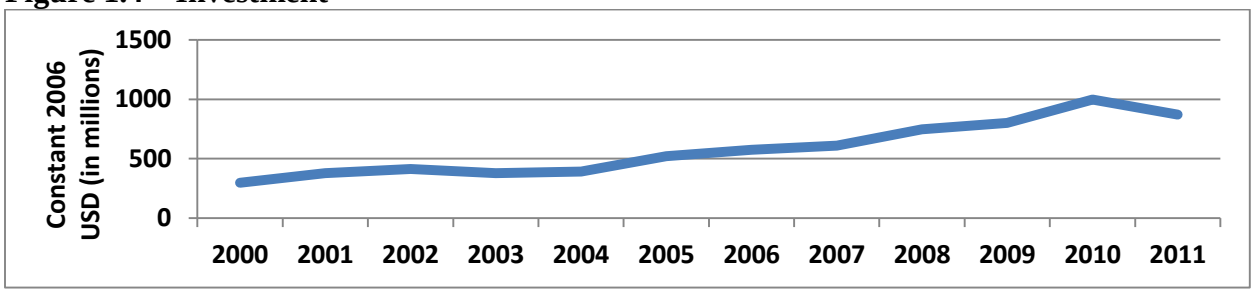


Source: Niger National Statistics Institute (INS), National Economic Accounts, 2012

1.3. Investment

Since 2000, investment in Niger has generally followed an upward path. An analysis of the investment data highlights a change from domestic investment to foreign investment. In 2006, less than 10 percent of total private investment in Niger came from foreign direct investment (FDI). By 2010 that share had increased to over 90 percent, with total private investment increasing by an average of 14 percent per year. Figure 1.4 displays the evolution of investment from 2000 through 2011. Niger's FDI has been largely linked to investments in extractive industries, particularly petroleum and uranium. According to the IMF, Niger's trade position is expected to improve in the coming years as new petroleum and uranium production comes online and the level of FDI-related imports falls.[45]

Figure 1.4 – Investment



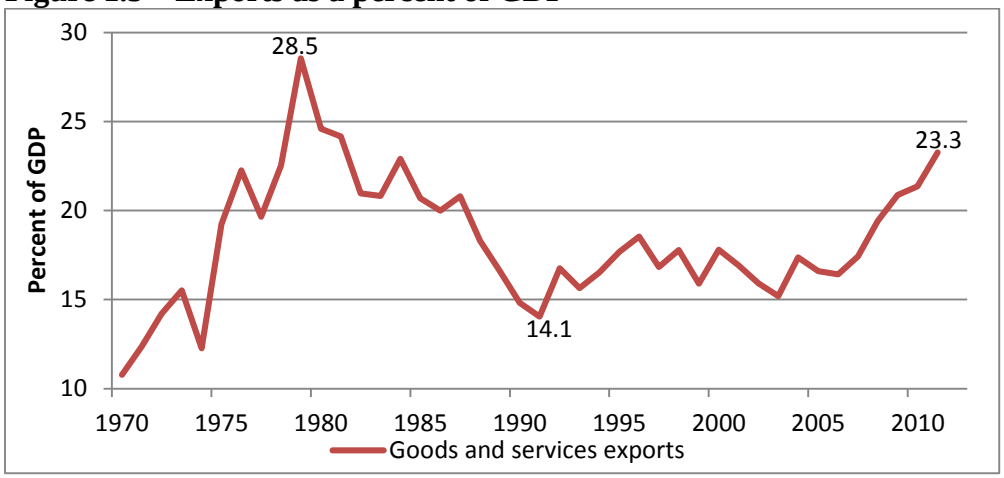
Source: Niger National Statistics Institute (INS),

[45] IMF, Staff Report for the 2011 Article IV Consultation – Debt Sustainability Analysis, page 4.

1.4. Export trends

Niger's exports, as a percentage of GDP, fluctuated significantly over the last four decades, reaching a peak of 28.5 percent in 1979 before experiencing a significant decline over the following decade, bottoming out at 14.1 percent in 1991. Since 1991, exports followed an upward trend and constituted 23.3 percent of GDP in 2011 (see Figure 1.5).

Figure 1.5 – Exports as a percent of GDP



Source: World Development Indicators

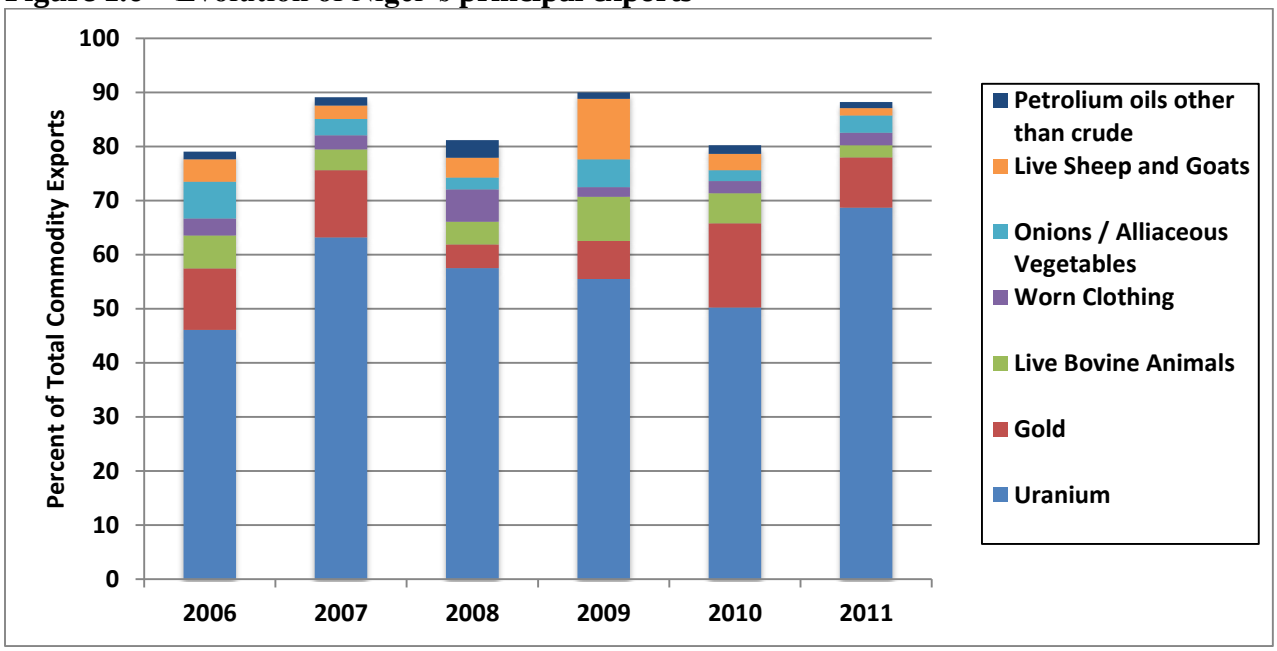
Niger's export basket consists primarily of minerals. Figure 1.6 displays Niger's top six commodity exports (plus refined petroleum products) since 2006.

Uranium[46] constituted almost 70 percent of Niger's commodity exports in 2011,[47] and output is expected to expand further in the coming years. During the 2000s, the French parastatal mining company Areva, the largest uranium concessionaire in Niger, began excavating the Imouraren site in the Agadez region. The site is expected to begin production in 2015 and to be Areva's third and largest mine in the country. Since 2006, other companies have brought mines into operation, expanding the sector. Niger is currently the fifth largest uranium producer in the world, but with these developments, it is projected to become the second largest by 2016.[48]

Gold production has also increased in recent years. Traditionally, the mineral has been mined artisanally in Niger, using methods that were only able to capture surface deposits in gold-bearing sands. Niger's first commercial gold mine, operated by Société de Liptako at the Samira Hill site near the Burkina Faso border, began operation in 2004 with financing from Canadian investors.

[46] In addition to uranium, this category also includes thorium ores and concentrates. (UN Comtrade)
[47] UN Comtrade
[48] Niger African Economic Outlook Report 2012, pp 4.

Figure 1.6 – Evolution of Niger's principal exports



Source: UN Comtrade Database, 2012

Live animals – mainly cows, sheep, and goats – constitute Niger's third largest export behind uranium and gold, with Nigeria and Ghana as the primary purchasers. Export earnings from livestock reached a peak of approximately 20 percent of commodity exports in 2009 but in general represent less than 10 percent of the total value of exports.[49] Official statistics likely underestimate the volume of livestock exports, as they do not capture the significant number of animals that are transported to markets in Nigeria on the hoof.[50]

Niger also recently began production of refined oil. The China National Petroleum Company (CNPC) discovered reserves in the eastern region of Diffa near Lake Chad and in 2008 signed a deal with the Nigerien government to build a refinery at Zinder (along with a pipeline of several hundred kilometers to connect the oil field to the refinery). During the second quarter of 2012, refined petroleum made up 24.3 percent of the country's exports,[51] and Niger became a net exporter of oil products for the first time in 2012. The current capacity of the SORAZ refinery at Zinder is 20,000 barrels per day of refined petroleum products, with the possibility of expanding the production capacity by 60,000 barrels per day beginning in 2015. In addition, the construction of a pipeline to connect the oil field to the existing Chad-Cameroon pipeline is under consideration.[52]

[49] UN Comtrade.
[50] U.S. Department of State, Bureau of African Affairs, "Background Note: Niger," February 2012.
[51] Niger National Statistics Institute (INS), *Indices du Commerce Exterieur, Deuxième Trimestre 2012*, p 12.
[52] IMF, "Staff Report on Request for New Three-Year Arrangement Under Extended Credit Facility," May 2012.

2. NATURAL CAPITAL

Natural resource limitations or unfavorable geographic attributes can impede economic growth by limiting viable investment opportunities and making rapid economic growth more difficult to achieve. A lack of water, land, vegetation, mineral or soil wealth would reduce the productivity of other factors of production (capital and labor) and potentially curtail investment and wealth creation. In Niger these geographic limitations appear to be quite acute. As a landlocked state whose surface area includes vast portions of the Sahara Desert[53], the country's prospects could appear hindered by its natural environment. However, Niger has a number of natural advantages as well as disadvantages that must be evaluated.[54]

The analysis presented in this chapter concludes that Niger benefits from sizable exploitable mineral deposits and a relative abundance of agricultural and pastoral land. It has adequate, but costly renewable water resources, which is coupled with low, variable rainfall. Niger bears the costs of its lack of proximity to ports and, by extension, its poor access to international markets. However, **agricultural and mineral outputs are growing and contribute significantly to the country's GDP, suggesting that Niger is successfully, though not completely, exploiting its natural capital endowments and that natural capital does not constitute a binding constraint to economic growth.**

2.1. Mineral wealth

Niger has numerous mineral deposits that could be exploited to accelerate short- and medium-term growth. Presently, uranium is Niger's most notable extractive industry, and Niger is projected to become the world's second largest supplier by 2016.[55] Table 2.1 below shows the list of confirmed mineral and petroleum reserves in Niger.

Of these confirmed reserves, uranium, gold, coal, and crude oil are being commercially exploited. Uranium, gold, and petroleum and oil products were discussed in the Overview. Coal mining is limited to the state-owned power company SONICHAR, which uses the coal principally to supply power to the uranium mines near Arlit. In addition, Niger has known reserves of chromium and cobalt, but the exact quantities have not yet been ascertained.

[53] Estimates vary as to the total portion of Niger's area that is desert but generally fall within the range of two-thirds to three-fourths. (See: World Bank, "Niger's Infrastructure: A Continental Perspective", June 2011; IMF, "Niger: Poverty Reduction Strategy Paper", May 2008)

[54] Most constraints analyses are structured so that the Access to Finance chapter immediately follows the Overview chapter. A decision was made to change this structure because in the case of Niger the Natural Capital chapter provides information and context essential for understanding the analysis that follows.

[55] World Bank, Project Appraisal Document: Competitiveness and Growth Support Project, June 2012 pp 3

Table 2.1 – Confirmed Mineral and Petroleum Reserves in Niger

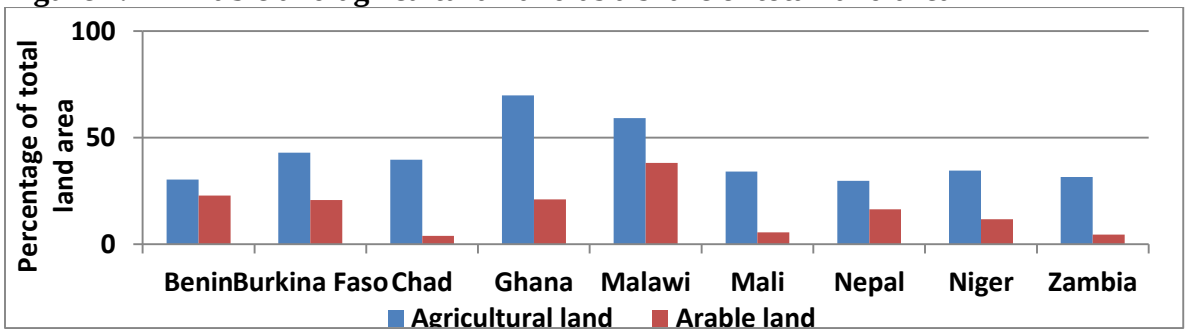
Mineral	Estimated Reserves
Coal	39.63 million MT
Gold	39.5 MT
Lithium	300-350K MT at 1.4-2% LiO_2
Iron Ore	1.008 billion MT at 45.84% 207.1 million at 40.8%
Nikel	200K MT at 1.5-1.8%
Vanadium	49,000 MT
Manganese	52,500 MT at 39%
Molybendum	24,680 MT
Copper	45,593 MT
Phosphates	1.254 billion MT at 23%
Titanium	8 million MT of TiO_2
Uranium	228,047 MT at 0.77%
Crude Oil	600 million barrels

Source: Niger Ministry of Mines (2010)

2.2. Land resources

Despite having a large land area, Niger's exploitable land resources are limited, as approximately 75 percent of its surface area consists of desert.[56] According to the World Bank, Niger's arable land constitutes 11.8 percent of its total land area. Figure 2.1 shows that this ranks the country sixth among the comparators. Agricultural land covers 34.6 percent of its land area, the fifth highest out of its comparators. Agricultural land, in this sense, includes arable land (land cultivated in seasonal crops); land given over to permanent crops, such as fruits; and permanent (used for five years or more) pastureland[57]

Figure 2.1 – Arable and agricultural land as a share of total land area



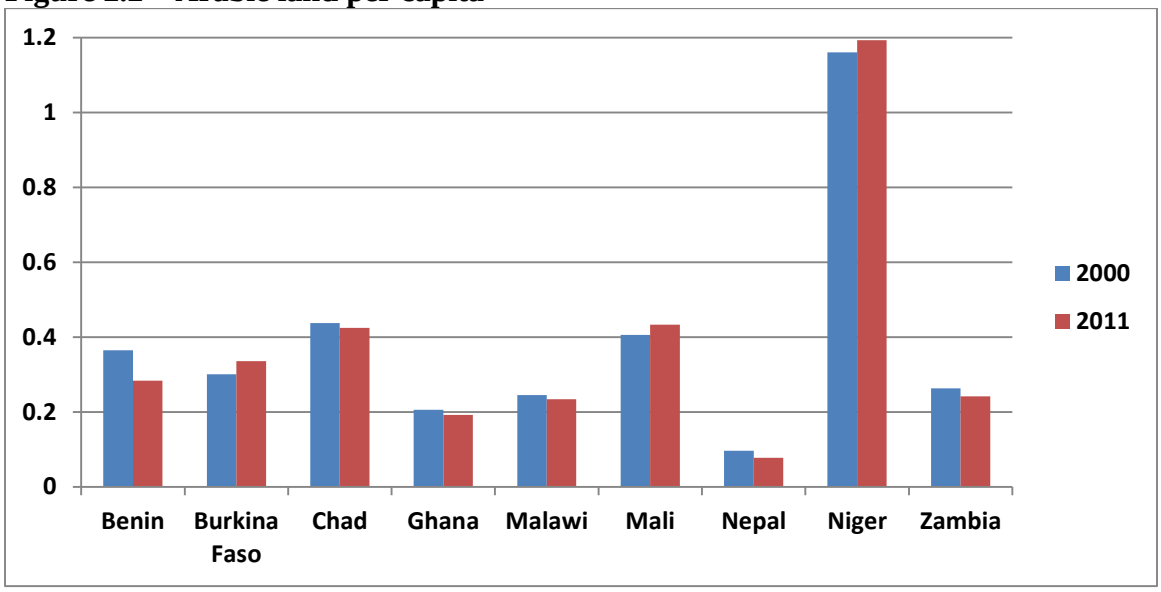
Source: World Development Indicators. Data refer to 2011

[56] For differing estimates of the share of desert in Niger's land area, see "Le Niger et le desertification" by the GoN (1999), 75 percent; the IMF PRSP of May 2008, 66 percent -77 percent, the World Bank "Niger's Infrastructure: A Continental Perspective" 66 percent, and the CIA World Factbook, 2012, 80 percent. For the purposes of this paper we will use 75 percent.

[57] *Glossary*, FAO Website (http://faostat.fao.org/site/375/default.aspx).

Though arable and agricultural land areas in Niger are small in percentage terms, given the country's large size (126.7 million hectares), its endowment in productive land is substantial in absolute terms. Within its country comparator group, Niger is second largest in agricultural land (43.3 million hectares) and largest in arable land (14.9 million hectares). This gives Niger the highest amount of arable land per capita among its comparators in 2009. Unfortunately, Niger's rate of population growth is higher than the rate of arable land expansion, leading to an expected average annual loss of 2.2 percent of arable land per capita (see Figure 2.2 below).

Figure 2.2 – Arable land per capita



Source: World Development Indicators

2.3. Climatic conditions and water resources

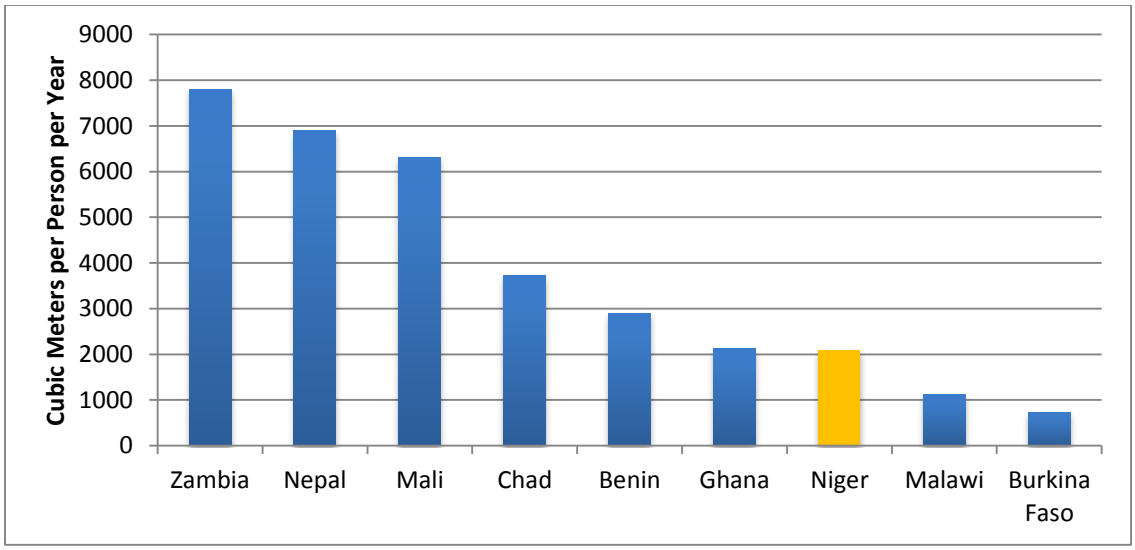
The hydrographic network in Niger is divided into two main groups: the Niger River Basin and the Lake Chad Basin. Most of Niger's renewable water resources come from the Niger River and its tributaries along its right bank. The river crosses the south-western part of the country over a distance of about 550 km, and the volume of water flowing through it is strongly dependent on the local rains. Renewable groundwater represents 2.5 billion cubic meters per year, and non-renewable groundwater represents 2 trillion cubic meters.[58] As Figure 2.3 shows, this places Niger's total level of renewable water resources at a low level vis-à-vis its comparators countries. With just over 2000 cubic meters per person per year, Niger's renewable water resources are greater than only those of Malawi and Burkina Faso.

However, Niger withdraws a relatively small percentage of this water for annual use – only 6 percent in 2000, according to the Food and Agriculture Organization (FAO). The International Water Management Institute (IWMI), indicates that other countries in Africa are more water

[58] UN Food and Agriculture Organization, AquaStat Database, 2011

insecure than Niger. They classify Niger as having an "economic" water scarcity, rather than "physical" water scarcity.[59]

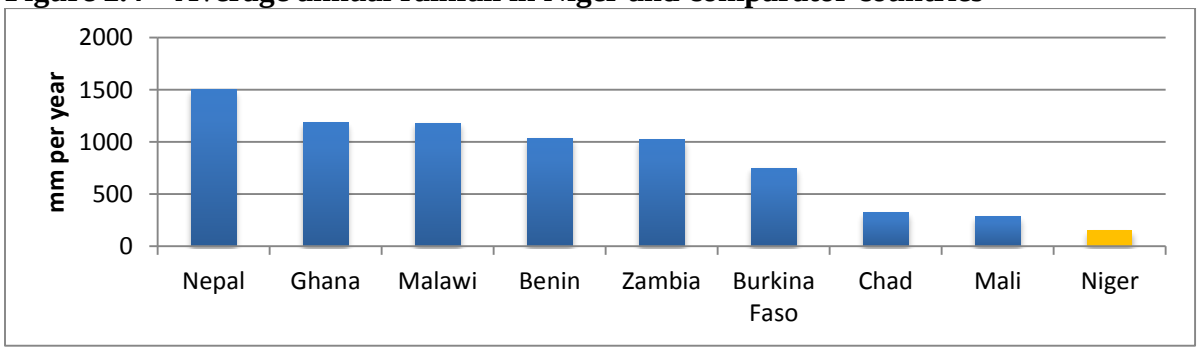
Figure 2.3 -- Renewable water resources – 2011



Source: FAO Aquastat Database2011

Niger's rainfall is low and variable, presenting a severe situation. Three of the last five years (2007, 2009, and 2011) have brought drought to Niger, and the country receives on average less rainfall than all of its comparators. With over 40 percent of Niger's economy in the agricultural sector, variations in output are predominantly driven by rainfall. Figure 2.4 shows annual rainfall for Niger and its comparator countries.

Figure 2.4 – Average annual rainfall in Niger and comparator countries



Source: World Development Indicators, 2009

[59] "The IWMI classifies countries that are predicted to be unable to meet their future water demand without investment in water infrastructure and efficiency as economically water scarce; and countries predicted to be unable to meet their future demand, even with such investment, as physically water scarce." *Understanding Water Scarcity: Definitions and Measurements*, Global Water Forum, (http://www.globalwaterforum.org/2012/05/07/understanding-water-scarcity-definitions-and-measurements).

2.4. Lack of access to the sea

As a landlocked country, Niger must rely on land, air, or river transportation to reach its principle, non-African trading partners (specifically, the European Union). Sachs and Mellinger (1999) find that landlocked non-European countries tend to have lower incomes and lower growth rates than their coastal neighbors. Niger's nearest port, Cotonou, Benin, is located at a distance of 1,050 kilometers from Niamey, which impacts the country's access to international markets.

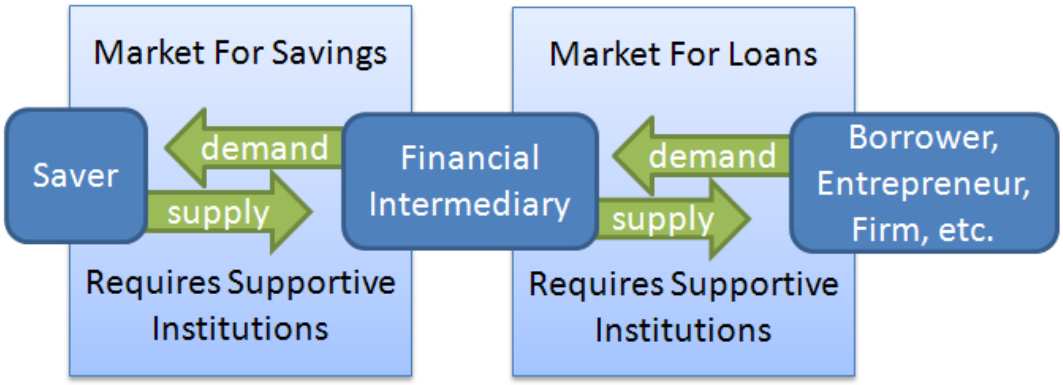
3. ACCESS TO FINANCE

While the Nigerien financial sector is underdeveloped and suffers from several structural problems, the evidence taken as a whole does not support an argument that the cost of accessing finance in Niger is a binding constraint to investment and economic growth.

In general, financial system development plays an essential role in improving the allocation of resources within an economy. Within a given economy, if the quantity of finance is low due to supply-side limitations, a strong case could be made for access to finance as a binding constraint. However, a low level of finance may also reflect low demand, which would effectively eliminate access to finance as a potential binding constraint.

As illustrated in Figure 3.1, the supply of finance from intermediaries ultimately determines the availability of finance for firms and entrepreneurs. If the overall supply of finance cannot be ruled out as a constraint, the HRV framework organizes the search for deeper determinants of constraints in finance. The supply of finance could be constrained by: (i) inadequate or costly local financial intermediation due to a lack of supportive institutions, market concentration, or other causes; or (ii) low supply of savings, both domestic savings and foreign capital, with their own supportive market institutions.

Figure 3.1 -- Allocating resources through the financial system



Source: MCC

Considered within this context, the financial sector in Niger is characterized by the following:

- While the real interest rate is below average for low income countries, the value of collateral required to secure a loan was second highest among the comparison countries.[60] Thus, while the price of credit is low, the shadow price could potentially be high for those firms and entrepreneurs who do not have sufficient assets to pledge as collateral or who operate in the informal sector.

[60] This comparison is based on the most recently available Enterprise Surveys for the respective countries, produced between 2007 and 2010. In Niger, the value of collateral needed to secure a loan (as a percent of the loan amount) more than doubled between 2006 and 2009, increasing to approximately 230 percent.

- A comparison of the nominal lending rate and domestic credit to the private sector indicates that improvements to the supply of finance since the mid-2000s have driven the increase in the depth of the credit market.
- Eighty-nine percent of investments in the formal sector are self-financed, indicating unmet demand for financing.[61] However, Niger is largely in line with the comparison countries with regard to the proportion of investments financed by banks.
- Based on the 2009 Enterprise Survey, firms in Niger identify access to finance as the second largest constraint to their activities (see Figure 0.2). Small firms were the primary complainants, while access to finance did not rank among the top three constraints for medium and large firms. If access to finance is indeed the most binding constraint, then medium and large firms should be "surviving and thriving" due to their superior ability to access credit. This does not appear to be the case in Niger.

The present analysis focuses exclusively on the formal financial sector. Informal sector firms frequently have limited access to formal credit markets, and indeed when firms weigh the costs and benefits of formality versus informality, the ability to access credit markets is often part of the decision-making process. A 2005 survey of the informal sector identified taxes as the main perceived drawback of formality.[62] A more detailed discussion of government regulation of business, taxes, and the informal sector in Niger is presented in Chapter 6.

The following sections present the most salient results of studies on Niger's financial sector. Section 3.1 presents an overview of the financial system in Niger, taking into account the dominance of the banking sector along with the regional dimension of the financial market. Section 3.2 examines the market for loans to shed light on whether the supply of finance is adequate to meet demand. Section 3.3 questions the availability of savings that could be used by financial intermediaries. Section 3.4 investigates the specific role of financial intermediaries. Section 3.5 seeks to understand additional factors in the financial sector that may limit growth.

3.1. Overview of finance in Niger

Trends in private sector investment

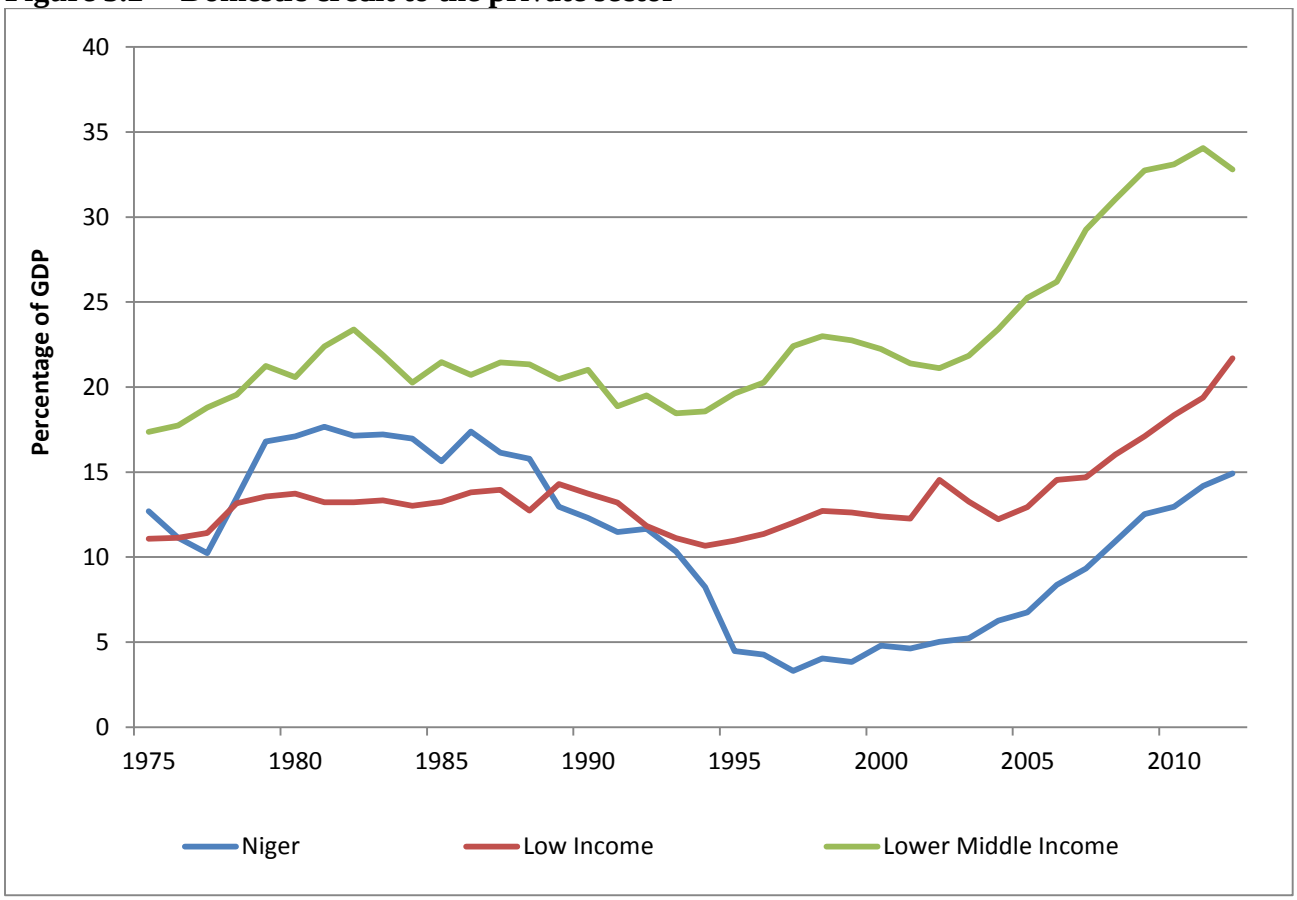
The HRV framework takes the view that sustainable economic growth is driven by private investments. Ideally, quantifying private investment entails a multifaceted approach that examines "investment" in the broadest sense of the term. While not a complete measure in this sense, credit to the private sector is our best available metric of the financial sector's ability to promote "investment."

Domestic credit to the private sector peaked in Niger in the early 1980s. This credit expansion was fuelled by government policies that encouraged financial institutions, especially state-owned banks, to lend to designated sectors and state-owned enterprises on favorable terms. This led to deterioration in the loan portfolio of several banks. Beginning around 1989, the financial sector in Niger and much of WAEMU suffered a crisis, which led to a decrease in domestic credit to the

[61] This could also potentially indicate low demand. Johnson, McMillan and Woodruff (2002) argue that the first best option of firms is to fund investments using internal resources, which are less costly than bank loans. Thus, it may be the case that the internal funds of firms in Niger are frequently sufficient to finance existing profitable investments.
[62] Enterprise Survey

private sector (as a percent of GDP) from around 15 percent to 3.3 percent in 1997. Since 1997 domestic credit has climbed steadily to 14 percent in 2011 (see Figure 3.2).

Figure 3.2 -- Domestic credit to the private sector



Source: World Development Indicators

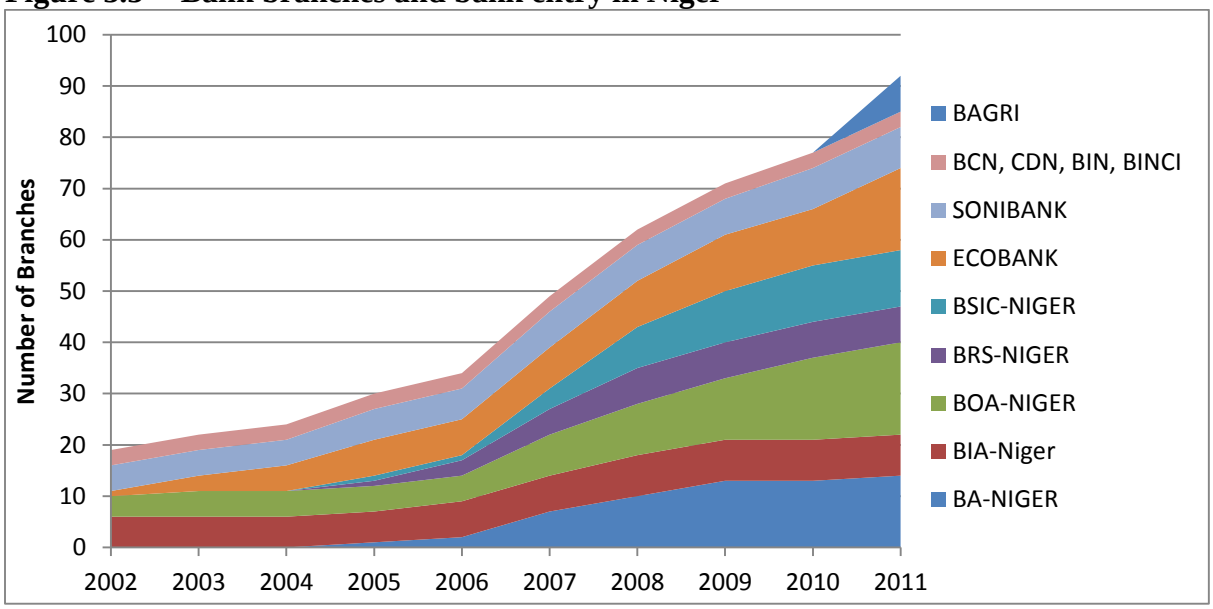
Banking sector

Niger's financial system is dominated by the banking sector, which is comprised of eleven commercial banks and one investment bank. These banks are largely integrated within the banking system of the WAEMU region, which the IMF found to be "generally healthy" with a "liquidity position [that] is rather strong".[63] As shown in Figure 3.3, the number of bank branches in Niger has increased steadily beginning in 2000. Nonetheless, credit rationing is a likely feature of the Nigerien banking sector.[64]

[63] IMF, "West African Economic and Monetary Union (WAEMU) Staff Report on Common Policies for Member Countries," Country Report No. 12/59 (March 2012)

[64] Credit rationing is a feature of virtually all financial market (Stiglitz and Weiss (1981)) but is often more problematic in developing countries.

Figure 3.3 -- Bank branches and bank entry in Niger

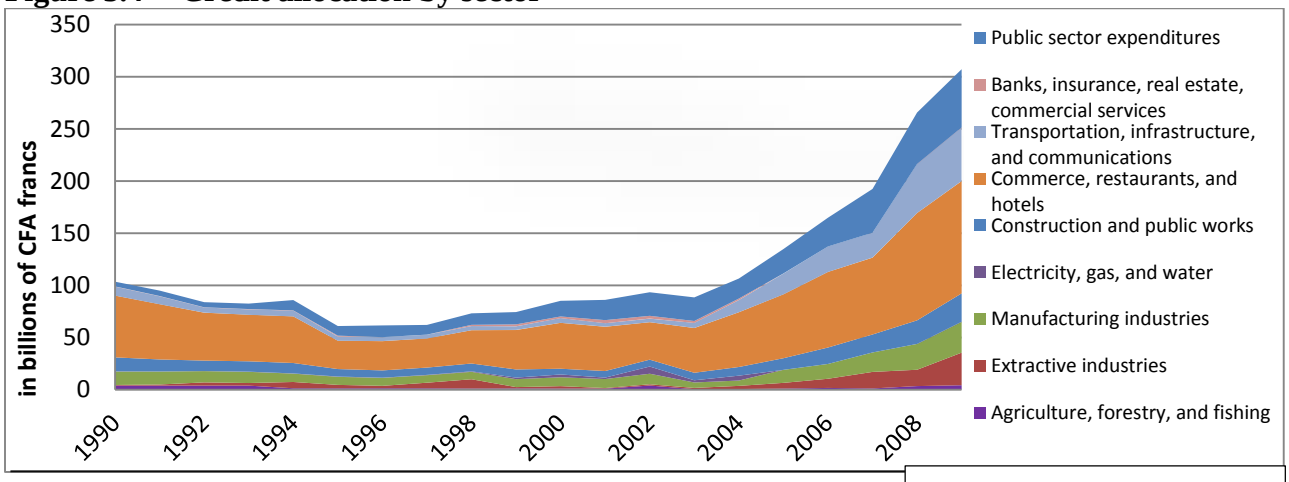


Source: West African Monetary Union, Banking Commission, Annual Reports, 2006-2011; Central Bank of West African States (BCEAO)

Commerce and the hospitality industry are the primary beneficiaries of bank loans in Niger, as illustrated in Figure 3.4. Over the period 2005-2009, service sector firms received the bulk of bank lending, while the agricultural sector received just one percent of the total bank lending. In 2010, bank lending to the manufacturing sector was six percent of total lending, roughly equivalent to the sector's share of value-added in the economy.

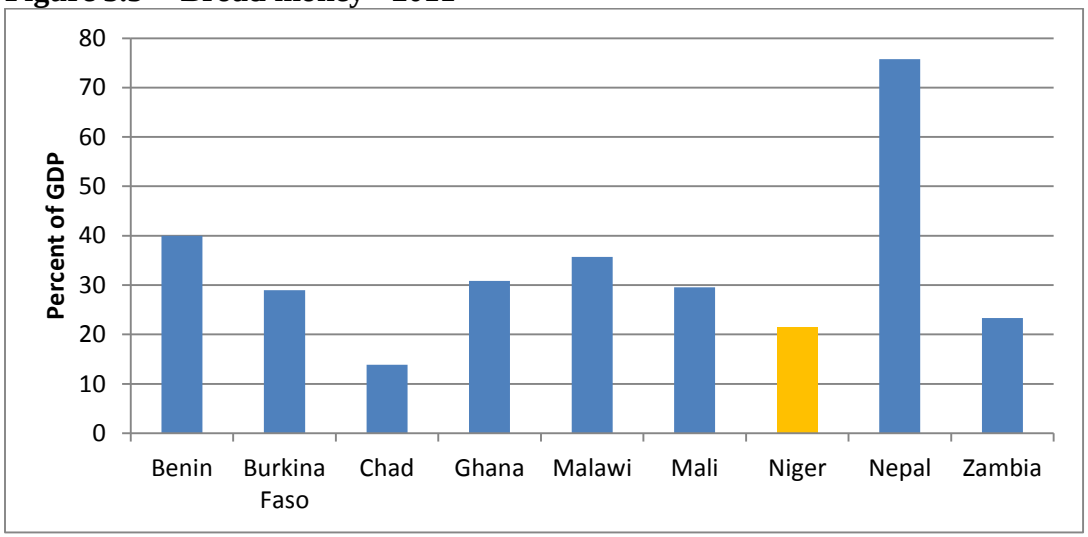
Despite the improvements in the banking system, the financial sector in Niger remains small relative to GDP. As Figure 3.5 shows, Niger's broad money as a percent of GDP (a measure of the extent of financial intermediation) is the second lowest of its comparators. Similar to domestic credit to the private sector, this number has grown from 14.1 percent in 2006 to 19.1 percent in 2010. The proportion of loan maturity has been shifting from predominantly short-term maturity to an almost equal proportion with medium-term maturity loans; long-term loans have fallen in share (Figure 3.6). The lack of loans with longer maturities, while not uncommon in less-developed countries, may hinder borrowers' ability to make longer-term investments.

Figure 3.4 -- Credit allocation by sector



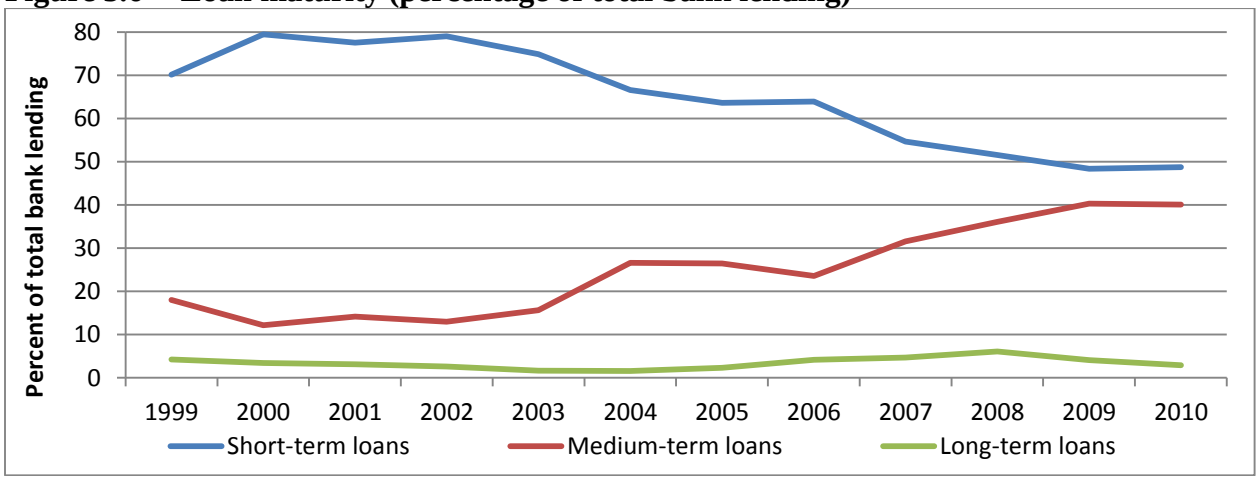
Source: Niger National Statistics Institute (INS)

Figure 3.5 -- Broad money - 2011



Source: World Development Indicators

Figure 3.6 -- Loan maturity (percentage of total bank lending)[65]



Source: Central Bank of West African States (BCEAO)

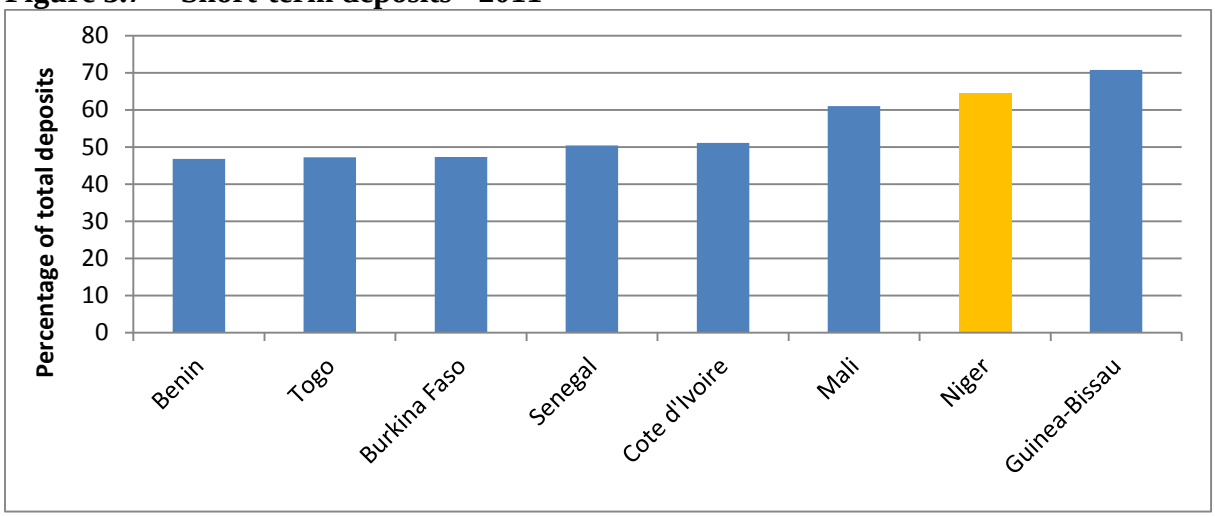
The availability of long term credit is contingent on the ability of banks to collect long term deposits. Previously WAEMU regulations required banks to finance 75 percent of their long-term loans with deposits of a matching maturity.[66] This ratio was revised downward to 50 percent effective January 1, 2013.[67] Niger has the second-highest rate of short-term deposits among the members of the WAEMU (Figure 3.7), leaving relatively small proportions for medium- and long-term deposits.

[65] Short-term loans are defined as having a length of less than two years. The duration of medium-terms loans is fixed at between two years and ten years. Loans with a length of more than ten years are considered long-term loans. (BCEAO, "Décision No 397/12/2010 Portant Règles, Instruments et Procédures de Mise en Œuvre de la Politique de la Monnaie et du Crédit de la Banque Centrale des Etats de l'Afrique de l'Ouest," December 2010.)

[66] Faye and Triki (2010)

[67] BCEAO, "Note D'Information: 4e Trimestre 2012," No. 32

Figure 3.7 -- Short-term deposits - 2011



Source: West African Monetary Union, Banking Commission, Annual Report, 2011

Niger's financial sector also includes 81 microfinance institutions (MFIs) which are concentrated in the most populous southern regions of the country (Table 3.1). The sector is dominated by ten MFIs, which accounted for 90 percent of loans and 80 percent of deposit in 2010. Despite its significant reach in terms of number of clients served, the microfinance sector remains small relative to the banking sector with regards to both assets and deposits. In 2010, a new regulatory framework was enacted by the Government of Niger in response to changes in BCEAO regulations, which resulted in the closure of underperforming MFIs.

Table 3.1 -- Microfinance sector

	2009	2010	2011
Number of MFIs	115	80	81
Number of Branches	175	189	198
Number of Members	161,904	167,903	173,417
Deposits*	9.4	8.9	11.1
Outstanding Loans*	18.6	16.7	17.4
Non-Performing Loans	8 %	15 %	6 %

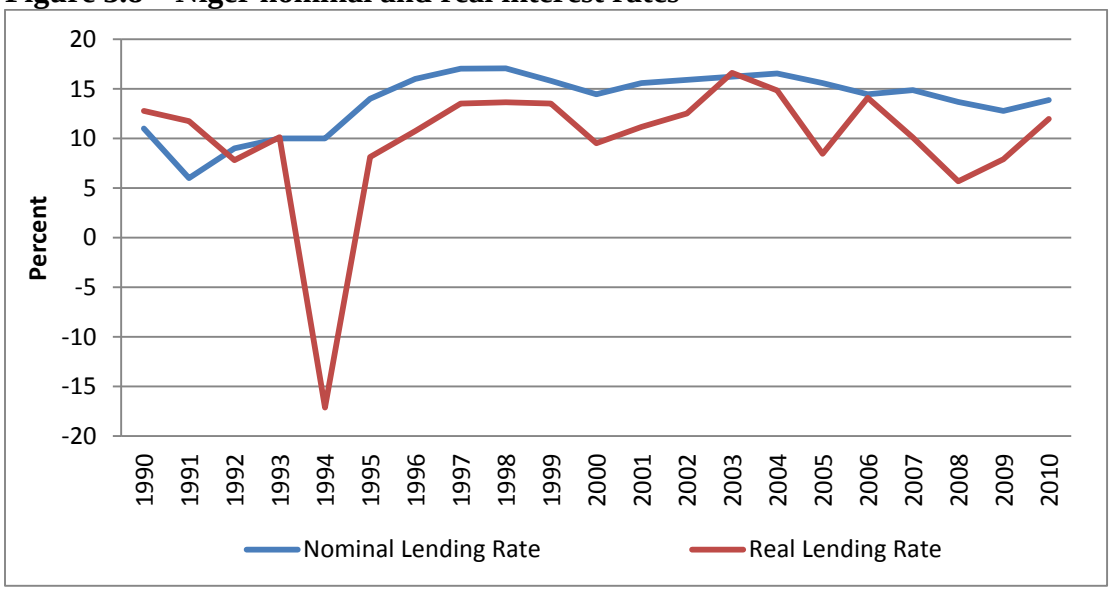
Source: Niger Ministry of Finance, "Aperçu sur le Secteur de la Microfinance au Niger," December 2012
**in billions of FCFA*

3.2. Price of Credit

The first "test" of a binding constraint is that it should have a high price. In the credit market, the real interest rate is the effective price. Niger's historical trend shows a steep dip in the real interest rate during the 1994 devaluation of the FCFA (Figure 3.8). Most real interest rate fluctuation since the devaluation results from volatility in the prices of food and fuel (which constitute a high share of Niger's overall consumer basket) driven by periods of drought. Over the last five years, the real interest rate in Niger has averaged about ten percent. In comparison, the average real interest rate in lower-income countries was 11.7 percent for the three year period between 2009 and 2011.

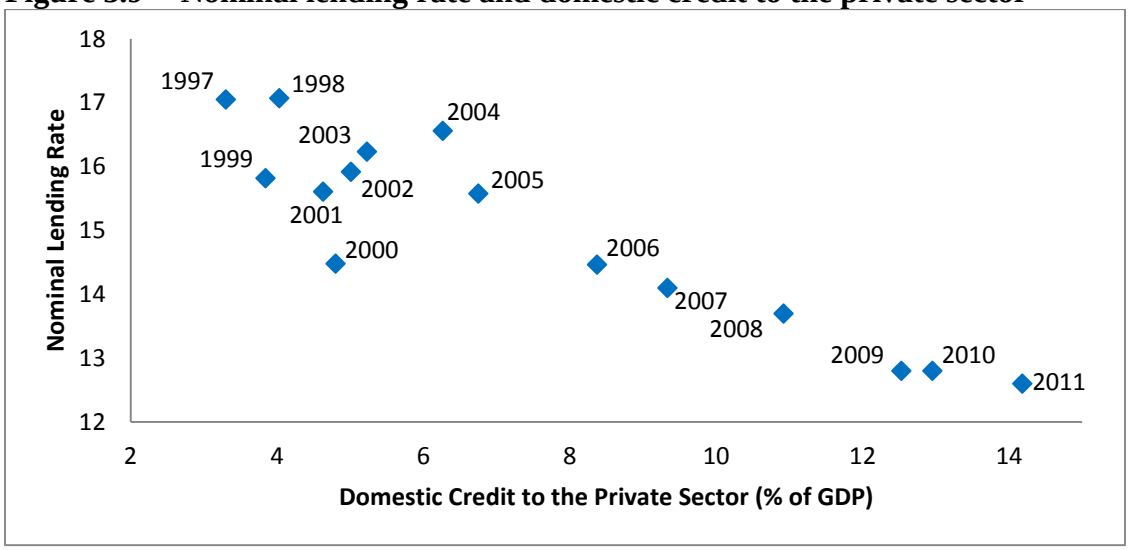
As illustrated in Figure 3.9, in the early 2000s, both the price and quantity of credit increased, implying an increase in the demand for financing. Since 2004, prices have dropped several points while the quantity increased significantly. This indicates that improvements to the supply of finance since the mid-2000s have driven the increase in the depth of the credit market.

Figure 3.8 – Niger nominal and real interest rates



Source: Central Bank of West African States (BCEAO)

Figure 3.9 -- Nominal lending rate and domestic credit to the private sector



Source: West African Monetary Union, Banking Commission, Annual Reports, 2009-2011; Central Bank of West African States (BCEAO); World Development Indicators

The next sections examine deeper determinants of the supply of finance in order to assess more specific potential constraints.

3.3. Access to Savings

This section examines the availability of savings to financial intermediaries, and thus to investing firms and entrepreneurs, and determines that the conditions in Niger are not consistent with a savings constraint. From Table 3.2, the number of accounts and total deposits indicate that the reach of the banking sector is limited.

Table 3.2 -- Banking system - 2010

	Bank Accounts per 1,000 people	Total Deposits (percent of GDP)
Benin	60	37
Burkina Faso	46	27
Cote-d'Ivoire	80	25
Guinea-Bissau	25	17
Mali	61	29
Niger	16	17
Senegal	65	36
Togo	84	39

Source: Central Bank of West African States (BCEAO)

However, the primary characteristic of a savings constraint is not an overall low quantity, but a high price for savings. For a savings constraint, banks should be willing to compensate savings at a high interest rate. The available evidence does not suggest that savings are in high demand. The average real deposit rate in Niger over the period 2005-10 has been slightly negative. A negative real savings rate is not consistent with a high price paid for savings, and thus a saving constraint is not a binding constraint. Furthermore, Niger's capital adequacey ratios are in line with BCEAO requirements, which suggest that it should be relatively easy to draw on savings external to Niger in the case that domestic savings are inadequate.

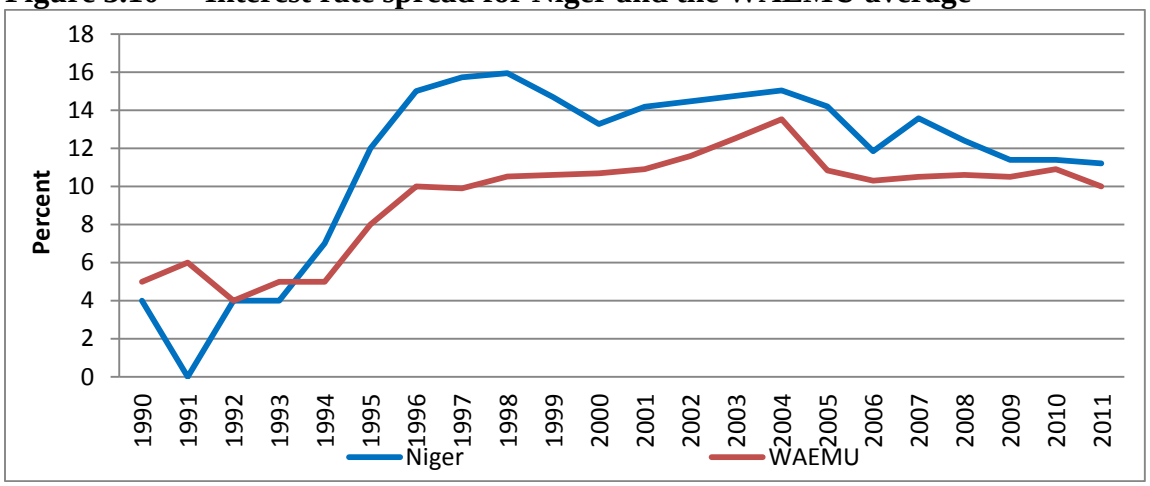
3.4. Weak Financial Intermediation

This section examines different elements of financial intermediation and determines that weak financial intermediation does not constitute a binding constraint in Niger.

Market concentration

One potential cause of costly financial intermediation is high market concentration. An important signal of market concentration is the spread between deposit and lending interest rates. The comparison with other WAEMU countries is shown in Figure 3.10. Since a peak in the late 1990s, Niger's spread has converged toward the WAEMU average and was approximately a percentage point larger in 2010.

Figure 3.10 -- Interest rate spread for Niger and the WAEMU average



Source: West African Monetary Union, Banking Commission, Annual Reports, 2010-2011; Central Bank of West African States (BCEAO)

Moreover, the Herfindahl-Hirschman Index of market concentration indicates that the Niger banking sector was moderately concentrated[68] in 2009, placing it in line with other WAEMU countries, especially with regards to lending (see Table 3.3).

Table 3.3 -- Herfindahl-Hirschman Index for banking sector of WAEMU countries

Country	HHI - Assets	HHI - Deposits	HHI - Lending
Benin	1.866	1.742	1.741
Burkina Faso	1.210	1.263	1.158
Côte d'Ivoire	0.994	0.995	1.067
Guinea-Bissau	3.434	3.436	3.611
Mali	1.344	1.492	1.222
Niger	**1.739**	**1.875**	**1.665**
Senegal	1.495	1.523	1.522
Togo	1.564	1.666	1.711

Source: West African Monetary Union, Banking Commission, Annual Report, 2009

Information problems and transaction costs

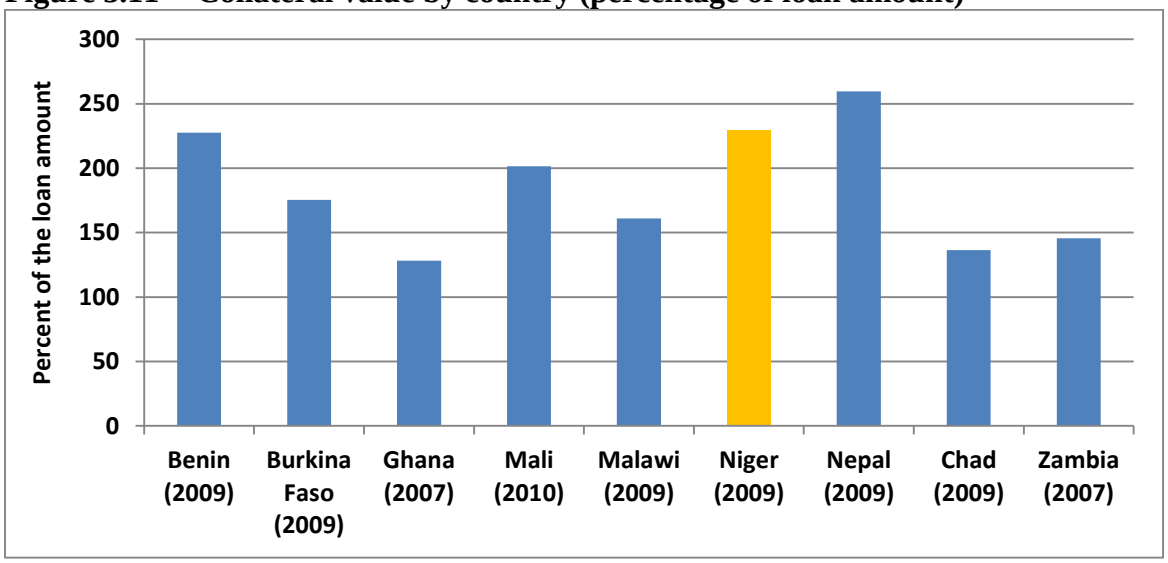
Financial intermediation can also be constrained if the information available for banks to assess risks is inadequate (and that the available lending tools to provide this information are underdeveloped), leaving profitable investment opportunities unidentified. Collateral is one tool for overcoming this information problem and has recently become a prominent feature of Niger's banking system. In addition, banks in Niger have relied on relationship lending to assess risk; that is, banks can assess a potential loan based on their historical relationship with the customer.

[68] Based on the guidelines issued jointly by the U.S. Department of Justice and the Federal Trade Commission in 2010, markets with an HHI below 1.500 are unconcentrated, markets with an HHI between 1.500 and 2.500 are moderately concentrated, and markets with an HHI greater than 2.500 are highly concentrated. This differs slightly from the definitions used by the WAMU Banking Commission, which sets the cutoff points for the three categories at less than 1.000, between 1.000 and 2.000, and greater than 2.000, respectively.

Collateral requirements

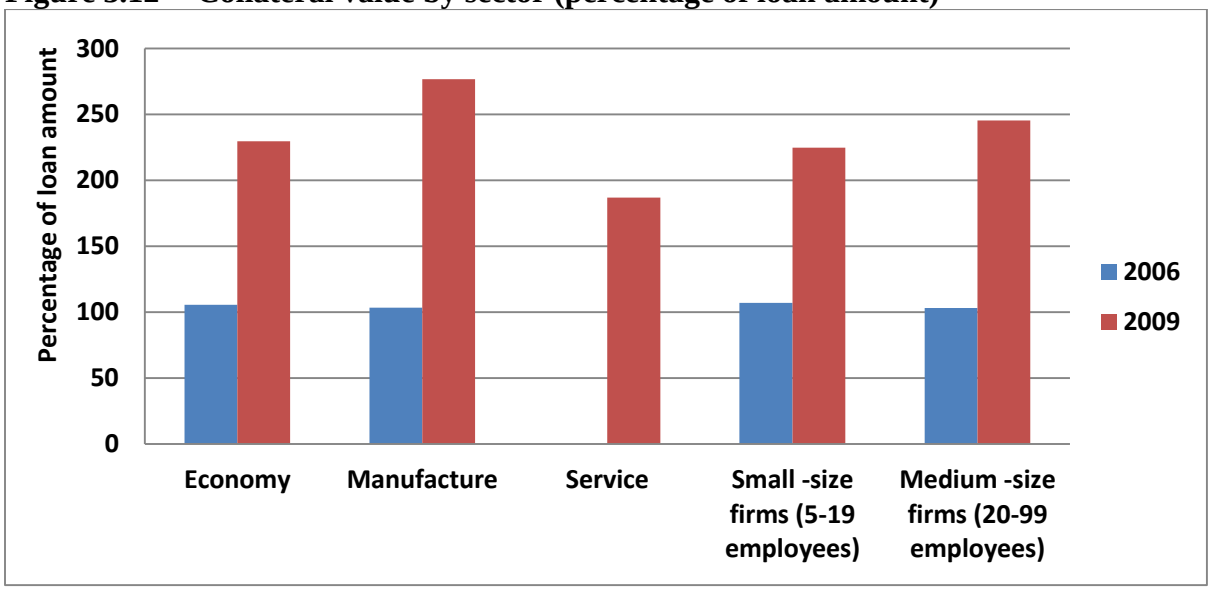
Relationship lending is not an option for new banks entering the market. This may explain not only the relatively high ratio of collateral in Niger (Figure 3.11) but also the increase from 2006 to 2009 (Figure 3.12).

Figure 3.11 -- Collateral value by country (percentage of loan amount)



Source: Enterprise Surveys

Figure 3.12 -- Collateral value by sector (percentage of loan amount)



Source: Enterprise Surveys

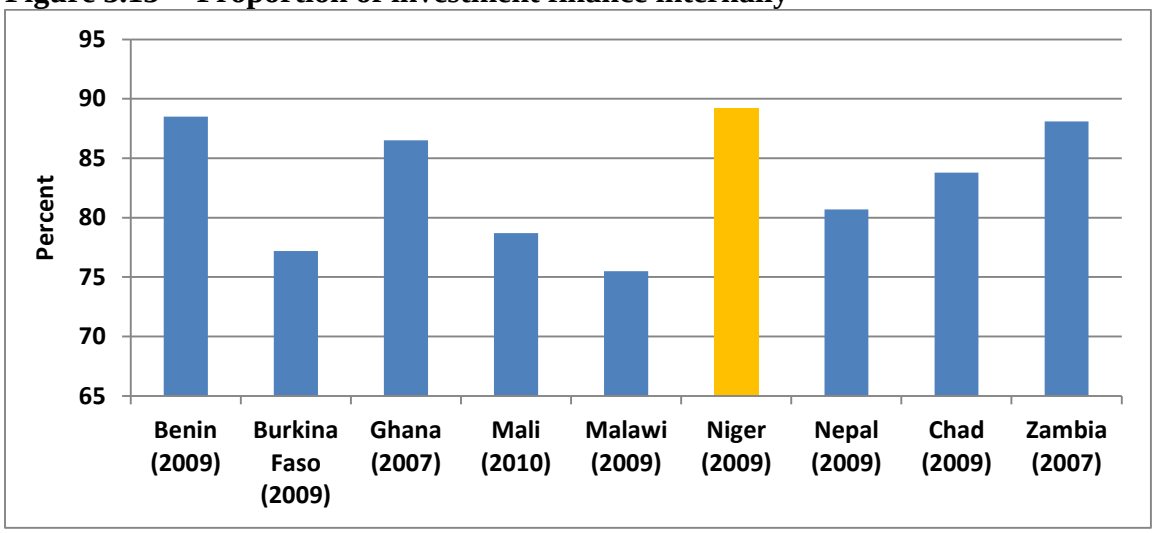
The ability of collateral to facilitate lending is contingent on the ability of banks to resolve insolvency and seize collateral. Starting in 2007, the ability of banks in Niger to resolve insolvency, as indicated by the recovery rate, has improved from below three percent to 14.2 percent; further improvements were made between 2011 and 2013, with an increase from 16 percent and to 21.7

percent.[69] However, a 22 percent recovery rate is still below the regional average; this results in a ranking of 130th (of 185) on the IFC's Resolving Insolvency Indicator.

3.5. Additional Evidence

If access to finance was a constraint, we would expect firms to undertake behaviors to get around the constraint, such as financing a high proportion of investments with internal funds. In Niger, this is certainly the case (Figure 3.13), but Niger is also largely in line with the comparator countries with regard to the proportion of investments financed by banks (see Figure 3.14).

Figure 3.13 -- Proportion of investment finance internally



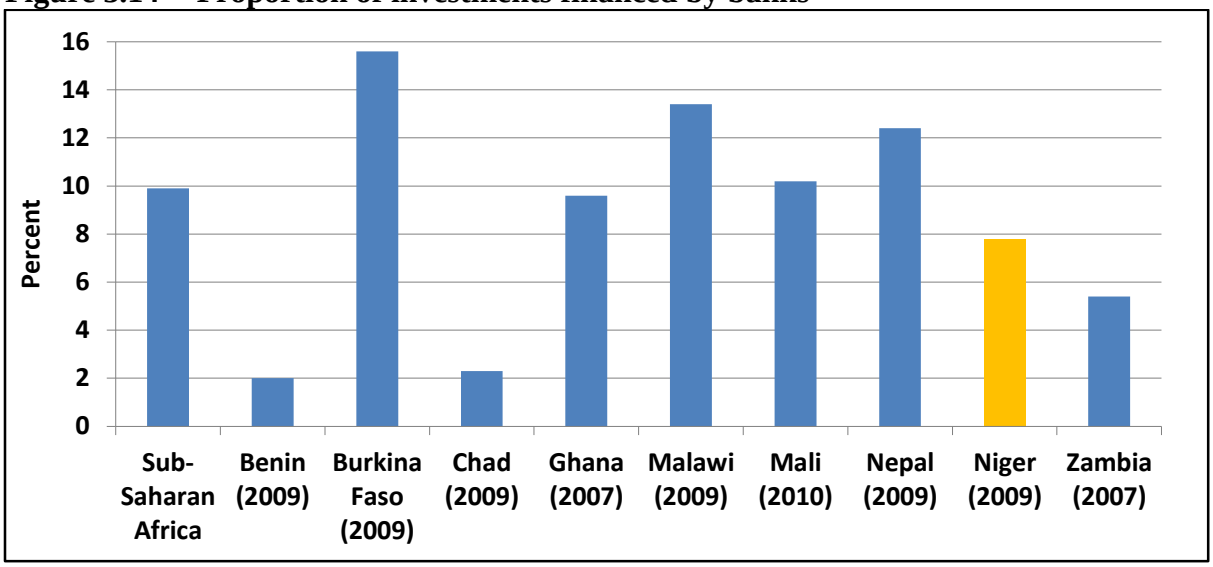
Source: Enterprise Surveys

Another important piece of the puzzle is firms' perceptions of access to finance as a constraint. The Enterprise Survey indicates that access to finance is perceived as the second strongest obstacle for business in Niger, with 20.6 percent of firms listing it as the strongest obstacle. However, it only figured among the top three strongest constraints for small firms (see Figure 3.15).

If access to finance was a binding constraint, one would expect firms that have better adapted to the existing constrained conditions – in this case, large and medium firms – to "survive and thrive". It does not appear that larger firms are exploiting their access to finance to take advantage of investment opportunities in Niger. Sales growth and productivity growth are both higher for small firms than for medium-sized firms, and there appears to be a relative dearth of large firms, which suggests access to finance is not the most binding constraint in Niger.

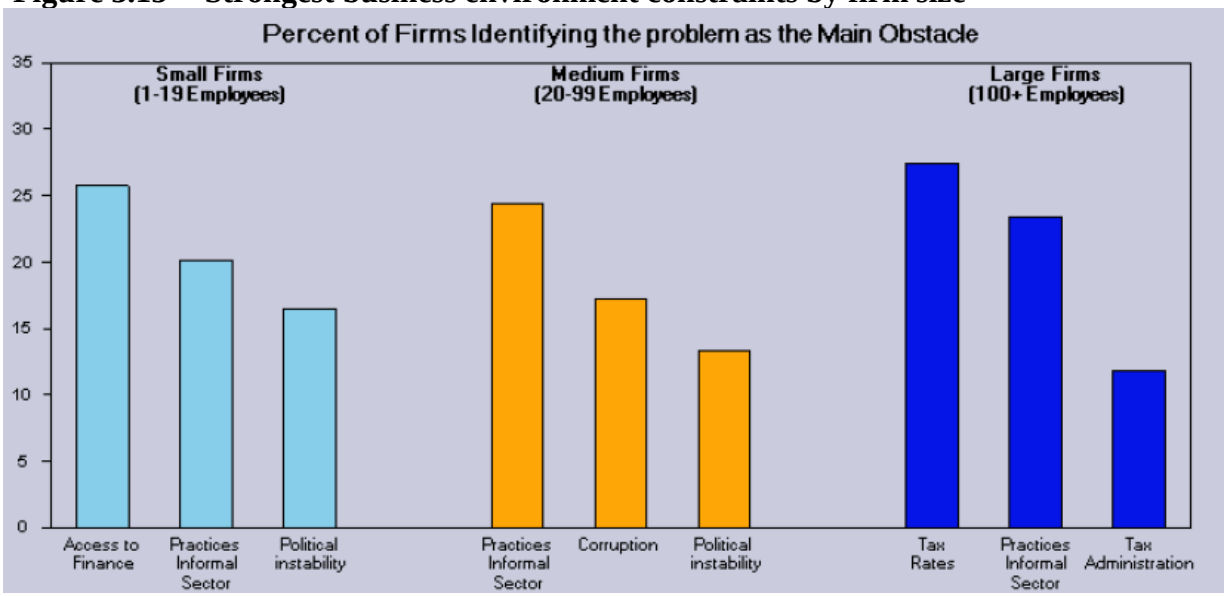
[69] World Bank, IFC, Doing Business Indicators

Figure 3.14 -- Proportion of investments financed by banks



Source: Enterprise Surveys

Figure 3.15 -- Strongest business environment constraints by firm size



Source: Enterprise Surveys

3.6. Conclusions

While still below the low income country average, domestic credit to the private sector in Niger has more than doubled since 2000. Over the same time period, the number of bank branches has more than quadrupled. Nonetheless, the Nigerian financial sector has some important limitations. The financial sector in Niger remains small relative to GDP and shows evidence of being moderately concentrated. Despite these shortcomings, Niger's financial sector does not satisfy the necessary criteria to be considered a binding constraint to growth.

4. HUMAN CAPITAL

In the context of growth diagnostics, a shortage of human capital can pose a binding constraint to growth if private investors cannot secure the skilled labor they need to effectively manage and operate their businesses at a competitive cost. Although many countries may aim for a highly skilled workforce as part of their development plans, a lack of human capital only poses a binding constraint to growth if the demand for skills substantially exceeds supply, so that the costs of obtaining the needed skills are high.

The chapter concludes that while the lack of human capital undoubtedly constitutes a serious problem for some investors and laborers, it does not satisfy the necessary conditions to be considered a binding constraint to broad-based economic growth. Niger faces serious challenges in the areas of health and education; however, due to relatively low demands for and returns to educated workers and low rates of worker absenteeism caused by disease, improvements to the health and education systems would not be sufficient on their own to stimulate economic growth and private investment.

4.1. Education

The formal educational system in Niger is modeled on the French system, and consists of six years of primary school, four years of junior secondary school, and three years of secondary school (or high school). Students generally start school at the age of seven. There is an exam at the end of the sixth and tenth years that students must pass in order to advance to the next level of schooling, and after the 13th year, called *Terminal*, students sit for a *Baccalaureate* (or *Bac)* exam. Students that pass the exam at the end of primary school are eligible to enroll in technical or professional education, and students that pass the *Bac* receive their high school diploma and are eligible to enroll in university courses.

4.1.1. Status and Trends

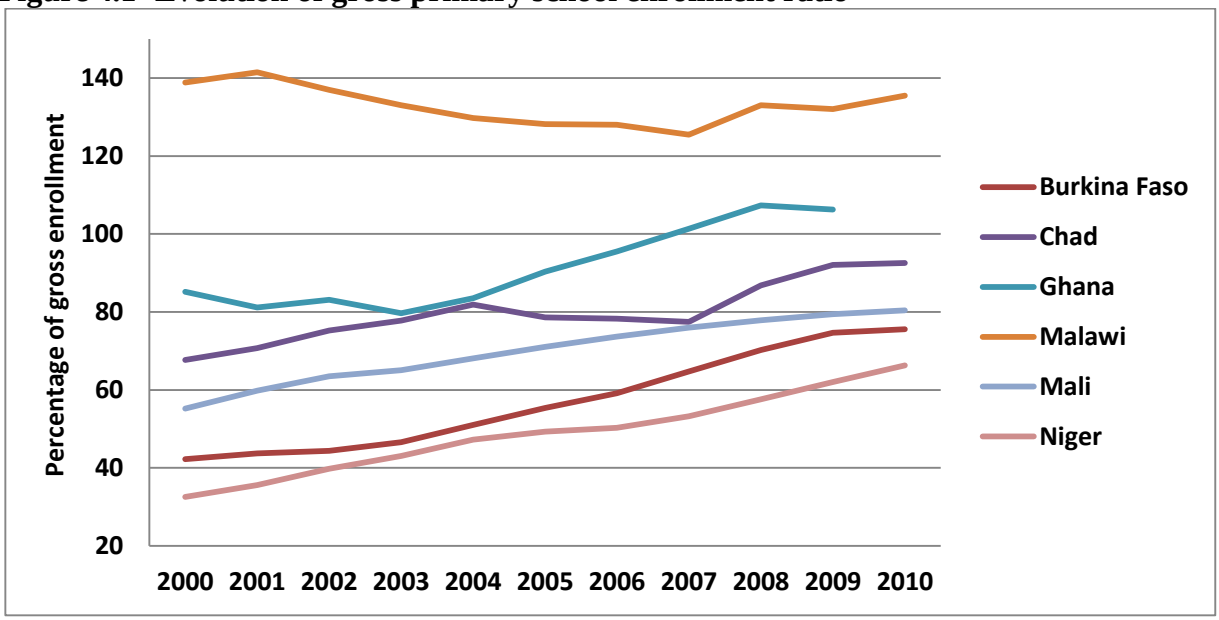
School enrollment rates, even at the primary level, remain extremely low in Niger. The gross primary school enrollment ratio, which divides the number of primary school attendees by the number of primary school-aged children in the country, is 66 percent, well below all comparator countries. Furthermore, this ratio overstates the share of school-aged children in school because it includes older children that started school late (this is why the ratio is over 100 in some countries). A 2012 study by the Niger Ministry of Education finds similar results for net primary school enrollment ratio (which only counts primary school students that are of primary school age) at 67 percent. The country is not expected to achieve the Millennium Development Goal of universal primary education, and instead expects to have a net primary school enrollment ratio of only 82 percent by 2015[70]. The expected years of schooling completed by a child in Niger, while still low, has increased from 2.5 years in 2000 to 4.9 years in 2010.[71]

The poor retention rates of primary schools in Niger mean that there is little secondary or tertiary education in the country. The gross secondary school enrollment rate in 2011 was just 13

[70] Millennium Development Goals Report, 2012
[71] UNESCO Institute for Statistics (2012)

percent, well below the 35 percent average[72] in Niger's group of comparator countries, and there were only 22,000 university students in the entire country. However, Figure 4.1 below shows that significant progress has been made since 2000, with the gross school enrollment rate doubling over the last decade. The likelihood of graduating primary school, if enrolled, has remained fairly stable between 65 percent and 70 percent between 2001 and 2012[73].

Figure 4.1- Evolution of gross primary school enrollment ratio



Source : World Bank, World Development Indicators, 2012
Note: Data for Nepal, Benin, and Zambia were unavailable or incomplete

A concerted effort on behalf of the government of Niger to modernize and promote the schooling system, starting with the passage of the *Loi d'Orientation du Système Educatif Nigérien (LOSEN)* in 1998 and the implementation of the ten-year national Educational Development Project (PDDE) in 2003 resulted in a rapid increase in school enrollment. The effect of these reforms was to loosen the rigid structure of the French colonial school system that Niger had inherited at independence. Older students were granted access to primary school, and "second chance" schools were created for students who had failed exams and previously would have been excluded from the education system. The government also made a concentrated push at building schools in more communities and decentralizing school governance to local school boards.[74]

The quality of Niger's education system remains a serious concern. Even with the expansion of school enrollment over the past decade, the literacy rate remains significantly lower than the rate of primary school completion. As of 2010, more than 70 percent of the population lacks basic literacy skills. Available data for comparator countries show that in this dimension Niger is a severely negative outlier. In countries such as Malawi, Zambia and Tanzania, less than 30 percent of the population is illiterate.[75]

[72] World Development Indicators 2012
[73] UN Statistical Database, 2012
[74] Ministry of Education
[75] ISESCO / UNESCO

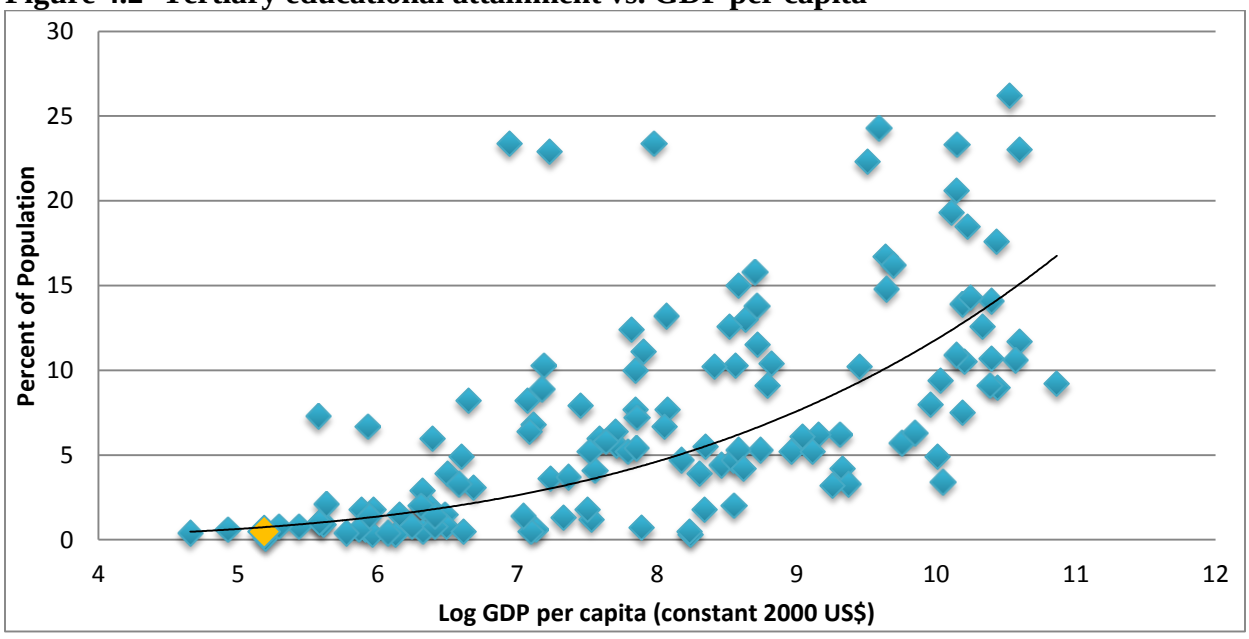
The low level of education in the country translates into a poorly skilled workforce. Over fifty percent of the labor force in Niger is without even a primary education, and this has not changed significantly in the last ten years. The proportion of workers over 15 years of age with some post-secondary education has remained extremely low, and is now only 0.4 percent.[76] This data reflects that the stock of human capital, in terms of worker skills, remains extremely low in Niger despite improvements to the educational system.

4.1.2. Is education a binding constraint to growth?

A general result from cross country analysis is the tendency for educational achievement to rise as countries become wealthier. Unfortunately, the causal relationships between education and wealth are harder to identify. The quality of the labor force in Niger, while exhibiting some encouraging signs in recent years, remains low in absolute terms. However, in order for the quality of the labor force, or human capital more broadly, to be classified as a binding constraint in Niger, one must demonstrate that this low supply is coupled with a high, unmet demand for competent, skilled labor. The analysis below shows that this is not the case, and therefore, education cannot be categorized as a binding constraint.

Figure 4.2 shows that the share of the population in Niger that has completed a tertiary education is low relative to its level of income.

Figure 4.2- Tertiary educational attainment vs. GDP per capita



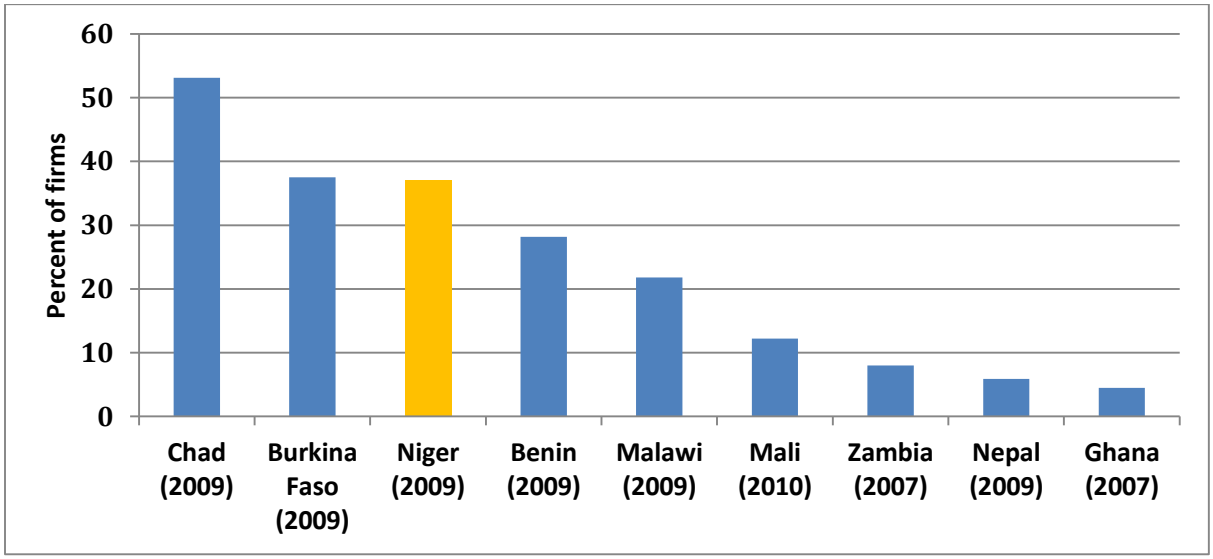
Source: World Bank World Development Indicators (GDP per capita) /Barro-Lee data (educational attainment). All data refer to 2010.

While low levels of education may indicate a significant constraint to growth, it may also be the case that the supply of education is low because the demand (and therefore the returns) to education are low. If an educated workforce is not demanded by firms in Niger, low levels of

[76] Barro-Lee Educational Attainment Dataset, 2010

educational achievement would be a natural effect of other constraints, rather than a constraint in and of itself. In such a case, increasing the supply of skilled workers would not lead to broad-based economic growth. Firm perceptions of the quality and applicability of the skills of the workforce are a proxy for the demand for skilled labor and are used to assess whether the human capital needs of an economy are being fulfilled. Figure 4.3 shows that 37.1 percent of Nigerien firms rank worker skills as a major constraint.

Figure 4.3 – Share of firms citing "Inadequately Educated Workforce" as a "Major Constraint"



Source: Enterprise Surveys

This finding is tempered by the fact that nine constraints are cited more frequently as a major constraint and that only four of the 150 formal sector firms surveyed as part of the 2009 Investment Climate Assessment listed "inadequately educated workforce" as their number one constraint to business operations.

Another measure of human capital, as a constraint, is the relative demand for human capital via wage premiums and employment opportunities. If education is a binding constraint to growth one would expect returns to education to be high and unemployment to be low for skilled workers as their skills are in high demand. Using the World Bank Living Standards Measurement Study (LSMS) 2012 surveys, we analyze employment by education level and returns to education via mincer regressions below.

The results in Table 4.1 show the expected increase in wages due to a change in the variable in question. For primary schooling, we see that for each year of primary schooling average wage is expected to increase by 3.5 percent. Returns to education are most dramatic for junior secondary schooling and tertiary schooling at 13.5 percent and 19.3 percent respectively[77]. This data implies that specialized skills, rather than a general education and literacy, are in the highest demand.

[77] Average returns to education, not separated by education level, are 7 percent per year.

Table 4.1 – Niger Returns to Education, 2012

	Coefficient	P-Value
Primary Schooling	3.50%	0.000
Junior Secondary Schooling	13.50%	0.000
Senior Secondary Schooling	3.20%	0.509
Tertiary Schooling	19.30%	0.000
Age	8.40%	0.000
AgeSq	0.00%	0.000
Unionized	42.90%	0.000
Urban	41.30%	0.000
Male	148.00%	0.000

Source: World Bank LSMS Surveys, 2012

Employment rates (formal or informal) increase slightly for the tertiary educated in the LSMS survey (Table 4.2), however as unemployment for tertiary educated is not in a range expected for full employment (5 percent – 10 percent), the employment rate does not indicate a constrained supply of skilled workers.

Table 4.2 – Employment by Education Level, 2012

Education Level	Employment Rate
Less Than Primary	73.38%
Primary Education	72.57%
Secondary Schooling	71.76%
Tertiary Schooling	80.68%

Source: World Bank LSMS Surveys, 2012

A third test, for which data is available, quantifies levels of imported skilled labor. The rationale for such a test is to determine whether employers in Niger are attempting to overcome a lack of skilled labor by importing foreign workers.

Table 4.3 lists domestic and foreign skilled workers in the formal private sector in Niger by skill category. The total number of skilled formal sector workers in Niger is small, and the data also indicate a high rate of foreigners employed as engineers and executives[78].

[78] The percentage of foreign employed as engineers and executives increased by over 35 percent between 2007 and 2010. While this could potentially be linked to increases in foreign investments in the extractive sector, the team was not able to correlate this increase to a single sector or driver within the Nigerien economy.

Table 4.3 – Skilled Domestic and Foreign Workers in Niger's Formal Private Sector, 2010

	Total	Expatriate	% Foreign
Specialized Workers[79]	7,498	196	2.6%
Qualified Workers	10,981	208	1.9%
Office Workers	25,737	122	0.5%
Supervisors	12,957	961	7.4%
Engineers and Executives	4,594	1,547	33.7%
Total Skilled Workers	**61,767**	**3,034**	**4.9%**

Source: Agence National pour la Promotion de l'Emploi (ANPE), MCA Niger calculations

If education was acting as a binding constraint to growth in Niger one would expect firms to circumvent this constraint by relying on skilled foreign workers. As can be seen in Figure 4.4 only 4.9 percent of the skilled workforce is foreign despite the relatively few barriers to labor mobility in the country. While foreign workers constitute one-third of engineers and executives in Niger, the total number of this category of workers at 6,141 is not high enough to act as a constraint to growth. This suggests that firms are not significantly constrained by the level of education in the workforce in Niger.

4.1.3. Conclusions on Education

Although human capital is quite low in Niger, it is sufficient for its income group and is also matched by low demand. Moreover, firms are not attempting to bypass the constraint through imported labor. Considering these two points together, human capital is not acting as a binding constraint to growth. Similarly, the relatively constant levels of unemployment, by education level, as well as the lack of significant complaints reported by firms suggest that demand for education is not outweighing current supply.

4.2. Health

The second dimension of human capital considers the physical ability of workers to perform their tasks. Disease tends to heavily burden those in developing countries and health crises can lead to an effective shortage of labor (even in countries with high levels of unemployment) and to the diversion of limited private savings from productive investment to health care costs. The precise impact of health on economic growth is uncertain with some economists noting the direct effects of diseases (TB, Malaria) generally only account for one percent to two percent of disposable income in developing countries while other economists such as Sachs and Malaney (2002) claim that estimate the loss in GDP at 10 percent when accounting for secondary effects.

For health to act as a binding constraint to growth, there must be evidence that the impact of health via missed work days and household funds diverted to pay for health expenses are a significant obstacle to human capital accumulation. The available data demonstrate that while Niger suffers

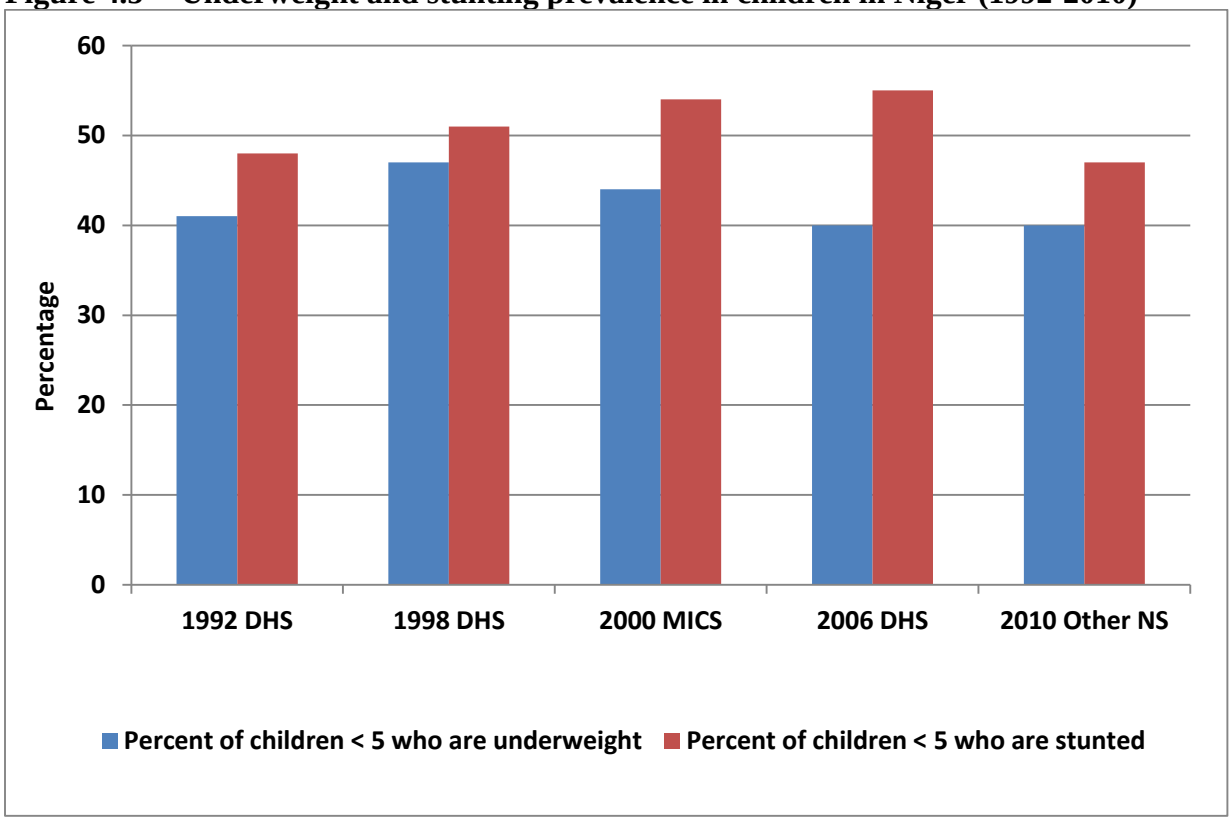
[79] The terms *Specialized Workers* and *Qualified Workers* have specific meanings in Nigerien public policy. They refer to skilled manual labor, and are defined in the Convention Collective of 1992 (the general agreement governing relations between the government and trade unions) as requiring differing levels of skills and experience. *Specialized Workers* are those with skills that require only an elementary technical training, and *Qualified Workers* are those who have a full understanding of their profession through deep theoretical and practical training.

from high rates of malnutrition and malarial and diarrheal diseases, the economic costs of health quality are relatively low in Niger as compared with countries at similar development levels. Malnutrition and disease prevalence may be affecting economic growth as a result of shortened life spans and decreased strength and productivity, but the data available do not demonstrate that this rises to the level of a binding constraint to broad-based economic growth.

4.2.1. Status and trends

The rate of child malnutrition, measured as the percentage of children under five that are underweight, is high and virtually no improvement has been made between 1992 and 2010 (see Figure 4.5). As a result, Niger is the worst performer among the comparison countries on this indicator (see Figure 4.6).

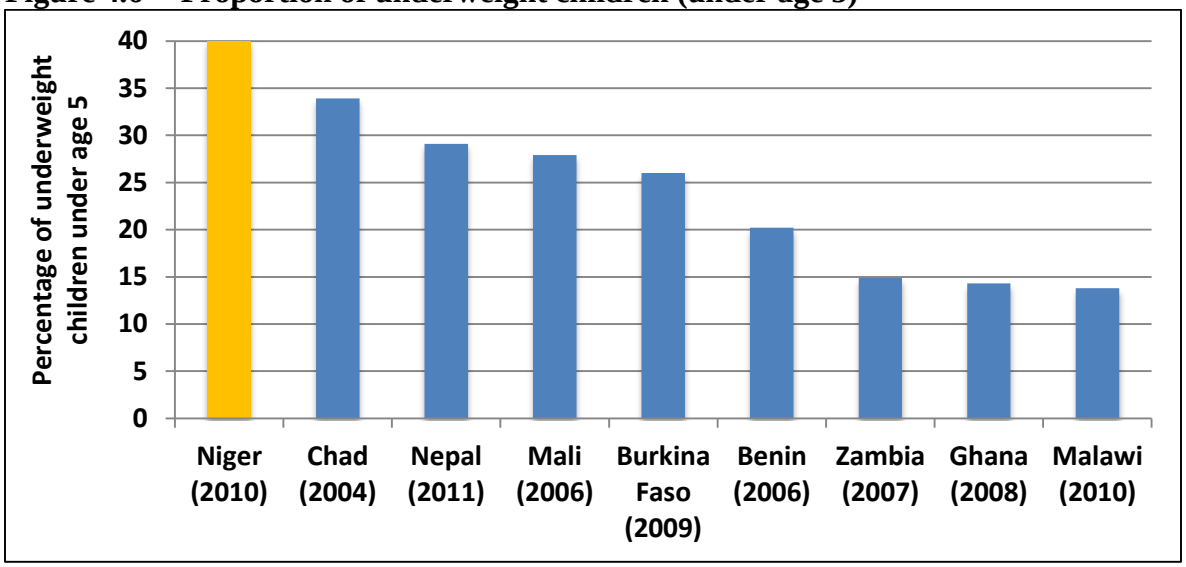
Figure 4.5 -- Underweight and stunting prevalence in children in Niger (1992-2010)[80]



Source: Countdown to 2015: Maternal, Newborn & Child Survival; WHO / UNICEF Joint Monitoring Programme (JMP) 2012

[80] Based on 2006 World Health Organization (WHO) reference population. This figure presents a mix of data obtained from demographic and health surveys (DHS), multiple indicator cluster surveys (MICS) and other national surveys (NS).

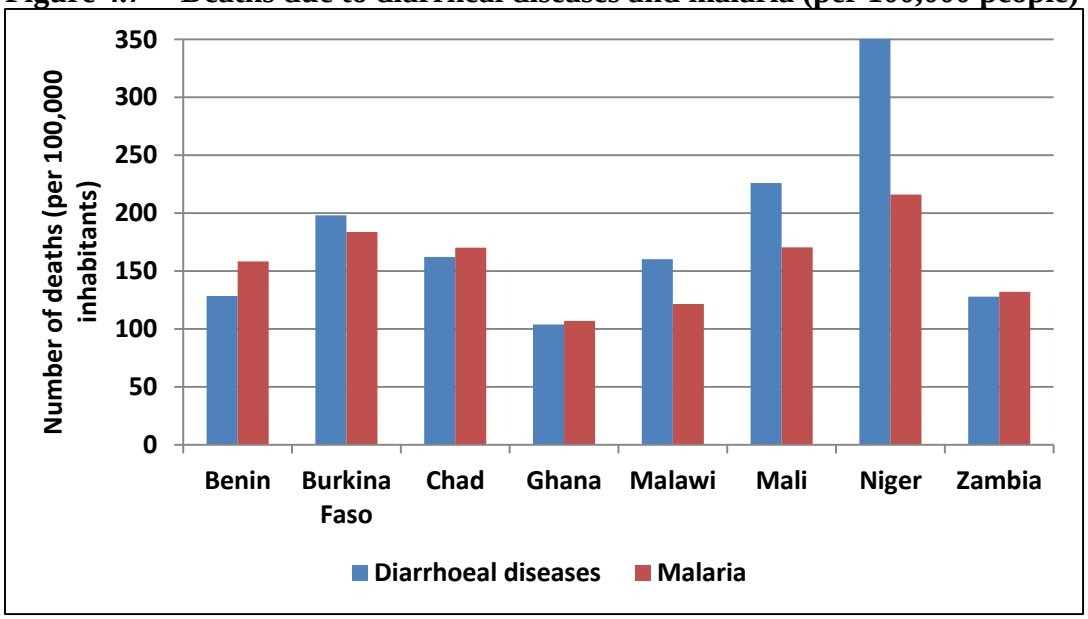
Figure 4.6 -- Proportion of underweight children (under age 5)



Source: WHO, Global Health Observatory

With regard to malaria and diarrheal diseases, the situation is equally poor. Niger's mortality rates from these two diseases are the highest among any of its comparators, and malaria and diarrhea are among the leading causes of death in the country (see Figure 4.7).[81] They have an especially high impact on the under-five population, with malaria and diarrheal disease causing close to 30 percent of the deaths of children under five in Niger in 2010.[82]

Figure 4.7 -- Deaths due to diarrheal diseases and malaria (per 100,000 people)

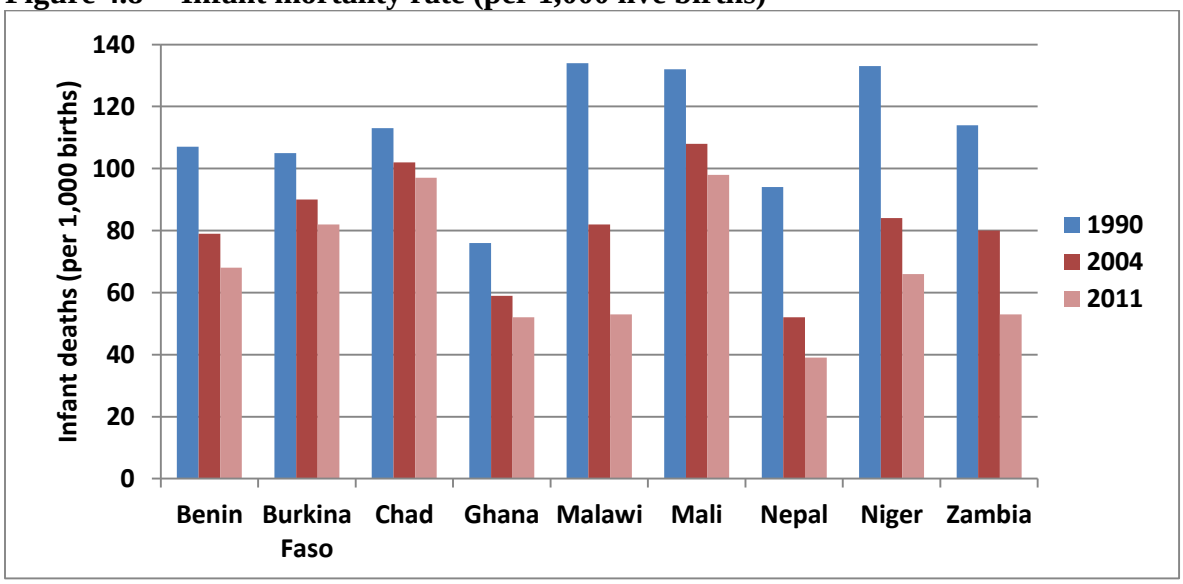


Source: World Health Organization, WHOSIS Database (2011)

[81] WHO, Health Compendium Consolidated Appeal Process, 2012 (pp18)
[82] WHO, "Niger: Health Profile," updated May 2012.

Niger has, however, made progress on several other health indicators. The infant mortality rate in Niger, while high, fell by approximately 50 percent between 1990 and 2011 (see Figure 4.8).[83] Between 1990 and 2010, the mortality rate for children under five decreased by over 60 percent.[84] However, this progress masks important inequities between urban and rural health. The 2006 DHS estimated the under-five mortality rate, measured by the number of deaths per 1,000 live births, at 229 for rural areas in Niger, as compared with 139 for urban areas.[85]

Figure 4.8 -- Infant mortality rate (per 1,000 live births)



Source: World Development Indicators

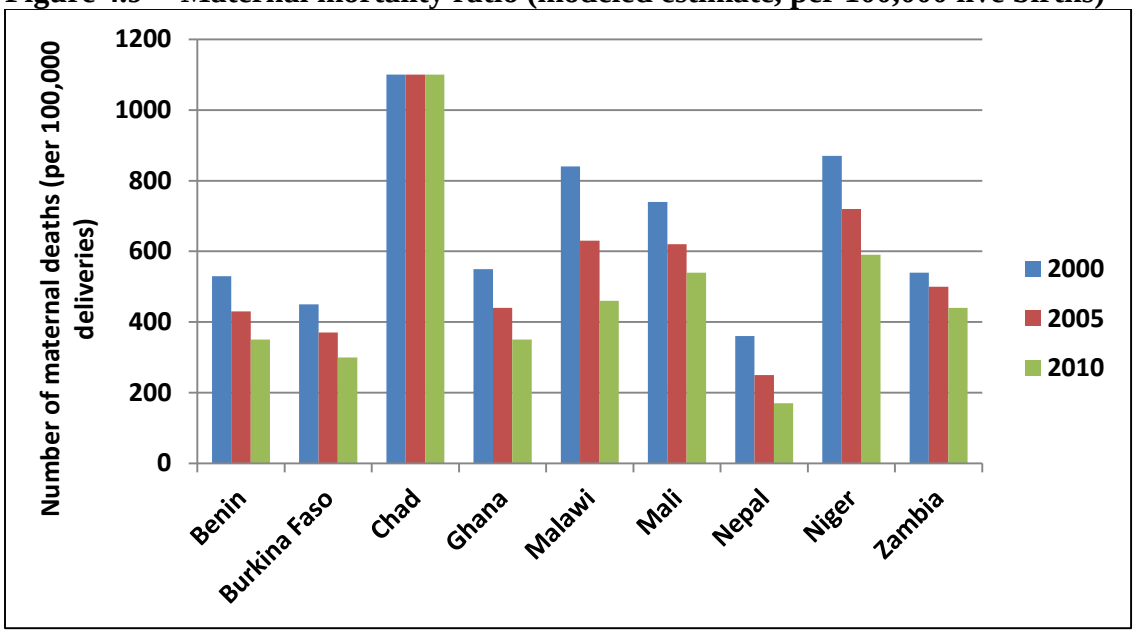
Maternal health in Niger is similarly improving, but remains a cause for concern (see Figure 4.9). The maternal mortality ratio decreased by 32.2 percent between 2000 and 2010. However, with the exception of Chad, Niger's maternal mortality rate remains the highest among the comparators. In addition, Niger's total fertility rate[86] of 7.16 is the highest in the world,[87] meaning that for a woman in Niger the lifetime risk of maternal death is 1 in 23.[88]

Under the guidance of the 2002 national health policy declaration, the Government of Niger developed and instituted a 2005-2010 health development plan that has seen tangible results. Between 2006 and 2010, Niger added 121 new health centers (an increase of 26.4 percent) and built more than 400 rural clinics. A new health development plan that covers the period from 2011

[83] AUC, UNECA, AfDB and UNDP, "MDG Report 2012: Assessing Progress in Africa towards the Millennium Development Goals,"
[84] Cornale, Guido, "Striking Success in Child Survival Fulfills Promise in Niger," *Huff Post Impact*, November 2012
[85] WHO, *World Health Statistics 2012*. Only preliminary statistics are currently available from the recently completed DHS; as such, updated statistics for the under-five mortality rate in urban and rural areas were not available at the time this report was published.
[86] The total fertility rate is measured by the average number of children born per woman.
[87] CIA, The World Factbook
[88] WHO, UNICEF, UNFPA, World Bank and UN Population Division Maternal Mortality Estimation Inter-Agency Group

through 2015 was recently adopted. These improvements in health services are part of a broader trend. Between 1990 and 2008, per capita health spending by the Nigerien government rose by approximately 72 percent, from 5.30 USD to 9.10 USD.[89] In 2010, health spending constituted 11 percent of total government expenditures.[90]

Figure 4.9 -- Maternal mortality ratio (modeled estimate, per 100,000 live births)



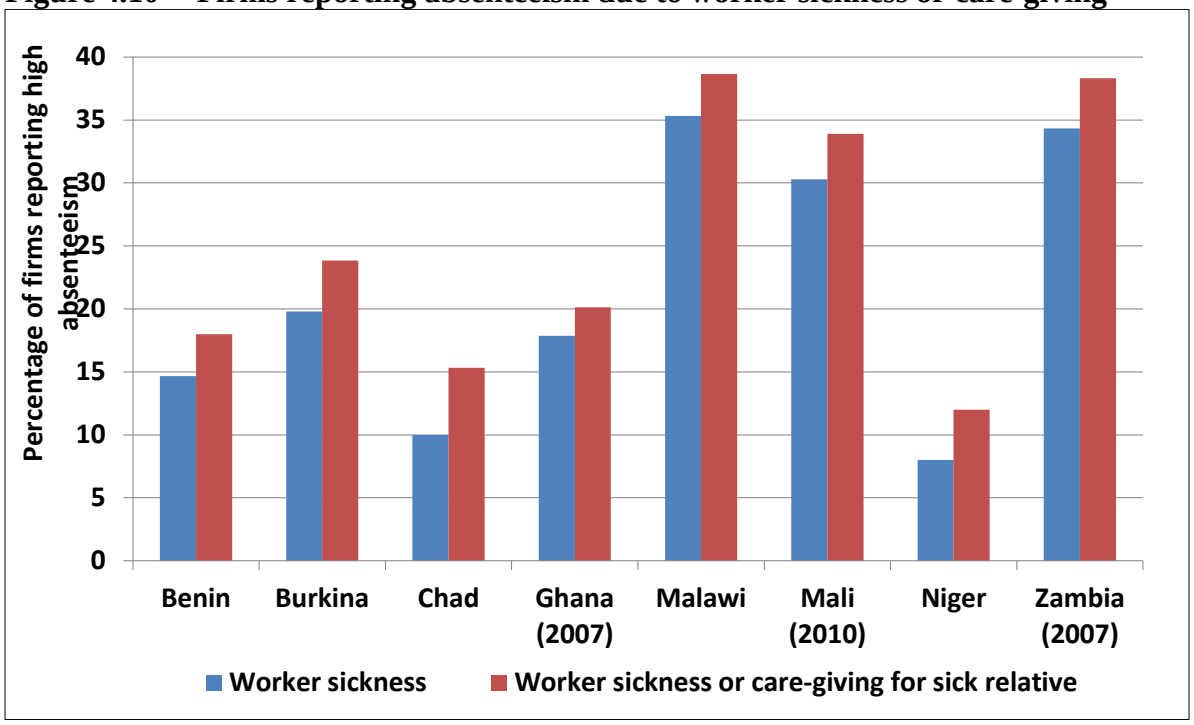
Source: World Development Indicators

4.2.2. Economic impact

Poor health quality can impact economic growth through direct health care costs, labor/school days missed due to sickness, and the impact of poor health on work quality.[91] A worker's health directly affects his or her ability to maintain and perform a job, and one would expect an economy that is constrained by poor levels of health to experience high levels of worker absenteeism. However, the rate of absenteeism reported by a survey of urban, formal sector firms in Niger in 2009 was lower than any of its comparators (see Figure 4.10). Further information on worker absenteeism for both rural and urban regions became available via the 2011 Demographic and Health Survey (DHS). This data, shown in Table 4.4 indicates that while worker absenteeism is slightly higher in rural areas, the difference is not significant with 0.7 days lost every 4 weeks in urban areas and 0.8 days lost every 4 weeks in rural areas.

[89] Cornale, "Striking Success in Child Survival Fulfills Promise in Niger"
[90] Countdown to 2015: Maternal, Newborn & Child Survival; WHO / UNICEF JMP 2012
[91] According to the World Sanitation Program (WSP), workers are, on average, incapacitated for two days for an incidence of diarrhea, five days for respiratory infections, four days for malaria, and two hours per day while a child is sick. (WSP. "Economic Impact of Poor Sanitation," March 2012)

Figure 4.10 -- Firms reporting absenteeism due to worker sickness or care-giving



Source: World Bank Enterprise Survey

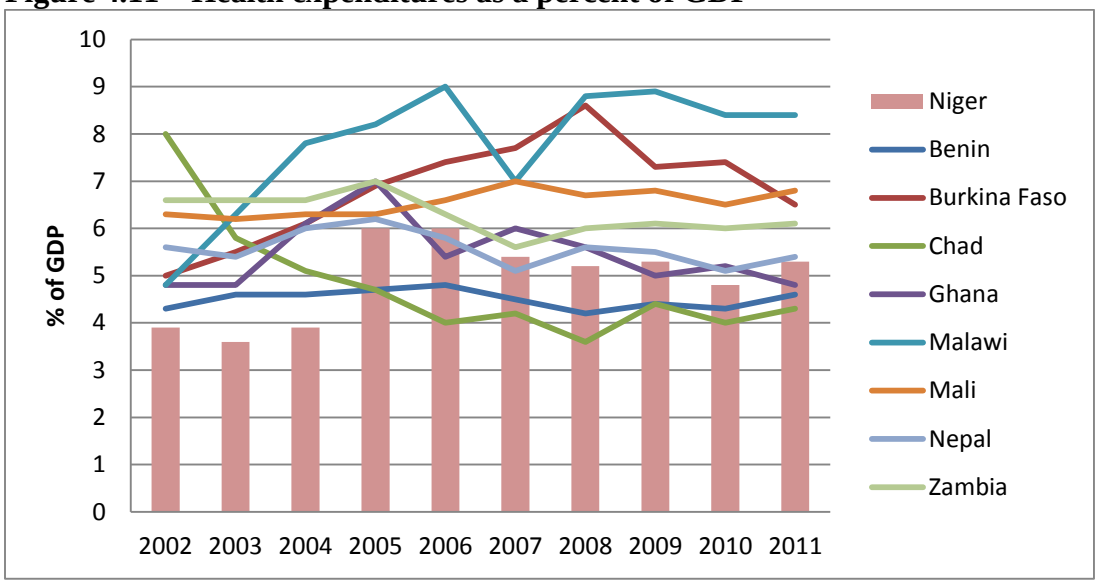
Table 4.4 – Lost days of work or school, last four weeks

	Total	Urban	Rural
None	86.46%	87.75%	85.64%
less than a week	9.80%	8.67%	10.51%
1-2 weeks	2.74%	2.67%	2.78%
2+ weeks	1.00%	0.91%	1.06%

Source: Demographic and Health Survey, 2011

The financial cost of caring for diseases in Niger (public and private expenditures) was 5.3 percent of GDP in 2011, which has increased from 3.9 percent in 2002. The current rate is largely in line with the average for comparator countries as can be seen in Figure 4.11, with Malawi, Mali, Burkina Faso, and Chad spending more per year on health. A low rate of health expenditures, while showing the financial cost is low, could be low because health is not a priority, thereby leading to a high disease prevalence and a significant negative impact on the labor force. While disease rates are high in Niger, the impact on worker and school absenteeism is relatively low.

Figure 4.11 – Health expenditures as a percent of GDP



Source: WHO statistical database

Poor health can also decrease worker lifespans and productivity beyond simple absenteeism as diseases/malnutrition can have long term negative impacts on an individual's strength, health, and immune system[92], however the macroeconomic impact of nutritional improvement on growth is less clear. As malnutrition and long-term disease impacts on worker quality are often correlated with high worker absenteeism it is unlikely this acts as a significant constraint to growth, but further data is needed to come to a definite conclusion.

4.3. Conclusions

Despite high rates of malnutrition and disease prevalence (particularly diarrhea and malaria), the economic costs of health quality, as shown by health expenditures and worker absenteeism, are relatively low in Niger when compared with countries at similar development levels. Malnutrition and disease prevalence may be impacting growth via shortened life spans and decreased productivity. However, the data available does not indicate that this is a significant constraint to investment and growth in Niger, and therefore, access to health services does not qualify as a binding constraint to economic growth.

[92] Alderman (2003) notes the positive impact of nutrition on cognitive ability and income.

5. INFRASTRUCTURE

The positive relationship between economic growth and the supply and quality of infrastructure has been clearly established in economic literature.[93] Infrastructure plays an important role in production processes by increasing the marginal product of inputs such as labor and physical capital. However, infrastructure is frequently plagued by significant market failures, especially in developing countries.[94] A low supply of infrastructure can negatively affect the profitability of investments, reducing the quantity and scope of viable economic activities in the country and limiting growth.

The low quality and limited supply of infrastructure is frequently cited as a significant obstacle to investment and economic growth in Niger.[95] While every sector of Niger's infrastructure faces serious challenges, the focus of this report is to determine whether any of these sectors satisfy the necessary criteria to be considered a binding constraint to growth.

This chapter examines the following sectors and systems: (i) transportation; (ii) drinking water and sanitation; (iii) access to water for agriculture and livestock; (iv) electricity; and (v) telecommunications.

Robust and compelling evidence supports the conclusion that poor access to water for agriculture and livestock is a binding constraint to economic growth in Niger. The analysis concludes that while the other four sectors examined are beset by a number of issues and the quality and quantity of the services provided are far from ideal, they do not meet the necessary criteria to qualify as binding constraints.

If steps are taken to loosen the current most binding constraints to growth in Niger, significantly increasing economic activity, then additional demands will be placed on the existing infrastructure systems in Niger. Thus, reforms and investments currently undertaken by the Government of Niger in collaboration with various donor organizations must continue in order to ensure the existing infrastructure sectors and systems in Niger are improved, expanded, and properly maintained.

5.1. Transportation

For a landlocked country such as Niger, the quality of its land-based transportation infrastructure assumes added importance. Poor quality transportation infrastructure can limit economic growth by increasing input and transaction costs, and limiting the markets to which firms can sell their output. This section examines roads, air transport, river transport and railways to determine if one or more of these subsectors constitute binding constraints to growth in Niger.

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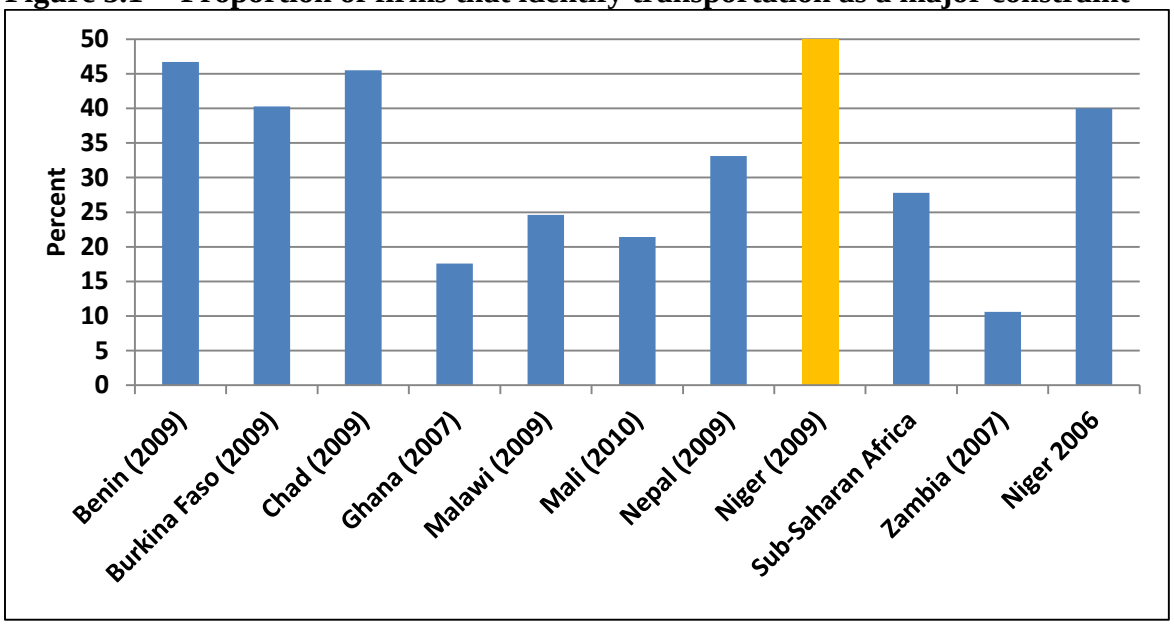
[93] World Bank, *World Development Report 1994: Infrastructure for Development*; Calderón, César and Luis Servén, "The Effects of Infrastructure Development on Growth and Income Distribution," Central Bank of Chile Working Paper No. 270, 2004

[94] OECD Conference, "Investment for Development," 2005

[95] World Bank, "Niger - Accelerating Growth and Achieving the Millennium Development Goals"; IMF, "Niger: Poverty Reduction Strategy Paper," Country Report No. 08/149, 2008; World Bank, "Niger's Infrastructure: A Continental Perspective," 2011.

Businesses in Niger consider transportation to be a constraint to their operations. In 2009, half of all firms identified transportation[96] as a "major" or "severe" constraint, more so than in any of Niger's comparator countries (see Figure 5.1). However, only 2.8 percent of firms cited transportation as the most severe constraint for businesses in Niger (see Figure 0.2).

Figure 5.1 -- Proportion of firms that identify transportation as a major constraint



Source: Enterprises Survey

5.1.1. Road transportation

In 2012, Niger had a total road network of 19,676 kilometers, nearly 40 percent of which consisted of unmanaged dirt tracks known as *pistes sommaires*.[97] Given Niger's size and the vast deserts covering its northeastern regions, the team examined the number of kilometers of road per square kilometer of arable land – as opposed to total land area – for Niger and the comparison countries. The results are presented in Figure 5.2.[98] Niger's road density is low and significantly below that of Mali and Chad, countries that share similarities with Niger in terms of both size and geography.

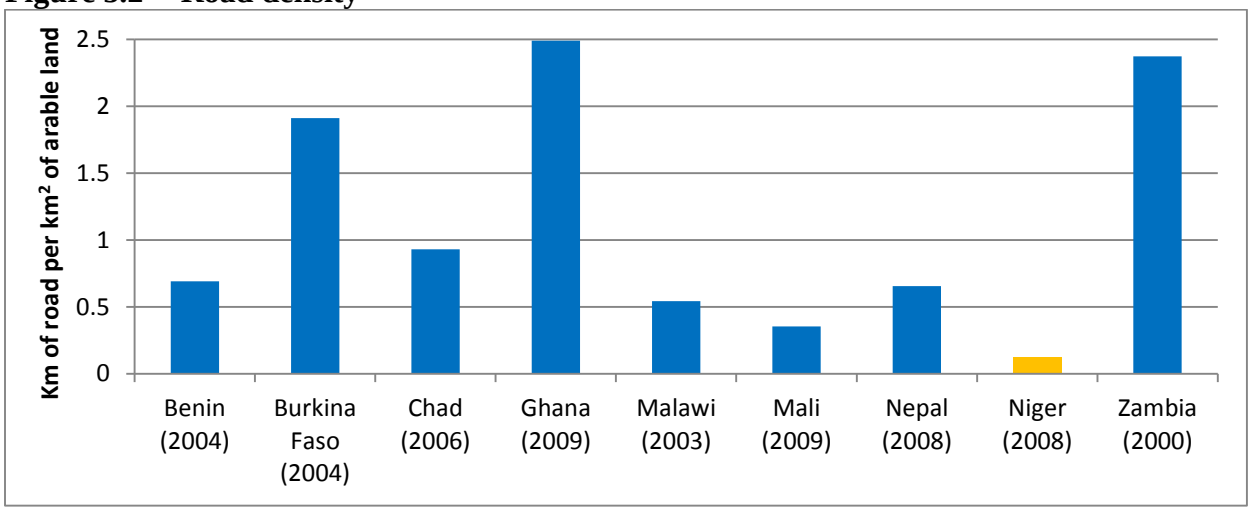
Niger's unpaved roads (*routes en terre)* are sub-divided into the following three categories:

- ***Pistes sommaires*** are informal roads that do not receive any government-level planning or management and are only required to be "more or less" permanent to be counted by as part of the road network.
- ***Routes en terres sommaires*** are planned by the government, receive some level of management, and follow the natural terrain, but do not benefit from installed drainage.

[96] In this context, transportation refers to the entire value chain required to transport goods. A firm's perception can be impacted by a variety of factors including the quality of the transportation infrastructure, the quality of and price charged by logistics and transport companies, and regulatory or policy barriers that limit the movement of goods or increase the cost of transport.
[97] Ministry of Works
[98] Data on the total road network for various comparators were available only sporadically, so not all data points in Figure 5.2 are from the same year.

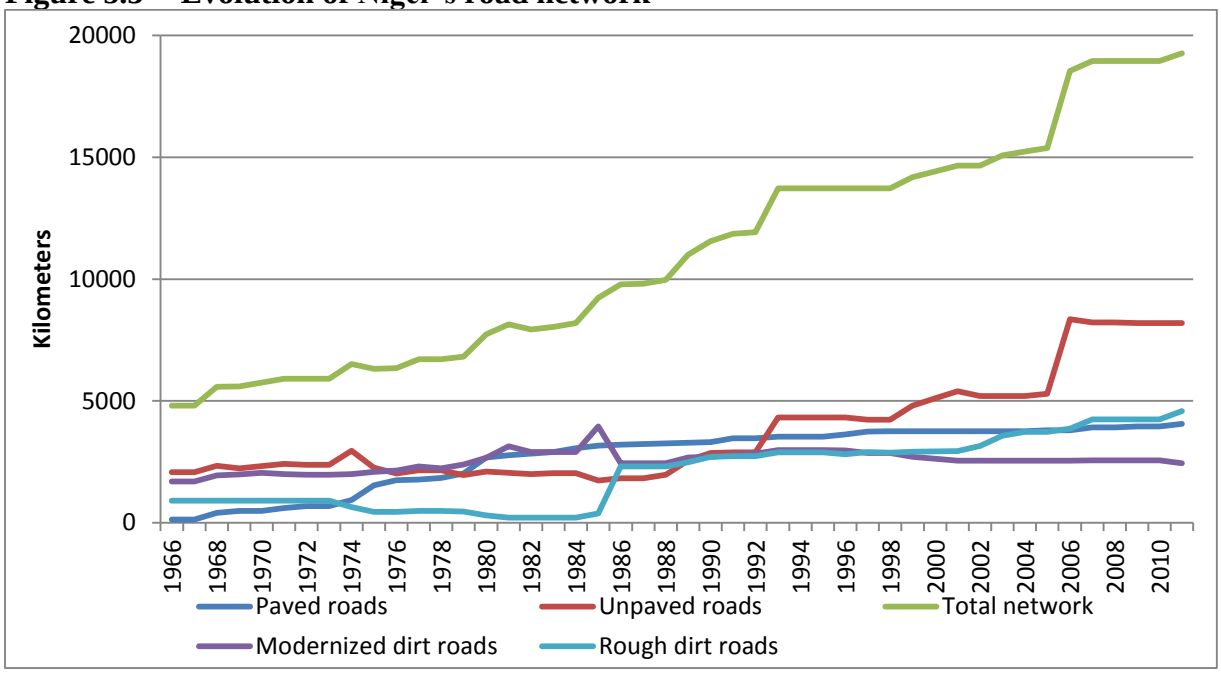
- ***Routes en terres modernes*** are well-managed dirt roads. They can be built on a raised platform and generally do not pass through stream beds.

Figure 5.2 -- Road density



Source: World Development Indicators

Figure 5.3 -- Evolution of Niger's road network

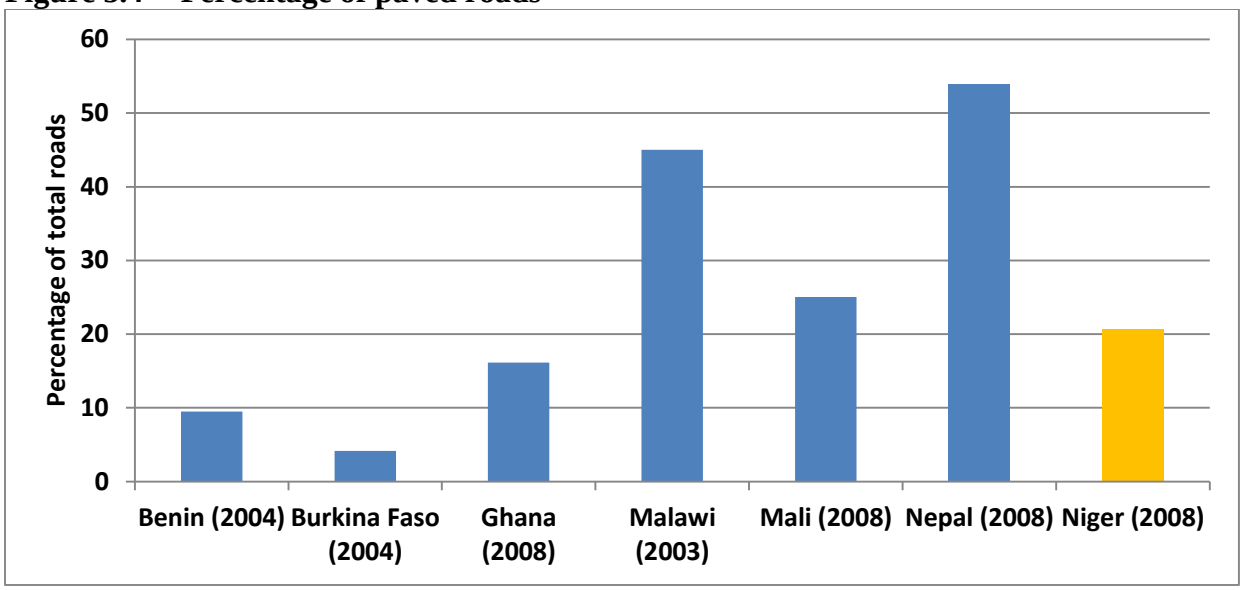


Source: Niger Ministry of Works

Despite its limited size, the road network in Niger has expanded significantly in recent years (see Figure 5.3). Since 2000, the government has endeavored to extend the road network, building 1,948 kilometers of *routes en terres sommaires*, with the goal of stimulating growth by connecting productive agricultural areas to markets. In addition, a 2006 census found that the network of *pistes sommaires* had increased by more than 5,000 kilometers, or 60 percent, in the space of four years.

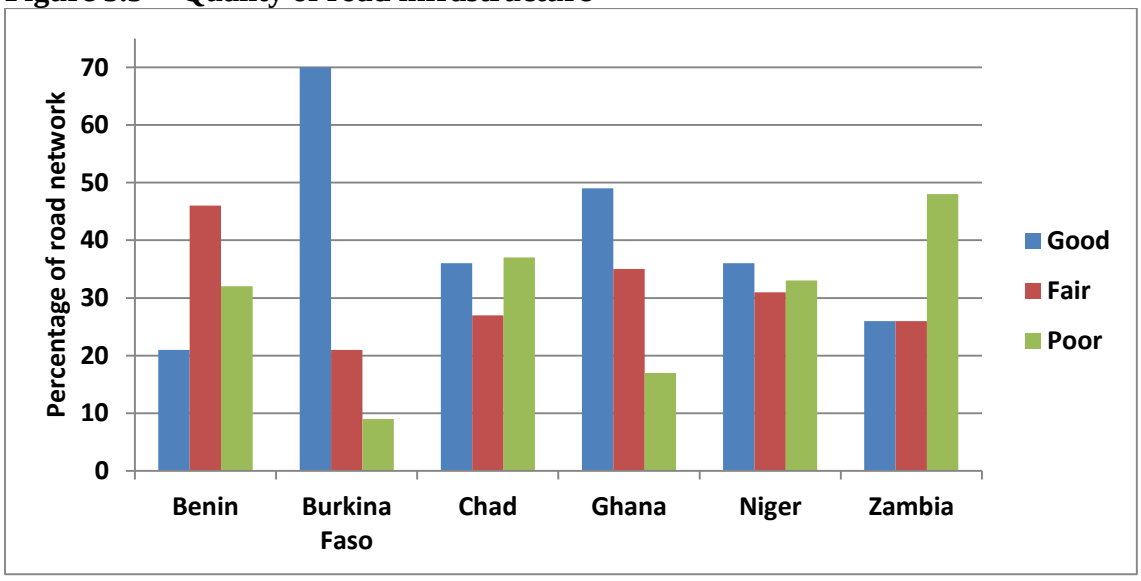
Given the significant expansion of unpaved roads in Niger since 2000, it is perhaps not surprising that only 21 percent of roads in Niger are paved (see Figure 5.4). This places Niger well below some of its comparators, but ahead of Ghana, Burkina Faso, and Benin.

Figure 5.4 -- Percentage of paved roads



Source: World Development Indicators

Figure 5.5 -- Quality of road infrastructure

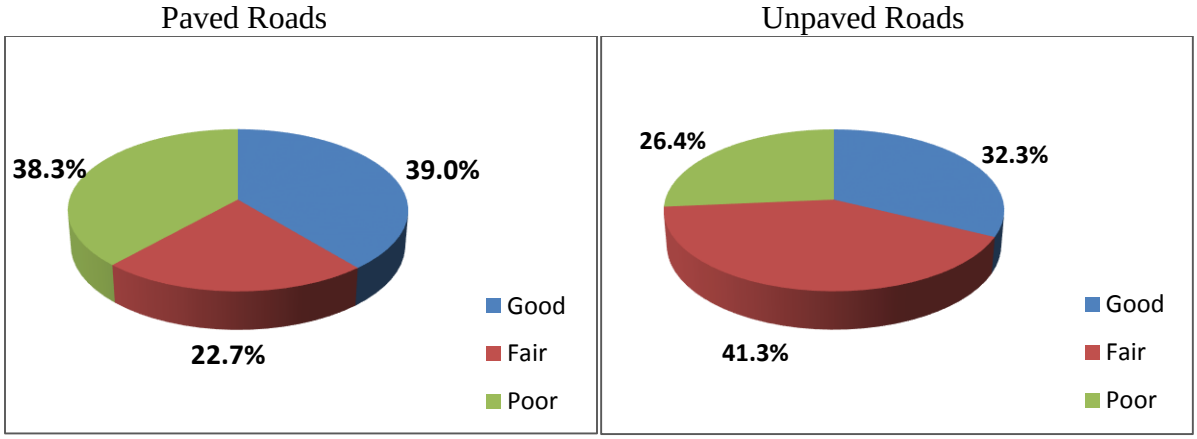


Source: African Development Indicators, 2008

In 2008, approximately 35 percent of roads in Niger were in good condition while slightly more than 30 percent were in poor condition. This placed Niger largely in line with the comparison countries (see Figure 5.5). A 2009 report by the Niger Ministry of Works examined the quality of Niger's roads by region. This report indicated that with the exception of the fairly remote regions of Agadez and Diffa, the significant majority of paved roads in Niger were in good or fair

condition.[99] More recent data indicate that nationally 77.3 percent of paved roads and 73.6 percent of unpaved roads are in good or fair condition (see Figure 5.6).[100]

Figure 5.6 – Condition of paved and unpaved road network in Niger in 2012



Source: Niger Ministry of Works

A key element in determining whether road transportation is a binding constraint to economic growth in Niger hinges on the presence – or lack thereof – of demand for roads. The last internationally benchmarked measure of road traffic in Niger was performed in 2008/09 using data provided by the Niger Ministry of Works, with the findings summarized in a 2011 World Bank report. Niger's unpaved road network averaged 31 vehicles per day, as compared to an average of 57 for low income countries and an average of 40 among the African comparator countries. For the classified paved road network, Niger recorded 387 vehicles per day, as compared to the low income country average of 1,131 and an average of 947 for the African comparison countries[101]. The World Bank argued that "traffic levels are extremely low, making it difficult to justify heavy road engineering."[102]

Within the past five years, Niger has periodically conducted vehicle traffic counts at locations around the country. However, the nature of this data, which does not account for elements such as seasonality, makes it difficult to discern trends and draw definitive conclusions. Niger's National Strategy for Transportation and Action Plan 2011-2025 acknowledges these shortcomings and outlines a plan to rectify them and to collect more reliable annual average daily traffic (AADT) counts in the future.[103]

The significant expansion of *pistes sommaires* between 2002 and 2006, the bulk of which were built by communes or villages, indicates that a certain level of demand for roads does indeed exist. In addition, the requests for rural roads lodged by communes with the Niger Ministry of Works underwent an exponential increase in 2011, but this increase in demand appears to be driven in

[99] Niger Ministry of Works, "L'Entretien Routier et sa Gestion - Niger 2009"
[100] Niger Ministry of Works
[101] The average traffic on paved road networks among comparators fell to 654 when the list was restricted to African landlocked countries (i.e. Burkina Faso, Chad, Malawi, Mali, and Zambia).
[102] "Niger's Infrastructure: A Continental Perspective," pp 14
[103] Niger Ministry of Works, "La Stratégie Nationale des Transports et Plans d'Action (2011-2025) au Niger, " June 2012

significant part by a change in government policy and greater awareness of the processes required to submit such requests. Reasons cited by the communes as the basis for their requests include reducing the isolation of rural villages and improving access to rural markets and social services such as schools and health centers.[104]

The World Bank report also found that Niger's roads were in relatively good condition as compared with those of its neighbors. On Niger's most important trade corridor connecting Niamey and Cotonou, the majority of the difficulties with respect to road quality was encountered along the portions of the road in northern Benin.[105] On the corridor with Cotonou, 77 percent of the Nigerien roads were in good condition. Along the Lomé-Niamey corridor (through Burkina Faso), 99 percent of the roads in Niger were in good condition. More recent data provided by the Niger Ministry of Works paints a somewhat different picture, with 50.3 percent of the Nigerien portion of the Niamey-Cotonou corridor classified as being in good condition and the remainder in poor condition (see Table 5.1).

Table 5.1-- Road quality by country along Niger's major transport corridors

Corridors	2008/2009				2011	
	Condition (%)				Condition (%)	
	Good	Fair	Poor		Good	Poor
Lomé-Niamey	**50.2**	**30.1**	**19.8**		**66.1**	**33.9**
Togo	51.7	0	48.3		47.6	52.4
Burkina Faso	35.4	38.9	25.8		90.1	9.9
Niger	99	1	0		100	0
Cotonou-Niamey	**49.5**	**7.9**	**42.6**		**73.8**	**26.2**
Benin	38.1	2.2	59.7		82.8	17.2
Niger	77.7	22.3	0		50.3	49.7

Source: The 2008/2009 data is from "Niger's Infrastructure: A Continental Perspective," p 13; the 2011 data was provided by the Ministry of Works

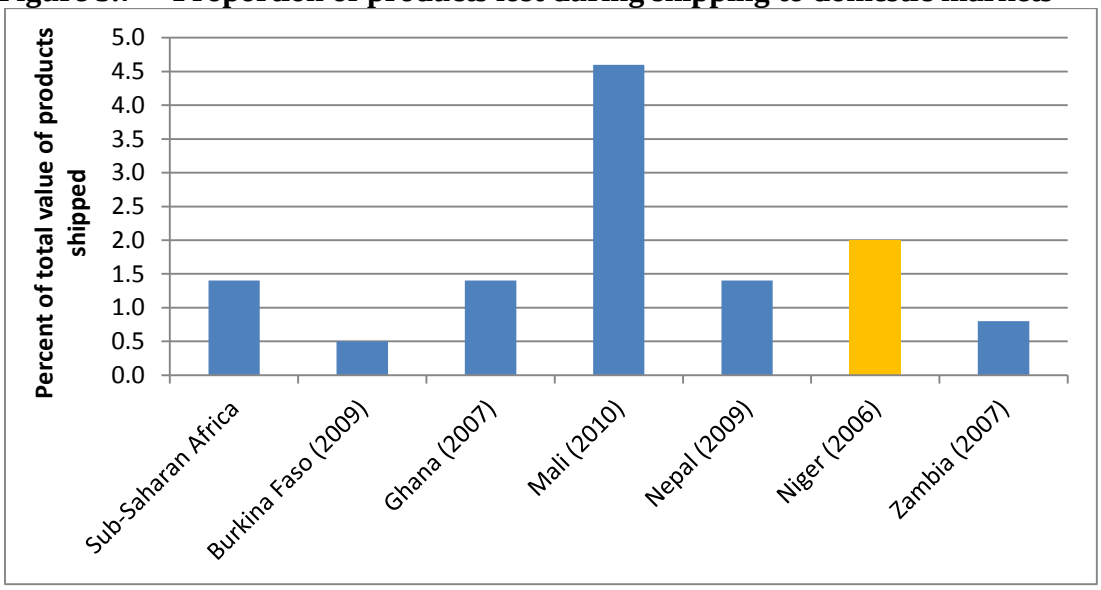
Assessing the potential impact of limited or poor quality road infrastructure on the price of goods is another means of determining whether road transport is a potential binding constraint but is difficult to ascertain in Niger due to old data and imperfect metrics.

As part of its assessment of the quality of a country's infrastructure, the Enterprise Survey asks firms to estimate the proportion of products lost due to breakage or spoilage during shipping to domestic markets. This can indeed indicate the effects of poor road quality. However, it can also be symptomatic of other transport issues that are not related to road quality, such as truck

[104] The number of kilometers of rural roads requested by communes increased from 38 kilometers in 2010 to 6,877 kilometers in 2011 before falling to 1,171 kilometers in 2012. (Niger Ministry of Works)
[105] "Niger's Infrastructure: A Continental Perspective," pp 12

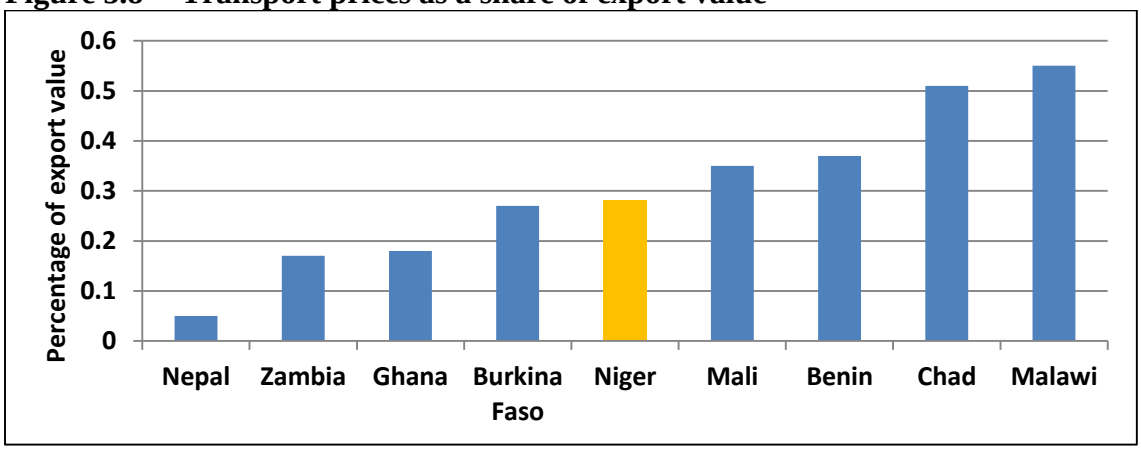
overloading or poor quality transportation services. Nigerien firms reported losses that were higher than most comparators, but low in absolute terms.

Figure 5.7 -- Proportion of products lost during shipping to domestic markets



Source: Enterprise Survey

Figure 5.8 -- Transport prices as a share of export value



Source: Data from Faye et al., 2004

The Transport Cost Index developed by Faye et al.[106] is another potential tool for analyzing the effect of inefficient transport infrastructure on export prices. On this indicator, Niger falls in the middle of the group of comparator countries, as illustrated by Figure 5.8 below. However, this is an imperfect indicator, as a variety of factors impact the cost of transporting goods for export, many of which are not linked to the quality of road infrastructure within Niger.

[106] Faye, M., J. MacArthur, J. Sachs, and T. Snow. "The Challenges Facing Landlocked Developing Countries." Journal of Human Development Vol 5, No. 1, March 2004.

In the absence of significant levels of vehicle traffic providing clear indication that a strong, unmet demand for roads exists in Niger, road transport infrastructure cannot be considered a binding constraint to growth in Niger at the present time.

5.1.2. Air transportation

Niger has three international airports,[107] three domestic airports, and several airfields and runways scattered throughout the main towns and the departments. However, the majority of air traffic passes through Diori Hamani International Airport in Niamey, which handles approximately 128,000 passengers each year (see Table 5.2).[108] The amount of freight handled by the Niamey airport has fluctuated significantly since 2000, but is generally less than 4,000 tons per year.[109]

In 2009, air transport volumes in Niger were low compared with other West African countries. The Niamey airport accounted for less than 1 percent of the total aircraft movements in the ASCENA zone[110], as compared with 15.5 percent and 10.2 percent, respectively, for the airports in Dakar, Senegal, and Libreville, Gabon. Similarly, the total number of passengers at the Niamey airport represented less than 1.5 percent of the total for the zone, whereas the airports at Dakar and Abidjan, Ivory Coast, registered 18.5 percent and 11.2 percent of the passenger total, respectively.

Table 5.2 -- Air traffic indicators for select cities in the ASECNA zone

Airports	Movements (number)	Passengers (number)	Freight (tons)
Abidjan	14,777	943,660	9,588.70
Bamako	11,668	500,732	6,281.90
Cotonou	9,308	370,575	6,238.60
Dakar	37,846	1,554,546	21,571.70
Libreville	24,876	662,512	20,097.00
Lomé	6,024	199,544	2,716.30
N'Djamena	4,624	132,415	5,828.10
Niamey	**2,083**	**128,726**	**3,430.20**
Nouakchott	3,996	215,742	2,911.70
Ouagadougou	5,997	334,140	6,751.10

Source: ASECNA, 2009

Limited demand exists in Niger for air transportation. Moreover, the most heavily used airport in Niger, the Diori Hamani International Airport in Niamey, does not appear to be capacity constrained. Thus, the data indicates that air transportation does not constitute a binding constraint to growth in Niger.

[107] In addition to the airport at Niamey, the other two international airports are the Zinder International Airport located 900 kilometers east of Niamey and the Mano Dayak Airport in Agadez, 960 kilometers northeast of Niamey.
[108] The estimated threshold for an international airport is approximately 500,000 passengers per year.
[109] Niger Ministry of Works, Statistics Department
[110] The Agency for Aviation Navigation Safety in Africa and Madagascar (L'Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar, ASECNA) manages air traffic in the following seventeen African countries: Benin, Burkina Faso, Cameroon, Central African Republic, Comoros, the Congo, Ivory Coast, Gabon, Guinea Bissau, Equatorial Guinea, Madagascar, Mali, Mauritania, Niger, Senegal, Chad, and Togo.

5.1.3. River transportation

The Niger River, which traverses the western portion of the country, passing through Niamey, provides limited potential for river transportation because some stretches are unnavigable, and others are not navigable year round.[111] As such, the potential to develop river transport in Niger is limited and is not judged to be a binding constraint to growth.

5.1.4. Rail transportation

Niger does not currently have a railroad system, but there are several plans in various stages of development. One plan, dubbed "AfricaRail," envisions connecting Niger to various existing railroads in other countries creating a regional rail network.[112] Another plan would include a rail link beginning in Arlit and passing through Agadez and Niamey before terminating in Cotonou.

While ensuring the provision of adequate and varied transportation services is an admirable goal, the absence of a railroad does not appear to be constraining the movement of goods in Niger and, thus, cannot be considered a binding constraint to growth.

5.2. Water

5.2.1. Improved water and sanitation

Improved water and sanitation affects economic growth by decreasing the time required to fetch clean water, improving worker attendance and productivity by lowering disease prevalence, and increasing overall economic growth by lowering mortality of infants and children as well as the current working population.

In Niger, access to an improved water source has increased significantly in the last ten years. Nationally, it increased from 22.3 percent in 1992 to 50 percent in 2008,[113] and in urban areas the rate of access is now close to 100 percent. However, the rate of access in rural areas is still very low and has remained relatively unchanged in recent decades, increasing from 31 percent in 1990 to slightly less than 40 percent in 2010, which is lower than all comparator countries (see Figure 5.9). This is more significant given that 80 percent of Niger's population is rural.[114]

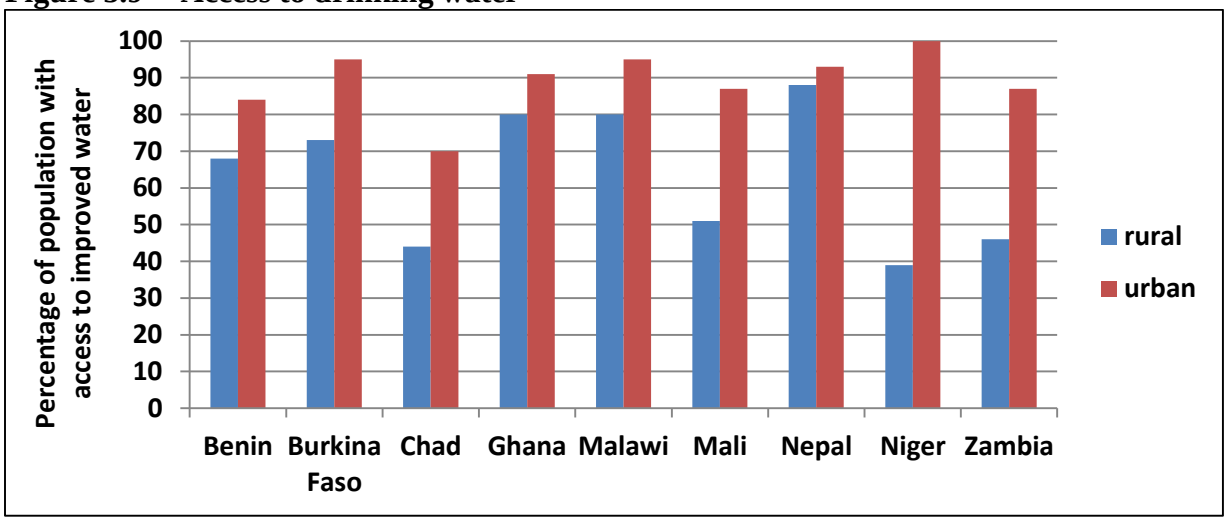
Table 5.3 -- Percent of population by type of drinking water source, 1990-2010

	TOTAL		URBAN		RURAL	
	1990	2010	1990	2010	1990	2010
Piped on Premises	3	8	21	39	0	2
Other Improved Water Source	32	41	36	61	31	37
Unimproved Water	62	49	42	0	66	58
Surface Water	3	2	1	0	3	3

Source: WHO / UNICEF Joint Monitoring Programme (JMP) 2012: Countdown to 2015: Maternal, Newborn & Child Survival

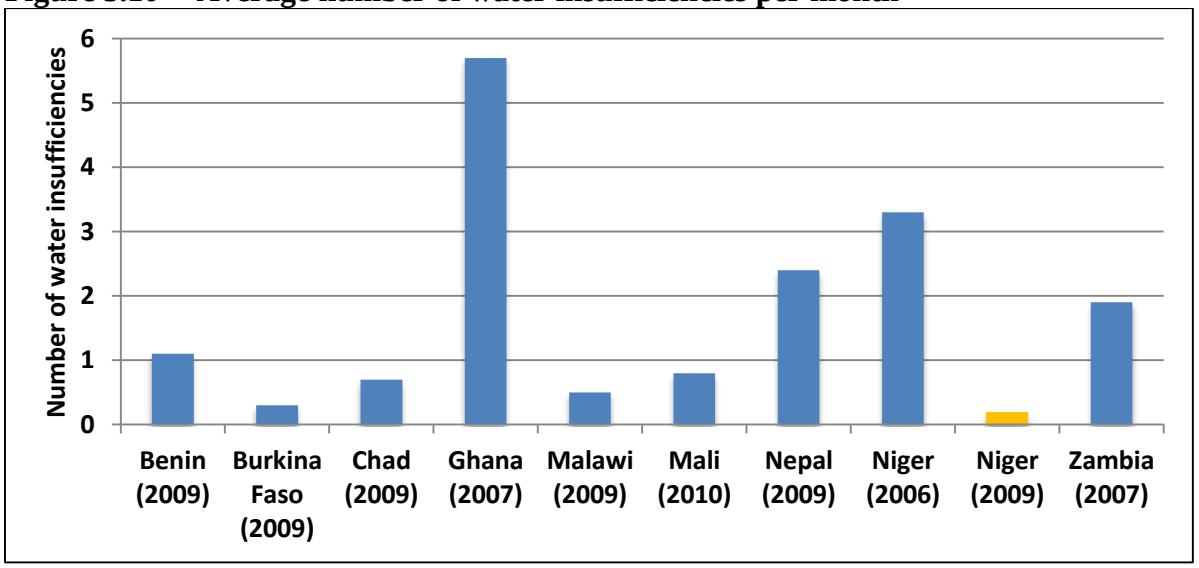
[111] The Niamey-Gaya stretch is only navigable from mid-December through March. (CIA World Factbook)
[112] "Niger: Modernizing Trade During a Mining Boom," World Bank DTIS, Dec. 2008, pp 58.
[113] United Nations, "The Millennium Development Goals Report 2012," June 2012
[114] International Development Association, World Bank, "Niger – Building Resilience to Vulnerabilities and Sustaining Reforms for an Inclusive Growth," May 2012 (http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:22911461~menuPK:64256345~pagePK:34370~piPK:34424~theSitePK:4607,00.html)

Figure 5.9 -- Access to drinking water



Source: World Development Indicators, 2010

Figure 5.10 -- Average number of water insufficiencies per month



Source: Enterprise Surveys

In urban areas, the proportion of the population served has changed significantly since the restructuring of the national water company, *Société Nigérienne d'Eaux*, in 2001. Following the restructuring, the management of the national water company improved, and between 2006 and 2009, the number of water outages reported by firms fell sharply. In 2009, the number of urban water outages was less than one-tenth of the Sub-Saharan African average, and very few Enterprise Survey respondents in Niger identified access to water as a major constraint.

Data is unavailable on the time spent gathering water for households, precluding an analysis of whether the time required to fetch improved water is impacting economic activities in rural Niger. While access to improved water services has increased, this is primarily due to increases in improved water sources coming from outside the home. Anecdotal evidence implies that the travel time to reach water is quite extensive, and that the trips are taken mostly by school-age children,

notably lowering attendance rates during the dry season.[115] In recent research by the World Bank, Nauges and Strand (2013) found that water gathering in Ghana was primarily undertaken by women and children and that reductions in the time it takes to reach an improved water source increase school attendance in the impacted regions.[116] As water is usually gathered by members of the household not participating in the labor force and labor demand does not exceed labor supply in Niger, it is unlikely that time spent gathering improved water significantly impacts growth. However, further information is needed to come to a definite conclusion.

While progress, though uneven, has been made in expanding access to drinking water, little progress has been made with regard to sanitation. The sewer network is underdeveloped in Niger relative to comparator countries, and 79 percent of the population practices open-air defecation, one of the highest levels on the African continent. Few Nigerien towns or cities have a sewage network, and where networks do exist, they are limited and maintenance is lacking[117].

Table 5.4 -- Percent of population by type of sanitation facility, 1990-2010[118]

	TOTAL		URBAN		RURAL	
	1990	2010	1990	2010	1990	2010
Improved Facilities	5	9	19	34	2	4
Shared Facilities	3	6	14	25	1	2
Unimproved Facilities	8	6	41	24	2	3
Open Defecation	84	79	26	20	95	91

Source: WHO / UNICEF JMP 2012; Countdown to 2015: Maternal, Newborn & Child Survival

Figure 5.11 shows that Niger has a lower than expected level of access to adequate sanitation given its level of per capita GDP. Niger is represented by the larger orange diamond at the bottom left.

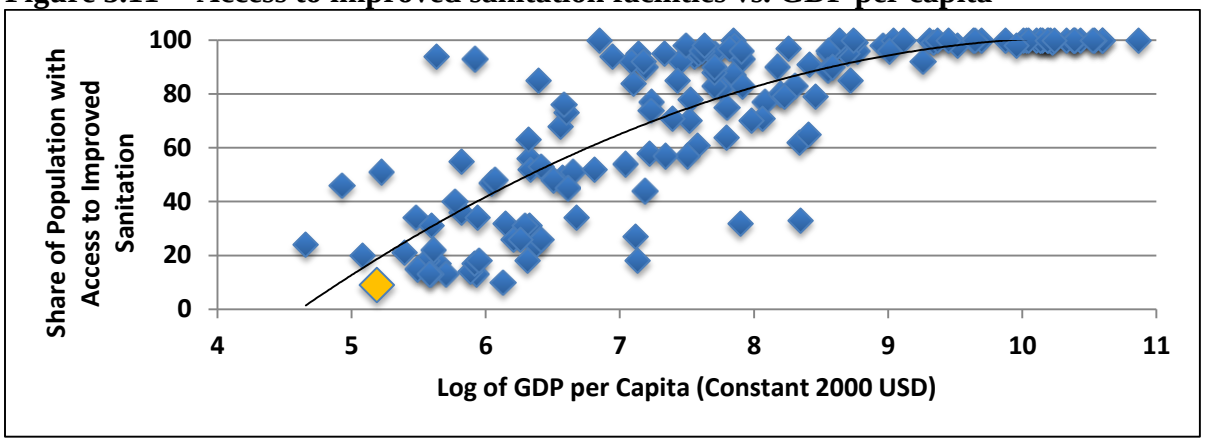
[115] Nossiter, Adam (2012), "Late for School after a Long Journey for a Drop to Drink," 2012

[116] It was found a reduction in travel time to water by 10 minutes improves school attendance by 2.4 percent.

[117] DHS report, 2010.

[118] The definitions referenced here were established to monitor the progress of countries towards the Millennium Development Goals (MDG). An improved sanitation facility is required to hygienically separate human excrement from human contact. Shared facilities are defined as improved sanitation facilities that are open to the public or shared by at least two households. Unimproved facilities include uncovered pit latrines and any toilet, latrine, or container that empties directly into open sewers, ditches, bodies of water or other open area. (MDG Indicators; WHO / UNICEF JMP for Water Supply and Sanitation)

Figure 5.11 -- Access to improved sanitation facilities vs. GDP per capita

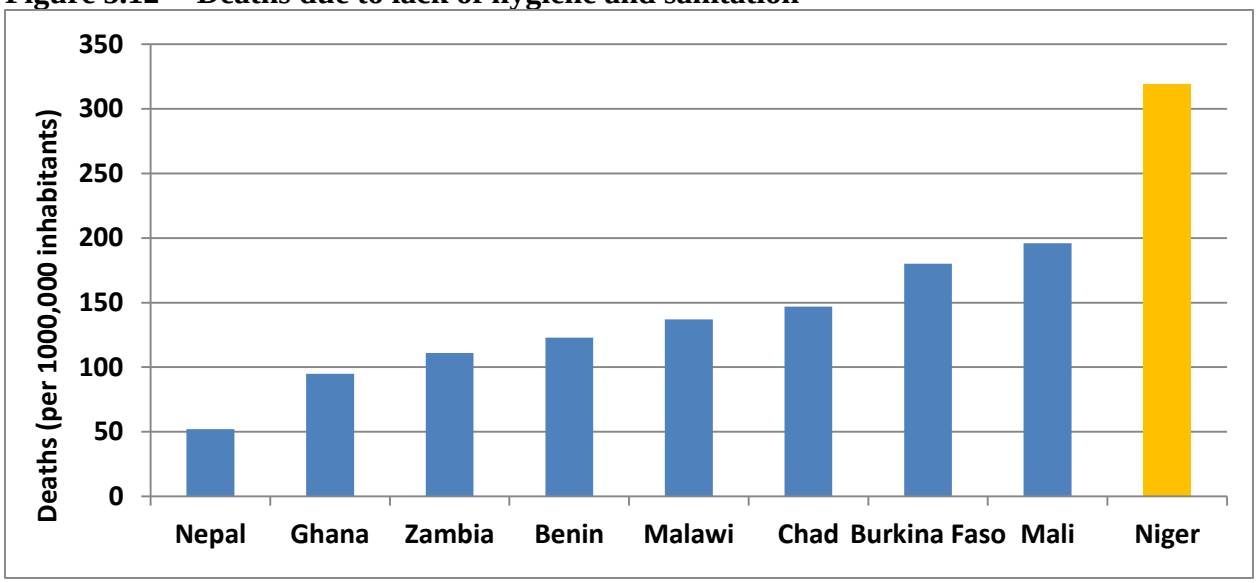


Source: World Development Indicators, data refer to 2010

The lack of access to clean drinking water in rural areas and the poor sanitation systems throughout the country directly translate into negative health outcomes. According to the WHO, in 2004, Niger had the highest number of illnesses due to lack of hygiene and sanitation of any country in the world with the exception of Sierra Leone (see Figure 5.12).

Moreover, between 1994 and 2012, Niger experienced cholera outbreaks every year except 1998 and 2009.[119] In 2010, there were 1,154 reported cases of cholera resulting in 66 deaths. In the first 11 months of 2011, there were 2,409 reported cases resulting in 60 deaths. Most recently, in 2012, there were 5,285 reported cases with 110 deaths.[120]

Figure 5.12 -- Deaths due to lack of hygiene and sanitation



Source: WHO, 2004

[119] Research using global datasets has shown that the incidence of cholera is generally underreported. (Ali, Mohammad, Anna Lena Lopez, et al. "The Global Burden of Cholera," Bulletin of the World Health Organization, 2012. Lanata, Claudio and Robert Black, "Improving Diarrhoea Estimates," World Health Organization; 2002.)
[120] WHO, "Cholera Country Profile: Niger," updated February 2013

The primary economic risks of poor access to improved water and lack of sewage services are the work days lost due to sickness, expenditures on health services, and reductions in lifespans and productivity due to illness. As discussed in the Human Capital chapter, while Niger fares poorly on many health indicators including those related to malaria and diarrheal diseases, the available data does not indicate that poor health outcomes have a significant impact on worker productivity in urban or rural regions. While improvement to water and sanitation would undoubtedly decrease mortality and increase health outcomes, access to improved water and sanitation do not satisfy the necessary criteria to be classified as binding constraints to growth at this time.

5.2.2. Access to water for agriculture and livestock

A second important aspect of water that merits examination is its use for agriculture, both for farming and herding. Adequate access to water maximizes agricultural productivity, while reliable access reduces the vulnerability of agricultural production to climatic hazards, preserving household savings in the event of exogenous shocks.

It is not the purpose or intent of the present document to discuss or propose policy responses to inadequate and unreliable water access. However, an overview of the various irrigation systems and the benefits associated with each, in addition to overall water use in Niger, is presented as part of the analysis as it relates to the shadow price of and demand for water for agriculture and livestock.

Overview of status and trends

As outlined in the chapter on Natural Capital, Niger's absolute capacity of agricultural land, arable land, and arable land per capita is the largest or among the largest of the comparator countries. According to the most current data available (2000-2002 for all the comparator countries), Niger practices water management on only 0.2 percent of land dedicated to agriculture.[121] Still, this low percentage is in line with the rest of the comparator countries' use of water for agriculture which, with the exception of Nepal, all fall between 0.2 percent and 1.1 percent. However, this statistic does not address whether Niger is failing to utilize water in agriculture to its full potential or whether Niger has poor access to water.

Niger's irrigation potential is limited relative to the total number of hectares of cultivated land. Previous estimates placed the number of hectares of irrigable land in Niger at approximately 270,000 hectares, 140,000 of which are concentrated in the Niger River valley. The rest of the country's irrigation potential comes primarily from the Komadougou River, seasonal rivers like the Goulbi and the Korama, dry river beds with accessible ground water (*dallols*) and the oasis basins of Manga and Air. Slightly less than 97,000 hectares, or 35.9 percent, of that area is under irrigation.[122] When looking at the latest available FAO data for Niger and the comparator countries

[121] This statistic is derived from land classified as "total agricultural water managed area," which the Food and Agriculture Organization (FAO) defines as the sum of total area equipped for irrigation and areas with other forms of agricultural water management (non-equipped flood recession cropping area and non-equipped cultivated wetlands and inland valley bottoms).

[122] *Note Synthese sur la Revue des Ameneagements Hydro Agricoles Au Niger*, République du Niger, Minestère de l'Agriculture et de l'Elevage, Direction Générale du Génie Rural – 15 March 2010.

(2000-2002), Niger is situated in the middle of the group in terms of the proportion of its developed irrigation potential.

However, an effort is underway to recalculate Niger's total irrigable land and preliminary indications are that the total number of hectares of irrigable land will increase to close to 600,000 hectares.[123] With this projected increase in the number of hectares of irrigable land, less than 14 percent of the 4.5 million hectares[124] currently under cultivation in Niger would be potentially irrigable and an estimated 16.1 percent of irrigable land in Niger would be under irrigation.

The number of hectares under irrigation could rise dramatically with the completion of the Kandadji Program, a multi-phase World Bank project that, in addition to the construction of a hydro-electric dam, will create a reservoir for drinking water and irrigation while making complementary investments in community economic development. The Program proposes to irrigate a total of 45,000 hectares in the Tillabéry region of the Niger River valley. However, the project appraisal does not indicate a completion date or identify the donors that will work with the GON to complete Phase III of the project, which includes the majority of the irrigation. Additionally, it will not be possible to expand the land under irrigation beyond the allocated 45,000 hectares since doing so would reduce the flow of the Niger River below the rate agreed upon by international treaty. Thus, under current conditions, the Kandadji Program will effectively exhaust Niger's allotment of water from the Niger River. [125]

Once completed, the land irrigated as part of the Kandadji Program will fall under the *Aménagements Hydro-Agricoles* (AHA), or medium-to-large systems of managed irrigation. Approximately 14 percent of irrigated land falls under AHA management. AHA schemes were initially publicly funded (with donor assistance) and publicly managed; management responsibility was moved to cooperatives in 1982 with the government retaining ownership of the land and equipment.[126]

In addition to AHA schemes, Niger also boasts a small number of medium-to-large scale irrigated commercial farms. These are a relatively recent addition to the Nigerien irrigation landscape and make up less than 1,000 hectares of irrigated land. The 2008 World Bank study of Niger's irrigation system noted that the potential to expand these commercial farms is limited by access to water and land tenure.[127]

Private irrigation is typically small and pump-driven, and currently accounts for approximately 16,000 hectares of irrigated land.[128] Increasing land under small private irrigation systems has been the focus of several World Bank projects. The most recent, the Private Irrigation Promotion Project (PIP2), was completed in December 2008. It supplied training and inexpensive pumps to farmers to access *dallols*. Located primarily in areas along the Nigerian border, the project also developed

[123] Conversation with World Bank representative in Niamey, Niger in July 2013
[124] FAO Aquastat
[125] *First Part of the Second Phase of the Niger Basin Water Resources Development Program Project*, World Bank, Project Appraisal Document, 31 Aug 2012.
[126] *Développement de l'Irrigation au Niger: Diagnostic et Options Stratégiques*, World Bank, Working Paper, May 2008.
[127] *Ibid*
[128] *Ibid*

a value-chain of artisans capable of manufacturing and repairing the pumps. PRODEX, a World Bank project designed to complement the investments made under PIP2, was approved in 2009 and has an anticipated end date of 2014. It will focus primarily on providing support services to farmers (training, access to credit, market facilitation, and technical assistance).[129]

More than half of Niger's irrigation comes from *Périmètres de Contre-Saison* (PCS) systems. These small plots (usually about one hectare in size) are used to grow crops during the dry season and are particularly important in years when the main rainy season harvest is poor. There are approximately 60,000 hectares under PCS irrigation management in Niger.[130]

In addition to these irrigation systems, approximately 12,000 hectares are "cultivated in flood recession cropping areas (non-equipped)," which are areas located along rivers that are cultivated after the water recedes. A further 300,000 acres have access to water through *Collecte des Eaux de Ruissellement*, which are essentially pits that are dug to collect rainwater. The FAO claims that these areas have increased agricultural productivity by 50 percent over undeveloped land.[131] However, this approach to water management is difficult to replicate, with disputes over administration, ownership, and management of resources limiting its sustainability.[132]

Table 5.5 – Summary of agricultural water use in Niger

Category of management	Managed area (ha)	Exploited area (ha)
AHA (ONAHA)	13,850*	12,735*
Commercial irrigation	<1,000	<1,000
Private irrigation	16,150*	16,150*
PCS	70,000*	60,000*
Flood recession cropping area, non-equipped	12,000	10,000
Total agricultural water-managed area**	**112,000**	**98,885**
Collection of runoff water	300,000	300,000

*Estimates based on 2005 *Stratégie nationale du développement de l'irrigation*
** Excludes commercial irrigation

Source: Développement de l'Irrigation au Niger: Diagnostic et Options Stratégiques, World Bank, 2008.

Is poor access to water for agriculture and livestock a binding constraint to growth?

The analysis of whether or not access to water is a binding constraint to growth in Niger begins with an effort to determine the shadow price of access to water. Since there is no available data on

[129] *Niger Agro-Pastoral Export and Market Development Project*, World Bank website (http://www.worldbank.org/projects/P095210/niger-agro-pastoral-export-market-development-project?lang=en) and *Agro-Pastoral Export and Market Development Project (PRODEX) in Niger*, World Bank website (http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTAFRREGTOPGENDER/0,,contentMDK:22624717~pagePK:34004173~piPK:34003707~theSitePK:502360,00.html)

[130] *Note Synthèse sur la Revue des Aménagements Hydro Agricoles Au Niger*, République du Niger, Ministère de l'Agriculture et de l'Elevage, Direction Générale du Génie Rural - 15 March 2010

[131] *Niger*, FAO AQUASTAT, Country Profile, 2005.

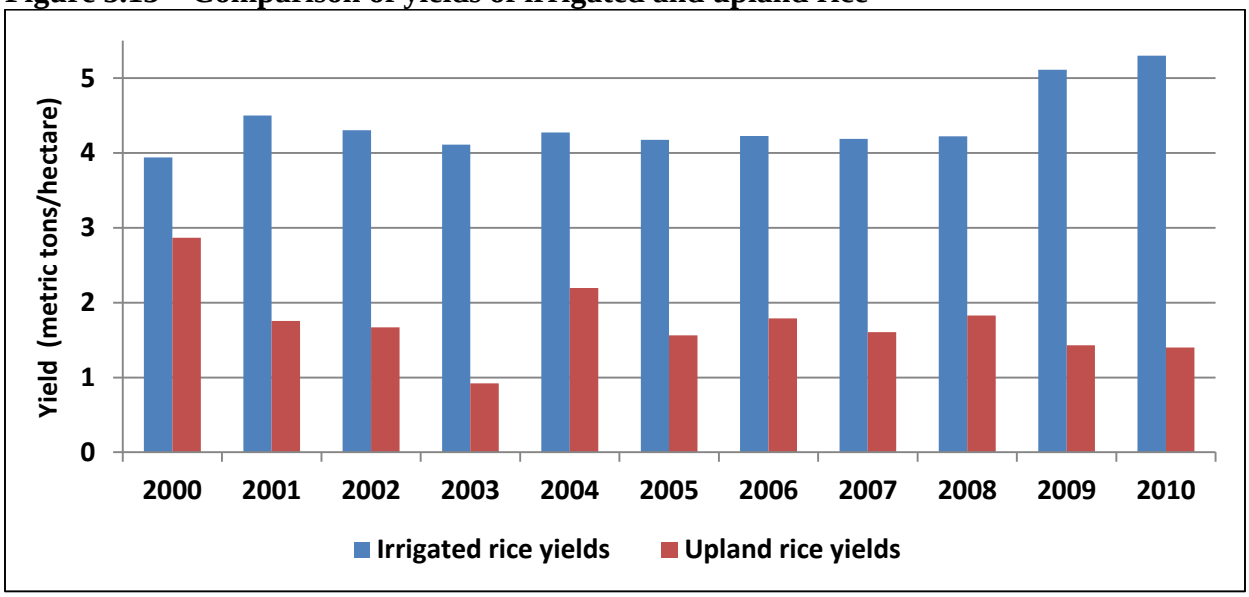
[132] *Développement de l'Irrigation au Niger: Diagnostic et Options Stratégiques*, World Bank, Working Paper, May 2008.

water markets in Niger, irrigation is used as a proxy. The shadow price refers to the cost to the economy of not having reliable and sufficient access to water for agriculture and livestock, and is therefore approximated by the marginal benefit of irrigation. We also examine the losses imposed on the economy due to agricultural losses during the 2004 drought and losses in the livestock sub-sector resulting from the 2009 drought. The data, as presented below, suggests that the shadow price of water for agriculture and livestock is quite high.

The best available data on improvement of crop yields is drawn from rice production in Niger. Rice is farmed in the Niger River valley both in areas that are irrigated and in rain-fed zones. The yield in terms of kilograms per hectare in the irrigated areas is more than four times that of rain-fed areas.

While crop yields rise with irrigation, so do production costs, but to a lesser degree, resulting in higher profit margins for irrigated agriculture than for rain-fed agriculture. A 2010 FAO study of rice production in Niger found that one hectare of controlled water infrastructure as part of private modern system offers a value addition of over 536,000 FCFA (1,072 USD) with profits per hectare equal to 367,582 FCFA (735 USD). One hectare of small private rice production using traditional cultivation methods creates around 300,000 FCFA (600 USD) of value added with profits ranging from 121,299 FCFA (243 USD) to 310,235 FCFA (620 USD).[133] Thus, the value added per hectare for rice production improves by over 75 percent when water management infrastructure is used.

Figure 5.13 – Comparison of yields of irrigated and upland rice



Source: Ministry of Agriculture, 2011

[133] Sido, Y. Amir. "*Etat des lieux de la Riziculture: Cas du Niger.*" FAO, 2010. p 14.

The PIP2 project provides evidence of high returns to irrigation in Niger for multiple crops. PIP2 brought over 5,000 hectares under irrigation and consolidated an additional 10,000 hectares into irrigation. An evaluation of the project indicates that yields in treated areas increased substantially. In particular, onions, Niger's fifth largest export,[134] experienced yield increases from 26 tons per hectare to 41 tons per hectare (see Table 5.6).

Table 5.6 – Crop yields before and after PIP2

Crop	Reference yield	Yield 2005/06	Yield 2006/07	Yield 2007/08	Variation from reference
Onion	26.0	40.8	37.7	40.9	57%
Pepper	11.4	19.4	14.5	18.4	62%
Tomato	20.0	24.9	27.6	31.9	59%
Rice	2.4	2.9	3.6	3.7	55%
Cabbage	11.8	29.1	33.8	36.7	211%
Carrot	20.0	29.4	30.5	30.5	52%
Potato	15.8	13.9	21.2	26.7	70%
Sweet potato	17.2	25.0	23.9	28.7	67%

Source: PIP2 completion report, 2009

The shadow price of unreliable water access can also be approximated by the losses incurred by the economy as a result of water shortages. As highlighted by the World Bank, the 2004 drought[135] "led to about a one percent drop in real GDP growth, and a 4 percent decline in per capita GDP, reflecting a decline of more than 13 percent in agricultural production."[136]

Table 5.7 below details the losses suffered by the livestock sub-sector due to the 2009 drought, which resulted in the direct loss of 2.7 million head of livestock from starvation. It also contributed to the indirect loss of an additional 357,000 animals and forced the sale under distress of 1.48 million animals. The total capital losses attributable to the drought were estimated at 805 million USD.

[134] *Niger*, UN Comtrade, 2009-2011
[135] The 2004 drought was compounded by a locust infestation.
[136] World Bank. "Niger - Accelerating Growth and Achieving the Millennium Development Goals : Diagnosis and the Policy Agenda," Report No. 41408-NE, September 2007, pp. vii

Table 5.7 – Loss of livestock in 2010 as a result of the 2009 drought

	Direct losses (Deaths by Starvation)	Indirect losses (Due to diseases, lost animals and other causes)	Animals sold at distressed prices	Losses (deaths) due to 2010 floods.	Value of livestock capital lost in the crisis (billion FCFA/million USD)
Cattle	739,725	93,525	441,825	65,716	243.07
Sheep	1,021,070	124,908	464,899	216,109	75.948
Goats	901,048	113,351	443192	49,493	38.509
Camels	35,534	14,250	77,208	752	54.82
Donkeys	23,330	11,076	55,590	11,266	4.662
Horses	4,720	337	2,486	(a)	0.943
Total	**2,725,427**	**357,447**	**1,485,200**	**343,336**	**417.952**
Total Livestock (in area studied)	20,178,422	20,178,422	20,178,422	20,178,422	NA
Percentage of Total Livestock	13.51	1.77	7.36	1.70	NA
Total (million USD)					**865.76**
Total corrected for flood losses (million USD)					805.24

Source: Salla et al. (2011). Section 6.3
Notes: (a) Included in donkeys.

The increases in production and value added resulting from improved access to water and the economic losses incurred as a result of droughts both suggest that the shadow price for water for agriculture and livestock is high. The strong relationship between access to water for the agricultural sector – including the livestock sub-sector – and economic output in Niger has been established by numerous reports, as presented in the Overview chapter. Thus, access to water satisfies two of the four tests

Evidence suggests that the third test – producers are incurring costs or risks to circumvent the constraint and obtain access to water – is also satisfied. Exchanges with industry experts and a review of technical reports indicate that smallholder farmers are developing irrigation zones without the assistance of the government. As of 2008, there were 4,558 private irrigation sites in the country and reports from the Ministry of Agriculture suggest that this number is increasing despite the capital investments required. Farmers working on these sites faced average annual payments of 111,717 FCFA (220 USD) on the capital required to build private irrigation infrastructure.[137]

The PIP2 project provides additional evidence of producers circumventing the constraint. Discussions with the project implementation team revealed that farmers that participated in PIP2 went on to purchase additional pumps in order to expand their land under irrigation.

[137] In comparison, farmers that benefit from large-scale irrigation schemes managed by the Government of Niger faced annual payments of 187 USD.

Ideally, the fourth test would allow us to assess whether economic actors within the agricultural sector whose activities require less water are thriving as compared with their counterparts whose activities are relatively water intensive. One potential means of completing this test would be to evaluate the crop choices of farmers to determine whether there has been a movement to more drought resistant crop varietals. Similarly, the composition of livestock herds in Niger could be evaluated to determine whether herders have shifted towards animals that require less water. Data on crop type, cropping intensity, and breeds of livestock exists for Niger and tends to indicate an increase in the crops and livestock that are more drought resistant. However, there are a myriad of potential reasons for these shifts, and in the absence of data explaining the reasoning of farmers and herders, no definitive conclusions can be drawn.

Conclusion

Robust and compelling evidence supports the conclusion that poor access to water for agriculture and livestock is a binding constraint to growth in Niger. The analysis presented in this section indicates that the shadow price of agricultural water is high and that there is significant unmet demand for water in the agriculture and livestock sectors. As presented in the Overview chapter, Niger's GDP is closely linked to its agricultural output, which in turn is strongly influenced by climatic conditions. This relationship between unreliable and insufficient access to water and economic growth satisfies the second of the four tests proposed by Hausmann, Klinger, and Wagner to evaluate whether a binding constraint exists within a particular sector. Evidence suggests that farmers are attempting to circumvent the lack of access to water by expanding their use of private irrigation systems despite the high costs incurred. While data and interviews indicate that farmers and herders are shifting to crops and livestock that are better suited to drought conditions, the data available was not sufficient to complete the fourth test.

5.3. Electricity

Firms in Niger complain about electricity and their perception of the situation seem to be getting worse. In 2009, more than 60 percent of firms surveyed listed electricity access as a major or severe constraint to their operations, compared to only 21 percent in 2006.[138] However, in Niger most economic assets are scarce, and when asked to identify the most severe constraint to growth, firms cited five other issues more frequently than they cited electricity (see Figure 0.2). Although there are frequent outages and only a relatively small portion of households and firms are able to access grid electricity, the analysis shows the shadow price of electricity to be low, and the relative unresponsiveness of firms' demand to changes in supply suggests that electricity is not a binding constraint to growth in Niger.

Overview and background

Electricity in Niger is provided by the state-owned electric utility NIGELEC, which was formed in 1968 after the break-up of SAFELEC, the pan-West African power company that was a vestige of the French colonial administration. Despite several attempts to privatize NIGELEC between

[138] Enterprise Surveys

1996 and 2003, the company remains 96 percent state-owned. The price of 15.7 cents[139,140] per kilowatt-hour (kWh) for general home and business use is in the low-to-mid range for African countries. Niger purchases two-thirds of its electricity from Nigeria at a subsidized rate. Electricity from Nigeria, made available under a series of complex agreements dating back to 1977, costs NIGELEC only three cents per kWh. Producing electricity in Niger is extremely expensive, with diesel generation costing around 30 cents per kWh and coal generation costing 12 cents per kWh.[141]

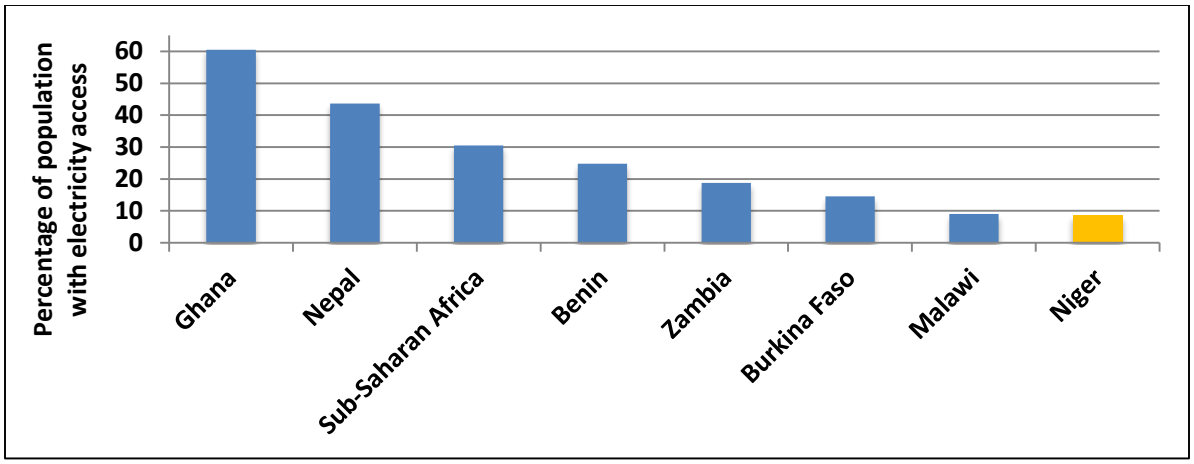
Two recent trends characterize the power sector in Niger. The first is that demand growth has been quite strong over the last decade – between 2000 and 2009 the consumption of grid electricity nearly doubled. This coincides with the end of the political instability that characterized the "lost decade" of the 1990s and with the investment boom and GDP growth that began in the 2000s.

The second trend involves significant government investment in the sector and reforms of NIGELEC. From 2001 to 2005, the Government of Niger ran a special electrification program that brought grid electricity to 159 communities[142]; as of September 2012, a total of 350 communities were electrified.[143] Additionally, NIGELEC developed two programs – "Development of an Electrical Interconnection Network" (DREIN) and "Extension and Reinforcement of the Nigerien Electric Network" (PERREN) – that focused on improved transmission and distribution infrastructure, respectively. A key accomplishment of DREIN was the construction of a 266km high-voltage transmission line from Maradi to the Tahoua region.[144] A new national program to improve access to modern electrical services (*Programme national de référence d'accès aux services énergétiques modernes* or PRASE) is currently underway.

In 2006, NIGELEC underwent an internal restructuring that allowed it to improve its collections. The company's collection ratio now exceeds 96 percent of billings,[145] which has allowed it to increase funding of the PRASE project and push ahead more strongly on electrification. All told, between 2001 and 2009, the share of the population with geographic access to the grid increased from 17 percent to more than 23 percent, and between 2000 and 2011, the share of the population actually accessing the grid increased from just over 5 percent to 8.63 percent.[146] Despite these improvements, Niger's electricity access rate remains the lowest among the comparators for which data were available and is less than of one-fourth the average for Sub-Saharan Africa (see Figure 5.14).

Figure 5.14 -- Electricity access rates[147]

[139] Le Président de la République du Niger, Décret 2012/PRN/MEP, du portant révision des tarifs d'électricité de la Société Nigérienne de l'Electricité (NIGELEC)
[140] General home and business consumers of low-voltage electricity pay a fixed price of 79.25 FCFA (15.2 US cents) per kWh (though the first 50 kWh are reduced to 59.45 FCFA). Farm businesses under managed irrigation and certain extractive industries receive specially discounted tariffs.
[141] "Niger's Infrastructure: A Continental Perspective," June 2011, pp 29
[142] International Monetary Fund, Niger Poverty Reduction Strategy Paper, 2008, pp 61
[143] Email correspondence between Government of Niger Core Team and NIGELEC on 13 September 2012.
[144] Ibid
[145] Dominguez-Torres, Carla, and Vivien Foster. "Niger's Infrastructure: A continental perspective" Africa Infrastructure Country Diagnostic (AICD) World Bank, 2009. Pp26.
[146] Système d'Information Energétique. Ministère de l'Energie, Niger
[147] Figure 5.14 was made using data from 2009, when Niger's access rate was 8.58 percent.



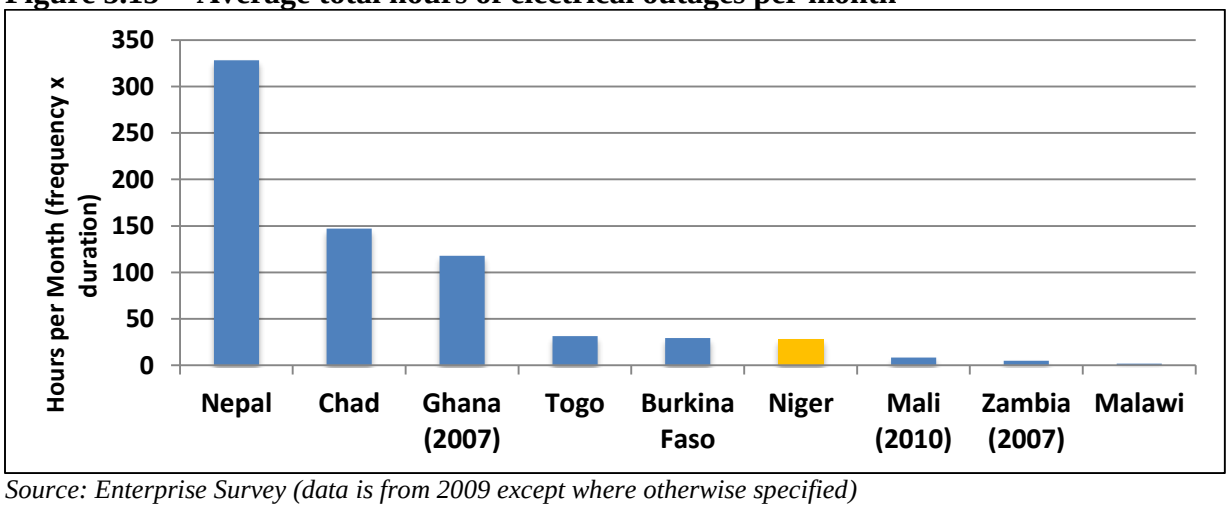
Source: International Energy Agency, Niger Ministry of Energy, 2009

However, these two trends – growing demand and continuing improvements in both the electric utility company and the distribution system – have not played out equally, resulting in a system that has failed to keep up with demand growth.

Between 2006 and 2009, the average number of power outages reported per month fell slightly (from about 20 to about 18), but the average length tripled to 1.5 hours. Niger ranks second highest among the comparators in terms of the frequency of power outages. In spite of the increase in duration of power outages, Niger is still well below the Sub-Saharan Africa average of 5.3 hours and has an average duration that is lower than any of the comparators.

Combining the indicator for frequency and duration of outages, Niger remains among the middle of its group of comparator countries in terms of total hours of electrical outages per month (see Figure 5.15). However, it is important to note that between 2006 and 2009, the average number of hours per month that firms in Niger suffered power outages nearly tripled, from 10.35 hours per month to 27.75 hours per month. This coincided with the large increase in the number of firms identifying access to electricity as a major or serious constraint to their activities.

Figure 5.15 -- Average total hours of electrical outages per month



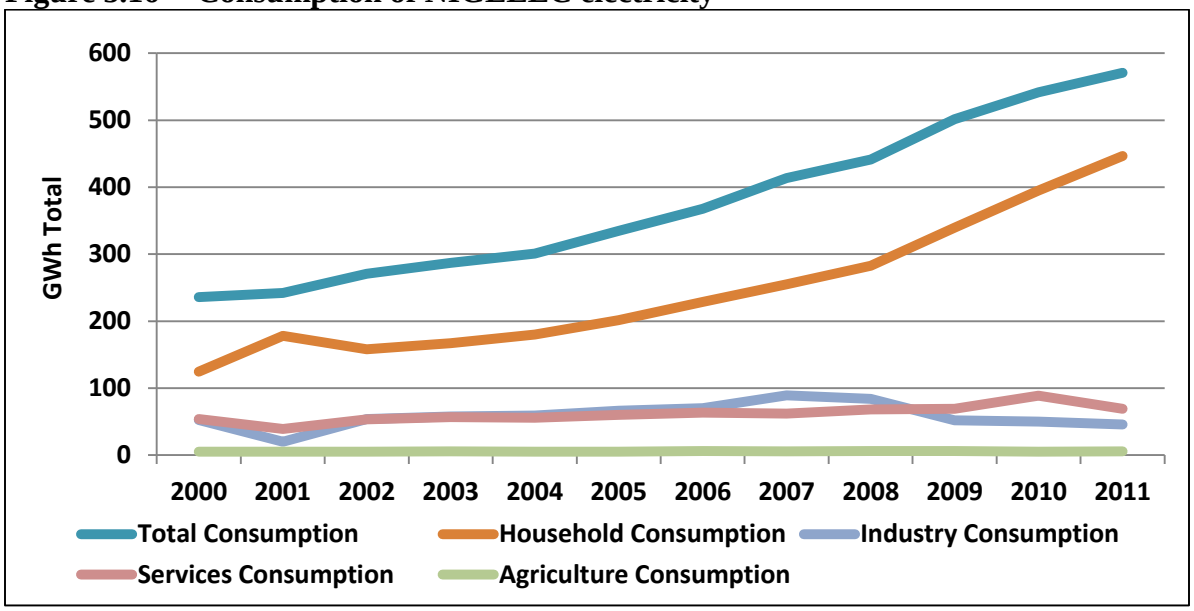
Source: Enterprise Survey (data is from 2009 except where otherwise specified)

Is electricity a binding constraint to growth?

Observing the developments in the sector in recent years provides indications that are important for determining whether the lack of electricity in Niger constrains growth. A closer look at the evolution of Niger's electricity consumption in particular reveals significant insights. Over the last decade, demand for electricity (consumption) has increased significantly. This increase has been almost entirely driven by increases in household use of electricity, as opposed to commercial, industrial, or agricultural use of electricity.

Household consumption of electricity grew, indicating the availability of grid electricity. Imports of electricity from Nigeria increased significantly in order to meet the demand of Nigerien households, which increased from 203 gigawatt-hour (GWh)[148] in 2000 to 545 GWh in 2011. In contrast, electricity consumption by industry decreased between 2007 and 2011.[149] No evidence was presented to indicate that this lack of demand was the result of discriminatory practices that privileged households' access to electricity over that of firms and industry. Thus, the data presented in Figure 5.16 is indicative of limited demand for electricity among businesses.

Figure 5.16 -- Consumption of NIGELEC electricity

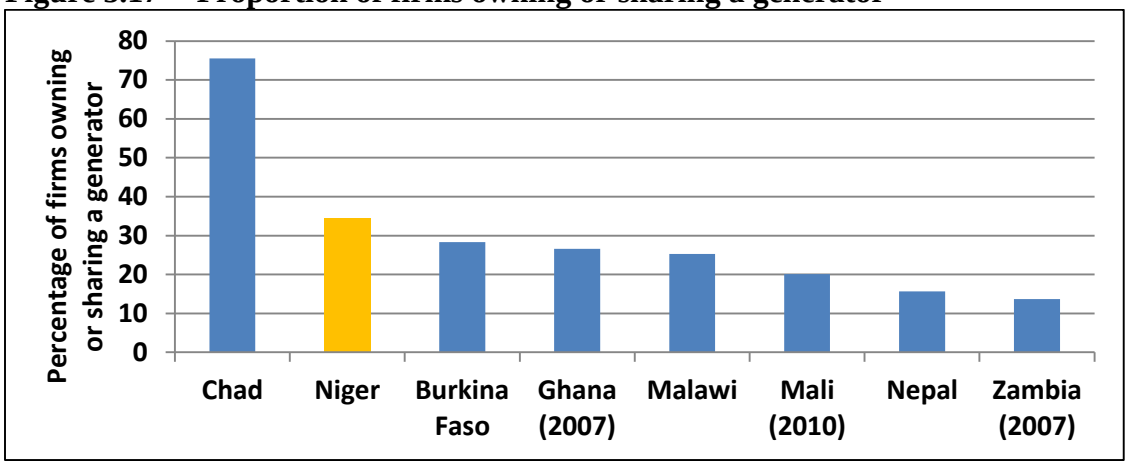


Source: NIGELEC

To determine whether the unreliability of electricity provision is a binding constraint to growth, it is necessary to study the alternatives to grid electricity, notably self-generated power from generators. Many businesses in Niger either own or share a generator, 34.5 percent according to the 2009 Enterprise Survey. This places Niger among the highest of its comparator countries, but significantly below the Chad. By comparison, only 27.54 percent of firms in Niger owned or shared a generator in 2006.

[148] There are one million kilowatt-hours in a gigawatt-hour.
[149] NIGELEC

Figure 5.17 -- Proportion of firms owning or sharing a generator

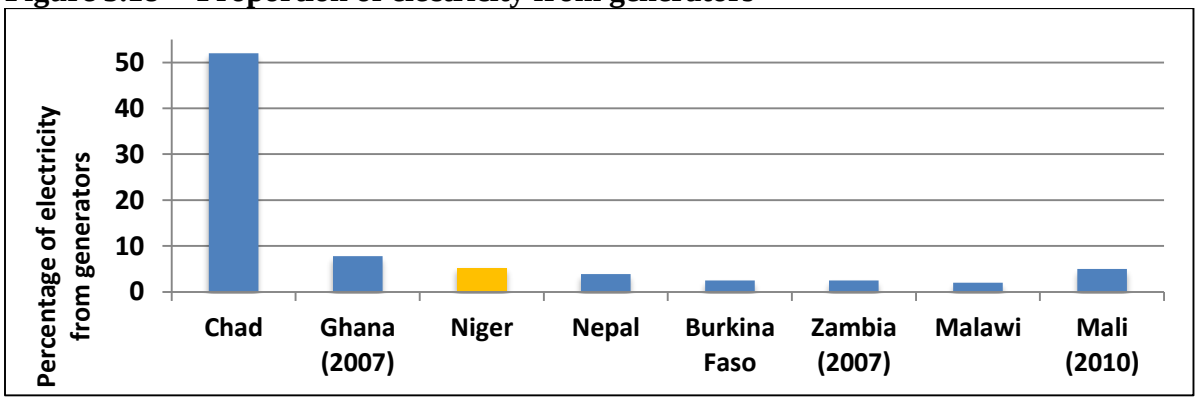


Source: Enterprise Survey (data is from 2009 except where otherwise noted)

Compared to grid electricity, self-generated electricity is relatively expensive. In a study produced using data from the 2006 Enterprise Survey, Foster and Steinbuks (2009) calculated the cost of generator ownership for firms in various African countries and argued that the marginal cost of self-generated electricity is a good proxy for the marginal cost of power outages and therefore is a good shadow price for electricity. In Niger, the cost of self-generated power was calculated to be 41 cents per kWh. This cost is significantly higher than the price of grid electricity. However, it is only 13th highest among Foster and Steinbuks' 20-country sample and is significantly below the price observed in neighboring Burkina Faso,[150] suggesting that the shadow price of electricity cannot be considered high. Further, firms in Niger only obtain 5.2 percent of their electricity from generators.[151] This places Niger in line with the comparator countries.

Estimates of the losses incurred by firms as a result of electrical outages are an additional indicator of the economic costs of unreliable electricity provision. Firms in Niger report losses of 1.9 percent of annual sales due to power outages[152], which is relatively low when placed alongside the comparators.

Figure 5.18 -- Proportion of electricity from generators



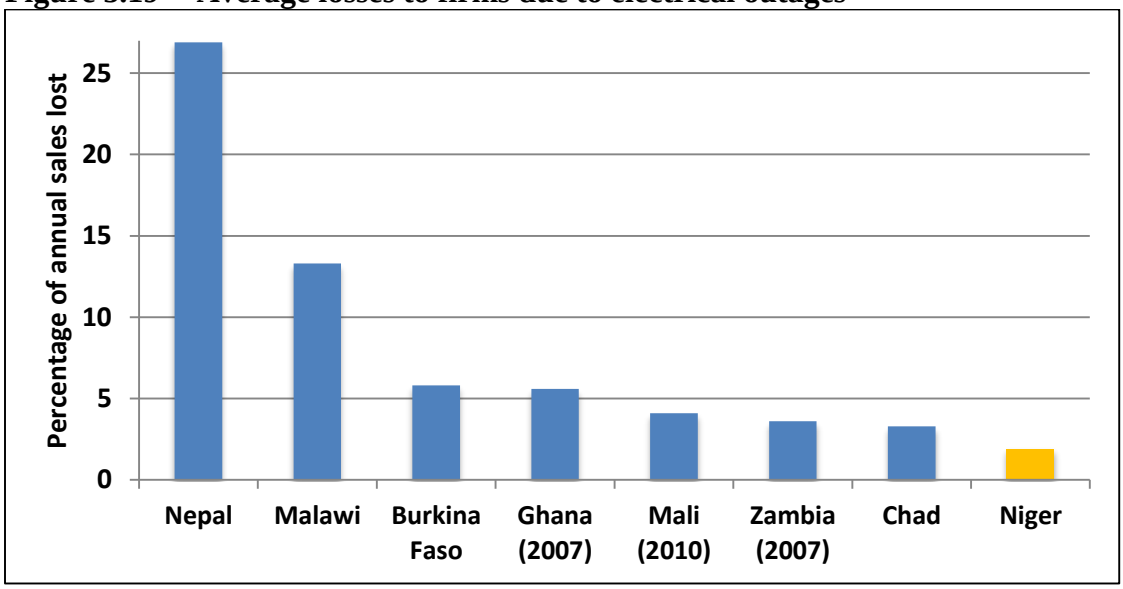
Source: Enterprise Survey (data is from 2009 except where otherwise noted)

[150] Foster, Vivien and Jevgenijs Steinbuks (2009) "Paying the Price for Unreliable Power Supplies: In-House Generation of Electricity by Firms in Africa," World Bank Policy Research Working Paper No. 4913

[151] Enterprise Survey

[152] When the sample is limited to manufacturing firms in Niger, this percentage is only slightly higher at 3.8 percent.

Figure 5.19 -- Average losses to firms due to electrical outages



Source: Enterprise Survey (data is from 2009 except where otherwise noted)

Conclusions

In Niger, firms complain in significant numbers about electricity, grid access is minimal, and power-outages are frequent. However, firms do not exhibit strong demand for electricity, and both the shadow price of and the estimated losses from unreliable power are relatively low. In the last decade NIGELEC has been reorganized and reformed and is making improvements to the network, which gives reason to hope that Niger's poorly-maintained transmission and distribution networks will improve in the coming years.

While electricity is not at present a binding constraint to growth in Niger, the viability of the sector is contingent on the continued supply of power from Nigeria. Given the importance to the Nigerien economy of subsidized electricity from Nigeria and the complicated and opaque nature of the agreements between the two countries, there is reason for concern. Transparent energy security is rightly a high priority for the Nigerien government[153], and an emphasis should be placed on efforts to secure the future of the Nigerian arrangement and to develop cost-effective domestic electricity sources such as the Kandadji Dam and the 100 megawatt electricity generation plant at Goroubanda.

[153] Recent events have reinforced the importance of this recommendation. On May 25, 2013, the power lines running from the Kainji dam located in western Nigeria were toppled by a storm, depriving Niamey and the regions of Dosso and Tillabéry of one of their key sources of power. The electricity supply to Niamey and these regions was significantly impacted for over a month resulting in frequent and prolonged blackouts and as yet uncalculated economic losses. (Boureima Hama, "Niamey Power Cuts Leave Locals on Edge," *AFP*, June 25, 2013; Abdoulaye Massalatchi, "Niger's Worst Power Cuts in Years Threaten Economy," *Reuters*, June 19, 2013.)

5.4. Telecommunications

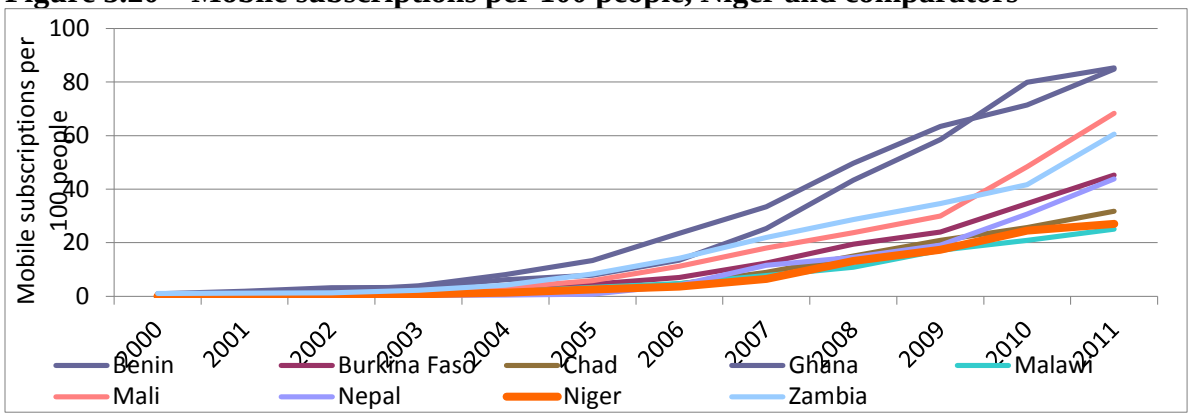
Access to Information and Communications Technology (ICT), provided through telecommunications infrastructure such as copper telephone lines, fiber-optic cables, and cell phone towers known as "base stations", can be a strong facilitator of economic growth. Access to ICT improves productivity by lowering the cost of obtaining essential information. It increases the adoption rate of improved practices in agriculture and business, and it can help firms reach new markets. Further, reliable Internet infrastructure can be important for attracting foreign direct investment in technology subsectors, and telecommunications use in Africa is correlated with growth. This section examines whether a dearth of telecommunications infrastructure is a binding constraint to growth in Niger.

Status and Trends

ICT use in Niger is low compared to its comparator countries. The country's geographic size, income levels, and limited urbanization present challenges for telecommunication companies, which in general have trouble reaching these market segments. As a result, Niger has a poor endowment of ICT infrastructure.

The existing mobile network only covers 53 percent of the country's population. Further, Niger has only one international fiber connection, to the SAT-3 cable through Benin, with a capacity of 2 x 155 megabits per second (Mb/s). All other international connectivity is via satellite, and there is only 155 Mb/s of this type of capacity in the country. As of 2011, there were only 27 mobile phone subscriptions per 100 people, only 1.3 percent of the population used the Internet, and the number of fixed broadband subscriptions numbered less than 2,000.[154] These low usage rates may reflect a difficult market for ICT companies in Niger or low demand for such services.[155] Figure 5.20 displays the trend for mobile phone subscriptions in Niger and comparator countries.

Figure 5.20 – Mobile subscriptions per 100 people, Niger and comparators



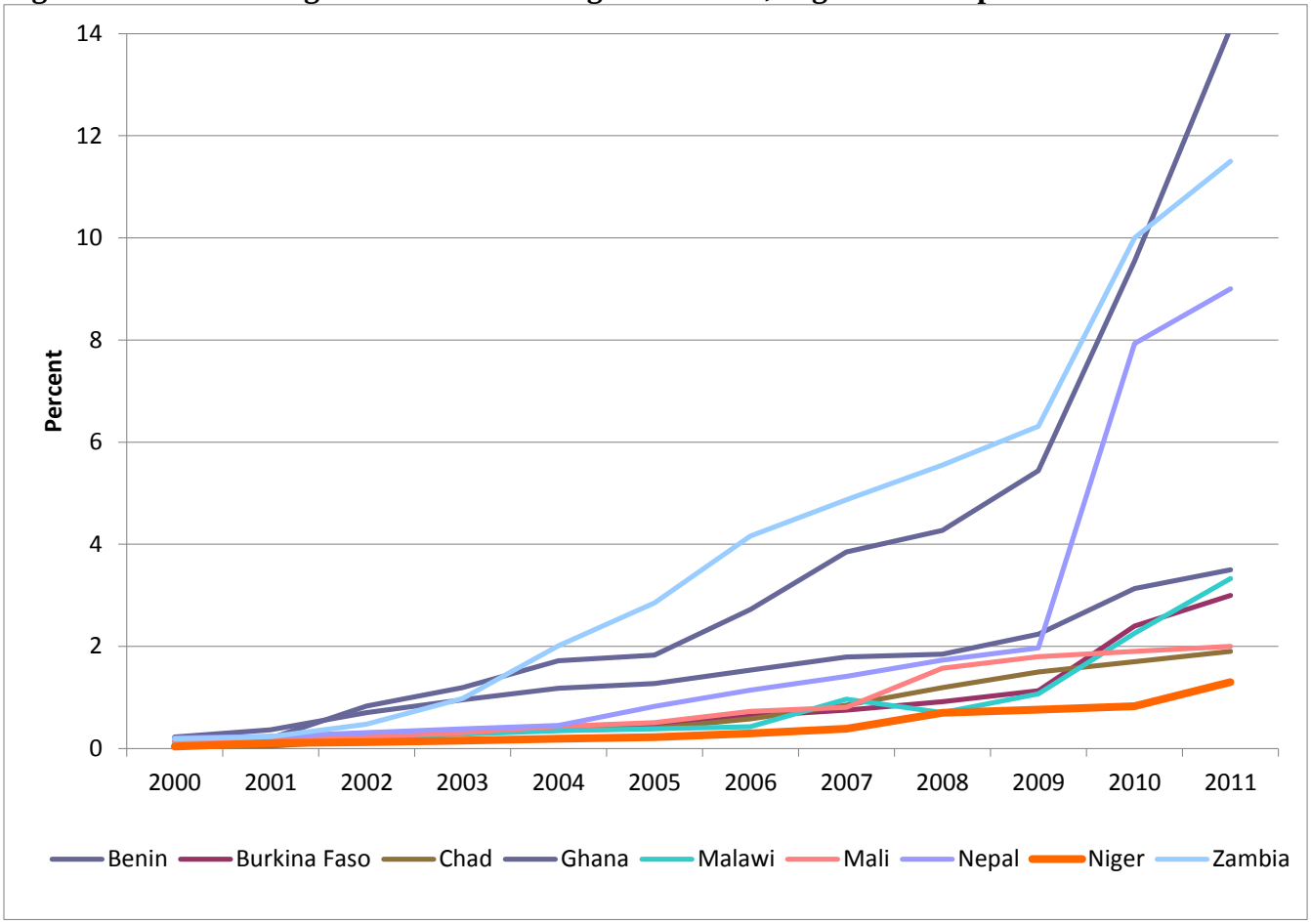
Source: International Telecommunications Union (ITU) International ICT Statistics

Internet use in Niger is the lowest among its comparator countries, at less than two percent of the population (see Figure 5.21).

[154] International Telecommunications Union, ICT Eye, 2011

[155] Niger's high illiteracy rate, which is greater than 70 percent, is expected to reduce relative demand for telecommunication services.

Figure 5.21 – Percentage of individuals using the internet, Niger and comparators



Source: International Telecommunications Union (ITU)

5.4.1. Conclusion

Similar to the provision of other types of infrastructure, the ICT sector can facilitate growth or respond to growth. Given the low levels of ICT usage in Niger and apparently adequate supply,[156] price trends can be analyzed to conclude that the ICT markets are functioning well, compared to other countries. According to the International Telecommunications Union's ICT Price Sub-Basket data (2010),[157] prices for fixed-line phone service and mobile phone service in Niger are approximately equal to world averages.[158] Reasonable prices and low demand lead to the conclusion that ICT infrastructure in Niger is not a binding constraint to growth.

[156] There are four mobile phone operators and five companies offering internet service

[157] ICT Price Basket Data is publicly available in Chapter 3 of the ITU's publication "Measuring the Information Society 2011".

[158] Prices for fixed-broadband service are also near the world average, but the world average is skewed by a few, high prices. Eliminating the ten highest prices reduces the world average to the point where Niger's price is approximately twice the world average.

6. MICRO-APPROPRIABILITY OF RETURNS

As indicated in the HRV framework, returns to an economy as a whole from investing may be high, but the ability of private entrepreneurs to appropriate those returns can be limited by risks and distortions at the micro-economic level. Among the many issues that would increase the risk of insufficient appropriability or drive a wedge between social and private returns are excessive or costly regulatory obstacles; the structure, level, and administration of taxes; restrictions on or obstacles to trade; and inadequate protection of all forms of property and contractual rights, including land.

Doing Business 2013[159] ranks Niger 176 out of 185 countries. Of its comparator countries, only Chad scores worse. Niger scores among the bottom third of its comparators on the following indicators: Starting a Business; Protecting Investors; Trading Across Borders; and Dealing with Construction Permits (see Table 0.1).

Based on the analysis presented, this chapter concludes that the weak micro-appropriability of returns poses a key binding constraint to investment and growth in Niger, notably with regard to: (i) the quality of regulation of private sector business; and (ii) institutional and regulatory barriers to trade. Insufficient data existed to confirm or definitely exclude the cost of starting a business, labor market regulations, and land policy and management as additional key barriers to the micro-appropriability of returns to investment in Niger.

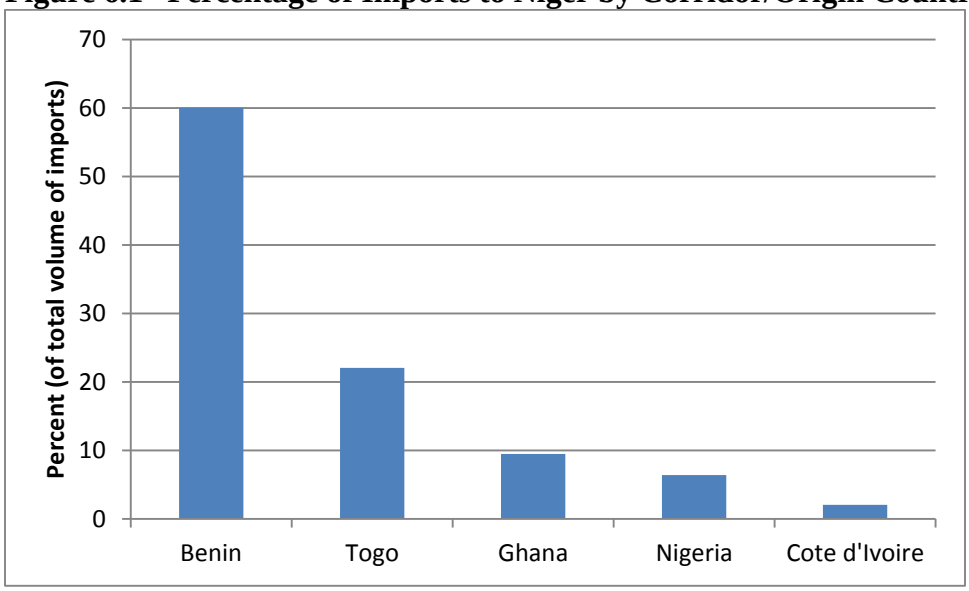
6.1. Regulatory and institutional barriers to trade

Regulatory and institutional barriers to trade not only hinder the flow of goods to and from a country but also significantly increase the cost of production within the country and reduce the competitiveness of domestic firms seeking to compete in international markets. It may take an inordinate amount of time to file paperwork, there may be costly delays at border crossings, and bribes or informal payments may be expected. Additional delays may be created or payments solicited at road blocks and check points along major transportation arteries. Domestic and international regulation of the transportation sector may distort or limit competition within the sector, resulting in high prices and poor quality service.

Niger's key terrestrial trade link is with Nigeria, the destination for the vast majority of Niger's agricultural exports, notably onions and livestock. Imports transit largely through five container ports in West Africa: Cotonou (Benin), Lomé (Togo), Tema (Ghana), Takoradi (Ghana), and Lagos (Nigeria). Of these, the port of Cotonou is responsible for the most traffic – 60 percent of the total in 2011 (see Figure 6.1). While the portion of Niger-bound traffic passing through Ghanaian ports has increased over the past five years,[160] Cotonou retains its preeminent position, with the percentage of total Nigerien imports transitioning through the port increasing between 2010 and 2011.[161]

[159] The Doing Business Indicators are based on a theoretical medium sized firm located in the capital.
[160] CNUT, *Enquête couts et délais de transport auprès des chargeurs*, *Rapport d'Analyse,* February 2011.
[161] USAID, "Impact of Road Transport Industry Liberalization in West Africa," February 2012

Figure 6.1– Percentage of Imports to Niger by Corridor/Origin Country - 2011



Source: Direction de l'Observatoire des Transports, "Bulletin Statistique", Conseil Nigérien des Utilisateurs de Transports (CNUT)

Niger ranks 176th out of 185 countries on the Trading Across Borders indicator in Doing Business 2013. This is the country's worst Doing Business score. Subcomponents of this index reveal that the time and cost to both import and export are nearly double the Sub-Saharan African average. This is not simply a function of being landlocked, since Niger performs worse than the other landlocked comparator countries with the exception of Chad.

Table 6.1 below shows the time, cost, and number of documents required to import to and export from Niger and its comparator countries.

Table 6.1 – Time, Cost and Documents to Import and Export, Niger & Comparators

	Documents to Export (Number)	Time to Export (Days)	Cost to Export (US$ per container)	Documents to Import (Number)	Time to Import (Days)	Cost to Import (US$ per container)
Benin	7	30	1079	8	30	1549
Burkina Faso	10	41	2412	10	47	4030
Chad	8	75	5902	11	101	8525
Ghana	7	19	815	7	34	1315
Malawi	10	34	2175	9	43	2870
Mali	6	26	2202	9	31	3067
Nepal	11	41	1975	11	38	2095
Niger	**8**	**59**	**3676**	**11**	**64**	**3711**
Zambia	6	44	2765	8	56	3560

Source: Doing Business 2013

Table 6.2 and 6.3 below show Niger's performance on various components of the Doing Business sub-indices, ranked only against other landlocked countries in its comparator group.

The document burden imposed by Niger on both importers and exporters in terms of time and cost is second highest among the landlocked comparator countries. In the 2009 Enterprise Survey, only 45 of the 150 firms surveyed were either importers or exporters. Of these, one third listed customs and trade regulations as a major or severe constraint to growth but only three firms listed customs and trade regulations as the biggest constraint.

Table 6.2 -- Export time and cost by step (per container)

	Document Prep (days)	Document Prep (US$)	Customs Clearance (days)	Customs Clearance (US$)	Ports and Terminal (days)	Ports and Terminal (US$)	Inland Transport (days)	Inland Transport (US$)
Burkina Faso	28	187	3	225	3	800	7	1200
Chad	39	840	3	330	3	367	30	4365
Malawi	21	285	2	150	4	240	7	1500
Mali	11	472	3	300	4	570	8	860
Nepal	14	300	4	300	4	275	19	1100
Niger	**36**	**665**	**3**	**429**	**7**	**582**	**13**	**2000**
Zambia	27	230	4	150	4	285	9	2100

Source: Doing Business 2013

Table 6.3 -- Import time and cost by step (per container)

	Document Prep (days)	Document Prep (US$)	Customs Clearance (days)	Customs Clearance (US$)	Ports and Terminal (days)	Ports and Terminal (US$)	Inland Transport (days)	Inland Transport (US$)
Burkina Faso	27	330	6	300	6	1000	8	2400
Chad	47	1500	7	525	5	500	42	6000
Malawi	19	280	3	150	9	240	12	2200
Mali	13	352	4	375	5	820	9	1520
Nepal	14	270	5	300	6	275	13	1250
Niger	**36**	**700**	**9**	**429**	**3**	**582**	**14**	**2000**
Zambia	26	365	6	245	11	450	13	2500

Source: Doing Business 2013

If Niger were to lower the customs costs assessed on imports to the same level as Burkina Faso, the cost per container equivalent[162] would fall by 129 USD. If document preparations costs were

[162] For the purposes of its calculations, Doing Business assumes "The traded product travels in a dry-cargo, 20-foot, full container load. It weighs 10 tons and is valued at $20,000. The product: (i) is not hazardous nor does it include military items; (ii) does not require refrigeration or any other special environment; (iii) does not require any special

on par with that of Burkina Faso, the cost per container would decrease by 370 USD. This represents a 499 USD surcharge per container on imports to Niger. For exports, this figure increases to 682 USD per container. The team was unable to obtain data on the total annual volume (in tons) of Nigerien imports and exports, precluding an estimation of the losses borne by the Nigerien economy as a result of high customs costs.

One potentially positive development is the recent installation of an x-ray scanner for containers in Niamey, which began operating in October 2012.[163] While data is not yet available comparing the time required to clear customs before and after the inauguration of the scanner, government officials and actors in the transportation and shipping sector have indicated that the time savings are likely to be significant.

A recent study of trucking in Niger indicates that customs clearance costs paid at the final destination are large, amounting to 20 percent of logistics overhead costs faced by truckers.[164] A potentially higher cost to firms is lost time associated with importing and exporting. The Doing Business indicators suggest that the time to import into Niger is significantly higher than most neighboring countries; an investigation in 2011 by the USAID West Africa Trade Hub confirmed at least one instance. A truck hauling 40 tons of cement and carrying an observer spent 48 hours at the Malanville-Gaya border crossing. Expedited service could be purchased for 12,000 FCFA on the Benin side of the border, and 5,000 FCFA on the Nigerien side.

Delays, bribes, and other sorts of unofficial road blocks are a potentially important driver of investment decisions. Informal payments drive up costs and increase delays. The World Bank found that truckers along the Cotonou-Niamey corridor paid approximately 30,000 FCFA in bribes en route.[165] However, this represented a significantly smaller share of their overhead than did customs fees. Additionally, a study of the trucking sector in West Africa by USAID[166], and a World Bank report from 2007[167] suggest that these fees are more the result of overloading (and the subsequent need for truckers to bribe various officials so as not to be fined) than an exogenous potential constraint.

However, even if the direct costs of bribes are, on average, minimal, their unpredictability poses a risk that would need to be factored into economic decisions. The 2008 Diagnostic Trade Integration Study by the World Bank[168] found that there were 152 informal checkpoints or roadblocks on the 975 kilometer route from Zinder to Niamey. On the 130 kilometer stretch of road from Tahoua to Tsernoua, there were 94 roadblocks or checkpoints.

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phytosanitary or environmental safety standards other than accepted international standards; [and] (iv) is one of the economy's leading export or import products." (World Bank, "Trading Across Borders Methodology," http://www.doingbusiness.org/methodology/trading-across-borders)

[163] The installation of the scanner could also potentially increase the opportunity for rent-seeking behavior.

[164] Nathan Associates, Inc., "Logistic Cost Study of Transport Corridors in Central and West Africa," interim report, submitted to the Africa Transport Unit, World Bank, August 2012

[165] Ibid

[166] USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries: Market Structure and Conduct," September 2010.

[167] Teravaninthorn, Supee and Gael Raballand, "Transport Prices and Costs in Africa: a Review of the Main International Corridors." World Bank, 2008.

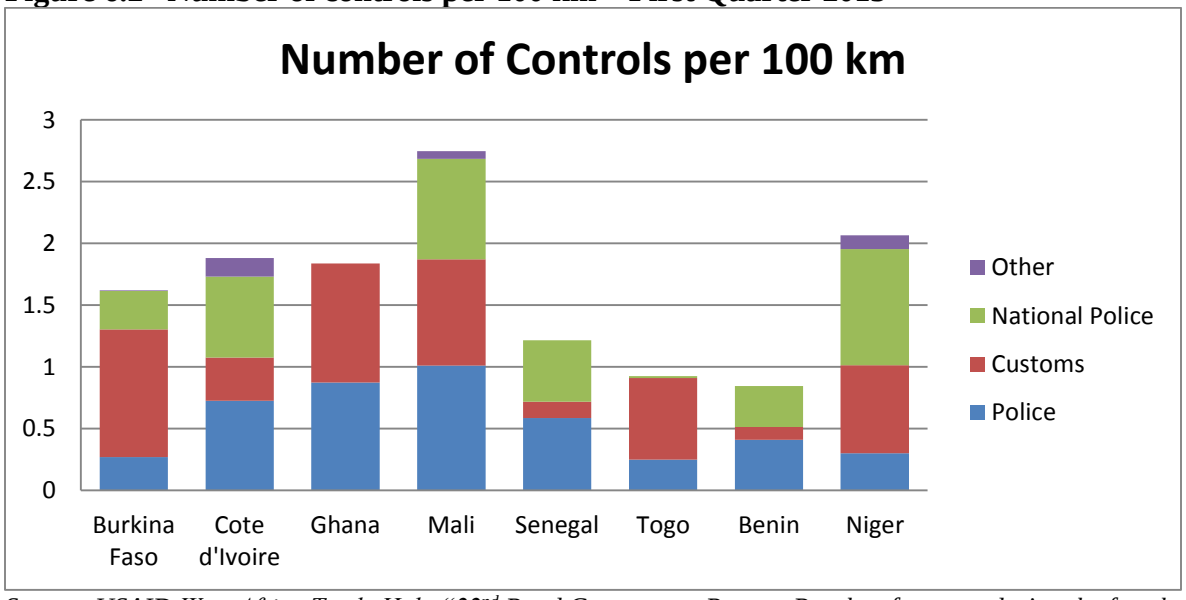
[168] Niger: Modernizing Trade During a Mining Boom, World Bank DTIS, Dec. 2008

While efforts have been made by the Nigerien Government to combat this problem, data from the first quarter of 2013 reveal that Niger still suffers from a high number of checkpoints relative to its West African neighbors (see Figure 6.2).

Is the trucking sector contributing to a binding constraint to growth?

Domestic and international regulations affecting the trucking sector are of significant concern. The 1972 ECOWAS Inter-State Road Transportation Convention allows pairs of West-African states (one maritime, one land-locked) to negotiate bilateral treaties governing freight-sharing along transport routes between the two countries. The agreement between Benin and Niger classifies goods bound for Niger into two types – strategic and non-strategic. Goods designated as strategic must be transported by Nigerien trucks, and non-strategic goods are divided between Beninese and Nigerien truckers on a one-third to two-thirds quota system. Loads have traditionally been assigned in the port of Cotonou on a first come, first served basis.[169]

Figure 6.2– Number of controls per 100 km – First Quarter 2013



Source: USAID West Africa Trade Hub, "22nd Road Governance Report: Results of surveys during the fourth quarter of 2012", May 2013

This system has been the focus of significant criticism for restricting competition and distorting market forces. It has been accused of creating a "double oligopoly,"[170] whereby truck operators are discouraged from improving their efficiency first by a fixed limit to the number of loads they are eligible to carry (based on nationality) and secondly based on an inability to compete for direct contracts with shippers (based on the queuing system). This results in poorly maintained and overloaded trucks, and leads to numerous hidden costs as, given the opportunity, truckers will pay to get around the constraints of the double oligopoly system.[171]

[169] USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries: Market Structure and Conduct," September 2010.
[170] Ibid
[171] Nathan Associates, Inc., "Logistic Cost Study of Transport Corridors in Central and West Africa"; Nathan Associates, Inc., "Impact of Road Transport Industry Liberalization in West Africa," submitted under the USAID

The extent to which this system is still being implemented is unclear. A 2008 World Bank Study of the transportation sector in West Africa found these distortions to be very large, such that improvements to transport infrastructure in West Africa would have limited impact on the cost of importing and exporting unless the rules governing the double oligopoly system were also modified.[172] A study by the USAID West Africa Trade Hub in 2010 investigated this claim and found that the quota and queuing systems were no longer or only partially applied along a number of corridors in the region; the exceptions to this trend were the Cotonou-Niamey and Lomé-Niamey corridors. The study attributed this to the particularly rigorous enforcement of the quota sytem by the *Conseil Nigérien des Utilisaterus des Transports* Publics (CNUT) at the ports of Cotonou and Lomé.[173] In contrast, a 2012 Nathan Associates report concluded that the quota system was less rigidly and uniformly enforced and that while strategic cargo must still be carried by trucks registered in Niger, there was some evidence of foreign operators registering trucks in Niger to bypass this constraint.[174]

The regulatory and institutional framework currently in place has resulted in a trucking and transportation sector in Niger that is small and provides service that is of poor quality at a high cost. This reality is reflected by the key characteristics of the Nigerien trucking sector:

- The average age of the trucking fleet is 17 years, much higher than that of other West African countries.[175]
- The entire Nigerien transit trucking fleet is estimated at 9,500 trucks[176], which is not enough to fill Niger's share of the one-third to two-thirds quota.[177] This results in the sale of the rights to Nigerien freight to Beninese truckers, with this additional cost passed on to consumers in Niger.
- Individual trucks do not travel great distances each year. The average informal sector truck travels around 25,000 km per year according to the Nathan Associates report, or 2,500 km per month based on the USAID report. This amounts to approximately one round trip between Cotonou and Niamey per month. In contrast, USAID estimates that Southern African truckers travel between 8,000 – 9,000 km per month and East African truckers travel 5,500 km per month on average.
- Formal sector truckers enjoy gross operating margins of around 23 percent[178]. It is unclear, however, if this is enough to allow for the financing of new vehicles, and informal sector truckers have even smaller profit margins. This may explain the age of the fleet.

Worldwide Trade Capacity Building (TCBoost) Project, February 2012; USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries: Market Structure and Conduct," September 2010

[172] Teravaninthorn, Supee and Gael Raballand, "Transport Prices and Costs in Africa: a Review of the Main International Corridors." World Bank, 2008

[173] USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries: Market Structure and Conduct," September 2010

[174] Nathan Associates, "Logistic Cost Study of Transport Corridors in Central and West Africa," Interim Report, August 2012

[175] Nathan Associates, pp 59.

[176] Ibid pg 57

[177] Nathan Associates pg 62; USAID West Africa Trade Hub pg 32

[178] Nathan Associates pg 68

A recent reform of the trucking sector was attempted by the WAEMU, whereby axle weight limits were to be applied and enforced. In response, the Nigerien truckers' association negotiated a near doubling of their freight fee, thereby ensuring that their profit margins were maintained.[179] As highlighted by the USAID report, "this arguably perverse solution means that end users (and not inefficient transporters) ultimately pay the cost of the axle-load control policy. Unprofitable transporters using old vehicles remain in business while formal-sector truckers presumable make higher profits than before."[180] This experience also serves to highlight the market power of the truckers' association in Niger and the extent to which competition in the sector is restricted.

Conclusions

The cost of the market distortions and inefficiencies prevalent in the trucking and transportation sector is borne by the Nigerien economy in the form of price premiums on the goods it imports and reduced ability on the part of its exporting sectors to compete in regional and international markets. Niger is already at a geographical disadvantage with regards to access to international markets, and the additional costs imposed by an inefficient and costly transportation sector, costly and lengthy customs processes, and bribes and other informal payments appear, in many cases, to be significant, with this reality reflected by the low levels of manufacturing and industry present in the country. For these reason, the team concluded that regulatory and institutional barriers to trade constitute a binding constraint to broad-based growth in Niger.

6.2. Government Regulation of Business

The framework of laws, policies, regulations, and requirements governing the private sector impacts the costs and risks faced by economic actors and, as a result, directly affects investment and economic growth.

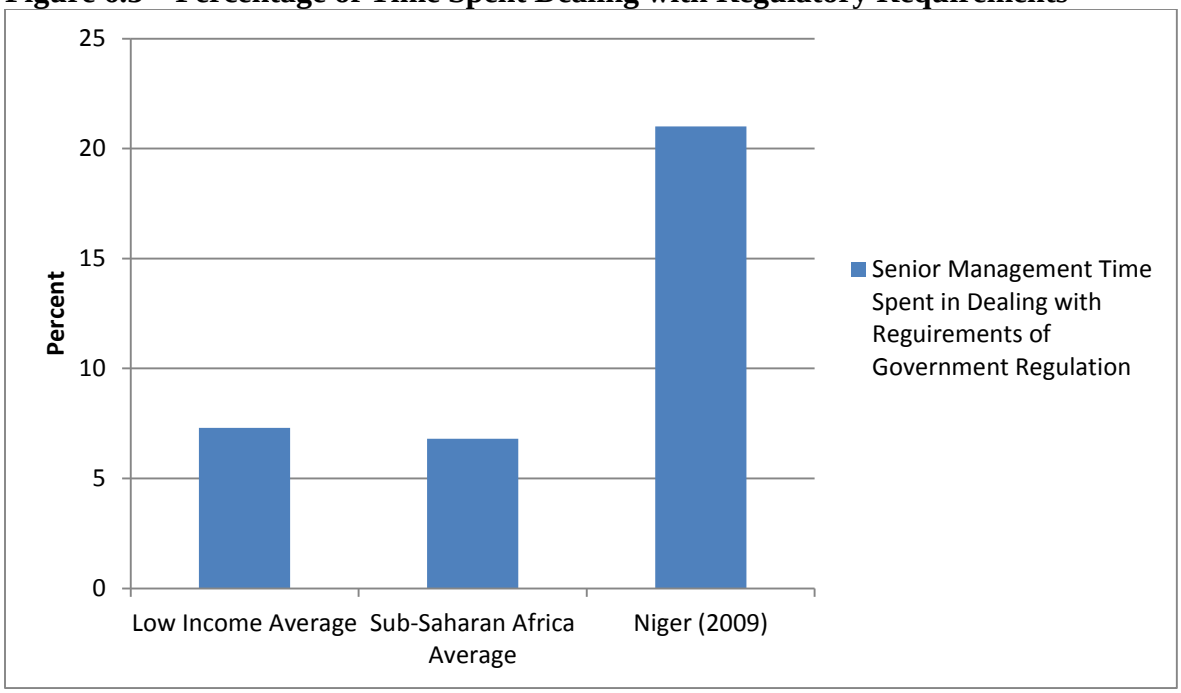
The high shadow price of the fragmented and inefficient business regulatory system is reflected in what the World Bank refers to as the "time-tax", the time devoted by Nigerien businesses and entrepreneurs to dealing with the requirements of government regulations. Managers in Niger report spending an average of 21 percent of their time on a weekly basis dealing with regulatory requirements as compared with an average of 6.8 percent for Sub-Saharan Africa and 7.3 percent for low income countries (see Figure 6.3). The amount of time devoted to dealing with the regulatory burden is even higher for medium firms (29.1 percent) and large firms (24.4 percent) in Niger.[181]

Additional economic losses result from the two-tiered tax system, which provides a disincentive for economic actors to invest, expand or formalize while also reducing the tax base. All economic actors in Niger are required to register with the local municipality or the National Tax Office, la Direction Générale des Impôts (DGI). Firms and individuals in the informal sector previously satisfied this requirement by obtaining a *patente synthètique*, which was created in 1995 with the

[179] The price per ton of freight from Tema to Niger, for example, increased from 38,000 FCFA to 67,000 FCFA after this renegotiation. The truckers' opening bid in this negotiation was 71,000 FCFA, which they nearly achieved. (See USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries")
[180] USAID West Africa Trade Hub, "Trucking to West Africa's Landlocked Countries," pg 22
[181] Enterprise Survey

objective of incorporating the country's large informal sector into the tax base.[182] Informal sector entities were required to register with the appropriate authorities and pay an annual low flat tax calculated as a fixed percentage of their declared revenues.

Figure 6.3 – Percentage of Time Spent Dealing with Regulatory Requirements



Source: Enterprise Survey

The *patente synthètique* underwent several changes beginning in 2012 including a reduction in tax rates[183] and a change to its name and is now known as the *impôt synthètique*. Local municipalities manage the impôt synthètique for informal sector operators with annual revenues of less than five million FCFA, and the DGI administers the impôt synthètique for those entities with annual revenues between five million and 50 million FCFA. The percentage of annual revenues that must be paid in the form of the impôt synthètique depends on the specific sector but do not exceed three percent. Annual revenues are self-declared by economic actors subject to the impôt synthètique, with no accounting documentation required, and are subsequently verified by the DGI on a case-by-case basis. However, officials acknowledge the inherent difficulties of this exercise, and based on interviews conducted in Niamey, it is safe to assume that reported revenues are being underestimated. Those entities whose declared annual revenues exceed 50 million FCFA are subject to the significantly higher tax rates outlined in Section 6.3.

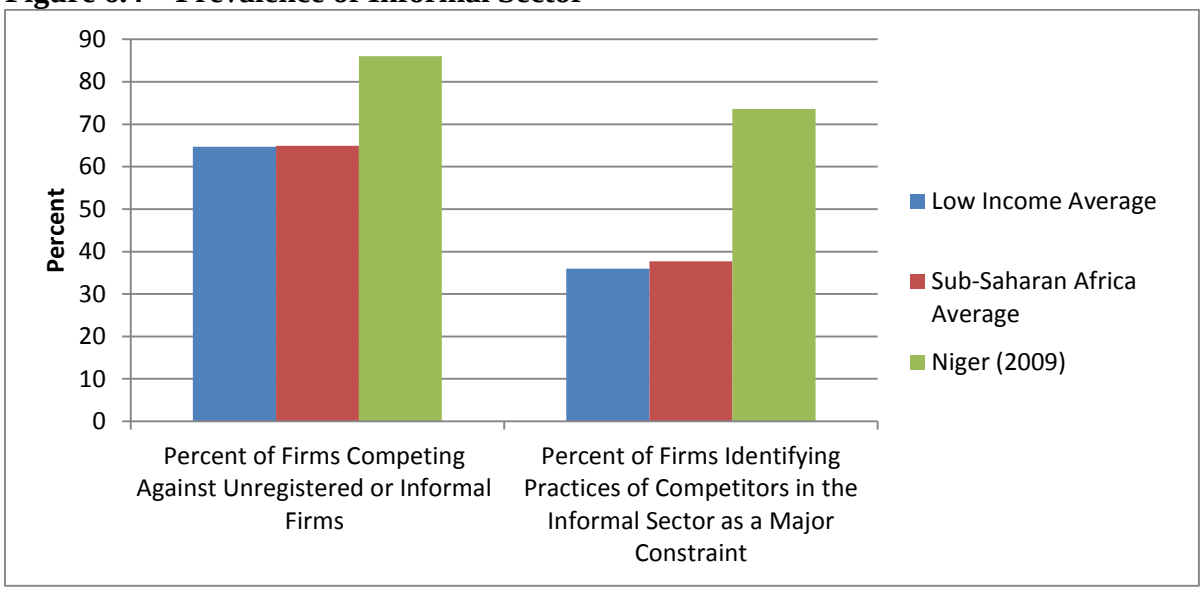
Estimates of the number of entities subject to the impôt synthètique vary widely and are difficult to verify, as the impôt synthètique is administered by municipalities and regional tax offices as well as the National Tax Office in Niamey.

[182] Loi no 95-015 du 03/07/1995 portant loi de finances pour l'année budgétaire 1995, section IX, Patente Synthètique

[183] The percentage of annual revenues that much be paid in the form of the *impôt synthètique* depends on the specific sector but do not exceed three percent.

Economic actors in Niger use informality to circumvent the heavy regulatory burden and inequitable tax treatment faced by formal sector firms. The practices of competitors in the informal sector were ranked the most severe obstacle by formal sector firms in Niger (see Figure 0.2), with more than one in five firms citing informal sector operators as their biggest constraint. Further, 73.6 percent of firms listed practices of the informal sector as either a major or severe constraint to their operations, almost double the Sub-Saharan African average of 37.7 percent. Similarly, 86 percent of firms in Niger reported having to compete against informal firms, as compared with an average of 64.9 percent for Sub-Saharan Africa (see Figure 6.4). In addition, less than 10 percent of formal sector firms began operations in the informal sector.[184]

Figure 6.4 – Prevalence of Informal Sector



Source: Enterprise Survey

These survey responses are reflective of an environment in which there are distortions to market forces, significant differences in tax and regulatory burdens, and high levels of informality. Such differences in the fixed costs faced by formal and informal sector actors reduce the expected payoffs associated with developing new or higher quality products and reduce the incentives for firms to invest in such activities. Maldonado and Gasarian (2004) noted this phenomenon in highlighting the "regulatory" role played by the informal sector in Niger, which competes with the modern sector with regards to prices and proximity to populations. Moreover, the low level of transition from the informal sector to the formal sector is not indicative of an informal sector that is fostering growth and innovation.

The last national census of the informal sector in the country was released in 1995. At that time, there were 667,935 informal entities in Niger, the majority of which were located in rural areas. Among rural informal entities, over 40 percent were involved in "production", largely consisting of work in agricultural transformation processes or artisanal crafts. In urban areas, informal enterprises were concentrated in commercial activities. The 1995 census estimated that the non-agricultural informal sector accounted for approximately 30 percent of Nigerien GDP, and this

[184] Enterprise Survey

figure has not fluctuated significantly in recent years. Between 2000 and 2011, the non-agricultural informal sector constituted between 23 percent and 29.5 percent of GDP.

In 2005, the World Bank surveyed 108 urban informal sector firms located in Niamey and Maradi. The self-reported profitability of survey participants was relatively high, with mean "net profit as a share of sales" of approximately 20 percent which is consistent with the results of the 1995 informal sector census. The World Bank survey also noted a low rate of investment among informal sector actors and highlighted their small average size. The combination of relatively robust profit levels, small average firm size, and low investment rates is indicative of an informal sector that is hindering growth and innovation. The main perceived drawback of formality cited by informal sector actors in the 2005 survey was the tax and regulatory burdens. Given that formal sector tax rates in Niger are largely in line with comparator countries, the perceptions of survey participants were likely the result of discrepancies and inequity in tax and regulatory treatment of actors in the formal and informal sectors.

A sizable informal sector is a common characteristic of many developing countries. The informal sector can serve an important role by providing employment opportunities and income to individuals unable to participate in the formal labor market and by serving as a testing ground for new technologies and activities. However, due to the nature of their operations, informal sector firms are generally less able to access essential factors of production than their formal sector counterparts, which negatively impacts the productive capacity and growth potential of these informal actors. If, as in the case of Niger, the regulatory framework and costs of operating in the formal sector are excessively burdensome and sufficiently outweigh the benefits associated with formality, then the result can be a large informal sector that suffers from low investment and productivity and serves as a drain on economic growth in the country.

As highlighted by the IMF, "large underground economies pose multiple problems for policymaking. Weak institutions and a large informal sector can interact in a vicious cycle to further undermine the quality of institutions that govern and encourage economic activity—the rule of law, absence of corruption, and minimization of unnecessary regulatory burden." A large informal sector also reduces the tax base and government revenues, hindering the government's ability to make necessary investments and increasing the burden on formal sector firms. This in turn can distort market forces and increase the sense of inequity, as formal sector firms find themselves competing against informal sector actors who are not subject to the same regulations or financial burdens.

The analysis reveals that the shadow price of the regulatory system is high. The inequitable two-tiered tax system provides a disincentive for economic actors to invest, expand or formalize and reduces the tax base and government revenues. A significant number of firms and entrepreneurs in Niger use informality to circumvent the constraint. These findings lead to the conclusion that the fragmented, inefficient and inequitable regulation of private sector business constitutes a binding constraint to economic growth in Niger.

6.3. Tax Rates

Taxes are a key funding source through which governments can fund infrastructure and essential public goods, thereby improving the expected returns to private investment. However, unduly

burdensome tax rates could significantly diminish the expected private return on investment, reducing the incentive for firms to invest and expand.

The Paying Taxes Index[185] of Doing Business calculates the "total tax rate" in Niger at 43.8 percent, of which 20.1 percent is for labor tax, 17.3 percent for profit tax, and 6.3 percent for "other tax." This total tax rate places Niger in the middle third among its comparators. Table 6.4 shows the total tax rate and other tax-related indicators for Niger and comparator countries.

Niger has a progressive income tax for both individuals and corporations. Among individuals, many are exempt and the top tax rate is 35 percent. For corporations, the top tax rate is 30 percent. The value added tax (VAT) is comparable to the other countries at 19 percent.

Table 6.4 – Tax rates in Niger and comparators

	Niger	Benin	Burkina Faso	Chad	Ghana	Malawi	Mali	Nepal	Zambia
Payments per year	41	55	46	54	32	26	45	34	37
Time per year (hours)	270	270	270	732	224	175	270	326	132
Profit Tax (%)	17.3	14.8	14.8	31.3	18.5	23.6	10.9	17.2	1.1
Labor Tax and Contributions (%)	20.1	27.3	22.6	28.4	14.7	7.7	34.3	11.3	10.4
Other tax rate (%)	6.3	23.9	6.2	5.7	0.4	3.5	6.6	3	3.7
Total Tax Rate (% profit)	43.8	65.9	43.6	65.4	33.5	34.7	51.7	31.5	15.2
Paying Taxes Rank	151	173	157	184	89	58	166	114	47

Source: World Bank Paying Taxes Report, 2013

In the 2009 Enterprise Survey, over 60 percent of firms surveyed identified tax rates as a major or severe constraint to business operations, and 12.8 percent of firms cited tax rates as the single biggest constraint to their activities.

Despite the many complaints, tax rates in Niger are in line with the comparator countries. Taxation is regularly seen as a constraint by firms in both Niger and comparator countries (see Table 6.5). Moreover, between the Enterprise Surveys of 2006 and 2009 for Niger, firm complaints about taxes decreased. During this time period, Niger lowered key tax rates: the VAT from 35 percent to 19 percent, and the top corporate rate from 50 percent to 30 percent. This reduction in the tax rate coincided with an increase in the tax ratio (tax revenue as a share of GDP). The DGI attributes this increase in tax revenues to the combination of a reduction in the number of tax exemptions

[185] The Paying Taxes Index contains different figures than those obtained from the Nigerien tax collection agency (the *Direction Générale des Impôts* or DGI). Doing Business calculates the total tax rate by determining the actual taxes paid by a hypothetical firm and dividing it by the assumed profit (also subject to several assumptions). It therefore differs from the statutory tax rates put in place by governments. Value Added Taxes are not included in the total tax rate of the Doing Business methodology. For more information on how the Doing Business Indicators calculate Total Tax Rate, see www.doingbusiness.org/methodology/paying-taxes.

and improvements in enforcement, but the source of the revenue increase could not be independently verified.

Table 6.5 – Tax rates as a constraint, Niger and comparators

	Percent of firms identifying taxation as a constraint	Rank of taxation (among top constraints)
Benin (2009)	67.6	4
Burkina Faso (2009)	75.7	2
Chad (2009)	59.7	10
Ghana (2007)	31	3
Malawi (2009)	15.6	5
Mali (2010)	26.3	7
Nepal (2009)	6.3	11
Niger (2009)	60.4	5
Zambia (2007)	25.2	1

Source: Enterprise Surveys, 2007-2010

6.4. Starting a business

One area where Niger scores poorly on the Doing Business Indicators is in starting a business, with Niger's low score resulting primarily from the cost of starting a business rather than from the procedural burden involved in doing so.[186] The cost of the procedures necessary for starting a business is equivalent to 112 percent of per capita income, and the required minimum paid-in capital is over 500 percent of per capita income. The African Organization for Harmonization of Business Rights (*Organisation pour l'Harmonisation en Afrique du Droit des Affaires* or OHADA) "Uniform Act Relating to Commercial Companies and Economic Interest Groups" fixes the required minimum paid-in capital for different types of companies in Niger. A private limited liability company is required to have at least one million FCFA deposited in the bank at all times.[187] Doing Business uses this amount to calculate its "minimum paid in capital" score.

However, this alone is not sufficient to determine whether the cost of starting a business is a binding constraint. Additional data would be required to determine the shadow price to the Nigerien economy of the high cost of starting a business. Moreover, when informal sector firms were queried regarding the barriers to formalization, the cost of starting of business was not cited as a key obstacle. As such, the cost of starting a business cannot be definitively excluded as a binding constraint to economic growth, but the available evidence suggests that its impact would be secondary to the regulatory burden and inequitable tax system identified in Section 6.2.

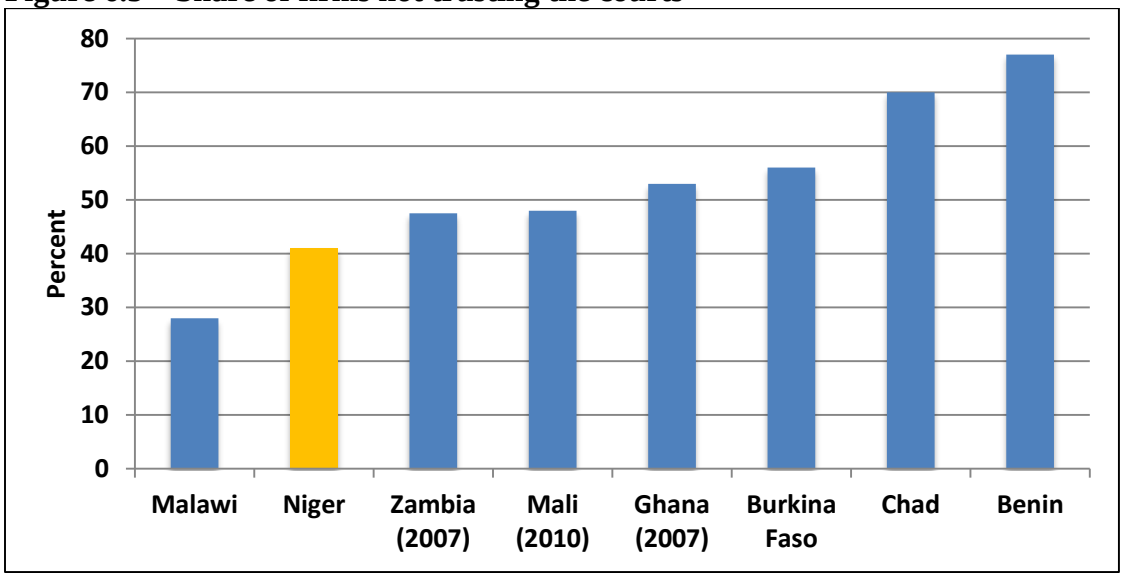
6.5. Property rights and rule of law

The Tandja government made addressing the constraints of rule of law and property rights protection a priority in the early part of the 2000s, shortly after coming to power. The judicial reforms of 2004 created business tribunals dedicated specifically to commercial cases, and

[186] Niger made a significant reform several years ago in consolidating their business registration procedures.
[187] See Article 311 of the Uniform Act

eventually the Niger Mediation and Arbitration Center (*Centre de Mediation et Arbitrage du Niger* or CNAM), designed to mediate business disputes in a non-judicial setting. Despite concerns regarding the funding of these tribunals and complaints regarding lengthy wait times, their creation has coincided with an improvement in perceptions of Niger's judicial system. The share of Nigerien businesses believing the courts to be unfair, corrupt or partial fell from 57 percent to 41 percent between 2006 and 2009.[188] In the 2009 survey, fewer Nigerien businesses perceived the courts to be corrupt or unfair than in any of the comparators with the exception of Malawi.

Figure 6.5 – Share of firms not trusting the courts

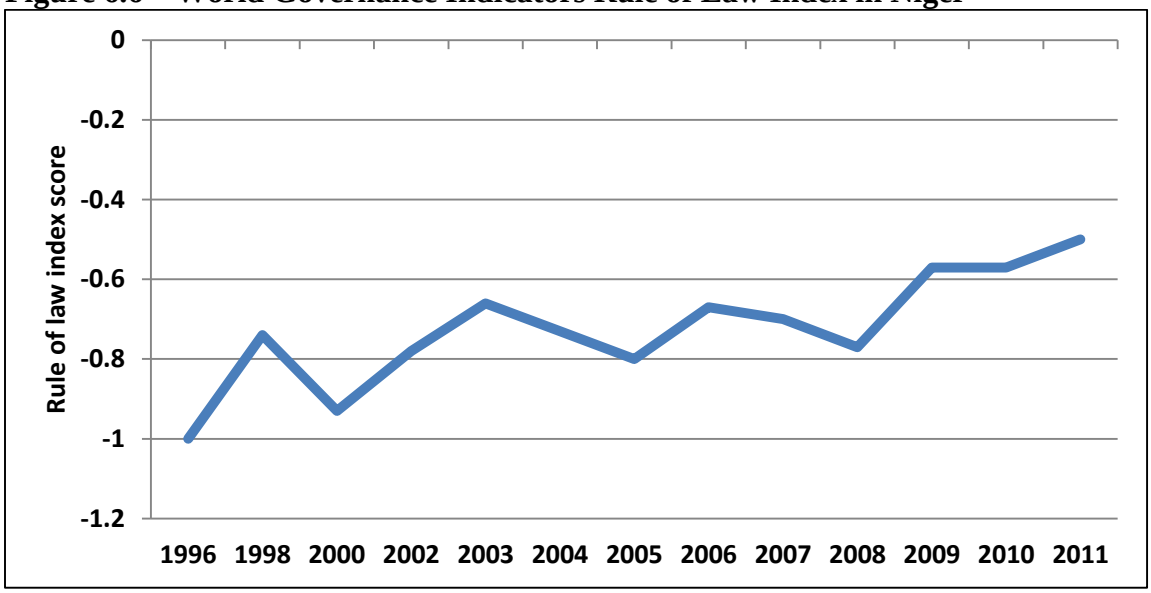


Source: Enterprise Surveys, data from 2009 unless noted. Data for Nepal were unavailable.

The World Governance Indicator "Rule of Law" metric assesses "the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." In the late 1990s and early 2000s, Niger scored poorly on this index – in the bottom quintile of countries worldwide. The country's performance improved significantly in the aftermath of the restoration of democracy in 1999, and this coincided with improved domestic investment in 2000-2003, during the early years of the Tandja regime. The Rule of Law score fluctuated around a constant mean in the middle part of the decade, and Niger remained just below the 30th percentile of countries. This changed in 2009, when the score began to follow an upward trend. The current rule of law percentile ranking is 37.1, which is only slightly above the regional average of 35.6.

[188] Enterprise Survey

Figure 6.6 – World Governance Indicators Rule of Law Index in Niger



Source: World Bank, World Governance Indicators

6.6. Corruption

In the 2009 Enterprise Survey, firms in Niger cited corruption most frequently "as a major constraint" to their operations, but when asked to identify the top business environment constraint, corruption was ranked fourth, with 13.8 percent of firms identifying it as their top constraint (see Figure 0.2). This suggests that the reach of corruption is broad but not deep, and while corruption is problematic and undoubtedly increases the risk and reduces the expected returns of private sector investments, it does not rise to the level of a binding constraint.

Corruption in Niger is prevalent. Firms complain of having to pay significant bribes to accomplish routine tasks involving the government. Nearly half of all economic actors surveyed stated that a gift was expected in order to secure a government contract, and approximately one-third indicated that bribes are required to obtain permits from the government.

On broader indexes measuring corruption, Niger scores near the average of the comparator countries. On Transparency International's Corruption Perception Index 2012, Niger scores 33 out of 100 (100 being least corrupt), which ties it for 113th in the world (an improvement of more than twenty places between 2011 and 2012), and 23rd among the 48 Sub-Saharan African countries ranked on the index. On the World Governance Indicators' Control of Corruption Index, Niger scores sixth among its comparators and is in the 31st percentile among all nations.

Table 6.6 – Corruption in Niger

	Share of firms expected to give a gift:				Value of expected gift to get gov't contract (percent of contract)
	To "get things done" with public officials	In meetings with tax officials	To secure a gov't contract	To get an operating license	
Benin (2009)	54.5	26.2	59	44.6	5
Burkina Faso (2009)	8.5	6.7	11.8	4.1	0.9
Chad (2009)	41.8	21.2	47.3	52.6	4.3
Ghana (2007)	38.8	18.1	61.2	22.6	8.3
Mali (2010)	19.4	20.2	22.8	42.4	2.5
Malawi (2009)	10.8	11.4	2.8	3.5	0.1
Nepal (2009)	15.2	14.9	62.2	11.7	4.4
Niger (2009)	**35.2**	**13.7**	**43.4**	**32.5**	**3.9**
Zambia (2007)	14.3	4.9	27.4	2.6	2.1

Source: Enterprise Surveys

The government of Niger has made controlling corruption a high priority, creating an anti-corruption body and installing a complaint hotline at the Ministry of Justice. There has also been a push on compliance with the Extractive Industries Transparency Initiative, especially as foreign investment in the sector has increased. These initiatives have resulted in improvements in the country's scores on control of corruption over the last several years, bringing Niger in line with the comparator countries.

Corruption itself, while problematic, does not satisfy the necessary conditions to be considered a binding constraint to economic growth. However, corruption may serve to exacerbate the identified binding constraints, either by dissuading individuals from entering the formal sector, dissuading foreign direct investment, or limiting the competitiveness of exports by imposing additional costs.

6.7. Labor market rigidities

Labor market regulations, when properly designed and implemented, should strike an appropriate balance between protecting workers and stimulating economic growth by providing employers with the flexibility necessary to respond to changing market conditions. Overly onerous labor regulations can increase production costs and reduce productivity. Such regulations can significantly increase the marginal cost of labor relative to its marginal product, decreasing the demand for labor and resulting in an inefficient underutilization of this resource by the private sector. As highlighted by the Tunisia Constraints Analysis, "there is a growing body of rigorous empirical evidence from a variety of countries that labor market regulation tends to reduce

productivity, growth, and employment (see, e.g. Besley and Burgess 2004, Almeida and Carneiro 2008, and Poschke 2006), as well as labor force participation (Botero *et al.* 2004)."[189]

Minimum wage in Niger is 30,047 FCFA per month, just above the national poverty line of 29,447 FCFA per month. In 2010, the value added to minimum wage ratio for Niger was .96, which is higher than every comparator country with the exception of Chad at 1.28. Firing costs in Niger are, on average, equal to approximately 35 weeks of salary, which is in line with other countries in the region. These rates do not indicate that the shadow price of labor market regulations is high relative to the comparators countries.

At present, not enough data exists to evaluate the other three tests. Given the stability in Niger's labor market regulations in recent years, observing measurable changes to investment or economic growth resulting from changes in labor market regulations was not feasible. The large informal sector could be a means of circumventing labor regulations in the formal sector. However, when informal sector firms were queried regarding the barriers to formalization, labor market regulations were not cited as a key obstacle. Some formal firms employ workers informally, but more information is needed to understand the prevalence of this practice and the underlying reasons for it. The fourth test would be confirmed by a bifurcation in the market between firms that are less labor intensive or are better equipped to absorb the high costs associated with formal hiring and firms that require significant labor inputs or are unable to absorb such costs. In the absence of additional data, labor market rigidities cannot be confirmed or excluded as a binding constraint to growth.

6.8. Land access

Land access in Niger is complicated, as most land is governed by three competing systems of management – traditional, Islamic, and modern. Land access has been subject to a twenty-year effort by the Government of Niger to establish a common set of ground rules and impartial arbitration bodies through the *Code Rural*. There is little documentation on the effectiveness of the implementation of the *Code Rural*, but it appears that its reach may be limited.[190]

The majority of land conflict in Niger occurs in rural regions, most commonly between agricultural farmers and herders, with the conflicts regularly escalating into violence (Lund, 1998, 2011). Efforts to regulate property rights and thereby reduce the frequency of conflict have met with mixed results, with the *Code Rural* constituting the most recent effort. Despite these efforts, property rights disputes and conflict have occurred consistently in Niger in recent decades.

Despite the difficulties encountered in reforming land tenure and management, it appears that the use of modern land management is becoming more prevalent in rural areas. Excluding the cities of Niamey and Agadez, there were only 2,901 land titles registered in Niger between 2000 and 2008. In contrast, in 2009, 1,479 land titles were registered.

[189] "Towards a New Economic Model for Tunisia: Identifying Tunisia's Binding Constraints to Broad-Based Growth," pg 116.

[190] Discussions in Niamey indicate that the *Code Rural* has been implemented in only 3,000 of Niger's 15,000 villages, but the team has been unable to independently verify this claim.

The available data and analysis shed little light on the reasons for this shift towards modern land tenure systems in rural areas, but an interview with a former Permanent Secretary of the *Code Rural* offered some insight. Under the customary land system, if a family member moves from a rural area to an urban center, he may ask the head of the household or communal group to give him a piece of the family plot as one-time compensation for no longer consuming any output from family land. If this happens, the land is fully private, no longer belonging to the family, and can be sold more easily than land that is still part of the family plot. In this way, land can move from the customary system and be incorporated into the modern system.

In the absence of additional data, land tenure security and land management cannot be confirmed or excluded as a binding constraint to growth.

7. MACROECONOMIC RISKS AND DISTORTIONS

Instability in the macroeconomic environment can reduce investment and add to the difficulties of achieving sustained economic growth. Just as onerous regulation or high taxation can reduce the returns to an investment, returns can also be affected by inflation or currency fluctuations. The health of a country's public sector finances is important for investors in two ways. Excessive borrowing could crowd out private investment by limiting access to loanable funds and driving up interest rates. Excessive borrowing could also suggest an inability of the government to honor its debts in the future. This could result in risk associated with doing business directly with the government, or result in exchange rate risk.

To determine if macroeconomic risks are constraining growth, this chapter examines trends and risks associated with inflation, exchange rate, external position, public spending, and interest rates in Niger.

The analysis shows that the macroeconomic environment in Niger is stable. Inflation has remained low for nearly two decades, public expenditures are within reasonable limits, and the current account has been stable except for recent investments in capital goods related to extractive industries, which will prove beneficial to the economy in the near term. Further, the country benefits from its membership in the WAEMU. **It can thus be concluded that the macro-economic environment of Niger is fairly strong and is not a binding constraint to growth.**

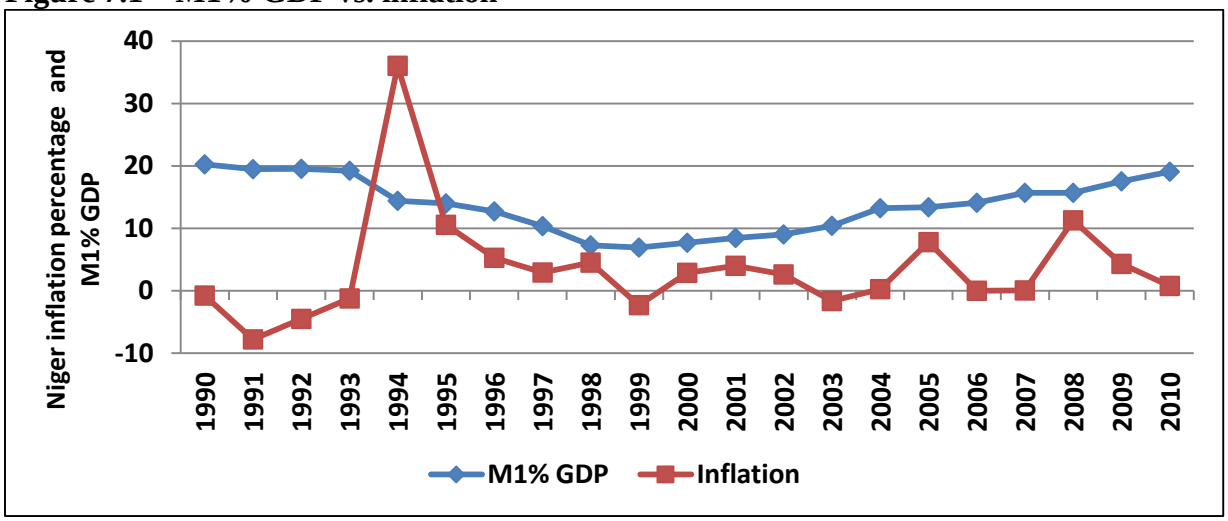
7.1. Inflation

Inflation can act as a tax on investment by lowering the real interest rate and consequently lowering real returns. High levels of inflation tend to discourage savings and investment, and encourage near-term consumption. Even if inflation is not persistently high, volatility in prices can create inflationary risk and uncertainty, thereby dissuading investment. Inflation in Niger has been relatively low and stable, barring the relatively quick adjustment to the 1994 devaluation of the CFA franc, which pushed inflation above 35 percent. In the years since, the annual rate of inflation has exceeded five percent only twice.

Niger's monetary policy is determined by the Central Bank of West African States (BCEAO) and the French Treasury, which guarantees convertibility at a fixed rate between the FCFA and the Euro.[191] Figure 7.1 shows the low inflation rates since 1995 and a stable monetary base.

[191] AfDB, "Franc Zone Ministers Meet in Paris - AfDB at the 40th Anniversary of Africa-France Monetary Cooperation," October 2012.

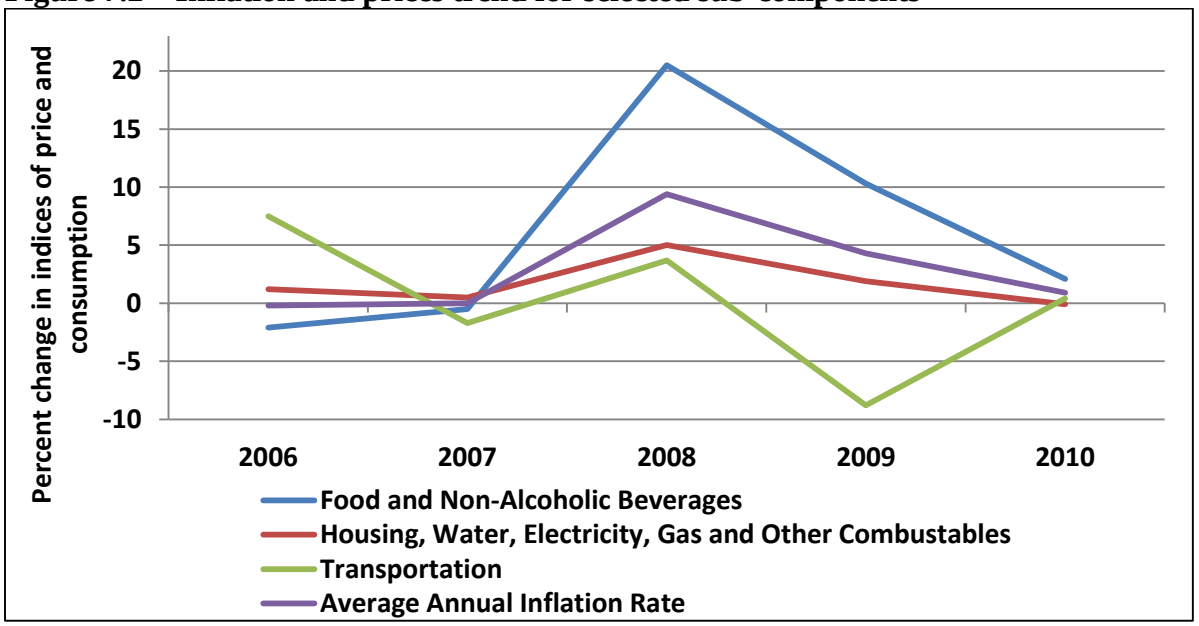
Figure 7.1 – M1% GDP vs. inflation



Source: INS (inflation), BCEAO (M1)

While low and generally stable, Niger's inflation is sensitive to import prices, especially petroleum products and food. Figure 7.2 highlights that the inflationary spikes in 2008 were largely due to high food prices, which stemmed from drought-affected harvests in the previous year, and the surge in the world price of oil witnessed that year. Overall, inflation has remained well within acceptable bounds and has displayed limited volatility and, therefore, is not a constraint to growth in Niger.

Figure 7.2 – Inflation and prices trend for selected sub-components



Source: INS, Statistical Yearbook 2010

Niger has additional inflation risks as a result of its participation in the West African Economic and Monetary Union (WAEMU). Due to regularized prices in tradable goods/services but not in non-tradable goods/services, countries with consistently higher growth rates than the average for

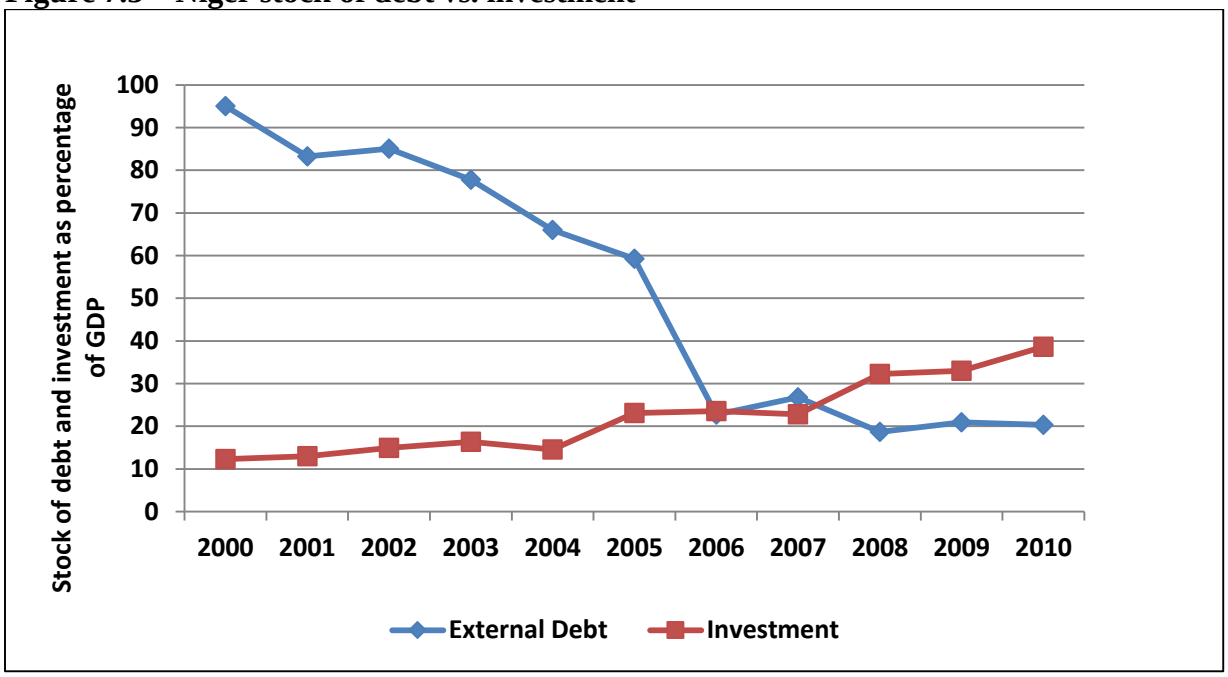
the WAEMU zone would expect to see upward inflationary pressures.[192] As Niger currently has the highest growth rate in the WAEMU, this may be a cause for concern in the future.

7.2. Total public debt

Niger developed a very large debt over the course of its early history. As detailed in the Overview chapter, a series of external shocks negatively impacted the economy and led to significant borrowing. The country benefited from external debt relief in the mid-2000s under the Heavily Indebted Poor Countries Initiative (HIPC) and the Multilateral Debt Relief Initiative (MDRI).[193] As a result, the IMF now classifies Niger's level of debt distress risk as moderate.[194]

The decrease in Niger's total public debt has coincided with an increase in investment as a share of GDP. However, it is difficult to discern the relationship between these two phenomena and the degree to which Niger's high public debt previously depressed investment in the country.

Figure 7.3 – Niger stock of debt vs. investment

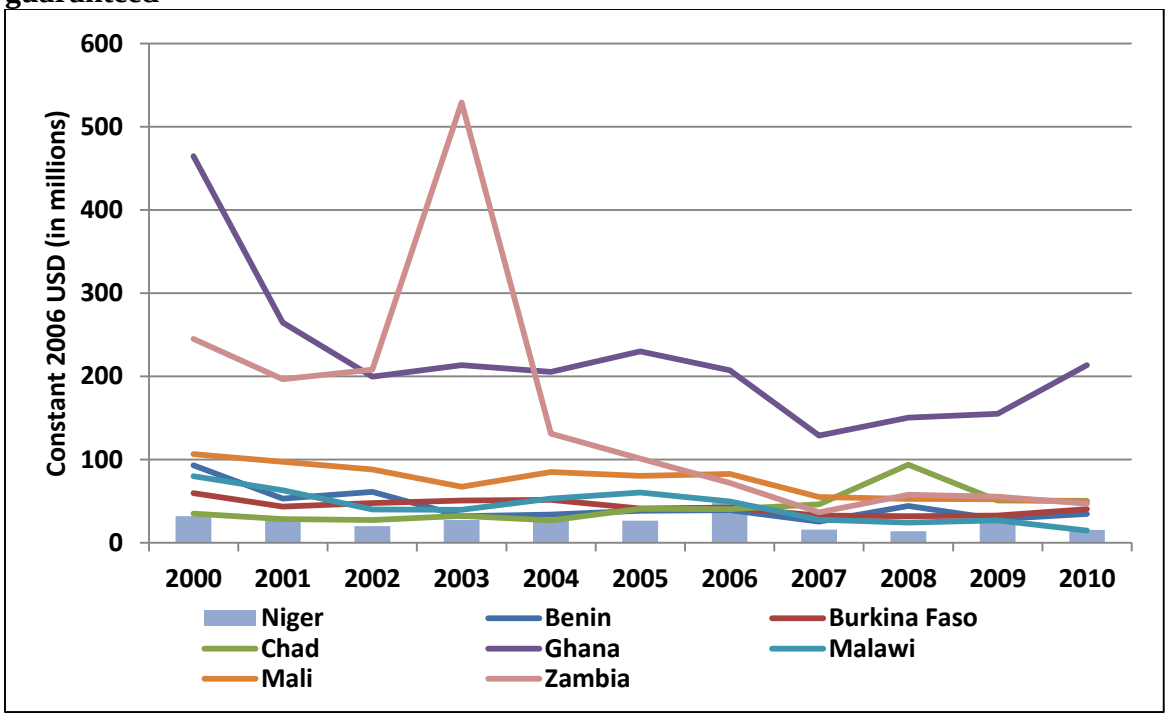


Source: IMF, World Economic Outlook, April 2012

Since 2006, Niger's debt service payments have remained low relative to comparator countries (see Figure 7.4). In this context and given the improvements experienced by Niger over the past decade, external debt is not a binding constraint to growth. However, international organizations should continue their monitoring and advisory efforts to ensure that Niger continues to engage in prudent borrowing activities and that public debt remains manageable.

[192] Puente (2003) notes the increasing upward pressure of growth on inflation within a monetary union.
[193] International Development Association and IMF, "Niger: Joint Fund-Bank Debt Sustainability Analysis," December 2008; U.S. Department of State, Bureau of African Affairs, "Background Note: Niger," February 2012
[194] IMF, "Niger: Staff Report for the 2011 Article IV Consultation—Debt Sustainability Analysis," November 2011

Figure 7.4 – Debt service on external debt as a percent of GDP, public and publicly guaranteed



Source: World Development Indicators 2012

7.3. Public finances

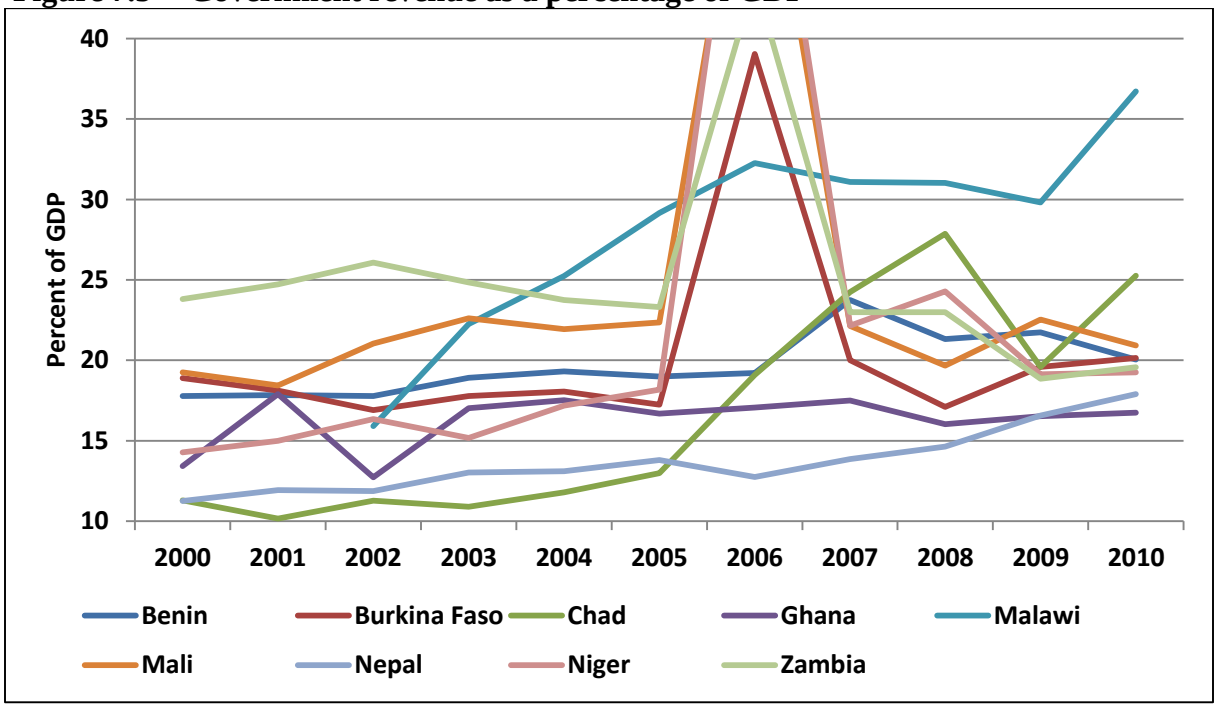
Niger's public budget has frequently been hampered by low tax revenues. It consistently fails to meet its WAEMU convergence criteria for tax revenue as a share of GDP,[195] and the most recent World Bank country economic memorandum cites the need to improve tax revenues in order for Niger to meet its development goals.[196] Some reforms have been undertaken, and on average public revenue has improved over the period from 2000 to 2010, as indicated by Figure 7.5. During the first half of this decade, government revenue averaged 17 percent of GDP, and was last observed at 19 percent of GDP in 2010. This increase was primarily due to an expanded tax base.[197] Figure 7.5 also reveals that Niger's revenues are in line with its comparators, suggesting a more generalized regional problem with low revenues.

As indicated by Figure 7.6, government expenditures as a share of GDP have risen from 18 percent in 2000 to 22 percent in 2010. The figure also indicates that Niger's rates are comparable to other countries. The annual public budget deficit has remained more or less constant, at only a few

[195] IMF, Staff Report on 2011 Article IV Consultation, pp 19.
[196] World Bank. "Niger: Accelerating Growth and Achieving the Millennium Development Goals: Diagnosis and the Policy Agenda." September 2007. Pp iv.
[197] Sacerdoti, Emilio and Philippe Callier, "Debt Relief Yields Results in Niger," *IMF Survey Magazine: Countries and Regions*, January 2008

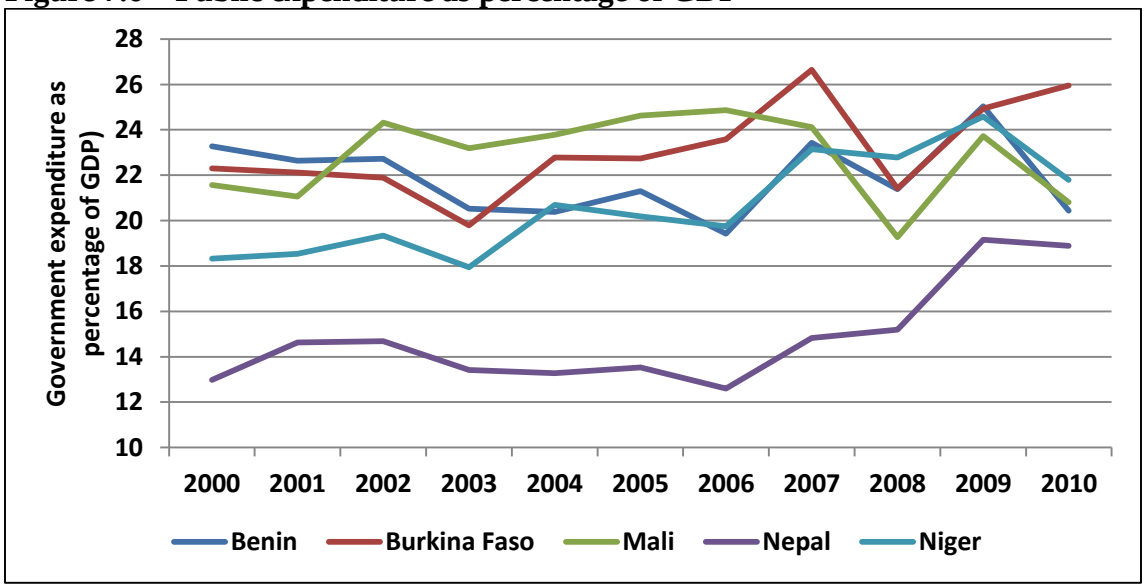
percentage points of GDP since 1995, with the exception of 2006.[198] In general, the budget deficit has been financed from external resources. This has limited its effect on the supply of domestic credit, and changes in public deficits have had little effect on domestic interest rates.

Figure 7.5 -- Government revenue as a percentage of GDP[199]



Source: IMF, World Economic Outlook, April 2012

Figure 7.6 – Public expenditure as percentage of GDP

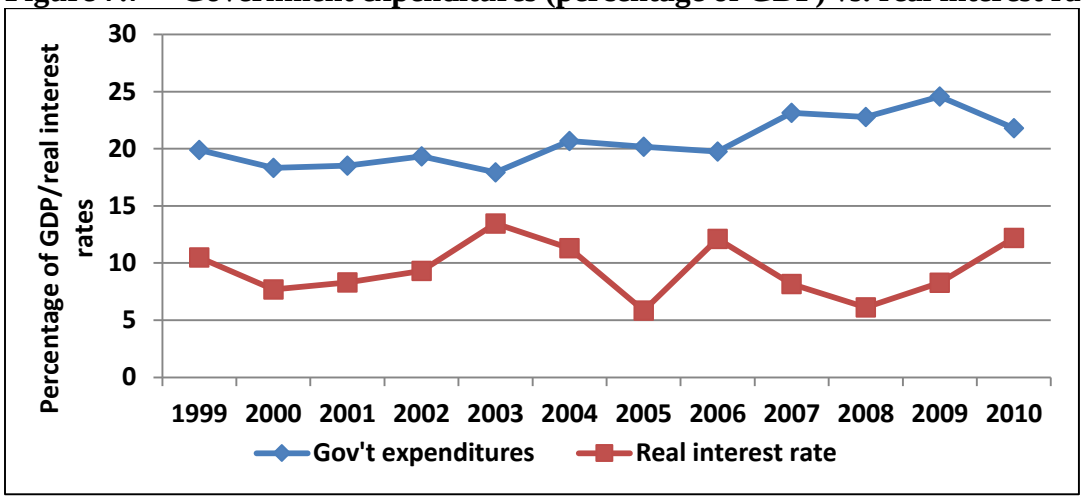


Source: IMF, World Economic Outlook, April 2012

[198] Niger National Statistics Institute (INS), *Annuaire Statistique* Nov 2011

[199] In Figure 7.5, several countries show large revenue spikes in 2006 when they received debt relief under HIPC/MDRI. The graph has been cut off to keep the y-axis scale small, making it easier to read.

Figure 7.7 -- Government expenditures (percentage of GDP) vs. real interest rate



Source: World Economic Outlook, April 2012

Niger's membership in the WAEMU imposes certain limitations on government fiscal policy. The convergence criteria's requirements for government deficit, debt, and expenditures reduce the Niger's flexibility in determining national fiscal policy to respond to shocks, and the joint ownership of monetary policy, while certainly advantageous for regional trade, can inhibit the effectiveness of fiscal policy on national shocks.[200] These limits on fiscal policy have not proven to be a significant constraint to date.

In sum, there is little evidence indicating that the level of government revenues and expenditures are creating a barrier to private investment and, therefore, they are considered to be a binding constraint to growth.

7.4. External position

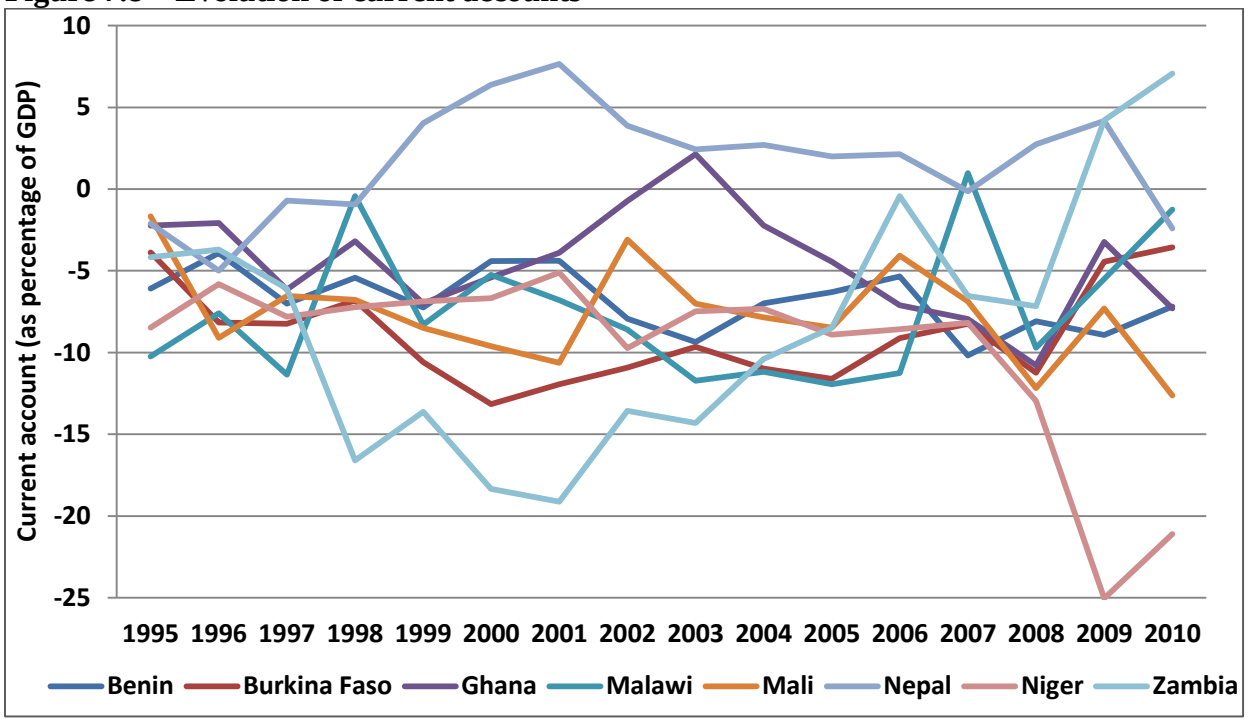
Niger's current account deficit averaged 6 percent of GDP between 1995 and 2008, which is in line with the comparator countries. The trade deficit widened to 25 percent of GDP in 2009 before reversing course the following year. As seen in Figure 7.8, Niger's external position is out of alignment with the comparator countries. This deterioration was primarily the result of imports of machinery and capital goods for the extractive and mining sectors, notably the refinery at Zinder.[201] The current account is expected to significantly improve in 2012 and beyond, as Niger becomes a net oil exporter and production of uranium is greatly expanded.[202]

While this raises the specter of Dutch Disease, exchange rate risk is somewhat reduced due to Niger's membership in the WAEMU. Niger benefits from a fixed exchange rate with its most

[200] Fiscal policy, particularly during demand shocks, is best used in cooperation with monetary policy responses to the shocks.
[201] African Economic Outlook, "Niger 2012"
[202] IMF, "Niger: Staff Report for the 2011 Article IV Consultation—Debt Sustainability Analysis"; African Economic Outlook, "Niger 2012"

important trading partner on paper, the European Union. Similarly, its trade with other WAEMU countries is facilitated by the use of a common currency. However, potential exchange rate risk exists with Nigeria, a key trading partner. According to official statistics, Nigeria is the destination of approximately 12 percent of Nigerien exports,[203] but the true percentage is likely much higher due to informal trade.

Figure 7.8 – Evolution of current accounts

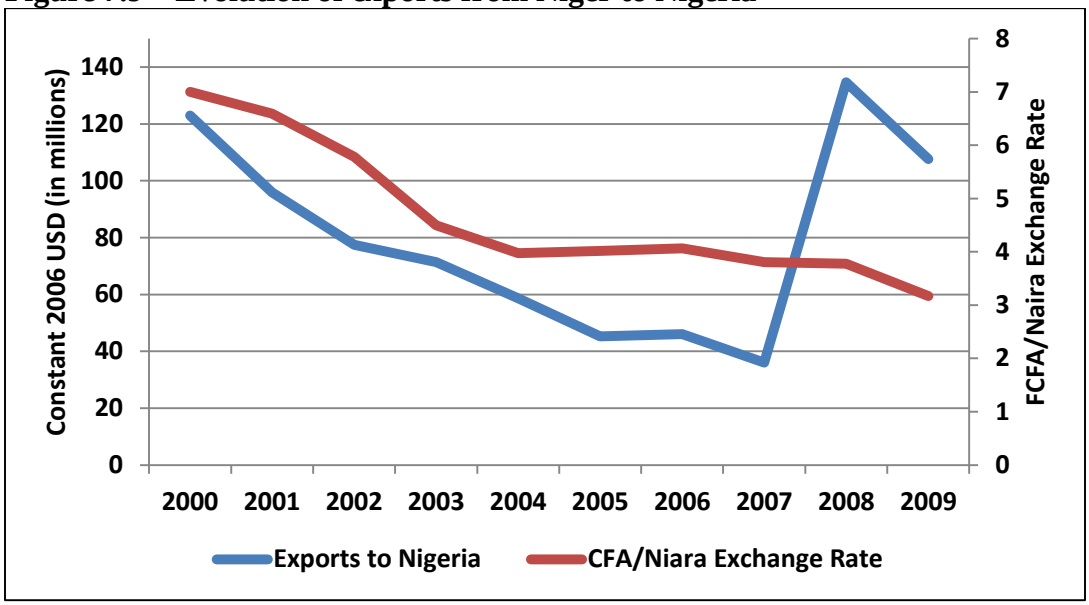


Source: IMF, World Economic Outlook, April 2012, Malawi data for 2010 is an estimate.

Since 2000, the FCFA has seen a steady appreciation against the Nigerian currency, the Naira, and there has been a corresponding decrease in the value of goods exported by Niger to Nigeria. The one-time increase in exports in 2008 was the result of a change in the agricultural policy of the Government of Niger. Setting aside the jump in exports in 2008, the steady downward trend in export value is of concern. The Government of Niger has limited control over WAEMU joint monetary policy and therefore cannot independently regulate the exchange rate between Nigeria and the WAEMU zone. If the CFA franc continues to appreciate against the Naira, the demand in Nigeria for Nigerien goods could drop significantly.

[203] UN Comtrade

Figure 7.9 – Evolution of exports from Niger to Nigeria



Source: INS Statistical Yearbook 2010, values in current FCFA

7.5. Conclusions

The macroeconomic environment in Niger has undergone significant changes over the past decade and is now relatively stable. The debt forgiveness from which Niger benefitted in the mid-2000s placed the country back on solid footing. While there are still risks, especially with regard to the current account imbalance, public debt, and exchange rate appreciation, Niger's macroeconomic policies are largely sound and do not constitute a binding constraint to growth.

8. MARKET FAILURES AND INNOVATION

Constraints analyses examine the conditions necessary to promote private investment. One of these conditions is that firms and entrepreneurs need information on what investments are profitable in a given country. This chapter examines whether firms in Niger can produce that information and identify profitable new products or sectors in which to invest. Firms may not be acquiring this knowledge for two reasons:

- Making the investments that are necessary to discover profitable opportunities is hindered by binding constraints in other branches of the HRV tree; or
- The incentives to invest in a new sector are underprovided, as the downside risks are born exclusively by the pioneering firm, while the benefits of successfully identifying a profitable sector will be spread among additional potential entrants.

Overall, it appears that innovation in Niger falls into the first category. **Innovation failures in Niger are symptoms of binding constraints that exist in other areas of the economy, and one would expect that when these constraints are removed, innovation will increase.** Nevertheless, exclusive of the binding constraints, there are certain aspects of Niger's economy that have the effect of repressing innovation. This chapter explores these issues, although they do not rise to the level of a binding constraint.

8.1. Export Overview

Much of the literature on market failures and self-discovery[204] focuses on exports. This is partly due to the availability of detailed data on the specific products a country exports. Comparable data on non-traded goods and services is rare. Focusing on exports is therefore a necessary simplification and a practical place to begin examination. As highlighted in the Overview chapter, the composition of Niger's exports has remained relatively stable over the last quarter century. Exports have been comprised mainly of natural resources (uranium, gold and lately oil), livestock, and agricultural products (see Figure 1.6). In value terms, uranium remains the dominant export despite significant fluctuation.[205]

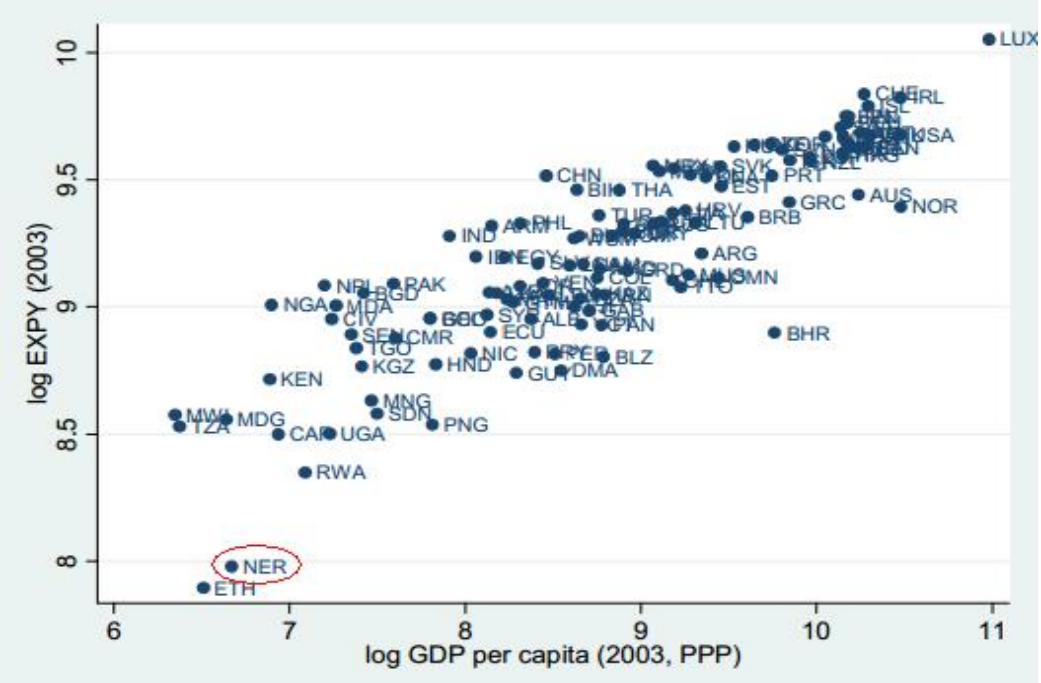
There are two distinct ways to further parse and explore export data. The first examines the evolution of a country's export basket. By tracking the "sophistication" of the export basket over time, trends may become apparent. Second, the current makeup of a country's export basket can either facilitate or hinder innovation and the discovery of profitable new products. Both aspects of Niger's exports are explored below.

[204] In their 2003 paper titled "Economic Development as Self-Discovery," Hausmann and Rodrik define self-discovery as the process of identifying the profitable opportunities and activities in a given economy.
[205] UN Comtrade

8.2. Export sophistication

Rodrik, Hausmann, and Hwang (2005) define a metric of the sophistication of an economy they call EXPY. Out of their sample of 122 countries, Niger's EXPY was calculated to be the second lowest.

Figure 8.1 -- EXPY by GDP per capita (2003)

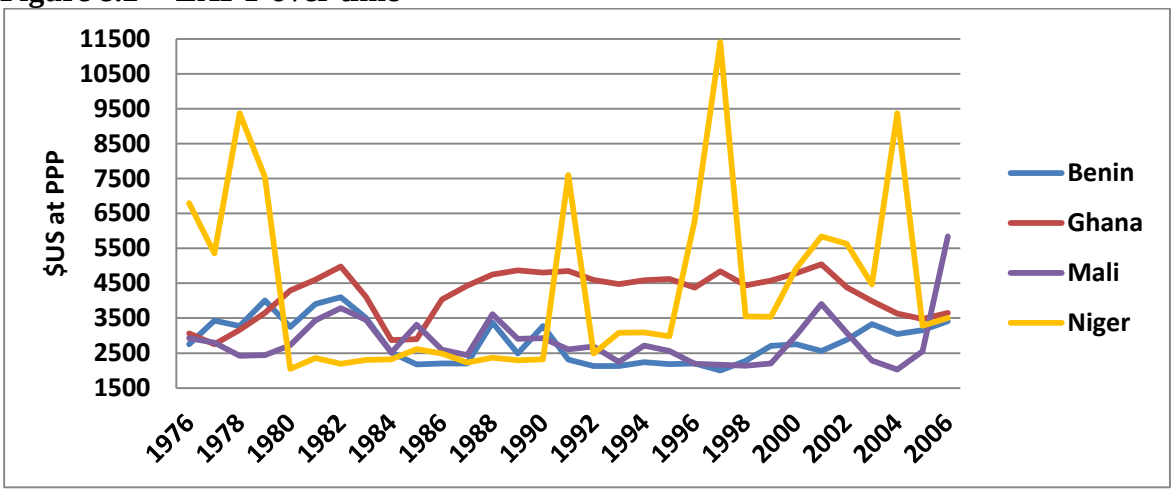


Source: Ricardo Hausmann, Jason Hwang, and Dani Rodrik, "What You Export Matters"

Another calculation of EXPY, this time by the PREM unit[206] of the World Bank, shows high volatility of the metric over time in Niger (Figure 8.2). This casts doubt on the ability of EXPY to describe Niger's economic sophistication. An alternative metric of sophistication was developed by Hausmann and Hidalgo (2009)[207] through their *Method of Reflections.* This measure is based on the number of different products a country exports (country diversity) accounting for the number of countries that export each of those products (product ubiquity). Unfortunately, as noted by Freire (2011), this metric also has difficulty in poor economies with a small set of exports: "In such cases, the export-oriented production, usually as part of foreign direct investment, of few relatively sophisticated products is captured by the higher order reflection as highly sophisticated."[208] In Niger, export-oriented uranium production has been driven by foreign direct investment (FDI). Because there are relatively few countries that export uranium, including Canada and Australia, this measure can easily become skewed (as can EXPY). In one study based on the Method of Reflections, Felipe et al (2012)[209] find that Niger ranks 70th out of 124 countries in economic complexity. This places Niger ahead of countries like Indonesia and the Philippines, an ordering which is not supported by qualitative and quantitative evidence.

[206] Poverty Reduction and Economic Management
[207] Hausmann and Hidalgo, *The building blocks of economic complexity*, 2009
[208] Freire, Clovis, MPDD Working Papers, Productive Capacities in Asia and the Pacific, United Nations ESCAP
[209] Abdon, Arnelyn, Marife Bacate, Jesus Felipe, Utsav Kumar, *Product Complexity and Economic Development*, Structural Change and Economic Dynamics, Issue 23, pp 36–68, 2012

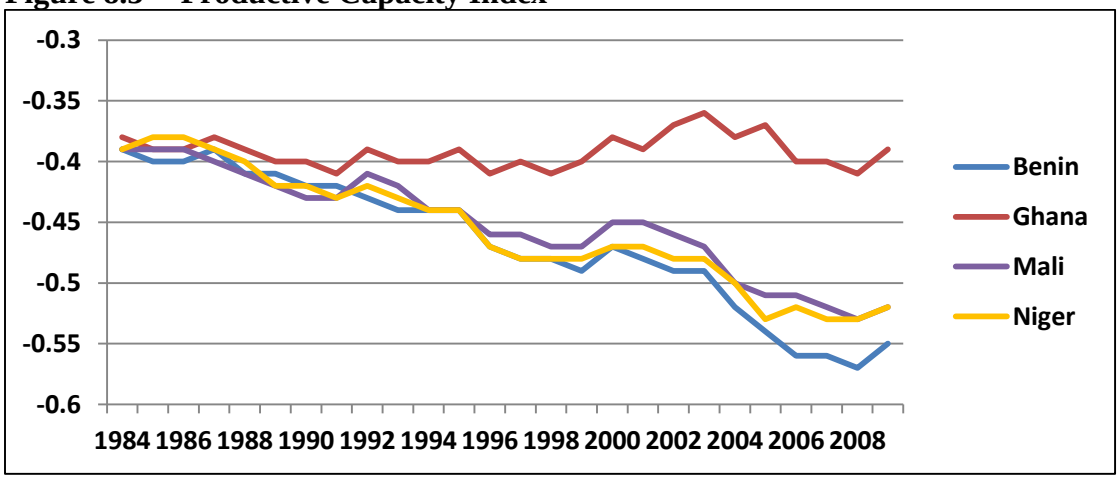
Figure 8.2 -- EXPY over time



Source: Calculation by the Economic Policy and Debt Department (PRMED) based on Hausmann, Hwang, and Rodrik (2006); using UN Comtrade data

As an alternative measure that addresses some of the problems that these metrics have with smaller economies[210], Freire (2011) constructs a productive capacity index. This shows much less volatility in Niger's measure over time.

Figure 8.3 -- Productive Capacity Index



Source: Freire 2011

Despite their different formulations, over the long run both EXPY and Freire's Productive Capacity show that Niger's economy has not achieved sustained improvements in economic sophistication. The next section examines potential causes that are specific to market failures and not included in other branches of the HRV framework.

[210] For details, see Freire 2011 or http://how2catchup.blogspot.com/2012/06/measuring-productive-capacity-using.html

8.3. New product potential

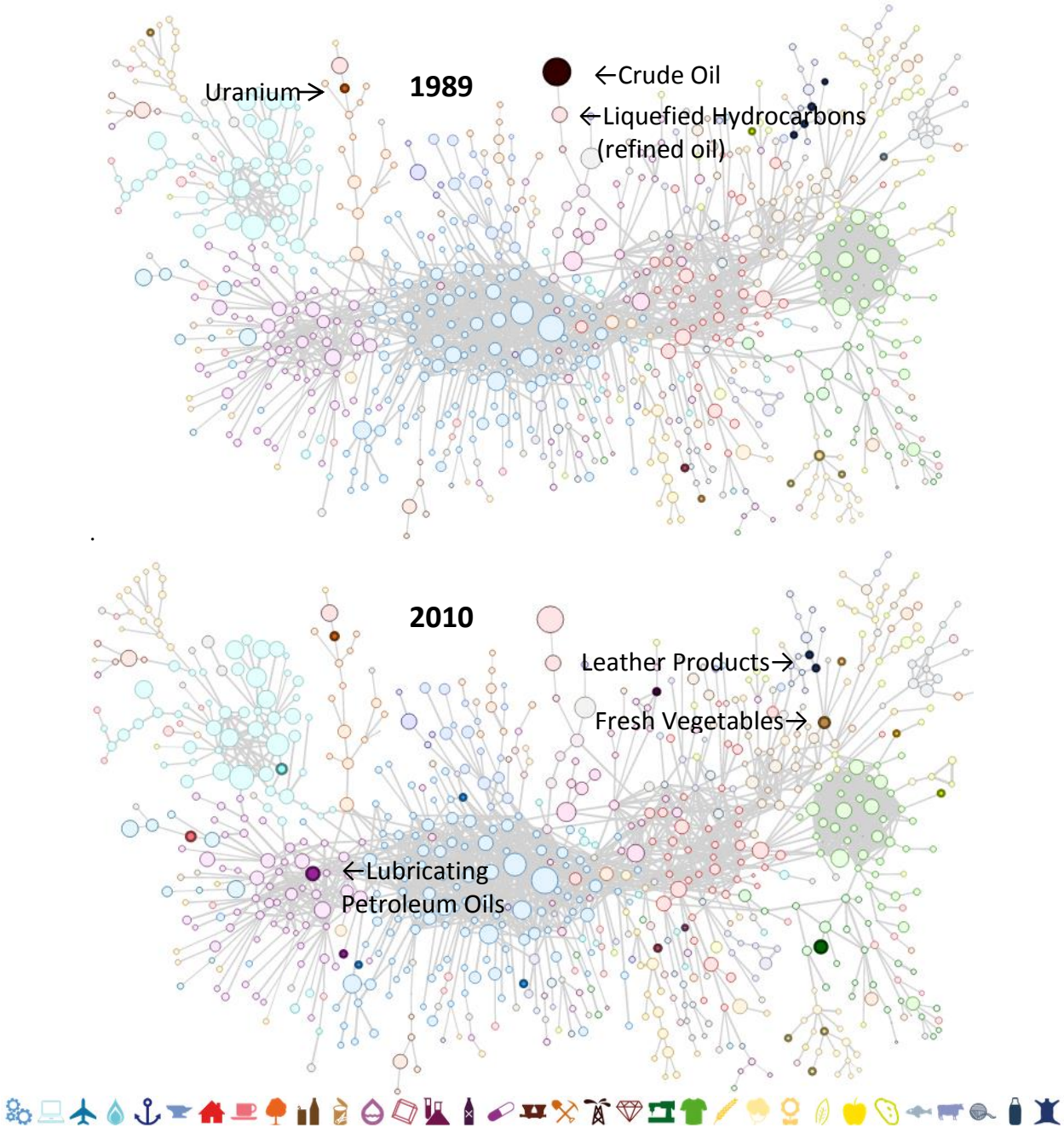
Measures of complexity and sophistication can be predictive of an economy's growth potential. If an economy's level of complexity or sophistication exceeds its current level of income, then faster income growth may be expected. In Niger's context of low levels of both sophistication and income, the question becomes: what are the constraints to increasing economic sophistication/complexity and thus producing more economic growth?

Hausmann and Klinger (2006) and Hidalgo *et al* (2007) illustrate that the ability of a country to begin exporting a particular new product is associated with the types of products currently produced. The authors theorize that a specific set of capabilities is required within an economy for a particular product to be exported with comparative advantage. These capabilities can include machinery, human capital, and connections to external markets - both physical connections through infrastructure as well as connections through relationships and institutions. Therefore, a firm's move into a higher productivity product is made easier the more the necessary capabilities already exist within the local economy or firm. The Product Space[211] organizes products by their implied shared capabilities[212].

Figure 8.4 shows that the products Niger has exported have been on the sparse periphery of this network and connected to relatively few new product opportunities. This implies that the capabilities necessary to produce Niger's current exports are not as useful for expanding into other (perhaps more productive) sectors. In 2011, Niger's oil refinery became operational, and the following year the country became a net exporter of oil products for the first time. This is surely a positive development for the country and has the prospect of boosting measures of economic complexity like EXPY. However, refined oil is unlikely to facilitate entry into additional productive exports as it is also in a remote area of the product space as shown in Figure 8.4. Niger's only persistent export[213] that is in a dense area of the product space is "lubricating petroleum oils". Niger's other exports – uranium, crude oil, vegetables, and animal products – are less likely to lead to new exports.

[211] Hidalgo CA, B Klinger, A-L Barabasi, R Hausmann, Science (2007) ; Hidalgo CA, Hausmann R, PNAS (2009)
[212] To do this, Hidalgo et al. examined the probability that a country produced a certain product given that it already produced a second. The higher this probability the more likely the two products shared a significant set of capabilities. The result of this network is shown in Figures 8.5 and 8.6.
[213] Due to Niger's small economy, various re-exports pop up in the product space from year to year. These would not actually represent capabilities. It appears lubricating petroleum oils is not a re-export.

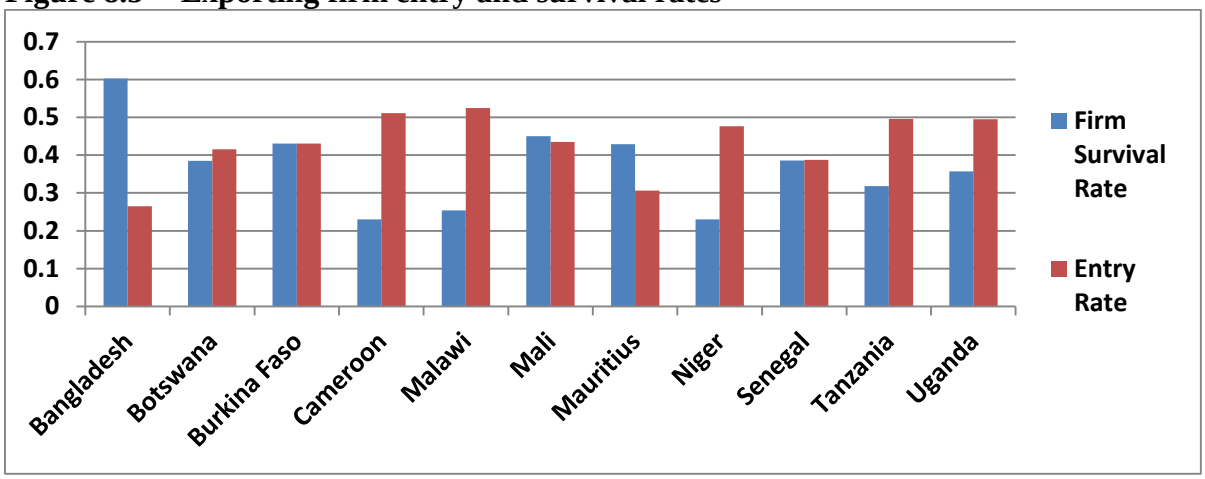
Figure 8.4 -- Niger's product space in 1989 (top) and 2010 (bottom)



NOTE: Darker filled-in bubbles represent a product that is exported. The size of a bubble represents the value of the worldwide market for the product

Despite Niger's limited product space, Figure 8.5 indicates that new exporting firms are getting started in Niger at a rate equivalent to comparator countries. The survival of these firms appears to be low, but this rate is likely skewed as the only available data is from 2009, a year of especially low growth and political instability in Niger.

Figure 8.5 -- Exporting firm entry and survival rates



Source: World Bank, Exporter Dynamics Database
Note: Data is sparse and represents the average of recorded rates from 2005-2010.

8.4. Conclusions

Using the available evidence, it is not possible to determine whether investments that can improve Niger's economic complexity/sophistication are hindered more by a lack of opportunities (as described by the product space view) or by other constraints to investment (as described elsewhere in this paper). In Niger's context of increasing FDI into extractive exports, it may be difficult and inappropriate to try to enhance the complexity of the export basket at this time. There are likely more gains to relaxing constraints and increasing investment in non-tradable services that support and complement the increased FDI. Diversifying into a more sophisticated export basket may therefore be a longer-term objective that can be supported in part by the gains achieved through the current FDI increase.

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