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MILLENNIUM CHALLENGE CORPORATION
UNITED STATES OF AMERICA

Towards a New Economic Model for Tunisia

Identifying Tunisia's Binding Constraints to Broad-Based Growth

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A joint study

by

The African Development Bank
The Government of Tunisia
The Government of the United States

2013

Contributors

African Development Bank	Government of Tunisia	Government of United States
Team Members Vincent Castel Team Leader Principal Program Coordinator for Tunisia, ORNA Kaouther Abderrahim Economist,ORNA Samia Mansour Economist, EDRE Gilles Nancy Professor, Aix-Marseille University – Centre de recherche de développement économique et recherche international (DEFI) **Management** Jacob Kolster Regional Director for Egypt, Libya and Tunisia, ORNA Steve kayizzi-Mugerwa Director Research Department, EDRE Shimeles Abebe Division Manager, EDRE **With capable contribution from** Daniel Gurara Senior Research Economist, EDRE Emanuele Santi Principal Country Economist for Tunisia, ORNA Koffi Marc Kouakou Statistician, ESTA Mohamed Safouane Ben Aissa Economist, ESTA	**Coordinating ministry** Ministry of Regional Developement and Planing **Team Members** Rached Ben Saleh Team Leader, Director, MDRP Sofiene Gaaloul Statistician / Sous Directeur, MDRP Anis Nacibi Economist, MDRP Dridi Nasreddine MDRP Mourad Abdesslem Banque Centrale de Tunisie Mustapha Bouzayene Director, Institut National de la Statistique (INS) Hayet Jouini Statistician, INS Helel Yamen Chef de service, INS Fadia Bougacha Statistican, INS Kaouther Chibani Statistician, INS Bouslema Nejib Lead Economist, Institut Tunisien de la Competitivité et des Études Quantitatives (ITCEQ) Raoudha Hadhri Statistician, ITCEQ Haithem Hammami Statistician, ITCEQ Safa Mkaouer Statistician, ITCEQ Mokhtar Kouki Professor Ecole Supérieure de la statistique et de l'analyse de l'information (ESSAI).	**Lead agency** Millennium Challenge Corporation (MCC) **Team Members** Theresa Osborne Team Leader, Lead Economist, MCC Omar Parbhoo Economist, Department of State Don Sillers Senior Economist, United States Agency for International Development (USAID) **With capable assistance from** Cynthia Berning MCC Brad Cunningham MCC Jerrod Mason USAID Jeremy Streatfeild MCC

Contents

1. Executive Summary

1.1 Introduction

In January of 2011, the people of Tunisia took to the streets to protest the existing 23-year-old regime, thus igniting the Tunisian Revolution and inspiring a wave of popular upheaval in the Arab world. To some observers the sudden outpouring of discontent was a surprise. Tunisia had achieved a notably solid record of economic growth, which averaged nearly 5 percent per year over the previous decade. Growth had in turn helped reduce the rate of poverty to below 5 percent nationally by 2005 (source: official INS statistics).[1] Yet this apparent success obscured inherent weaknesses in the country's development model. Unemployment remained stubbornly high and youth unemployment kept rising. Regional disparities in economic growth, income and wealth created what many today consider to be "two Tunisias"—one relatively affluent, along the coastal regions, and another in the lagging interior regions. Standards of living for many Tunisians stagnated, while few opportunities existed either to invest or work in private enterprises. Meanwhile, neither the public nor the private sector was expanding employment fast enough to absorb the growing supply of university graduates, leading to rapidly rising rates of unemployment among Tunisia's most educated young people. Increasing economic dissatisfaction was reinforced by a lack of political freedom and by increasing high-level corruption, which had a corrosive effect on the business climate. In the end, the revolution was sparked by a conflict between a small, informal fruit vendor and the police in a region particularly lacking in business and employment opportunities. The fruit vendor's position of economic disenfranchisement and loss of dignity prompted his tragic self-immolation, with well-known and far reaching consequences. Yet the seemingly mundane precipitating events were also emblematic of both the importance of small informal activities to earn a living, and of the lack of freedom to engage in and retain the fruits of one's endeavors in pre-revolutionary Tunisia.

Today, Tunisia faces several major economic, social, and political challenges as it attempts to create a more democratic, accountable political system and an economic policy regime

[1] Details are provided in Chapter 2: Overview of Recent Economic Trends.

that can foster greater prosperity for a broader segment of its population. Short-term risks have emerged since the revolution—in particular frequent strikes and social unrest due to pent-up economic demands of the population, and elevated macroeconomic fragility. These risks must be managed so that they do not undermine the economic and social progress already achieved. Charting a successful course requires rebalancing the role of the state to ensure an acceptable measure of equity and economic security along with adequate and necessary freedom for the private sector to play its role of innovating, investing, and creating employment opportunities.[2-3] At the same time, an economic strategy that fails to address the specific underlying sources of the country's previous economic failures is unlikely to succeed. The revolution has relieved the country of a corrupt and autocratic leader, but many of the underlying structural issues that have inhibited more broad-based growth remain. Thus, an essential ingredient of a successful revision of Tunisia's development model is a clear understanding and resolution of the most binding impediments to the country's broad-based growth.[4]

This study attempts to identify these constraints, both as they were manifested in the years leading up to the revolution and today. The methodology starts from the widely accepted proposition that private sector investment and entrepreneurship are ultimately the keys to sustained economic growth. Many useful studies have been conducted recently on the Tunisian economy (for example, ADE (2012), Erdle (2011), AfDB (2012), ILO (2011)), providing important details on a variety of economic issues. However, the methodology adopted in this study has the singular advantage of casting a clear, focused light on the most binding constraints among the many economic issues under discussion, and allowing for greater prioritization of the most critical constraints to address as part of a

[2] One debate of special relevance to Tunisia and other countries of the Arab world concerns the desired level of equity (or economic equality) and what is meant by this—equity of opportunity, or equity of outcomes.

[3] It should be stressed that the conceptual framework on which this report rests clearly recognizes the essential role of the state in supporting development, notably by maintaining stable macroeconomic policies (Chapter 4), maintaining an appropriate set of policies and institutions to ensure that private sector activity can operate efficiently (Chapter 5), investing in education and health to ensure equitable access to human capital (Chapter 7), and investing in critical infrastructure to complement and facilitate private investment (Chapter 8). These issues are examined in greater detail in the body of the report.

[4] There is no commonly agreed definition of "broad-based growth." For the purposes of this study, we define this generally as 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.

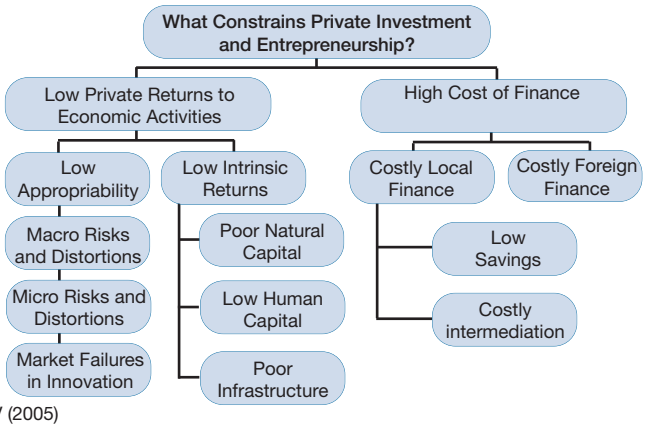
successful medium- and long-term development strategy. This is essential given the difficulties associated with implementing any economic reform program, especially in a context like Tunisia's where social demands are high and exceed the immediate capacity of the economy and the government to deliver.

1.2 Methodology of Growth Diagnostics

The growth diagnostic approach was proposed in a 2005 working paper by Ricardo Hausmann, Dani Rodrik, and Andrès Velasco (HRV).[5] They present the framework for the growth diagnostic analysis in the form of a "tree," as shown in Figure 1.1.

The method starts from two simple and uncontroversial propositions. First is the recognition that private investment and entrepreneurship—the process of identifying profitable business opportunities, productivity improvements, and innovations, and applying resources to the creation of value are the primary drivers of sustained economic growth, and that these results mainly depend on the prospect of an adequate rate of return to the investor, given the risks, as well as the costs of financing. Thus, understanding the reasons for inade-quate growth and private investment requires analyzing the factors that affect the returns and constraints that private entrepreneurs face.

Figure 1: The HRV Growth Diagnostic Tree



Source: HRV (2005)

[5] As HRV point out, all countries face an array of economic and development challenges, but not all such challenges are equally restrictive to growth. Because reform and investment efforts are limited by implementation capacity, political space, and financial resources, focusing on alleviating those constraints that limit growth the most will have the greatest impact. Moreover, because it is not possible to quantify all of the dynamic or indirect effects of loosening a given constraint, addressing those constraints that are the most directly binding provides greater assurance of a positive impact on growth.

The second key insight of economics that pervades the empirical method, simple and uncontroversial as it is, is that poor economic outcomes—such as low levels of investment, consumption, employment, or credit—must either be the result of constrained supply or of limited demand. 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. Hausmann, Klinger, and Bailey (2008) suggest four tests to determine whether this situation holds for a given factor, as follows:

(1) The shadow price of the constraining factor is high;[6]
(2) Changes in the availability of a constraining factor are correlated with changes in investment or growth;
(3) Economic agents are incurring costs or risks to circumvent the constraint; and
(4) The economy includes few firms that rely heavily on the constraining factor. This has come to be known as the "camels and hippos" test, by analogy to the fact that one does not expect to see hippos in an environment lacking water. Rather, one expects to see firms that have adapted to the existing constrained conditions, like camels that have adapted to the desert.

The HRV framework calls for a sequential approach, starting at the top of the tree. As such, the first question addressed is whether private investment and entrepreneurship are primarily limited by (a) a high cost of finance, arising from financial market constraints in the presence of high investment demand; or (b) weak investment demand by potential entrepreneurs, because they see few opportunities to earn an adequate return. Given the response to this initial question, the diagnosis then proceeds to identify the source of the problem—either the high costs of finance or the low private returns to investment.

To assess whether a factor of production or environmental condition is relatively scarce or inadequate often requires comparing the economy with those of other countries. To be informative, the comparison countries should be somewhat similar in geography and income levels. In the case of Tunisia, the countries of Jordan, Malaysia, Morocco, Romania and Turkey were

[6] A shadow price is the marginal value to the economy of an additional unit of the factor.

chosen for this purpose. In some cases aggregate data from lower middle income and upper middle income countries were also sometimes used, in addition to a broader set of faster growing economies.

Preliminary Considerations

The strength of the growth diagnostic approach is that it seeks to answer an ambitious yet important question that other methods, however rigorous, cannot answer. It does so by examining and testing all potential major constraints to a national economy, without making strong assumptions on the underlying growth process.[7]

Some might question the relevance of the HRV diagnostic approach to a country like Tunisia after a game-changing event like the 2011 revolution. After all, the conclusions drawn from the HRV approach, like any empirical method, can only be as valid as the data used to derive those conclusions. Nevertheless, the method retains its relevance to Tunisia today. The 2011 revolution has certainly altered Tunisia's development trajectory, transforming some of the issues the country faces: certain issues have disappeared since the revolution, while others have abated or evolved; some remain as they were, and some new issues have emerged. This fluid situation adds a layer of complexity to the exercise and requires one to distinguish among these possibilities. To overcome this challenge, the report interprets recent trends in light of current realities if there is reason to believe that the revolution erased or reversed pre-revolutionary facts or trends. However, as demonstrated in the subsequent chapters, many key underlying structural issues have persisted or evolved rather than disappeared since the revolution.

Finally, data on economic outcomes, however imperfect, can capture important economic phenomena more reliably than general perceptions of local observers can, and thus reveal important symptoms of the underlying constraints. Individual perceptions of a constraint often fail to take account of its aggregate economic effects. Nonetheless, qualitative factors can be important, and wherever possible data from enterprise surveys are used to assess these. Additional qualitative factors—attitudes, culture, and social constraints—are more difficult to quantify and could influence economic behavior as well. Such factors were

[7] General equilibrium models focused on growth dynamics can also be used but are typically unable to incorporate as many potential constraints and depend upon a variety of crucial assumptions, whereas the HRV method is relatively agnostic regarding the underlying growth process.

raised in discussions of this study, but in fact many perceptions expressed are common in developing countries.[8] Unfortunately, it is difficult to benchmark cultural or sociological factors among countries without credible attitude surveys. At the same time, the strength of a data-driven approach is that it elevates objectivity over prejudgment and aggregate evidence over the diversity of opinions held by various actors and observers.

1.3 The Binding Constraints to Growth in Tunisia

The application of the methodological framework discussed above reveals two broad categories of binding constraints to economic growth in Tunisia:

- First, a lack of effective institutions to ensure public sector accountability, the rule of law, and checks and balances on power, resulting in weak protection of property rights, barriers to entry, and corruption. Property rights and investment freedoms are fundamental to the development of entrepreneurship and to investment, innovation, and risk-taking, and therefore to achieving growth in productivity and the higher wages and living standards that accompany it. Whereas the worst abuses of the former regime that undermined those rights ended with its departure, establishing a sound framework of economic governance including institutions that provide investors with a clear and transparent set of rules and assurance that they will be able to reap the fruits of their investments—will require a sustained effort and has not yet come to fruition.[9] Lack of public sector accountability remains a significant cost for many businesses, which have limited recourse to the rule of law or corrective measures. In the aftermath of the revolution, moreover, labor and social unrest have contributed to weakening property rights. Constitutional and administrative reforms are needed to address these failures, along with a clear and consistent approach to the private sector on the part of the transitional government to signal its commitment to private sector-led growth and fair and objective adherence to existing laws.

[8] Although culture is undoubtedly a factor, there is no strong indication that the Tunisian economy is intrinsically limited by the attitudes and culture of its population, or that these attitudes cannot change if the context changes. On the contrary, there are many positive signs of entrepreneurial behavior, motivation, and cultural richness, which are likely to prove advantages to the economy and society.

[9] These institutions can be strongly related to democratic institutions and transparency, a free press, and an independent judiciary, which are also important objectives for social and political development, but here our focus is on the impacts on economic performance.

- Second, the high fiscal and regulatory costs of employing workers. Although social security programs and labor protections are intended to enhance the pay, benefits, and economic security of workers, many measures currently in place in Tunisia have been counter-productive in achieving these aims for all but the most fortunate Tunisian workers. Rather than enhancing the provision of acceptable jobs, they result in reduced investment, greater informality, lower worker pay, higher unemployment, and increased economic insecurity. Tunisian firms face among the highest payroll tax burdens in the world; among the highest risks associated with stringent worker dismissal requirements. These factors combine to reduce investment and the demand for labor across skill levels. Firms remain small, and use a variety of means to circumvent the formal requirements of employing workers, including informality or under-declaration of employees. Their inability to adjust employment according to market conditions discourages them from growing to attain economies of scale and from investing in worker training. These responses in turn reduce innovation and productivity growth and make Tunisian firms less competitive internationally. Tunisia's slow growth in labor productivity relative to other middle income countries reinforces the pressure to reduce private sector wages. Through a variety of channels, therefore, reduced demand for labor puts significant downward pressure on market-determined wages, increases unemployment especially of young workers, reduces standards of living, and relegates the majority of workers either to unemployment or to low pay through informal engagement in small, low-return enterprises. A national dialogue to achieve a new social contract is needed which includes previously excluded civil society representatives, which is informed by the economic impacts of the current policy regime, and which recognizes the importance of the private sector in driving growth and employment. Moreover, alternatives for designing social security systems and labor market protections should be considered with the aim of protecting people rather than specific jobs (See, e.g., forthcoming World Development Report (2013)).

These binding constraints operate on a national level, and therefore have negative consequences both in faster-growing and lagging regions. While a lack of investment in infrastructure and poor school quality are widely believed to reduce investment and employment opportunities in lagging regions, the lack of demand for the products and workers emanating from those regions is primarily driven by national and international markets.[10] Indeed, the constraints identified in this diagnostic may be even more binding on the growth of lagging regions. Whatever modest level of investment does take place in Tunisia is likely to flow first into regions with greater natural capital and infrastructure.

The identified constraints affect exporting firms and foreign-owned firms to a somewhat lesser extent than firms primarily serving domestic markets. Exporters enjoy exoneration of social charges and other taxes for several years, and given their larger scale and higher productivity are better able to adhere to formal labor requirements. They also appear to have been less subject to infringement of property rights under the prior regime. However, the identified constraints are still likely to dampen investment and employment creation by exporting firms as well. Meanwhile, the constraints present a tremendous barrier for Tunisian firms serving the domestic market—some of which would otherwise supply exporting firms or export directly, but under current circumstances cannot expand or innovate to the degree needed to compete internationally. Although Tunisia has relied upon an industrial policy and various tax breaks to promote innovation and competitiveness, without removing these fundamental obstacles further government efforts to directly subsidize or promote innovation are not likely to succeed in transforming the economy.

Emerging Risks and Potential Constraints

In addition to the two binding constraints identified above, risks have emerged since the revolution that could become

[10] There is much discussion and some planning within Tunisia to undertake regional growth diagnostics as well. The method used here can be used to diagnose regional constraints as long as regionally disaggregated data are available. At the same time, conducting a solid regional growth diagnostic requires starting with a clear understanding of the larger forces at work. Economic history suggests a strong tendency for middle-income countries to experience a concentration of economic activity toward cities and more favorably located regions, such as those with better access to international markets (World Bank 2009). This concentration of production typically results in an initial divergence in living standards between fast-growing and slow-growing regions, followed by a convergence, as workers relocate from lagging to leading regions in search of better-paying jobs. This historical experience seems quite relevant to Tunisia, a small country where labor and financial resources are mobile and where most markets are national (or international) in scope. Much of the solution to the country's regional disparities in living standards will necessarily involve workers moving to faster-growing regions. A further implication is that a lack of investment and job creation at the national level reduces opportunities for workers in lagging regions to increase their incomes through internal migration..

binding constraints if not effectively addressed. First is the risk that social unrest becomes persistent and pervasive, in which case it would deter investment in the coming years. Related to this is the risk of macroeconomic instability that could emerge if internal social and economic pressures override the government's commitment to fiscal sustai- nability.

In addition to this risk, the analysis highlights the problematic nature of the financial sector; the low quality of primary and secondary education, particularly in lagging regions; the need for improved water resource management; and the limits of Tunisia's current sea port capacity and management. Although not currently binding constraints, these problems could become more important constraints in the future.

1.4 Summary of Evidence

The evidence clearly points to the branch of the HRV tree on the left, low private returns to investment, rather than the high cost of finance, despite issues within finance. Tunisia's financial system is relatively under-developed and weak. Its ability to innovate and expand is constrained by capital account restrictions, an overhang of non-performing loans, dominant state ownership, and interest rate regulations, which can inhibit risk-taking. As in any developing economy, it is likely that some viable investments are stalled or limited by a lack of financing. At the same time, there are a variety of private financial institutions, including 16 commercial banks, private equity firms, and micro finance institutions, which are competing to some extent to fill gaps left by poor intermediation by state-owned institutions. In fact, access to finance does not pass the empirical tests of a binding constraint to growth. Real lending interest rates follow a pattern that is not explained by interest rate regulations but rather by demand and supply in the market. Moreover, correlation tests suggest that investment levels in the economy are dominated by demand side issues rather than by shifts in the supply of financing. Tunisian firms rely on external financing to a higher degree than most benchmark countries. While collateral levels are high, they are on par with benchmark countries. Firms cite high interest rates as an obstacle, but in fact real interest rates have been falling and are low by international standards. This suggests that financing costs are only "high" in view of the low returns investors anticipate. Thus, although there

is considerable room for improvement in the efficiency and reach of the financial sector, at present the evidence clearly shows that low demand by investors dominates supply-side financial constraints in determining investment levels in the economy. In short, costly finance is not a binding constraint to growth in Tunisia.

The next set of possible binding constraints relates to the availability of complementary factors of production—natural capital, human capital or skill, and infrastructure. Although there are some important disparities by region (discussed further in the relevant chapters) which are important for social equity, if not for growth, none of the issues associated with these complementary factors constitutes a binding constraint to growth at the national level.[11]

Despite mixed reviews by some businesses about the quality and relevance of the education and training of Tunisian workers, the evidence shows that a lack of human capital or skill does not pose a binding constraint to growth at present. Although unequal access to health services is an issue, indicators of health status show that Tunisians are healthier than the citizens of other countries with similar or higher levels of income. Similarly, Tunisia has increased overall educational attainment rapidly, particularly among youth and women. Yet the low quality and cost-effectiveness of primary and secondary education is an issue to be addressed in order to improve social mobility and equality of opportunity, as well as to prepare highly skilled workers for the future. There is some indication of a skills mismatch, in that excess supply of some skills is greater than for others. However, given high rates of unemployment across disciplines, there is no evidence that a lack of skill or knowledge in any particular area poses a binding constraint to investment and entrepreneurship at the national level. Outmigration of educated workers is high, and firms operating in Tunisia rate both the availability of engineers and the overall quality of the education and training system highly. This indicates that demand for skill is broadly being met, and a lack of demand for labor is the primary cause of high unemployment in virtually all broad skill categories. To the extent that the country's more binding constraints to growth are alleviated over the medium term, the demand for skill will increase. In such a scenario, the relatively modest competencies produced in Tunisia's schools, particularly in

[11] Without more disaggregated data on demand it was not possible to test for growth impacts at the regional level.

less-served regions, could eventually constrain Tunisia's future growth. However, investing appreciably more resources in skills and education today will not by itself spur an acceleration of growth.

In spite of some marked regional disparities in basic infrastructure—most notably sanitation—on the national level Tunisia's infrastructure appears to be an area of relative strength. Indicators of the quality of roads, costs of transport, and provision of electricity are all relatively favorable. In addition, information and communication technology infrastructure, airports, and ports meet current demand. At the same time, some specific infrastructure investments would likely to improve Tunisia's growth prospects in the future—in particular, greater port capacity and efficiency to support future growth in international trade. In addition, other transport infrastructure linking productive regions and urban centers and better connecting suburban and urban areas may be economic viable, but without further feasibility studies it is not possible to say.[12] Based on relatively adequate supply of infrastructure to support investment, there is no indication than a lack of infrastructure at the national level poses a binding constraint to Tunisia's growth.

Finally, Tunisia has some clear advantages in the area of natural capital. It enjoys relatively abundant arable land per capita, valuable phosphate resources, and a favorable geographic position on the Mediterranean Sea, which allows it to trade easily with Europe and other Mediterranean countries. At present, Tunisia also possesses adequate water resources. However, more sustainable water resource management will become increasingly important as global warming and water scarcity intensify. Nonetheless, at present a lack of natural capital does not represent a binding constraint to Tunisia's national economic growth.

Rather than a high cost of financing or lack of complementary factors, Tunisia's economy is mainly constrained by the risks and distortions which potential investors face in appropriating the returns to their investment and entrepreneurial endeavors. Under the former regime, the lack of effective institutions to ensure public sector accountability, the rule of law, and checks and balances on power has resulted in weak protection of property rights, barriers to entry and

[12] There were not sufficient data available to test for high excess demand in any of the nation's roads outside the main urban areas, but urban congestion appears to be a growing issue.

competition, and high costs and risks of corruption. Prior to the revolution, Tunisia scored relatively poorly on third-party indicators of public sector accountability and the rule of law; for example, 48 out of 100 on Global Integrity's score on "Corruption and the Rule of Law", and 17 out of 100 on their Government Accountability score. Corruption has been an issue in Tunisia for years, but as high level corruption grew under the previous regime, businesses had increasing reason to believe that a large share of their profits could be effectively expropriated if they were seen to be too successful. Although the regime is gone, additional institutional and political reforms to provide accountability and strong rule of law are still needed. Business groups and enterprise surveys continue to emphasize the costs of corruption and importance of reducing it. At the same time, barriers to entry without a clear policy rationale have not yet been removed, and have impeded healthy competition and dynamic productivity growth in both domestic and export sectors, and enterprises continue to rate the abuse of dominant market positions among their top obstacles to doing business.

There is clear evidence based on the available tests that the high fiscal and regulatory costs of employing workers represent a binding constraint to growth as well. Despite the important intent behind Tunisia's labor market requirements, in fact the current system results in reduced employment economy-wide, reduced labor productivity and wage growth, increased prevalence of small, low-return, informal activities, reduced growth, and a more unequal sharing of growth. Many workers are employed informally, and Tunisian firms utilize other measures to an unusual degree in order to avoid some formal requirements of employing workers, including sub-contracting and part time work, to circumvent various requirements. In addition, firm size in Tunisia is out of line with international comparators, especially for Tunisia's level of income: The high fraction of firms which have fewer than 6 workers indicates that larger firms tend not to thrive in the Tunisian economy. The formal requirements of employing workers make it unprofitable for firms to employ more of them or in many cases to invest at all. Small, less productive Tunisian firms are ultimately much less likely to grow to a scale or level of sophistication which allows them to compete internationally. There are three key policy areas

creating this situation. First, payroll taxes do not encourage employment. Payroll tax rates for firms serving the domestic market approach 30 percent of payroll, without including the 9.18 percent contributed by workers, and as a share of profits are considerably higher than in comparator countries. Secondly, the lack of flexibility in the labor market, particularly regarding open ended contracts, raises the costs and risks of employing workers in the first place, and like other restrictive labor market policies, reduces the demand for labor. Doing Business places Tunisia 110th in the world in overall labor market flexibility (in 2010) and 181st out of 183 countries in the flexibility of dismissing workers (2012 Doing Business). Thirdly, the current wage determination system adversely impacts employment levels and in combination with the other two policy areas reduces wages in the private sector: many who are successful in finding employment are paid less than the applicable minimum wage. Centrally negotiated wages may protect certain workers, but where they are higher than labor productivity in a given firm, they decrease demand for employees. Firms surveyed in the most recent World competitiveness survey report a low correspondence between pay and productivity (with a rank of 81st out of 143 countries) and a relatively low degree of flexibility in wage determination (119th in the world), relative to all comparator countries. All these facts highlight the need for the renegotiation of the social contract to allow formal employment to expand in a manner which benefits both firms and workers.

Finally, there is an additional potential constraint to consider—market failures surrounding technological and product innovation. Tunisia's performance in innovating and diversifying has been solid, if disappointing in some dimensions. Tunisia's economy has undergone significant structural changes, shifting from large shares in agriculture and mining and towards growing shares by the manufacturing and services sectors, and has successfully diversified its export product mix and increased the technological content of its exports, including in the mechanical and electrical sectors. By some measures of export sophistication or product uniqueness, Tunisia has fallen short of its potential to export products which contain higher value added. However, this is despite the leading position Tunisia held in export sophistication in 1980 (and 1960), which should have boosted

growth in value added exports if market failures were the crucial driver of sub-par innovation. At the same time, Tunisia has pursued an active industrial policy to promote innovation and export growth, in part by providing direct subsidies and tax breaks for new businesses, which should address market failures in innovation to a great extent. Rather, based on the evidence available, other factors which limit appropriability—namely, weak protection of investor returns, barriers to entry and competition, and impediments to employing workers at a sufficient scale are likely to present the most severe obstacles to an investor attempting to innovate.

Organization of the Report

The rest of the report provides the factual and contextual underpinnings to the diagnostic, as well as a more detailed presentation of the evidence. To frame the diagnosis, Chapter 2 first provides context on recent economic trends and the main weaknesses in Tunisia's recent economic performance. Chapters Three through Nine present the results under each topic shown on the analytical tree, with more detailed conclusions and general policy recommendations on many of the major issues identified.

2. Overview of Tunisia's Growth Experience

This chapter sets the stage for the growth diagnostic by reviewing key trends in the Tunisian economy along with the economic strategies underlying these trends. Tunisia's economic growth record has been one of contradictions, forced into view by the revolution of 2011. Tunisia had long been portrayed as an economic success story in the region. Moderately rapid and steady growth in gross domestic product (GDP), averaging 4.9 percent per year and 3.2 percent in per capita terms lifted per-capita GDP to just over 6,000 Tunisian dinars in 2010—nearly US$4,200 at market exchange rates.[13,14] Growth in recent decades was driven largely by increasing productivity and private investment, in apparent response to Tunisia's progressive opening to international trade, stabilization of its macroeconomic position, and adoption of various market-oriented reforms. Tunisia's growth has also helped drive a large reduction in rural and urban poverty, and has been accompanied by dramatic improvements in health, nutrition, and education.

Yet despite relatively impressive overall gains in living standards, in the past decade growth was not sufficiently rapid or broad-based to provide expanding economic opportunities to Tunisia's population. Labor productivity increased but grew slowly by international standards, while real private sector wages stagnated. Unemployment remained persistently high, especially among Tunisia's youth. Moreover, sharp regional disparities in growth, unemployment, and poverty rates created a widespread sense of economic disenfranchisement (Verdier-Chouchane et al, 2011).

The first section of this Overview reviews broad trends in Tunisia's economy since the early 1960s. The second section focuses on unemployment and regional disparities—key economic failures

[13] $4,199, equivalent to US$9,550 at Purchasing Power Parity (PPP) exchange rates, which adjust for differences in the cost of living.

[14] In 2009, Tunisia broke into the upper-middle income country group as defined by the World Bank. The World Bank's country classifications are based on Gross National Income per capita converted to US dollars using "Atlas" exchange rates, which are averaged over 3-year periods. Tunisia crossed the threshold of the upper-middle income group -- $3,976 – in 2009.

that helped fuel the anger behind the revolution.

2.1. Tunisia's Economic Growth and Policies 1961-2010

Evolution of Economic Policies

Tunisia's broad economic policy direction has shifted several times since independence in 1956. The first phase, launched in 1961, was characterized by state domination of the economy, with the nationalization of many industries, imposition of wage and price controls, and the adoption of protectionist trade policies. In 1969, this approach was replaced by a strategy that continued to protect domestic producers, but also promoted export growth through fiscal incentives and technical support. Although the government continued to dominate heavy industry, transport, and power, it encouraged private investment in other sectors, notably textiles and tourism. In 1972, Tunisia began to offer a wide range of incentives to investors for approved industrial projects, especially for export production. These incentives are believed to have helped Tunisia achieve rapid growth in GDP and exports, but eventually proved fiscally unsustainable. Large public deficits spurred rapid growth in Tunisia's external debt, which reached an unsustainable 65.9 percent of GDP in 1986. Public borrowing over this period also appeared to crowd out domestic investment, which fell from 34 percent of GDP in 1982 to 25 percent in 1986. As a result, by 1986 Tunisia could no longer service its foreign debt or finance essential imports.

Tunisia's next policy shift began with structural adjustment programs in 1987. Facing external insolvency and internal political crisis, in 1986 the government sought assistance from the World Bank and International Monetary Fund (IMF) under the Economic Recovery Structural Adjustment Program (ERSAP). Major elements of the program included a reduction in tariffs and in non-tariff barriers to imports, the adoption of a value-added tax (VAT) with offsetting reductions in personal income taxes, devaluation of the currency, and privatization of some state-owned enterprises. The period following the ERSAP broadly coincided with higher average productivity growth.

The year 1997 marked the beginning of another major policy phase as Tunisia initiated an ambitious program of reforms contained in a series of three na-

tional development plans, which focused sequentially on: integrating Tunisia into the world economy, strengthening the private sector, adapting to the opening of the economy primarily by improving competitiveness, developing infrastructure, strengthening social cohesion, and reducing regional disparities; beginning in 2002 on growth, employment, export development, and the preservation of macroeconomic equilibrium; and finally beginning in 2007 on consolidation of macroeconomic stability, continued gradual opening of the economy, increased investments in sectors with high added value, and educational reform.

Tunisia's Economic Growth in Comparative Perspective

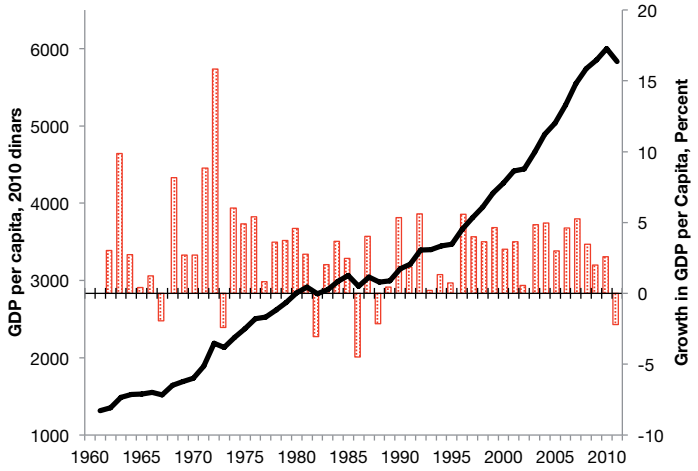
Tunisia's economic growth per capita has generally accelerated with these reforms, as shown in Figure 2.1. Despite exogenous events—droughts, September 11th, 2001, and most recently the global financial crisis—as well as the effects of the dismantling of the Multi-Fiber Agreement (MFA), which had until 2005 provided Tunisia protection in the European market from Asian and East European competitors, Tunisia has managed to reduce the volatility of growth since the late 1990s in part by emphasizing macroeconomic stability.

Despite these achievements, in comparative terms, Tunisia's growth has not matched that of relevant comparator countries. Figure 2.2 compares the evolution of real per capita income in Tunisia since 1980 with that of Jordan, Malaysia, Morocco, Romania, and Turkey, as well as with weighted averages for the World Bank's lower middle income country (LMIC) and upper middle income country (UMIC) groups[15]. As shown, over the long term, Tunisia's growth has been on par with that of Turkey and the LMICs, but fell short of the growth of the UMIC group, whose average is dominated by China and includes other fast-growing countries such as Malaysia and Thailand[16]. The only comparator country that strongly outgrew Tunisia was Malaysia, where real per capita income grew at an average rate of 3.3 percent per year 1980-2010, compared with 2.5 percent in Tunisia.

[15] The vertical axis uses a logarithmic scale, making slopes proportional to growth rates.

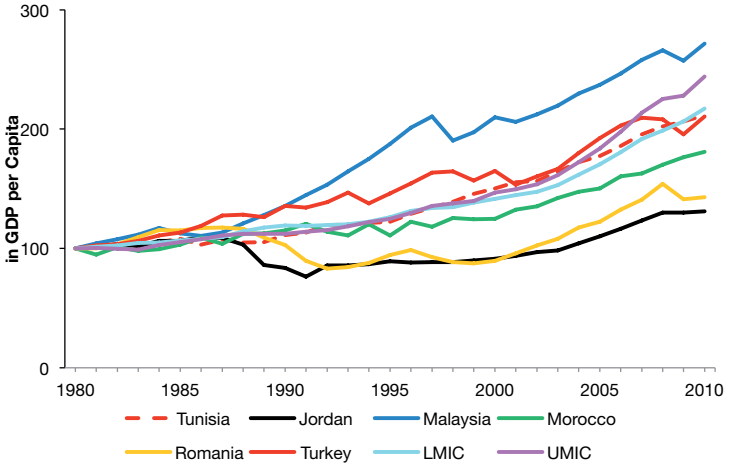
[16] Tunisia grew at almost exactly the same average rate as Turkey over the past three decades, but maintained a more stable growth path. It also grew much faster than Jordan and Romania over the full period, although growth in those countries has accelerated over the past decade following a collapse in growth in the mid-1980s.

Figure 2.1: GDP per Capita 1961-2011 with Annual Growth Rates



Source: World Development Indicators and Tunisian National Institute of Statistics.

Figure 2.2: Growth in GDP per Capita, Tunisia and Comparators 1980-2010

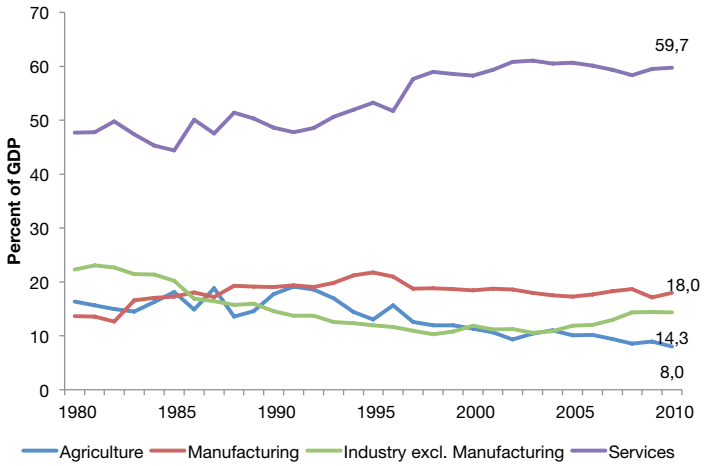


Source: World Development Indicators.

Evolution of Economic Structure

Over the past three decades Tunisia's economy has undergone significant restructuring as its output mix shifted away from agriculture and raw materials (phosphates, oil, and gas) in favor of services and, to a lesser extent, manufacturing. The share of services in GDP rose from 48.7 percent in 1990 to 59.7 percent in 2010 (Figure 2.3). As a result, growth in services has accounted for the majority of GDP growth over the past three decades: 1.7 points of the 2.8 percent annual growth in the 1980s, 3.7 out of 4.7 percent in the 1990s, and 2.8 out of 4.4 percent in the 2000s.

Figure 2.3: Evolution of Sector Shares in GDP



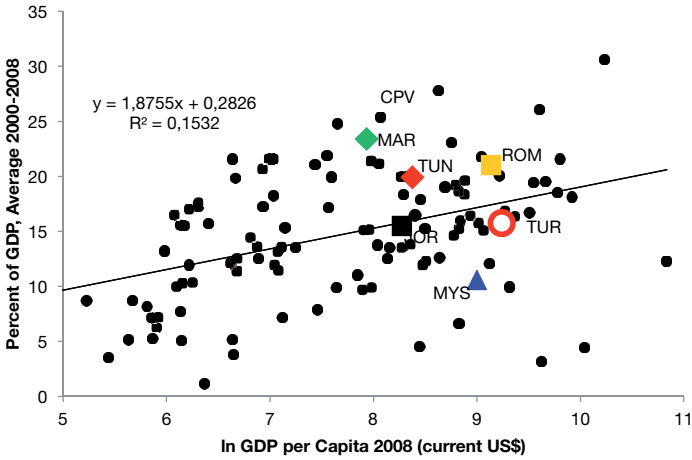
Source: World Development Indicators

Private Investment

As with growth generally, Tunisia has been a strong but not stellar performer in stimulating private investment. As shown in Figure 2.4, Tunisia's ratio of private investment to GDP—19.9 percent over the period 2000-2008—exceeded the average for a country of its income level. On the other hand, the figure also shows that many other countries have devoted a larger share of GDP to private investment, including Morocco (23.4 percent) and Romania (21.0 percent).

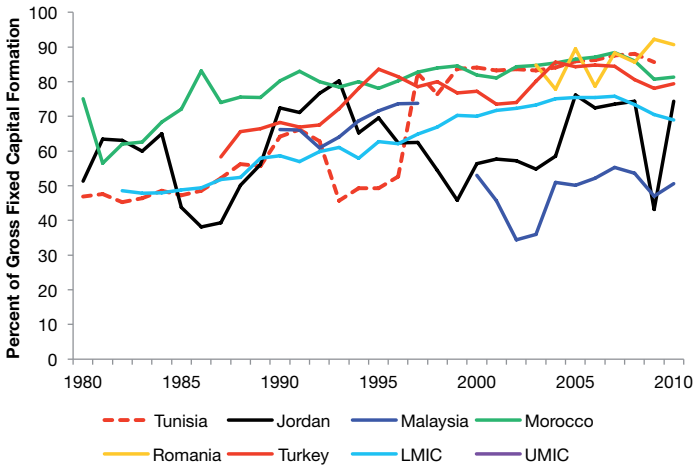
In response to reforms, Tunisia's level of private investment rose sharply beginning in 1996, as reflected in its share of national investment (See Figure 2.5). From 1980 through 1996, this share fluctuated around an average of 52 percent, the lowest among the comparator countries. In 1997, it rose to 82 percent, and then to 88 percent in 2008, roughly in line with that in Morocco and Romania, and well above that in the other comparator countries. Like private investment, Tunisia's overall investment rate is higher than international trends would suggest given its income level. Nonetheless, many countries—both richer and poorer than Tunisia—devote a much larger share of national income to investment.

Figure 2.4: Private Gross Capital Formation in Relation to GDP per Capita



Source: World Development Indicators.

Figure 2.5: Private Investment as Share of Total Investment



Source: World Development Indicators

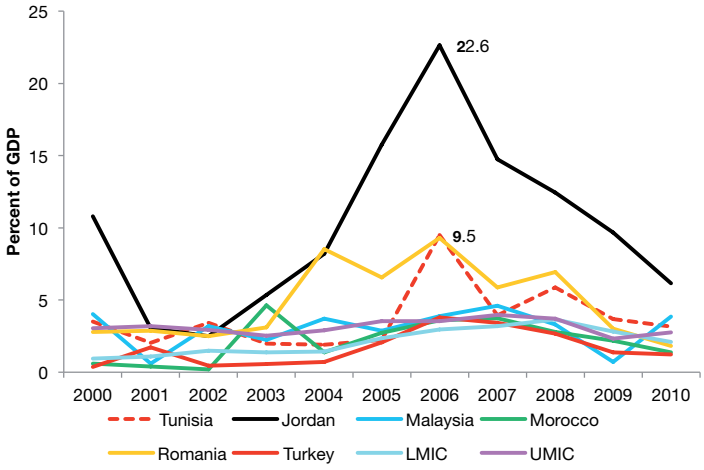
Foreign Direct Investment

Foreign direct investment (FDI) is a pillar of the Tunisian development model. In pursuit of the advantages that FDI provides in improving production technologies, management practices, and foreign market access, since 1972 Tunisia has promoted FDI through the Foreign Investment Promotion Agency (FIPA) and through significant tax advantages to the offshore sector. While these policies have helped make Tunisia a potentially attractive destination for FDI, Tunisia imposes a number of significant restrictions on foreign investment, including (a) a requirement for prior approval in many sectors for equity holdings above 50 percent; and (b) restrictions on foreign investment in commerce, air transport, communications, and certain professional services. A recent analysis concludes that Tunisia's restrictions on FDI in commercial services like communications, transport, and finance inflict a substantial cost on the Tunisian economy, mainly by limiting the productivity of goods—for which commercial services represent a large share of total production costs (Jouini and Rebei, 2012).

FDI inflows to Tunisia have been on par with comparator countries and have risen as a share of GDP, particularly after 2004, both compared with previous decades and with the comparator countries except Jordan and Romania (Figure 2.6). Removing the large spike in Tunisia's FDI flows in 2006 due to the partial privatization of Tunisia Telecom that year results in an average FDI/GDP ratio for the 2000s of 3.2 percent.

While the volume of these flows appears healthy, the pattern of those inflows has been more problematic. FDI has been heavily focused on the energy sector, which generates little employment compared with investment in manufacturing and services. Excluding the privatization of Tunisia Telecom in 2006, energy absorbed just over 60 percent of total FDI inflows 2006-2010. Manufacturing came in a distant second at 25 percent, and heavily protected services third at 8 percent (Table 2.1). A recent analysis by the Organization for Economic Cooperation and Development (OECD) attributes this pattern to the relative insensitivity of foreign investors in energy and other primary sectors to problems in the local business climate—clearly suggesting that potential investors in other sectors were being deterred by barriers in Tunisia's business climate (OECD 2012).

Figure 2.6: FDI Net Inflows as Percent of GDP, 2000s



Source: World Development Indicators

Table 2.1: FDI Inflows by Sector, 2006-2010 (millions of US$)

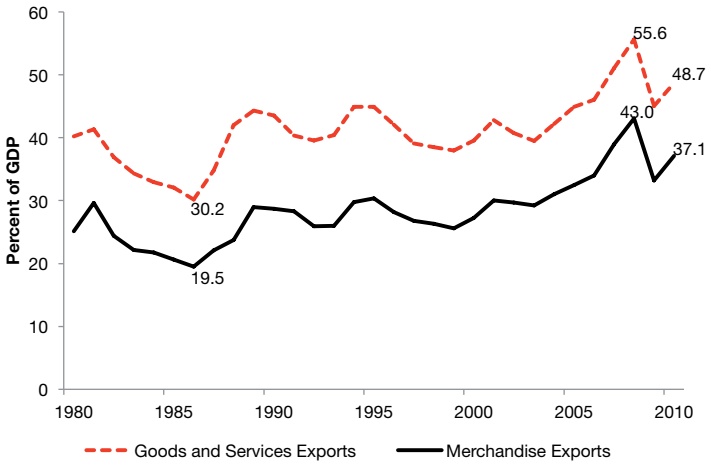
Sectors	2006	2006 excluding Tunisia Telecom	2007	2008	2009	2010	2010 Percent
Manufacturing	261	261	379	521	571	401	26.5%
Energy	706	706	1,061	1,570	914	920	60.8%
Tourism and real estate	14	14	56	161	63	66	4.4%
Agriculture	11	11	6	16	13	2	0.1%
Services and others	2.316	83	114	491	127	123	8.2%
Total FDI	3.308	1.075	1,616	2,758	1,688	1,513	100.0%

Source: Tunisia Foreign Investment Promotion Agency

Export Performance

In 1986 Tunisia began a program of gra dual liberalization of foreign trade and investment. It joined the General Agreement on Tariffs and Trade (GATT) in 1990, then the World Trade Organization (WTO) in 1995. In the same year entered into an Association Agreement with the European Union (EU), which entailed the progressive adoption of free trade in industrial products between the EU and Tunisia over the period 1996-2008. Following these measures, Tunisia's exports increased by 5.1 percent per year in the 1990s, growing from 30.2 percent of GDP in 1986 to 55.6 percent in 2008 before slipping below 50 percent in response to the recession in Europe (See Figure 2.7).

Figure 2.7: Exports as a Share of GDP, Tunisia 1980-2010



Source: World Development Indicators.

Europe has long been the primary market for Tunisia's exports. The European Union (EU) purchased 73 percent of Tunisia's exports in 2010; of the top ten destinations for its merchandise exports, seven were in Europe, with France and Italy alone absorbing more than half of the total. Three non-EU destinations also number in the top ten—Libya, Algeria, and the United States. Nonetheless Tunisia has diversified its export markets slightly in recent years: the EU's share of total exports fell 10 percentage points from its peak of 83 percent in 2004.

Since independence Tunisia has transformed itself from an exporter of oil, phosphates, and agricultural products into a producer and exporter of manufactured goods (Figure 2.8) From less than 10 percent at independence, the share of manufacturing in Tunisia's export basket reached 72 percent in 1992, and has remained above 70 percent ever since. Exports of services grew at an annual rate of 5.3 percent over 1986-2010 and represent a substantial though gradually declining share of Tunisia's total exports. Over this period travel and tourism fell from 63 to 49 percent of service exports, but remain the largest single component[17]. Meanwhile, the fastest-growing component of services exports has been

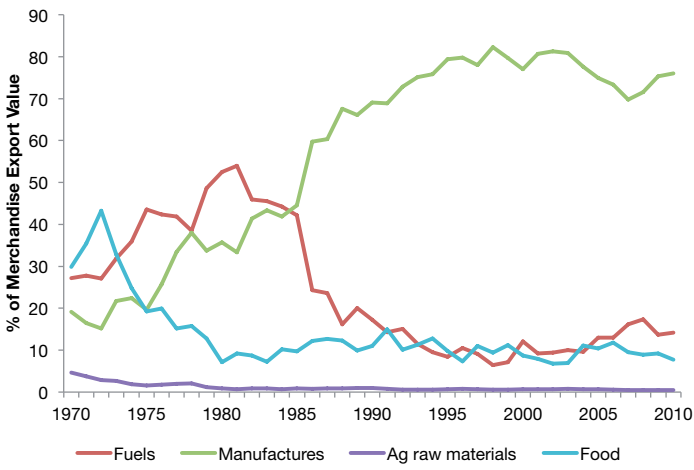
[17] Of 6.9 million tourist arrivals in 2009, 3.7 million were from Europe and 3.0 million from the Maghreb, especially from neighboring Libya and Algeria. Only 36,000 North Americans visited Tunisia in 2009.

"communications, computer, and other" services, which have grown from 9 to 21 percent over the same timeframe.

Although there are concerns about the mix and value addition of Tunisia's exports, exports have been a key driver of economic growth, as is revealed by a decomposition of aggregate demand since 1986. As seen in the second column of Table 2.2, exports of goods and services have grown more rapidly than overall output since the beginning of the Economic Recovery Structural Adjustment Program (ERSAP) in 1986, providing the largest single demand-side contribution to growth. While the contribution of government and household consumption has remained relatively constant over recent periods, the contribution of investment fell significantly from 1.1 percentage points in the years immediately following the ERSAP to a modest 0.5 percentage points in the last decade.

Once again, Tunisia's positive performance is somewhat overshadowed by stronger performance in the comparator countries, LMICs, and UMICs. Although Tunisia's exports as a share of GDP have been higher since 1980 than all these

Figure 2.8: Composition of Tunisia's Merchandise Exports 1960-2010



Source: World Development Indicators.

countries with the exception of Malaysia and Jordan (Figure 2.9), the growth of Tunisia's exports has been slower than that of all of the comparator countries except Jordan (Figure 2.10). As a result, Tunisia's early lead among the comparator countries in exports to GDP has been steadily narrowing.

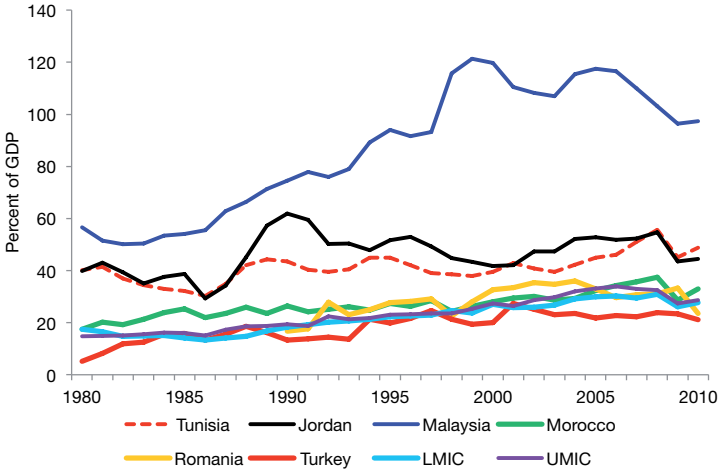
Table 2.2: Growth of Demand and Supply Components 1986-2010

Growth Rates (percent)	1986- 2010	1986-2000	2000-2010
Aggregate Supply	**4.6**	**5.2**	**4.6**
GDP at market prices	4.1	4.6	4.3
Imports of Goods & Services	5.7	6.7	5.3
Aggregate Demand	**4.6**	**5.5**	**4.4**
Household consumption	4.0	4.3	4.4
Government consumption	4.1	4.1	4.8
Gross capital formation	4.5	6.1	3.1
Exports of Goods & Services	6.1	7.7	5.0

Growth Rates (percent)	1986- 2010	1986-2000	2000-2010
Aggregate Supply	**4.6**	**5.2**	**4.6**
GDP at market prices	2.8	3.1	2.8
Imports of Goods & Services	1.8	2.1	1.8
Aggregate Demand	**4.6**	**5.5**	**4.4**
Household consumption	1.7	1.8	1.8
Government consumption	0.4	0.5	0.5
Gross capital formation	0.8	1.1	0.5
Exports of Goods & Services	1.9	2.2	1.6

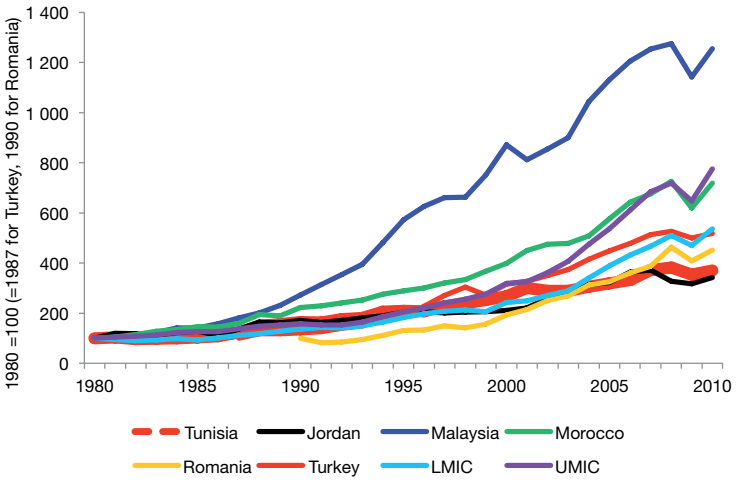
Source: Tunisia National Institute of Statistics, Statistical Annual (various issues)

Figure 2.9: Exports of Goods and Services as a Share of GDP



Source: World Development Indicators.

Figure 2.10: Exports of Goods and Services at Constant Prices

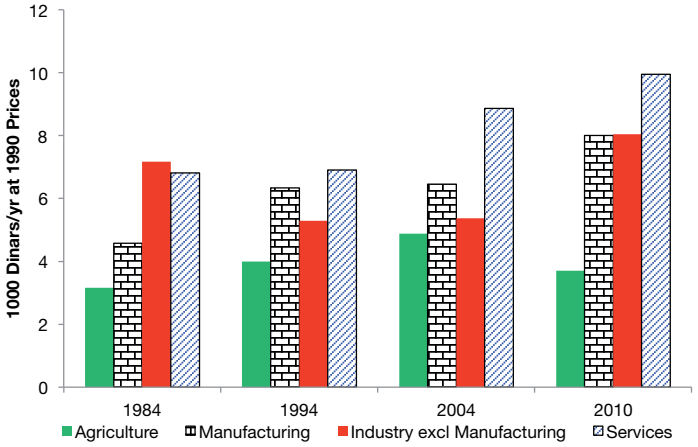


Source: World Development Indicators.

Productivity and Wages

Over the medium and long term, growth in income per capita depends heavily on the growth of output per worker—average labor productivity. In turn, increasing labor productivity requires that labor and other resources flow to those sectors where they are most productive, and that technologies and business practices apply those resources with increasing efficiency. Figure 2.11 shows trends in output per worker by sector since the early 1980s. With the exception of agriculture, output per worker in each of the broadly defined sectors has grown over this period, though by no means uniformly. Economy-wide, output per worker grew 1.6 percent per year in the period 1984-2010, and at an accelerating rate, but with significant differences across sectors. By 2010, output per worker in agriculture had fallen to less than half of any other sector, while output per worker in services had emerged as the highest among all sectors[18].

Figure 2.11:.Output per Worker by Sector



Growth rate of output/worker	1984-1994	1994-2004	2004-2010
Agriculture	2.3%	2.0%	-4.6%
Manufacturing	3.3%	0.2%	3.6%
Industry excl. Manufacturing	-3.0%	0.2%	6.7%
Services	0.1%	2.5%	1.9%
Total	0.9%	2.0%	2.1%

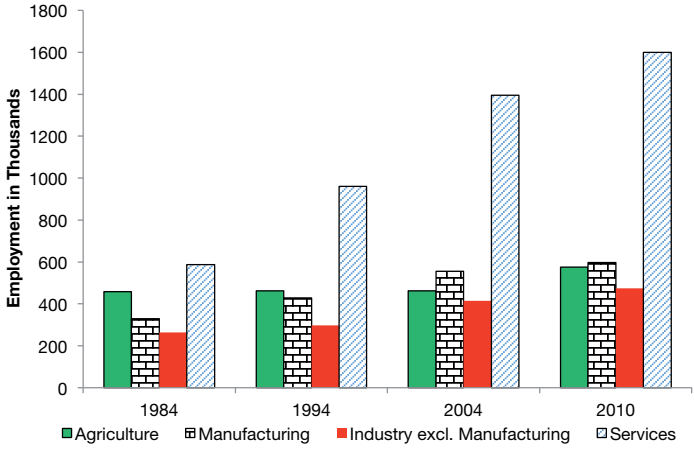
Source: Tunisian National Institute of Statistics.

[18] Because of the wide range of activities included in the services sector, this high sectoral average hides wide variation in output per worker in different subsectors, ranging from very low in some, like retail trade, to very high in others, notably finance and telecommunications.

The allocation of Tunisia's labor force has gradually shifted from lower-productivity sectors to those with higher output per worker (Figure 2.12). Agriculture's share in total employment fell by more than a third between 1984 and 2010, while employment in services—the sector with the highest average output per worker—grew rapidly both in absolute and relative terms until 2004 when its share of total employment has stabilized at just below 50 percent. Despite these shifts, Tunisia's gains in labor productivity over the past decade have been low relative to those of other middle income countries.

As shown in Figure 2.13, Tunisia's performance in this area was worse than any of the selected comparator countries and much worse than most of a broader set of comparators, which includes countries both poorer and considerably richer than Tunisia. Poor performance in this area is a major concern because of the strong and well-documented link between growth in labor productivity and growth in real wages. Slow growth in labor productivity in Tunisia is mirrored in the slow growth of private sector wages, documented and analyzed in Chapter 5[19].

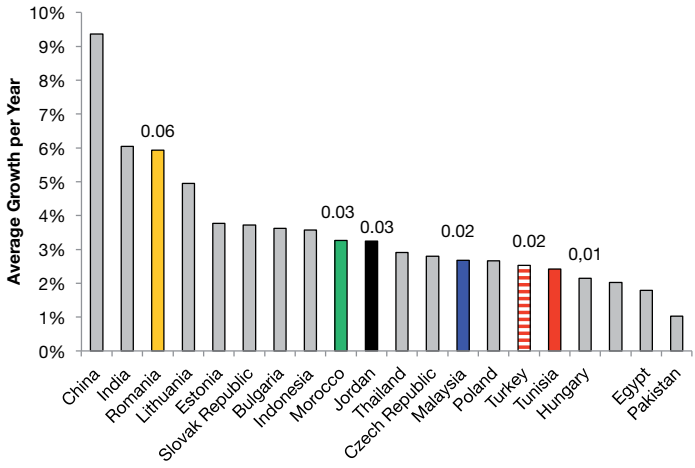
Figure 2.12: Employment by Sector, Selected Years



Sectoral shares of total employment	1984	1994	2004	2010
Agriculture	27.9	21.5	16.3	17.7
Manufacturing	20.1	19.9	19.6	18.4
Industry excl. Manufacturing	16.1	13.9	14.7	14.6
Services	35.9	44.7	49.4	49.3
Source: Tunisian National Institute of Statistics				

[19] A simple regression analysis finds that changes in labor productivity accounted for more than 99 percent of changes in average real wages between 1983 and 2009.

Figure 2.13: Growth Rate of Output per Worker 2000-2010



Source: World Development Indicators

2.2. The Year 2011: Revealing failures in the growth model

Despite Tunisia's economic achievements, on January 14, 2011 former President Zine El Abidine Ben Ali left power after a month of protests and violent confrontations. The social unrest and political turmoil that engulfed Tunisia in January indicated that despite the country's comparative economic success, key social and development challenges had not been addressed, calling into question the inclusive/broad-based nature of the growth achieved. The combination of high unemployment especially among young graduates, as well as political and economic disenfranchisement particularly in the central regions, created an untenable condition of discontent amongst Tunisians that erupted in a revolution and ended the 23 year rule of the country's second President. This section examines issues of unemployment, poverty, and inequities which have been central issues in the uprising. Chapter 5 considers the related issue of governance.

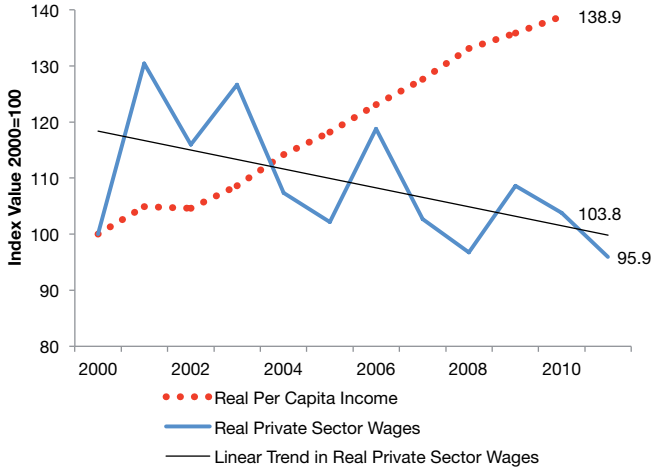
Unemployment and youth unemployment

High unemployment has been a central and longstanding feature of the Tunisian economy. Meanwhile, another large share of the population has remained out of the labor market entirely. The rate of unemployment in Tunisia has fallen slightly since the mid-1990s, but remains much higher than in most of the comparator countries, notably Malaysia and the upper-middle income countries (Figure 2.14). Unemployment among young people is far higher than among the general population. For example, in 2010 the rate of unemployment was 29.7 percent among those 20-24 years of age and 24.2 percent among those aged 25-29, compared with 13.0 percent among the overall labor force (Labor Force Survey 2010). In addition, unemployment rates are typically higher among women than among men (18.9 percent versus 10.9 percent in 2010). Unemployment rates tend to be higher in interior regions than along the coast (in 2008, 29 percent in Kasserine versus 8.8 percent in Nabeul.) Finally, unemployment rates escalate with increasing levels of education, especially among the young, as does the rate of long-term unemployment: in 2011, 50 percent of unemployed university graduates had been out of work for more than 12 months, versus 24 percent with a primary education (INS/World Bank 2012). Chapters 5 (Micro Risks and Distortions) and 7 (Human Capital) consider the implications of these patterns further.

Labor force participation in Tunisia is also very low, the second-lowest among the comparator countries, having remained well below 50 percent over the past two decades (Figure 2.15) and far lower than the average among LMICs or UMICs. Although labor force participation among men has fallen over the past two decades, this mainly reflects the low participation rate among women (data table to Figure 2.15), which at just over 25 percent remains far below the 60 percent average among upper middle income countries. The immediate implication of Tunisia's chronically high rates of unemployment and low rates of labor force participation is that the economy has considerable potential to achieve higher living standards by employing a larger share of its population in more productive economic activities[20].

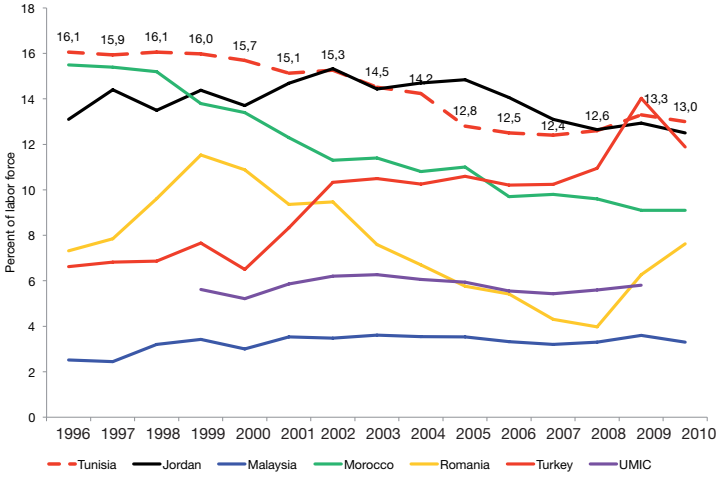
[20] Clearly many individuals who are not part of the labor force may be engaged in productive activities outside the labor market, such as home production – care of children or the elderly, cleaning, and cooking.

Figure 2.14: Unemployment Rates in Tunisia and Comparator Countries



Source: World Development Indicators and IMF World Economic Outlook database.

Figure 2.15: Labor Force Participation Rate, Tunisia and Comparators



	1990	1995	2000	2005	2010
Population 15+	48.1	48.3	47.6	46.2	47.4
Male	75.5	74.1	71.6	68.3	69.7
Female	20.8	22.6	23.7	24.3	25.3

Source: World Development Indicators.

Poverty, Inequality, and Regional Disparities

In late September 2012, Tunisia's National Institute of Statistics (INS) released new estimates of the prevalence of poverty and extreme poverty based on data from the household consumption surveys conducted in 2000, 2005, and 2010. These estimates employed a new statistical method developed in consultations among Tunisian experts from government and academia with counterparts from the World Bank and African Development Bank, ensuring that the new method followed best technical practice. The resulting estimates make clear that Tunisia achieved rapid progress in reducing poverty in both rural and urban areas over the 2000s, continuing progress achieved in previous decades. However, the new estimates confirmed earlier claims that both the level of poverty and the rate of progress in reducing it have been quite uneven geographically, with certain interior regions lagging well behind coastal regions with better access to international markets.

Figure 2.16 and the accompanying data table show the main results from the new method of estimating poverty. The national poverty rates represent a weighted average of the prevalence of poverty in six large cities, in other urban areas, and in rural areas. Each of the three sub-national poverty rates was measured against a separate poverty line reflecting the cost of living that area; the poverty lines for 2010 were set at 1,277, 1,158, and 820 dinars per year respectively. The poverty lines applied to 2000 and 2005 were adjusted for inflation to hold their real value equal to that applied to 2010. Converted to US dollars at 2005 Purchasing Power Parity (PPP) exchange rates, the poverty lines adopted were equivalent to $4.08, $3.70, and $2.63 per person per day, considerably higher than the $1.25 per day standard used to measure progress in reducing extreme poverty against the Millennium Development Goal (MDG). In this regard, Tunisia's new poverty lines conform to general practice among middle-income countries.

To provide further insight into the prevalence of poverty and progress in reducing it, the INS also released estimates of extreme poverty, measured against a second, lower set of poverty lines: 757, 733, and 571 dinars per year in big cities, other urban areas, and rural areas

[21] For example, using methods broadly similar to those of the new INS method, but different poverty lines, Bibi and Chatti (2007) estimate that extreme poverty fell from 17.8 percent in 1980 to 4.7 percent in 2000, while vulnerability fell from 30.6 percent to 10.6 percent over the same period.

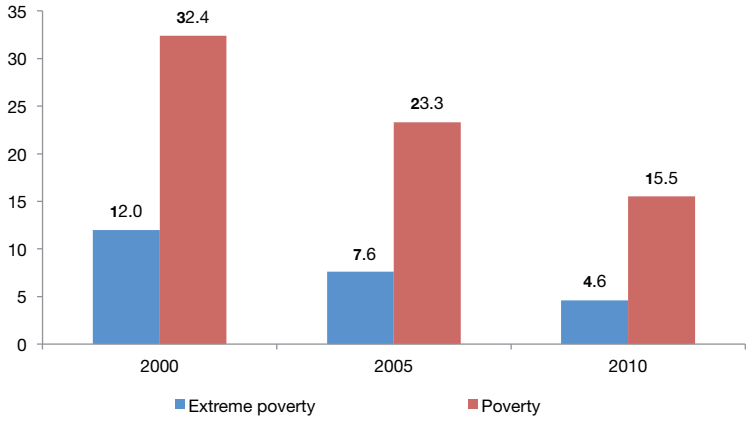
respectively in 2010, equivalent to $2.43, $2.35, and $1.83 per day in 2005 PPP terms.

As seen in Figure 2.16, the prevalence of both poverty and extreme poverty declined rapidly between 2000. Poverty fell by more than half, from 32.4 percent to 15.5 percent; extreme poverty fell by nearly two-thirds, from 12 percent to 4.6 percent. The data table to Figure 2.16 makes clear that rural areas experienced rapid reductions in both poverty and extreme poverty over this period, but also that the rate of progress achieved by rural areas fell well short of that experienced by large and medium urban areas.

Figure 2.17 shows estimates of the prevalence of poverty and extreme poverty in different regions of Tunisia in 2010; the accompanying data table provides corresponding data for 2000 and 2005. The new estimates provide the first official confirmation of the large disparities in living standards that exist among different regions of Tunisia—disparities that have been widely seen as fueling the anger that culminated in the revolution of January 2011. As seen in the figure, the rate of poverty in the interior Center-West region was more than four times that experienced in the coastal Center-East region. Differences in the prevalence of extreme poverty were even more severe, with the Center-West suffering a rate more than ten times that found in Greater Tunis. Equally disturbing, the data table shows that progress in reducing poverty was generally slowest in those regions that suffered the highest initial poverty rates, leading to a widening of regional disparities over the 2000s. For example, the prevalence of poverty in the Northeast region fell by 68 percent between 2000 and 2010, while extreme poverty fell by 83 percent over the same period. Meanwhile, poverty and extreme poverty fell by a mere 27 percent in the Northwest region between 2000 and 2010. Indeed, the INS notes that the rate of poverty decline in the Northwest was too limited to be statistically significant. Bibi labels this pattern one of increasing "polarization" (African Development Bank, 2011), citing two governorates in the Center-West region—Kasserine and Sidi-Bouzid, as examples. The coexistence of such extreme variations in poverty and unemployment (which is regionally correlated with poverty) within a small and homogeneous country, along with indicators presented elsewhere in this report, suggests a failure to provide equitable access to education and basic

infrastructure. However, it also suggests the existence of a highly segmented labor market, with workers from the disadvantaged regions having greater difficulty getting jobs in more prosperous nearby areas.

Figure 2.16: Prevalence of poverty and extreme poverty, 2000-2010

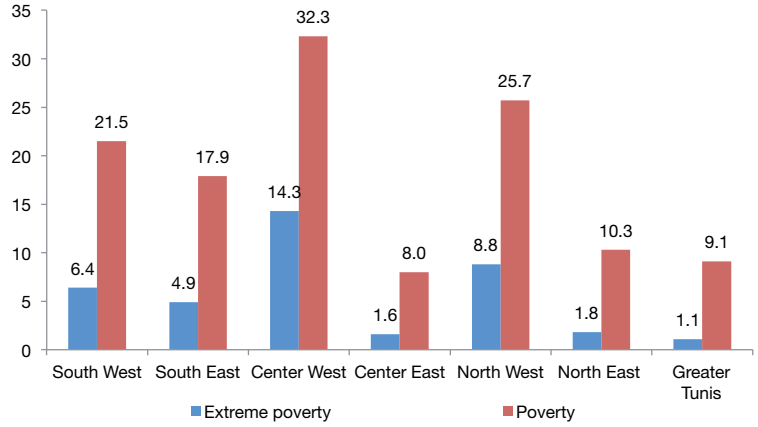


	Poverty			Extreme Poverty		
	2000	2005	2010	2000	2005	2010
National	32.4	23.3	15.5	12.0	7.6	4.6
Large cities	21.5	15.4	9.0	4.3	2.2	1.3
Medium cities and towns	32.5	22.1	14.0	10.5	6.5	2.9
Rural areas	40.4	31.5	22.6	19.1	13.4	9.2

Source : INS, Premiers résultats de l'enquête Budget, Consommation et Niveau de vie des ménages 2010 (2012)

The methodological improvements adopted in the INS's poverty estimates for 2000-2010 have so far not been applied to household consumption data from surveys conducted before 2000. The differences between old and new methods of poverty estimation make it difficult to compare the new estimates of the prevalence of poverty for 2000-2010 directly to estimates for years prior to 2000. Nevertheless, the available data make it clear that Tunisia's progress in reducing poverty between 2000 and 2010 represents a continuation of progress achieved in previous decades.

Figure 2.17: Regional variations in poverty and extreme poverty, 2010



	Poverty			Extreme Poverty		
Region	**2000**	**2005**	**2010**	**2000**	**2005**	**2010**
Southwest	21.7	12.1	6.4	47.8	33.2	21.5
Southeast	17.5	9.6	4.9	44.3	29.0	17.9
Center-West	25.5	23.2	14.3	49.3	46.5	23.3
Center-East	6.4	2.6	1.6	21.4	12.6	8.0
Northwest	12.1	8.9	8.8	35.3	26.9	25.7
Northeast	10.5	5.4	1.8	32.1	21.6	10.3
Greater Tunis	4.3	2.3	1.1	21.0	14.6	9.1

Source : INS, Premiers résultats de l'enquête Budget, Consommation et Niveau de vie des ménages 2010 (2012)

Table 2.3 provides summary data on poverty estimates based on INS's old method of estimation. Three key differences between the old and new methods deserve special attention. First, the old method applied two area-specific poverty lines (for urban and rural areas) rather than the three lines used in the new method. Second, between 1975 and 1995, the urban poverty line was set at exactly twice that of the rural poverty line. Comparison with the new method makes clear that this practice exaggerated the difference in the cost of living between urban and rural areas, which are actually closer to 55 percent higher for urban households close to the poverty line and 32 percent higher

for those close to the extreme poverty line, compared with their rural counterparts. One result of this practice was to overstate the prevalence of poverty in urban areas compared with that in rural areas, giving the misleading impression that poverty was a bigger problem inTunisia's cities than in the countryside. The improved practice applied in the new method reveals the reality that was almost certainly present all along—that poverty is much more prevalent in rural than urban areas. A second result of setting the urban poverty line too high compared with the rural line is that the national poverty rate—computed as a weighted average of the rural and urban rates—was distorted. Third and finally, the poverty lines used in the old method were far lower than those adopted in connection with the new method. In fact, the threshold living standard used to define extreme poverty in the new method is actually lower than that used to define poverty in the old method, while the new poverty line is more than twice as high as the old one. Although this change moves Tunisia closer to typical practice among middle-income countries, it makes direct comparisons between poverty levels and trends What remains clear from the poverty estimates produced using the old method is that the prevalence of poverty in Tunisia fell rapidly between 1975 and 2000 in both rural and urban areas, just as it did during the following decade. This conclusion is based on the fact that from 1985 to 2000, the rural and urban poverty lines were adjusted for inflation to keep the same real value over time (right-hand columns of Table 2.3); despite the absence of consumer price data for 1970 and 1975, the poverty lines used in those years were almost certainly set in a similar manner. Based on this assumption, it can be seen that the prevalence of poverty in both urban and rural areas of Tunisia both fell by more than four-fifths between 1975 and 2000. quite difficult.

Table 2.3: Poverty lines and estimates for 1975-2005 using the old INS method

	Poverty rate by area			Poverty line in current dinars per year		Poverty line in 2005 PPP $ per day	
	National	Rural	Urban	Rural	Urban	Rural	Urban
1975	22.5	18.0	26.5	43	87		
1980	12.9	14.1	11.8	60	120		
1985	7.7	7.0	8.4	95	190	0.93	1.87
1990	6.7	5.7	7.3	139	278	0.97	1.93
1995	6.2	4.9	7.1	181	362	0.95	1.90
2000	4.2	2.9	4.9	221	428	0.99	1.92
2005	3.8	7.1	1.9	378	429	1.49	1.69

Sources : INS and Bibi and Chatti (2007)

What remains clear from the poverty estimates produced using the old method is that the prevalence of poverty in Tunisia fell rapidly between 1975 and 2000 in both rural and urban areas, just as it did during the following decade. This conclusion is based on the fact that from 1985 to 2000, the rural and urban poverty lines were adjusted for inflation to keep the same real value over time (right-hand columns of Table 2.3); despite the absence of consumer price data for 1970 and 1975, the poverty lines used in those years were almost certainly set in a similar manner. Based on this assumption, it can be seen that the prevalence of poverty in both urban and rural areas of Tunisia both fell by more than four-fifths between 1975 and 2000.

There is widespread impression within Tunisia of high and rising inequality. However, inequality estimates based on consumption surveys conducted between 1980 and 2010 fail to offer support for this interpretation.

Table 2.4 shows estimates of trends in consumption inequality as measured by the Gini coefficient. The three right-hand columns show INS's new estimates of this measure for 2000, 2005, and 2010; the new estimates for 2000 and 2005 are somewhat lower than the old estimates for the same years[22]. Estimates for prior years (the six left-hand columns) suggest that inequality fell substantially during the 1980s, then registered a small increase

[22] The most likely explanation for the differences is that the new estimates reflect the application of an improved method for computing the "consumption aggregate," i.e. the estimated level of overall household consumption based on survey data on each household's consumption of individual items.

between 2000 and 2005[23]. This pattern supports Lahouel's (2007) finding that poorer Tunisian households experienced considerablyfaster-than-averageconsumption growth between 1980 and 2000, particularly in the late 1980s[24]. Tunisia's estimated Gini coefficient in fact indicates a moderate level of inequalityby international standards[25]. Comparing Tunisia's estimated Gini coefficient for 2010 with the latest data from the comparator countries, inequality in Tunisia appears similar to that in Jordan (Gini 35.4), higher than in Romania (30.0), lower than in Morocco (40.9) and Turkey (39.0), and much lower than in Malaysia (46.2).

Table 2.4: Trends in Inequality (Gini Coefficient), Tunisia 1980-2010

	1980	1985	1990	1995	2000	2005	2000*	2005*	2010*
National	43.0	43.4	40.1	41.7	40.9	41.4	37.5	37.7	35.8
Urban	39.6	41.1	37.4	38.9	39.1	39.5			
Rural	37.5	36.4	35.4	35.3	35.8	36.9			

Source: Tunisian National Institute of Statistics (INS); * new estimates September 2012.

These national estimates do not reflect the perceived "polarization" within Tunisia in the fortunes of different regions, whereby certain governorates suffer high and rising levels of poverty and unemployment while most of the rest of the country has improved (Bibi 2011)[26]. Fully diagnosing the reasons for these regional disparities is beyond the scope of this study. However, a wide range of international experience indicates that successful efforts to improve the incomes of the residents of such lagging regions will involve combining (a) efforts to identify and remove barriers

[23] The fact that measured inequality for the whole nation is higher than in either rural or urban areas reflects the fact that a large share of overall inequality exists between rural and urban areas, rather than among households living in urban areas or in rural areas.

[24] Lahouel attributes these results to a variety of overlapping factors, including macroeconomic stability; the growth of employment in labor-intensive export industries, which facilitated migration from lower-paying jobs in agriculture and created a return flow of remittances to rural areas; reforms in agricultural price policy in the early 1980s; pro-poor spending patterns in education, health, infrastructure, and food subsidies; and support for family planning and women's empowerment through education and employment.

[25] All inequality estimates depend on information that households provide in response to household consumption surveys. If the richest Tunisian households refused to participate in such surveys or under-reported their actual spending, this would cause measured inequality to understate the reality. However, non-compliance by the rich is a problem for many countries, so it is hard to judge how much it affects international comparisons (Deaton 2005).

[26] An empirical measure of polarization included in INS's summary of the new poverty data—though not specifically defined in that document—increases from 77.7 in 2000 to 93.6 in 2005 and 103.2 in 2010, suggesting a rapid increase in economic polarization over that decade.

to growth specific to those regions, such as inequalities in access to services that are not justified by normal considerations of economic viability; (b) complementary efforts to ensure that people living in such regions gain the skills needed to secure better jobs in faster-growing areas; and (c) most of all, ongoing reforms to promote rapid and sustained growth and job creation at the national level.

2.3. Conclusion

Although Tunisia has recorded moderately rapid economic growth in recent decades, there is clear evidence that the nation has the potential to achieve faster and more broad-based growth in the future. Tunisia's persistently high unemployment rates, especially for more educated young people, represent asubstantial waste of productive potential. Exports and output per worker have grown considerably more slowly than in a sample of comparator countries. Private investment has been in line with internationalaverages. However, other countries invest more and grow faster as a result. Among the most telling signs of economic weakness are indications that labor productivity growth has slowed; real private sector wages have stagnated, and that employment remains low. The chapters that follow build on these findings and examine the evidence to identify priorities for enabling Tunisia to achieve and sustain faster and morebroad-based growth.

3. Finance: Does Costly Finance Represent a Binding Constraint to Tunisia's Growth?

3.1. Introduction

The cost of finance can pose a binding constraint to growth if it is costly enough to discourage potential investors from undertaking many high-return investments that would otherwise be profitable. This constraint can arise either through inadequate access to domestic and foreign savings, or through inefficient financial intermediation that prevents the mobilization and efficient allocation of available financial resources. The evidence reviewed in this chapter shows that Tunisia's financial sector is underdeveloped, with various structural problems that merit attention. Nevertheless, closer inspection makes clear that these problems do not constitute a binding constraint to Tunisia's growth.

Tunisia's financial sector has evolved in a context of state intervention which has extended beyond the roles of setting monetary policy and prudential regulation. The sector's growth and development is constrained by regulations that limit the ability of banks to access foreign savings, take domestic credit risks, and mobilize adequate domestic savings. Foreign investment in the financial sector is restricted, while state ownership of major banks and the clientelism that characterized the former regime created a system of privileged access to credit. These factors have apparently distorted the allocation of finance to favored enterprises and priority sectors—such as tourism and agriculture—rather than to the most viable investments, creating a large overhang of non-performing loans. The Heritage Foundation has consistently given Tunisia low scores on its Financial Freedom index due to the control exercised by the central government over the country's financial sector. Since 2005, Tunisia has earned a score of 30 out of 100 on the index, indicating extensive government intervention in credit management and heavy restrictions on financial institutions. Though its peers have improved on this index, Tunisia continues to earn the lowest marks of the group (see Table 3.1). Doing Business (2012) also ranks Tunisia 98th in the world in Getting Credit. Thus, costly finance appears on a priori grounds to be a plausible candidate as a binding constraint to growth.

However, as will be demonstrated in this chapter, the evidence shows that a

relatively low level of demand for finance is the dominant influence on the level of investment in the economy, rather than constraints to the supply of finance. Indeed, none of the tests of a binding constraint to growth indicates that the cost of finance is such a constraint. Nonetheless, to the extent that the binding constraints are addressed and should investment demand increase dramatically, constraints in the financial sector could emerge as binding constraints in the future if regulatory and governance weaknesses are not addressed and the sector fails to develop and grow.

3.2. Financial and Banking Sector: Recent Evolution

The Tunisian financial sector is divided into those serving onshore versus offshore activities, where the offshore market is defined as largely export-oriented[27]. Tunisia has eight specialized offshore banks, which are subject to a unique set of financial regulations. Onshore firms have access to a more varied array of financial institutions, including leasing companies, merchant banks, and factoring firms. Nonetheless, domestic financial services are dominated by the banking system, which is made up of 21 separate banks. The majority of bank assets are concentrated in the top four banks, three of which are mostly state-owned (see Table 3.2).

Table 3.1: Heritage Index of Financial Freedom, 2012

Country	Score
Tunisia	30
Jordan	60
Malaysia	50
Morocco	60
Romania	50
Turkey	60

Source: Heritage Foundation

[27] Firms are allowed to sell up to 30 percent of their production to the domestic market and still fall under the "offshore" regulatory and tax regimes.

Table 3.2: Four Largest Banks by Assets (2009)

Bank	Assets (thousands of dinars)	Proportion of Total Banking Sector Assets
Arab International Bank of Tunisia	6,171,049	13.7%
Tunisian Banking Company*	5,937,138	13.2%
National Agricultural Bank*	5,648,460	12.6%
Bank of Housing*	5,176,934	11.5%

Source: Tunisia's Professional Association of Banks and Financial Institutions *state-owned bank

Soundness of the Banking System

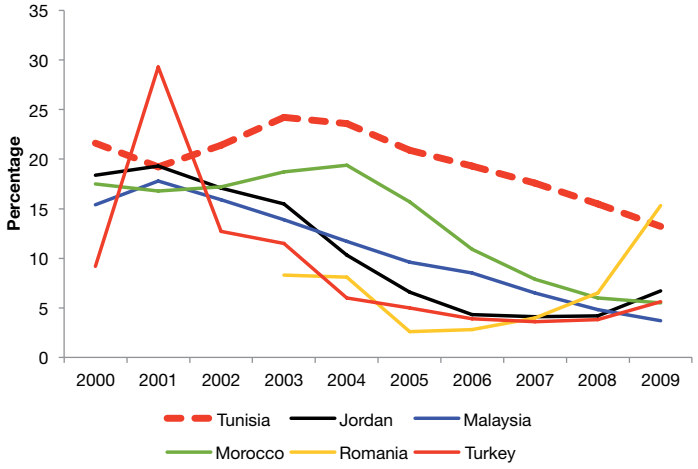
Poor governance of the banking sector has led to several major problems. One of these is the abnormally high proportion of non-performing loans (NPLs). Although the ratio of NPLs to total assets has decreased from a recent peak of 24.2 percent, it remains high at over 13 percent (see Figure 3.1). A driving factor behind these loans is the relationship that banks—particularly public banks—have with heavily indebted public companies and favored industries. Many banks still maintain their ties to these firms regardless of viability, which diverts resources from new but potentially risky projects. This practice has left banks overly exposed to certain sectors that have not performed well, such as tourism, which accounts for 20 percent of all bad loans.

Average bank capitalization ratios are broadly in line with international standards, but in some cases may still not be adequate to maintain solvency given these high NPLs. In 2009, banks' average Capital Adequacy Ratio (CAR) stood at 12.4 percent—only 10.9 percent for state-owned banks. This ratio is only slightly higher than the minimum set by the Basel Accord and may slip further. The Tunisian Banking Company (French acronym STB), the largest state-operated bank, is in a particularly dire financial situation. The quality of its loan portfolio deteriorated in 2011 and its capital adequacy ratio fell below the regulatory threshold of 8 percent. STB has increased its capital by issuing subordinated debt, but given the continued increase in NPLs in the first half of 2012, it remains uncertain whether the bank can meet capital adequacy regulations. Due

to the STB's size and importance in the banking sector, the state is negotiating a grant to the bank that will address the capitalization issue.

ded that of Morocco, Romania, Turkey, the LMICs, and until 2002, the UMICs. However, credit provision has significantly lagged levels in Jordan and Ma-

Figure 3.1: Ratio of Non-Performing Loans to Total Gross Loans

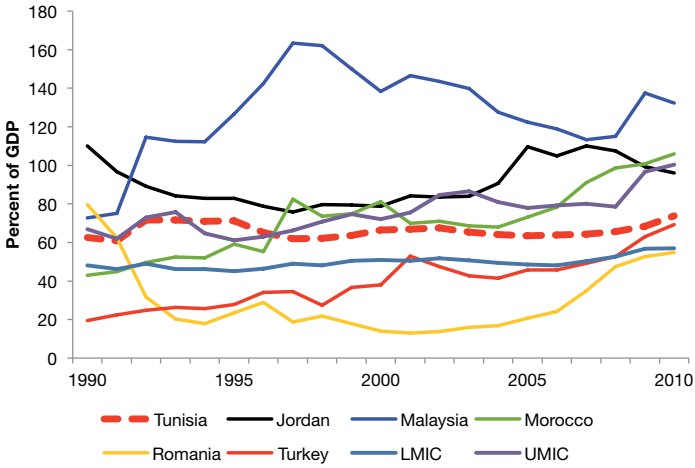


Source: World Development Indicators

Volume of Lending

Growth in the volume of credit can be an indicator of the financial system's ability to expand to meet demand. As shown in Figure 3.2, Tunisia's domestic credit as a percent of GDP has remained more or less steady over the past decade, reaching 73.7 percent in 2010. In the year preceding the global financial crisis, Tunisia's level of credit provision exceelaysia, and since 2005, in the UMICs as a whole. While the supply of credit relative to the size of the economy is low by some standards, it is not unusually low for a country at Tunisia's level of development. Moreover, a moderately low level of credit provision could be due to low demand for credit, rather than supply side constraints; thus tests of a binding constraint are required to draw any conclusions from these data.

Figure 3.2: Domestic Credit Provided by the Banking Sector



Source: World Development Indicators

Tunisian Stock Exchange

For an economy of Tunisia's size and sophistication, its stock market is very small. In 2010, only 54 companies were listed on the Tunisian Stock Exchange. The number of companies has since increased to 57, of which 24 are financial institutions. Total market capitalization of listed companies is under 25 percent of GDP, an amount that is much lower than that of most comparators (see Table 3.3). Underutilization appears to be primarily due to a lack of demand for equity finance. Firms continue to find debt a more attractive financing option: banks are eager to lend to safer, well-established enterprises, and such companies would prefer to bypass the disclosure requirements entailed in a stock market listing.

Table 3.3: Size of (Equity) Capital Markets, 2010

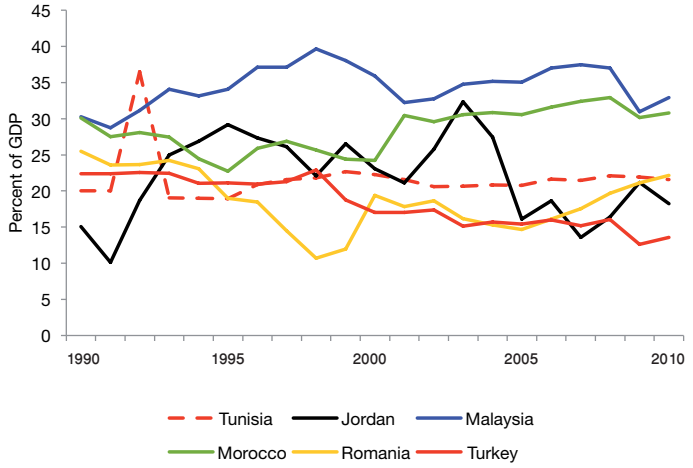
Country	Market Capitalization (% of GDP)	Number of Listed Companies
Tunisia	24.1	54
Jordan	111.9	277
Malaysia	172.6	957
Morocco	75.8	73
Romania	20.0	1383
Turkey	41.7	337

Source: World Development Indicators

Access to Domestic Savings

Low access to domestic savings could represent a barrier to investment if demand for finance exceeds these savings and if Tunisian firms cannot borrow sufficiently from external sources. As shown in Figure 3.3, domestic savings as a fraction of GDP in Tunisia have remained fairly constant over time at approximately 20 percent of GDP. They have been consistently below the levels shown in Malaysia, recently slightly below Moroccan and Romanian levels, but above those in Turkey and Jordan (which have been negative recently). Average domestic savings rates for the LMICs and UMICs are also higher than the Tunisian rates, at 26.7 and 28.7 percent from 1990-2010, respectively.

Figure 3.3: Gross Domestic Savings Rates, Tunisia and Comparators



Source: World Development Indicators

Access to International Finance

Although Tunisia has taken a cautious approach to foreign borrowing, prior to the revolution it was able to tap foreign credit markets. For many years, Standard and Poor's, Moody's, and Fitch rated Tunisian sovereign debt as investment grade. Since the revolution, all three agencies downgraded the country's rating, including most recently to BB—below investment grade—by S&P. However, this downgrade was due to recent macroeconomic uncertainties linked to the political situation, rather than to underlying structural weaknesses in the financial market.

In 2005, the Tunisian authorities began to liberalize the country's capital accounts in order to better attract external savings, diversify the financing of the balance of payments, and enhance the efficiency of domestic financial markets (AfDB, 2005). Nonetheless, remaining capital controls can present an obstacle for onshore banks that may attempt to access international finance: onshore banks may only borrow 10 million dinars worth of foreign currency per calendar year. Although there is no limit on loans granted for a period greater than a year, to access these longer-term loans banks must undergo a prior assessment by a rating agency or be listed on the stock exchange. These restrictions on foreign

capital limit banks' foreign currency exposure and the risk of a financial crisis, but they also limit banks' flexibility and ability to rely upon foreign sources to finance their lending[28].

As discussed in Chapter 2, Tunisia has been able to attract a healthy level of FDI. FDI as a percent of GDP has been generally on par with the comparator countries with the exception of Romania. Due to recent liberalization, foreign investors are now generally permitted to hold up to 100 percent of project equity without prior authorization, although restrictions on foreign ownership remain as a means to protect certain sectors or companies (see Chapter 5). In addition to debt and equity inflows, remittances from Tunisians working abroad provide a steady stream of funds representing approximately five percent of GDP and eleven percent of total foreign inflows.

3.3. Tests of the Constraint

In this section, we analyze the available data in the spirit of the diagnostic tests proposed by Hausmann et al. (2008) to assess to what extent Tunisia's modest levels of private investment are caused by supply-side constraints in the financial market—including moderately low levels of financial intermediation, savings, and financial depth—versus weakness on the demand-side (i.e., limited investment opportunities). If the tests point to problems on the supply-side, then the high cost of finance would appear to be a binding constraint to growth in Tunisia. We present indicators of whether the shadow price of financing is unusually high; whether movements in the constraint are sufficient to expand investment; and whether firms in Tunisia are particularly reliant on internal equity financing. Given that interest rates are regulated, they may not reflect the shadow cost of finance. Thus, to appropriately frame subsequent tests involving interest rates while also assessing whether interest rate regulation severely constrains lending, we first examine the degree to which interest rates are affected by regulation.

Financial Intermediation and Interest Rate Regulation

Tunisia's relatively modest levels of financial intermediation, savings, and deposit-taking could be in part the result of Tunisia's system of interest rate regulation. Efficient financial intermediation depends upon the ability of financial institutions to attract funding sources as

[28] This would be an important constraint to growth if demand for investment financing substantially exceeded domestic savings and banks were willing to pay interest rates abroad higher than the local deposit rate. As will be discussed further below, the available evidence is not consistent with this.

demand for investment financing expands. At the same time, the efficient allocation of savings depends upon the ability of the financial sector to set interest rates that reflect the risks and costs of providing financing to particular borrowers. Lenders in Tunisia are subject to interest rate caps that vary by type and purpose of the loan[29]. Lending interest rates cannot be higher than 120 percent of the mean interest rate charged by all banks in the prior quarter, by type of loan[30]. Thus although banks have some flexibility to price under these caps and to differentiate by loan type, they cannot respond to market conditions or serve riskier clients if this would mean setting interest rates over the ceiling.

Also potentially problematic is the lack of price competition for bank deposits, primarily due to the regulation of deposit interest rates. Given Tunisia's underdeveloped capital markets and the dominant role of banks in the financial sector, financial deposits are the primary source of loan funding. If demand for financing exceeded supply, banks in Tunisia would be unable to increase certain deposit rates to attract more funding. On short-term deposit accounts, they must offer a rate equal to the average money market interest rate for the previous month minus two percentage points[31]. Yet even for accounts for which interest rates can be freely set, there appears to be limited competition among banks, evidenced by comparatively low average rates on offer. Over the past decade the average nominal rate on deposits was just over three percent, which implies a negative real rate on average. Although this could be due in part to dominance by a few banks, as we will see below, it appears to be primarily due to low demand for bank financing.

Low regulated interest rates may partially explain Tunisia's relatively low rate of bank deposits and reduce the supply of domestic savings more generally, thus reducing the volume of financial intermediation[32]. Bank deposits as a fraction of GDP are lower in Tunisia than in comparator countries—52 percent of GDP in 2009, which is less than half the proportion in Jordan and Malaysia and substantially lower than in Morocco

[29] Banks must also include the cost of loan origination or other associated fees in their effective reported interest rates.
In addition, they may not exceed the monthly money market rate plus seven percentage points. http://www.bct.gov.tn/bct/siteprod/english/indicateurs/interet.jsp

[30] In 2011, this rate became fixed at two percent.

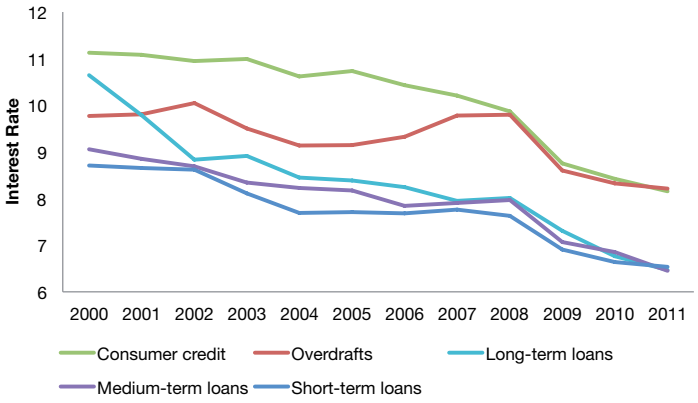
[31] Banks have more freedom setting the rates offered to smaller, individual accounts, but these rates tend to be low since the lending caps limit the extent to which banks can capitalize on these deposits.

[32] Gross domestic savings include the both private and public accounts, as well as direct or investments of equity, whether mediated through the financial sector or not.

(World Bank - World Development Indicators). To the extent that interest rate ceilings on bank loans curtail banks' willingness to lend to certain borrowers, these would also reduce banks' demand for deposits and desire to bid deposit rates up.

However, based on the actual behavior of interest rates, there is no evidence that interest rate regulations are primary determinants of the level of bank credit in the economy. Lending interest rates are set flexibly beneath a moving cap, the current regulations allow for at least a muted impact of supply and demand on those rates. If the supply of credit were too low to meet demand for financing, banks would charge interest rates to borrowers at or near the ceiling. In fact, interest rate restrictions on deposits that restrict the supply of funds to banks would tend to magnify any upward pressure on lending rates due to increasing demand for credit. However, an examination of average lending rates over time shows no upward convergence towards an ever higher ceiling, as one would expect if supply side constraints were binding. Rather, as shown in Figure 3.4, interest rates have been falling over time. The ceiling, which is set higher than the average rate from the previous period, has dropped over recent years as well. However, the gap between average lending rates and the ceiling has not declined over time. While the ceiling would in principle reduce banks' ability to price risk and serve riskier clients, if there were significant upward pressure on interest rates due to general increases in investment demand, these gaps would be smaller and declining.

Figure 3.4: Actual Average Nominal Interest Rate Charged by Type of Credit



Source: Central Bank of Tunisia

Correlation Test

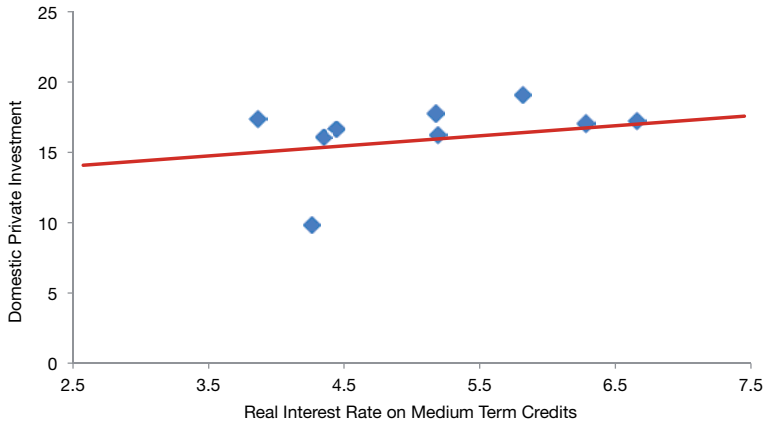
Given that interest rates do appear to reflect underlying market conditions rather than regulated outcomes, one can utilize a test of a binding constraint, proposed by Hausmann et al. (2008), to examine whether shifts in the supply of a factor produce changes in growth or private investment. In the case of financial markets, one can test whether the pattern of co-movement between real interest rates and private investment is consistent with shifts in the supply of financing being the dominant determinant of investment levels. In particular, if investment is primarily constrained by the supply of finance, then during periods when the supply of finance increases relative to demand, one should observe a drop in real interest rates alongside an increase in private investment, and vice versa during periods when the supply of finance declines relative to demand. Plotted graphically, this pattern of co-movement will emerge as a downward-sloping relationship between real interest rates and private investment. If such a pattern were observed, it would suggest that the supply of finance is an important determinant of growth and possibly—if other tests also indicate it—a binding constraint[33].

Figure 3.5 plots the relationship between real medium-term lending rates and the

[33] See Annex 3.6.1 for further explanation of this test.

domestically financed component of private investment as a percentage of GDP in Tunisia over recent years[34]. Domestically financed investment is used, given Tunisia's relatively closed capital account and since foreign direct investment is unlikely to be financed locally and impact domestic interest rates. Rather than the downward sloping relationship one would observe if the domestic supply of finance were constraining private investment, one observes instead a statistically significant upward slope (Table 3.4). This pattern suggests that, while shifts in the supply of finance would likely have some effect, it is primarily shifts in the demand for investment—and thus investment financing—which drive changes in private investment.

Figure 3.5: Relationship between Real Interest Rates and Domestically Financed Private Investment



Sources: WDI and Central Bank of Tunisia

Table 3.4 also shows the results of two alternative versions of this test, which include foreign sources of finance (primarily FDI) in addition to the purely domestic component. The second line of this table considers all private investment, while the third line includes all investment, whether public or private. In both cases, the slope of the regression line is statistically indistinguishable from zero. In economic terms, the implication is that there is no evidence that shifts in the supply of finance are a dominant determinant of investment. It should be

[34] Domestically financed private investment is derived by subtracting foreign capital inflows from private gross fixed capital formation. Subtracting inflows of foreign direct investment yields a nearly identical pattern.

emphasized that none of these three versions of the correlation test identifies the causes of shifts in either the demand or the supply of investment or investment finance, but none lends support to the idea that the supply of finance is a binding constraint on investment in Tunisia.

Table 3.4: Summary of Statistical Results from the Correlation Test

Dependent variable	Coefficient	t-statistic	P > ltl
Domestically financed private gross fixed capital formation	1.183	2.36	3.5%
Private gross fixed capital formation	0.025	0.09	92.9%
Total gross fixed capital formation	0.298	0.33	39.9%

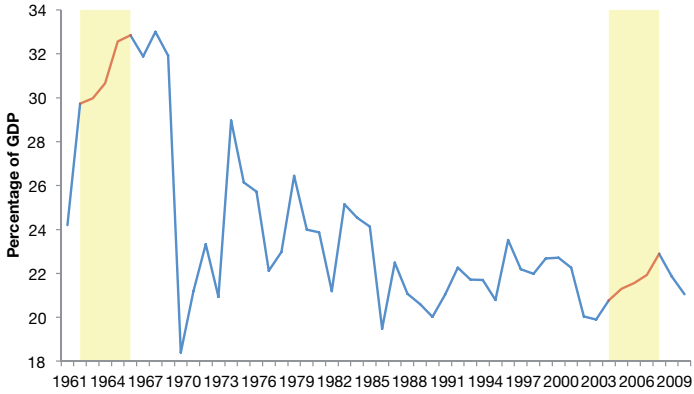
Sources: WDI and Central Bank of Tunisia

Additional correlation tests can be done with respect to the availability of domestic savings for investment. First, a simple test of the correlation between investment and domestic savings rates provides an indication of the degree to which a country has accessed external resources. If it cannot access such resources, and domestic savings rates are low, then this could constrain investment. For Tunisia over the period 1990-2010, the correlation between domestic savings and investment is high at .99, which suggests very limited utilization of external finance. At the same time, this correlation could also be explained by underlying investment conditions, which jointly impact domestic savings and investment demand. In fact, an analysis of Tunisia's past periods of growth acceleration does not support the view that a lack of domestic savings is a primary determinant of investment and growth in Tunisia. There are two periods in which domestic savings rates accelerated in a sustained manner as defined by Hausmann et al. (2005). The first, as shown in Figure 3.6, is from 1962 to 1966, a period which preceded Tunisia's first growth acceleration period since Independence (shown in Chapter 2, Overview), from 1969-1972. In addition, the more extended growth accelerations of the 2000s overlap only partially with the acceleration in domestic savings rates from 2005-2008. Thus, there is no indication

from this analysis that low domestic savings rates or their impact on the supply of financing, are a primary constraint to growth in Tunisia.

Finally, statistical tests relating the probability of a growth acceleration to a number of factors, including credit to the private sector, provide no evidence of a significant positive correlation for Tunisia (see regression results in Annex 3.2). Whereas macroeconomic stability, the degree of trade openness, the real effective exchange rate, and fiscal reforms have been associated with the probability of accelerated growth, increased credit to the private sector is negatively associated with growth in cointegration tests, and are insignificant as determinants of growth accelerations when taking account of key macro variables.

Figure 3.6: Domestic Savings and Growth Accelerations



Source: World Development Indicators

High Shadow Cost

In surveys, businesses ranked the high cost of or access to financing among their principal obstacles in Tunisia. In the World Competitiveness Survey, this factor has been ranked by surveyed businesses as the most or second-most important obstacle to doing business in recent years (see Table 3.5).

Similarly, enterprises in the ITCEQ annual survey on competitiveness rate the high cost of credit among their most problematic factors for doing business, particularly for smaller firms. When surveyed,

48.4 percent of firms with 11 to 50 employees cited bank financing as a major or severe obstacle for their companies. For firms with over 200 employees, only 29.2 percent responded similarly (see Table 3.6). Following the cost of credit, small firms also cite collateral requirements as an obstacle (discussed in detail below). Only a few claim that delays and complicated procedures are hindrances to accessing bank finance.

Despite firms' emphasis on the cost of credit, real interest rates in Tunisia are not high. In the most recent period interest rates on medium term credit averaged 2.75 percent, which is relatively low for Tunisia's income level (see Figure 3.7). Moreover, interest rates, which are close proxies for the shadow price of financing, have been falling in recent years, as shown in Figure 3.4, which suggests that demand for financing is growing more slowly than the supply and that the shadow price of finance has been declining. Based on these interest rates levels and trends, it is difficult to argue that the cost of finance is so unusually high in Tunisia that it constitutes a binding constraint to economic growth.

Table 3.5: Tunisia: The Most Problematic Factors for Doing Business

Year of report	2006/07	2008/09	2009/10	2010/11	2011/12
Access to financing	1	1	2	1	2
Tax rate	2	8	8	8	12
Tax regulations	3	6	9	9	10
Inefficient government bureaucracy	4	2	1	3	1
Restrictive Labor regulations	5	3	3	2	5
Poor work ethic in national labor force	6	4	5	6	8
Inadequately educated workforce	7	10	6	5	9
Foreign currency regulations	8	9	4	4	11
Inflation	9	5	10	10	13
Inadequate supply of infrastructure	10	7	7	7	6
Corruption	11	11	11	11	7
Policy instability	12	13	12	12	4
Government instability / coups	13	14	13	13	3
Crime and theft	14	15	14	14	14
Poor public health	-	12	15	15	15

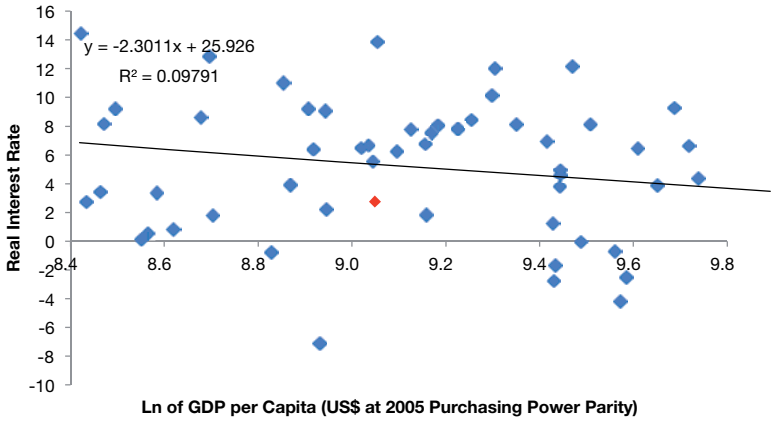
Source: World Economic Forum (WEF), Global Competitiveness Reports 2006-2011

Table 3.6: Cost of Bank Credit (percent of responses)

Firm Size (employees)	Minor/ No Obstacle	Moderate Obstacle	Major/ Severe Obstacle
6-10	28.0	32.0	40.0
11-50	32.8	18.9	48.4
51-100	37.5	23.4	39.1
101-200	29.6	31.7	38.7
>200	43.8	26.9	29.2

Source: ITCEQ Enterprise Survey 2010

Figure 3.7: Real Lending Interest Rates, 2010



Source: World Development Indicators
Note: The interest rate on medium-term credits is used to calculate the real lending rate for Tunisia.

How does one reconcile the modest shadow price of additional financing with the claims by businesses that the cost of credit is "too high"? The most logical explanation is that businesspeople are comparing the cost of finance to the private returns they anticipate from the projects they could finance through borrowing. The fact that businesspeople view interest rates as "too high" when in fact they are relatively low is a sign that the private returns to investment in Tunisia are low[35].

[35] Moreover, as much as the costs of financing may inhibit an individual firm's expansion, for the economy as a whole there is a market size limitation on the aggregate expansion of supply of products and services, and expansion of only the more competitive firms would be viable.

Rate of Self-Financing among Firms

Another test of whether the high cost of finance is a binding constraint to growth is to examine whether Tunisian firms are intensive in the factor that is being tested (the "camels and hippos" test). In this case, the (potentially) constraining factor is financing sources external to the firm. If firms are unusually reliant on internal or self-financing, this would suggest that only firms that do not require external financing can survive and thrive in Tunisia's economy. In fact, Tunisian firms rely to a similar degree on equity—particularly self-financing—as do firms in the comparator countries for financing their investments. On average, companies in Tunisia report that 63 percent of their investments are financed through equity, while bank credit comprises less than a quarter (Table 3.7). Moreover, Tunisian firms report a higher level of bank credit usage than is reported in three of the five benchmark countries. While the use of credit in Tunisia is lower on average than in Malaysia or Turkey, it is significantly higher than in other MENA countries (see Table 3.7)[36]. In addition, microenterprises report using external sources to finance approximately 20 percent of their investments by value (INS 2007). Whereas in 2007 bank loans represented only 8.1 percent of investments in microenterprises, leaving the majority of funding to self-financing, these firms had other non-bank sources of external funding. Limited access to bank funding by microenterprises is in fact typical in emerging economies, especially those with a large informal sector.

Table 3.7: Cost of Bank Credit (percent of responses)

Country	Equity	Bank Credit	Other
Tunisia	63.0	28.0	9.0
Jordan	85.9	10.9	3.3
Malaysia	76.5	12.2	11.3
Morocco	49.3	32.8	17.8
Romania	68.3	21.1	10.6
Turkey	59.2	38.0	2.8

Source: World Bank Enterprise Survey; 2010 ITCEQ Survey

[36] There are tax benefits in Tunisia for firms reinvesting their profits, and restrictions on the deductibility of interest as a business expense that may also reduce demand for financing external to the firm.

This breakdown of funding sources indicates that wholly self-financing firms are not unusually prevalent in Tunisia. The vast majority of firms utilize some external financing, including bank credit. They might use more if they did not view it as so costly, but as we have seen, real lending rates are already relatively low.

3.4. Other Indicators of Access

It is probably true, as it is in many emerging economies, that Tunisian banks have not been fully efficient in allocating credit, and have not been willing or able to lend to all potentially viable entrepreneurs. Standard issues concerning repayment risks typically limit lending to new enterprises and may prevent some potentially viable enterprises from being established[37]. Yet many microenterprises do start, reinvest their profits, and operate with some measure of external financing (INS 2007). Over five years, given reported rates of profit reinvestment by microenterprises, the investment values reported would lead to an average increase of 94 percent in firms' scale of operation, with or without unconstrained access to bank credit. Thus, constraints in the financial sector, while important for some firms, do not appear to drive the rate of firm entry and expansion in Tunisia[38].

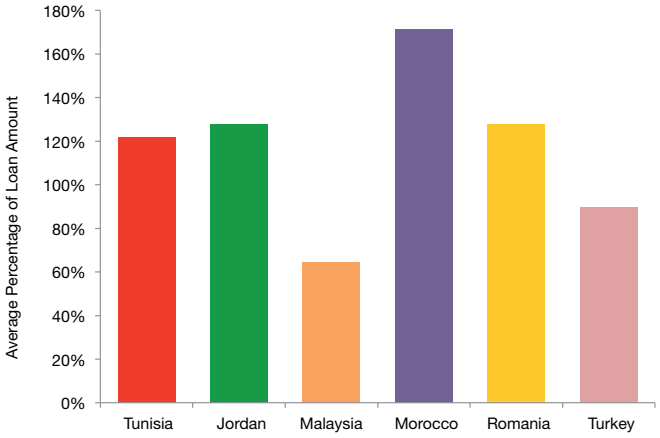
Moreover, a lack of credit for all firms desiring it does not necessarily imply that in the aggregate a lack of access to finance is a binding constraint to growth. Not all firms can grow simultaneously with limited market demand[39].

The concerns that firms express concerning access to finance may also reflect factors in the lending environment. A lack of creditworthiness, a limited capacity to produce the necessary documentation (business plan, license, title for collateral), or a lack of understanding of normal bank requirements (including guarantees and collateral) may be problems for some borrowers. Some of the most often mentioned obstacles to obtaining credit in Tunisia are the difficulties of meeting collateral requirements. High collateral requirements can be in part a function of banks' inability to properly price risk into their interest rates, but also may reflect weak regulations and institutions surrounding collateral registration or seizure and liquidation.

[37] The issues of asymmetric information make banks everywhere in the world concerned about the ability to ensure repayment and can induce credit rationing.
[38] See Chapter 5, where the dynamic implications of credit constraints are discussed further.
[39] Exporting firms are of course not subject to local market limitations, but these firms are likely to have adequate access to finance.

For example, Tunisia has no geographically unified collateral registry, forcing banks to demand more collateral to compensate for the possibility of a borrower leveraging the same property multiple times. Nonetheless, in Tunisia, the average collateral requirement of 122 percent of the value of the loan is not unusually high when compared to the benchmark countries (ITCEQ 2011). As shown in Figure 3.8, only Malaysia and Turkey have lower average requirements. A recent survey of Tunisian firms showed that collateral safeguards are inversely proportional to the size of the company, as would be expected if smaller companies were considered riskier borrowers[40]. Moreover, 22 percent of those interviewed cited collateral requirements of over 150 percent of the loan value[41]. Nonetheless, this pattern, too, is a common finding internationally.

Figure 3.8: Average Collateral Value Required for a Loan



Source: World Bank Enterprise Surveys (2006-2009); ITCEQ Survey 2011

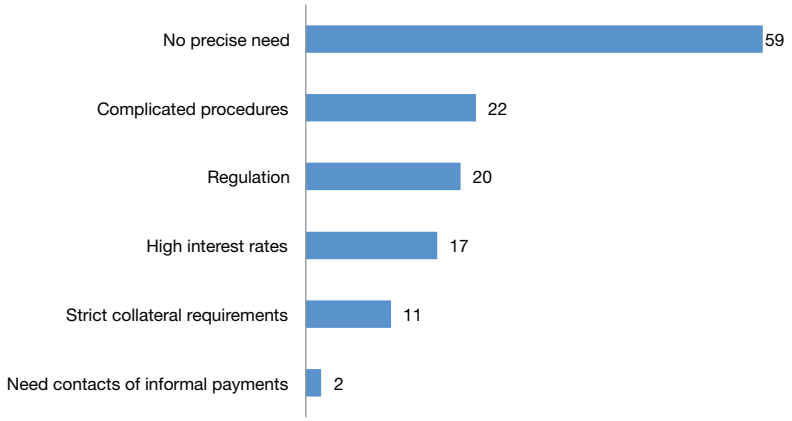
Closer inspection of survey responses by on firms not accessing bank credit shows that the great majority did not apply for loans. In a 2011 enterprise survey, 81 percent of firms without outstanding credit stated that they did not submit an application for a loan, while only 9 percent applied for a loan and were rejected[42]. When asked why they did not apply for credit, 59 percent stated that they had no precise need for a loan, while 22 percent cited complicated procedures as the main deterrent (see Figure 3.9). These responses do not indicate a strong unmet demand for credit.

[40] ITCEQ 2011

[41] It should be noted that small firms comprised only 35 percent of the sample, which does not include any micro-enterprises which may access bank credit. Thus the average requirement from this survey may understate the true average. However, the World Bank Enterprise Surveys also exclude microenterprises.

[42] ITCEQ

Figure 3.9: Reasons Given by Enterprises for Not Applying for Credit (Responses by Firms Not Applying for Credit)



Source: ITCEQ 2011[43]

In addition, the primary reasons for any rejected loan applications for firm applying for credit related either to the financial position of their companies or to the infeasibility of their projects. Insufficient collateral was a problem for some entrepreneurs, but was not an overwhelming issue overall. Table 3.8 shows that only two percent of locally operating firms and one percent of partially exporting firms surveyed cited a lack of collateral as the reason for not obtaining sought-after credit.

Table 3.8: Proportion of Enterprises with Loans Rejected, by Reason

	Partially exporting	Locally operating
Weak financial position of the company	3%	5%
Project infeasibility	0%	2%
Insufficient collateral	1%	2%
Information obtained from credit bureau	0%	1%
Other	0%	0%

Source: ITCEQ 2011

[43] 167 firms surveyed

These aggregated indicators may mask regional disparities related to access to finance and possibly in the cost of credit (i.e., through higher risk premia and collateral requirements). While the limitations of the financial sector seem to be systemic and pervasive throughout the country, the effects may be felt more severely in the interior. On the other hand, the disparities in credit flows may reflect differences in the volume of viable projects among the regions and not necessarily variability of access[44].

Other Sources of Financing

The Tunisian government has attempted to address concerns regarding a disproportionately small share of financing going to micro, small and medium enterprises (MSMEs). Two public banks, the Banque Tunisienne de Solidarité (BTS) and the Banque de Financement des Petites et Moyennes Entreprises (BFPME), were created to provide targeted finance for MSMEs. The BFPME, for example, aims to promote SME financing by providing guarantees for projects through a facility called the Tunisian Guarantee Company. In 2009, BTS and BFPME financed 11,249 and 821 targeted projects, respectively, which is relatively little considering the size of the MSME sector. At the same time other non-governmental efforts have been established to compensate for the lack of credit to smaller enterprises. Enda Inter-Arabe is a non-governmental microfinance organization created in 1990 and is the dominant player in the microfinance sector with over USD 56.3 million in loans to more than 160,000 borrowers. In addition, some major banks have begun to develop more effective strategies and divisions to serve the SME market[45].

3.5. Conclusion

The Tunisian financial sector has some important limitations. Tunisia exhibits moderately low levels of domestic savings. Interest rate controls may limit the availability of credit for riskier or smaller borrowers, while governance of the sector has not been adequate to ensure an efficient allocation of credit and risk. The stock and bond markets are under-developed, and access to foreign savings is restricted. Inefficiencies in the allocation of credit and financing are likely to have hindered economic activity and growth to some extent and continue to present obstacles at the individual firm level.

[44] More regionally-disaggregated data would be necessary to elucidate how access issues and the extent of any excess demand may vary.
[45] Bank interviews.

Nonetheless, despite these weaknesses, the empirical evidence does not indicate that a lack of access or high cost of finance poses a binding constraint to growth in the current context. None of the three empirical tests conducted in this chapter points to costly finance as a binding constraint to private investment and growth: First, the shadow price of credit (the real interest rate) has not been abnormally high and has fallen in recent years. Second, the demand for credit—rather than supply of credit—seems to be the dominant determinant of the level of investment financed. Third and finally, the proportion of firms that rely intensively on internal financing sources is not unusually high for Tunisia's level of development[46]. Thus, based on the HRV method, costly finance cannot currently pose a binding constraint to Tunisia's growth. As a result, analysis aimed at identifying such constraints must focus on explanations for low private returns to investment.

To the extent that the current binding constraints to private investment are addressed and investment demand increases, the various weaknesses of the Tunisian financial sector could emerge as a more important constraint to growth. While there is no certainty that they will do so, the problems identified in this chapter should be closely monitored.

3.6. Technical Annex to the Finance Chapter

Annex 3.6.1. Test of Relationship between Interest Rates and Investment

Suppose market demand for investment finance in period t is given by: $Q^d_t=F(Dt;i\_t)$, where D is a vector of exogenous demand shifters, and i is the real interest rate. Assume that: (1) $\partial F/\partial D>0$ (normalization such that the vector of partial derivatives is positive); and (2) $\partial F/\partial i<0$ (i.e., demand is negatively related to the real interest rate given the values of D).

Supply of investment finance is written as follows: $Q\_t\text{^}s=G(S\_t;i\_t)$. S represents a vector of exogenous supply shifters. Suppose that (3) $\partial G/\partial S>0$ (a normalization); and (4) $\partial G/\partial i>0$. Supply is upward sloping in the real interest rate given the values of S.

Market equilibrium in period t is represented by a pair of endogenous variables [i*(S,D),Q*(S,D)]

[46] Given the cultural and regulatory prohibition on informal finance, it is not possible to test whether firms are circumventing the constraint by seeking recourse to informal sources. Since the tests were designed to be applied when feasible, the absence of the fourth test is not a major weakness given that finance does not pass any of the three tests conducted.

Equilibrium implies that Q_t^d=Q_t^s. It has been proven that if the demand and supply functions exhibit the standard continuity and monotonicity properties, there exists a function for the equilibrium interest rate ≡A(S_t,D_t), which has the following properties:
(5) ∂A/∂S<0 and ∂A/∂D>0.

In the test of interest rates and private investment, one is examining the relationship between the two endogenous variables over time, i.e., ∂i^*/∂Q^*.

Note that (di^*)/(dQ^i)=∂A/∂D dD+∂A/∂S dS. If overall this relationship/correlation is less than 0, then this implies that the absolute value of the first vector of terms is lower than the absolute value of the second vector of (negative) terms. The effect of supply side shocks exceeds the effects of demand side shocks. Therefore, supply side movements dominate the relationship and supply side shocks have a bigger effect on investment rates than do demand side shocks in the given economy.

Thus, to test this hypothesis, one can test whether (∂i^*)/(∂Q^*)<0.

Annex 3.6.2. Regression on Growth Acceleration Results

	Dependent variable: Incidence of growth acceleration in period
Domestic savings	1.414 (1.67)*
Macro stability	1.468 (2.20)**
Degree of openness	1.596 (1.73)*
Investment code	2.463 (2.85)***
REER	-1.522 (2.96)***
ToT depreciation	-1.385 (2.09)**
Credit to the private sector	-0.014 (-0.02)
Fiscal reform	-3.223 (3.77)***
Intercept	-2.087 (2.42)**
Pseudo R2 Quality of prediction N	0.4803 88.00% 50

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4. Do Macroeconomic Risks and Distortions Pose a Binding Constraint to Growth in Tunisia?

Poor macroeconomic policies can constrain growth through two broad channels. Macroeconomic distortions can constrain economic growth where macroeconomic policies reduce the current profitability of private investment. Excessive budget deficits, for example, require large amounts of government borrowing, and this drives up the real interest rate and crowds out private investment. Macroeconomic policies that result in an overvalued exchange rate reduce the profitability of exporting and of producing goods and services that compete with imports. In contrast, macroeconomic risks arise when government policies and external events combine to create a growing likelihood that the economy will suffer a macroeconomic crisis in the future. Where such future risks are significant, they tend to discourage investment in the present, as potential investors worry that their money will be lost to a burst of rapid inflation, sudden devaluation, financial crisis, or other symptom of macroeconomic crisis. In a situation where such distortions and risks are sufficiently serious, they can pose a binding constraint to economic growth.

This chapter asks whether these conditions represented a binding constraint to Tunisia's economic growth in the years leading up to the revolution, thus requiring an important policy shift today, and concludes that they did not. However, the risks of macroeconomic instability have risen in the aftermath of the revolution. Whether or not they will become binding constraints in the short- to medium- term depends on how the government responds to the macroeconomic challenges that have emerged in the wake of the 2011 revolution. If it successfully addresses those challenges and then resumes the pursuit of macroeconomic stability as in the recent past, then macroeconomic risks and distortions can be safely discounted as a binding constraint to growth. If, on the other hand, the government's pursuit of macroeconomic stability is compromised, these risks could emerge as a binding constraint to future growth. At present, this latter outcome seems somewhat unlikely, given the recognition among Tunisia's policymakers of the advantages that macroeconomic stability offers, and the extensive bilateral and multilateral resources on which Tunisia can draw if needed to bridge temporary financing gaps. Nevertheless, the seriousness of Tunisia's current challenges must be acknowledged.

This chapter begins with a summary of macroeconomic trends before the revolution as a way to assess whether macroeconomic risks posed a binding constraint to growth in preceding years. It then summarizes the current situation in light of information available at the time this diagnostic was being written in order to assess the extent to which macro risks represent a binding constraint today. A Technical Annex provides further analysis, highlighting the important contribution of macroeconomic stability to Tunisia's past growth.

4.1. Macroeconomic Policies before the Revolution

During the decade prior to the revolution, Tunisia maintained modest fiscal deficits and complementary monetary and exchange rate policies that maintained macroeconomic stability and progressively reduced the likelihood of a future crisis.

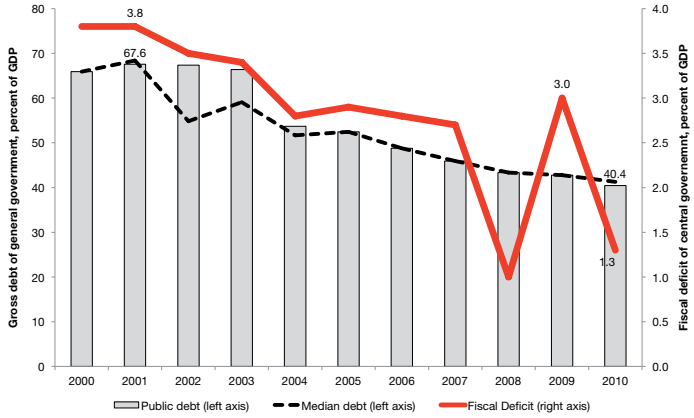
Fiscal Balance and Public Debt

Tunisia pursued a generally conservative fiscal policy throughout the 2000s, with deficits declining from 3.8 percent of GDP in 2000 to 2.7 percent in 2006 and 1 percent in 2008. The fiscal deficit rose to 3 percent in 2009, as the government shifted to more expansionary fiscal policy to offset the economic slowdown in Tunisia's European export markets (Figure 4.1, right-hand scale)[47]. This shift, which was encouraged by the International Monetary Fund (IMF), mainly consisted of accelerated implementation of public investment projects while containing subsidies and other current expenditures. The fiscal deficit declined to 1.3 percent of GDP in 2010.

Because Tunisia's budget deficits grew more slowly than the economy, overall public indebtedness steadily declined as a share of GDP from 67.6 percent in 2001 to 40.4 percent in 2010 (Figure 4.1, left-hand scale). This trend was roughly in line with the median among emerging market economies with similar sovereign debt ratings (Figure 4.1, left-hand scale) and provided valuable fiscal space to allow the government to pursue more expansionary fiscal policies when needed, as in 2009.

[47] Central government deficits excluding grants and privatization receipts.

Figure 4.1: Tunisia's Fiscal Deficits and Public Debt and Median Debt among Emerging Market Countries with Similar Sovereign Debt Ratings



Sources: For deficits, IMF Article IV Consultation Reports, various issues. Excludes grants and privatization receipts. For debt, IMF World Economic Outlook database and Tunisia: 2009 Article IV Consultation Staff Report Median computed for Tunisia, Barbados, Brazil, Bulgaria, Croatia, Jordan, Kazakhstan, Mauritius, Morocco, Romania, and Russia.

Based on IMF analysis, a continuation of past budgetary policies, including a gradual reduction in fiscal deficits to just over 2 percent of GDP by 2015, would have led to a further decline in the ratio of public debt to GDP, placing the ratio below 40 percent by 2015. The main source of vulnerability identified prior to the revolution was that almost 60 percent of Tunisia's debt was denominated in foreign currency. Thus any major depreciation in the real exchange rate would boost the ratio of public debt to GDP. A second, longer-term source of vulnerability arose from the public pension system, for which reform was planned in 2007 but has not yet been implemented. Nonetheless, prior to the revolution Tunisia's budgetary and debt policies appeared to be moving steadily in the direction of greater sustainability, reducing its vulnerability to future crisis.

Inflation

Tunisia's conservative fiscal policies during the decade prior to the revolution allowed the country to finance its deficits mainly through domestic and foreign borrowing rather than through monetary expansion. As a result, inflation remained restrained, with consumer price inflation fluctuating within a fairly narrow band between 1 percent and 5.1 per-

cent (Figure 4.2). While further stabilization might have proven beneficial, the available evidence provides little reason to believe that inflation at the rates recently experienced by Tunisia during the 2000s imposed a significant reduction in economic growth or in private investment.

Figure 4.2: Tunisia - Consumer Price Inflation 2000-2010 (Annual Averages)

Source: World Development Indicators

Exchange Rate Policy and Trends in Real Exchange Rates

The real exchange rate broadly affects growth in two ways. First, an overvalued currency reduces the profitability of exporting and import-competing firms, and thus the incentives for private production and investment. Second, in a country with an open capital account, a misaligned real exchange rate could, as discussed above, pose the threat of future financial crisis through a wide range of balance-sheet effects[48]. The IMF classifies Tunisia's exchange rate regime as "stabilized management," meaning that the government sets its monetary and fiscal policy with an eye toward keeping the real exchange rate on a desired path. Because Tunisia maintains significant restrictions on capital account transactions (transfers of financial assets in or out of Tunisia)—a policy that imposes costs on domestic borrowers—the risk of sudden shifts in short term capital flows is minimal. Therefore,

[48] To cite one among many such vulnerabilities, a misaligned real exchange rate could encourage domestic banks to borrow abroad in foreign currency and use the funds to make loans denominated in local currency. If such mismatches become prominent, they can result in widespread bankruptcy of both banks and borrowing firms if the exchange rate subsequently depreciates.

the main exchange-related macro risk concerns the impact of real exchange rates on the competitiveness of exporters and import-competing firms.

An assessment carried out by IMF staff in conjunction with the 2010 Article IV consultations, concluded that Tunisia's real effective exchange rate was "broadly in line with fundamentals." It reached this conclusion after examining the results of three different models.[49,50] The "macroeconomic balance" (MB) approach measures the exchange rate adjustment needed to shift the underlying current account to a sustainable level while allowing domestic output to remain at its potential. On the basis of this model, the IMF found that real exchange rate was overvalued by 6.5 percent. The "external sustainability" (ES) model seeks to identify the exchange rate adjustment needed to maintain the current level of external debt as a percent of GDP. On this basis, the IMF concluded that the real exchange rate was undervalued by 4.6 percent[51]. The third, "cointegration" approach estimates the Equilibrium Real Effective Exchange Rate (EREER) using a country-specific relationship determined by the terms of trade, trade openness, and the growth of output per worker in Tunisia and its trading partners. This model implies that the impact of Tunisia's growing output per worker was slightly outweighed by the impact of its declining terms of trade and increased openness, implying a slight overvaluation of 3 percent. Because these competing models suggest that Tunisia's actual real exchange rate was quite close to its equilibrium value, and because they diverge on the direction of any misalignment, it seems reasonable to conclude that exchange rate misalignment was small and therefore highly unlikely to represent a binding constraint to private investment and growth in Tunisia.

Current Account and External Debt

Current account deficits are not a sign of underlying economic weakness unless they reach unsustainable levels. The current account balance is by definition equal to the excess of domestic investment over domestic savings, and up to a point tapping into foreign savings can help a

[49] The Real Effective Exchange Rate is calculated by adjusting the nominal exchange rate by the ratio of cumulative inflation in the subject country to a weighted average of cumulative inflation in its trading partners, both relative to a particular base period. The weights are set equal to each trading partner's share in the country's trade flows.

[50] The rationale for these models is explained in IMF Working Paper WP/11/20, "Armenia: An Assessment of the Real Exchange Rate and Competitiveness," by Anke Weber and Chunfang Yang.

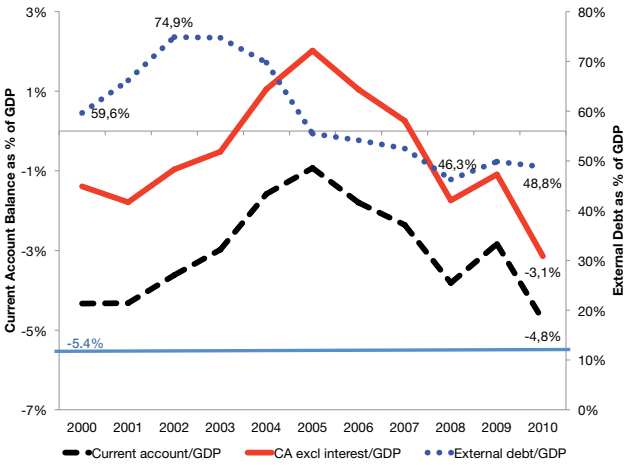
[51] The reason these two models come to opposite conclusions is that they adopt different assumptions regarding the "right" level of Tunisia's current account (CA) balance: the MB adopts a CA deficit of 0.5 percent of GDP as the norm, while the ES model adopts a CA deficit norm at 4.3 percent. Tunisia's projected underlying CA deficit of 2.7 percent of GDP falls between these two values.

country increase its rate of investment and growth. Nonetheless, current account deficits can pose a threat to macroeconomic stability if they are excessive and persistent, and are financed through borrowing or the sale of existing foreign assets rather than through foreign direct investment. In such cases, foreign lenders may conclude that a country will no longer be able or willing to service its debts, and refuse to lend more or to roll over existing debt as it matures.

The sustainability of a country's current account is typically assessed by the IMF and others through a debt sustainability analysis, which seeks to identify factors that could place the ratio of external debt to GDP on an unsustainably rising path. If the current account deficit excluding interest payments on existing debt remains above a certain threshold share of GDP, the analysis concludes that external debt is on an unsustainable path which must be reversed to avoid crisis.

Figure 4.3 shows the evolution of Tunisia's external debt as a share of GDP, along with the current account balance including and excluding interest payments. Tunisia's external debt/GDP ratio fell steadily from a high of 74.9 percent in 2002 to a low of 46.3 percent in 2008, before rising slightly to 48.8 percent in 2010. The solid red line depicts the current account balance excluding interest—the central focus of the IMF's calculations regarding the external debt sustainability. This balance remained in surplus from 2004 through 2006, helping account for much of the decline in the debt/GDP ratio. Although this balance fell into deficit beginning in 2007, through 2010 it never came close to the 5.4 percent deficit identified by the IMF as the threshold beyond which continued growth in external debt would become destabilizing. On the basis of these trends, it appeared reasonable to discount external imbalances as a source of macroeconomic instability or crisis.

Figure 4.3: Current Account Deficit and External Debt as Share of GDP



Source: World Development Indicators and International Financial Statistics.

4.2. Growth Acceleration Analysis

If an economy does not meet the macroeconomic conditions for accelerating and sustaining growth, policy and institutional reforms that address microeconomic inefficiencies will not lead to sustained growth in the future. Applying the "growth accelerations" methodology proposed by Hausmann et al. (2004) can help to identify the main macroeconomic variables associated with—and probably necessary to—accelerating a country's growth in the past. If those macro conditions do not obtain currently, they may be binding constraints to growth. This section summarizes the results of an analysis of Tunisia's growth accelerations between 1961 and 2010. Technical details and definitions are provided in the Technical Annex to this Chapter. The first step is to identify periods of accelerated growth in Tunisia that were sustained for at least 5 years. This process yields three growth acceleration periods, highlighted in Figure 4.4[52]: 1968-1972; 1996-2001; and 2003-2008.

A similar approach is used to identify periods of sustained improvement in macroeconomic conditions, defined by a primary budget deficit less than 1 percent of GDP[53]. By this criterion, Tunisia maintained macroeconomic stability

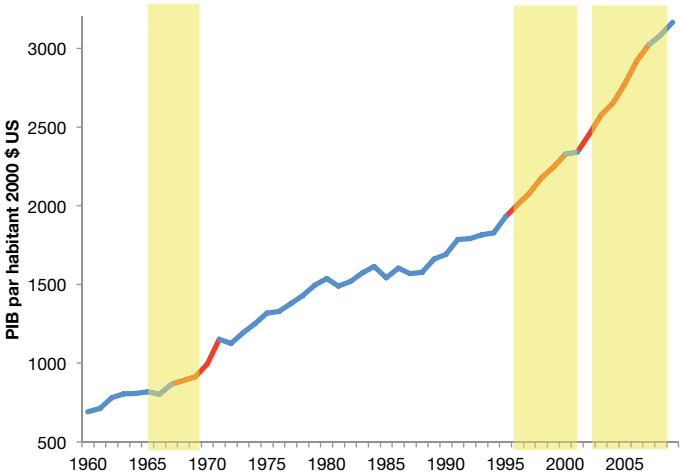
[52] Readers will note that the one-year gap between the second and third periods coincides with the global economic shock following September 11, 2001, which suggests that this is really one longer growth acceleration with an exogenous interruption.

[53] The primary budget deficit is the fiscal deficit excluding interest on existing public debt.

from 1992 through 2010, spanning all three periods of growth acceleration (Figure 4.5).

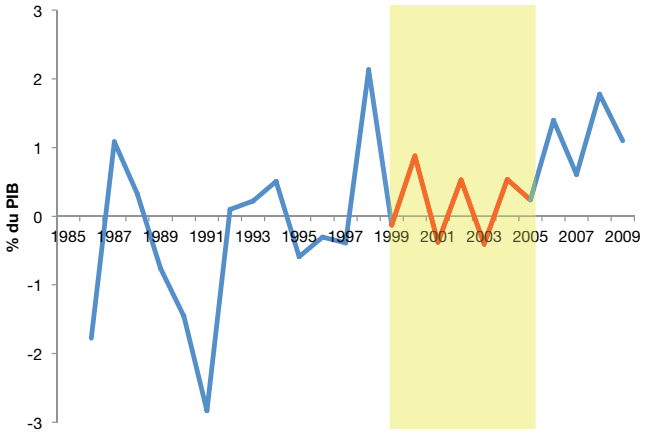
Depreciation of the real exchange rate also accelerated over three periods since 1975, the starting date of the series: 1975-77, 1985-88, and 2002-2010 (Figure 4.6). The second of these periods coincided with the onset of the structural adjustment program but did not coincide with a growth acceleration period. On the other hand, the third period of accelerated depreciation between 2002 and 2010 largely coincided with the third growth acceleration, 2003-2008.

Figure 4.4: Growth Accelerations in Tunisia 1961-2010



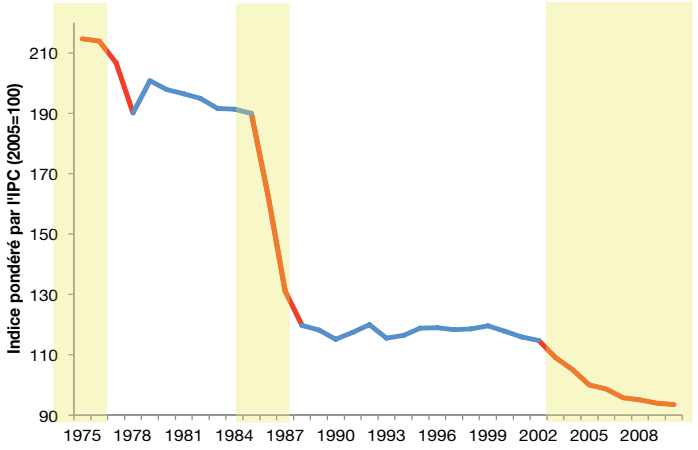
Source: World Development Indicators

Figure 4.5: Macroeconomic Stability - Primary Budget Surplus



Source: IMF World Economic Outlook database.

Figure 4.6: Real Exchange Rate Depreciation



Source: IMF, International Financial Statistics

One can extend this analysis to identify some of the key historical correlates of growth as well: if other indicators or tests show that these continue to constrain growth, then they may pose binding constraints[54]. As detailed further

[54] If these factors were improved in the past and spurred a growth acceleration, they would only continue to represent binding constraints if they pass additional tests of a binding constraint.

in the Technical Annex, this analysis reveals an association between the likelihood of growth acceleration and several macro and policy variables: (i) the degree of economic openness, (ii) macroeconomic stability as defined above, and (iii) depreciation of the real exchange rate. Meanwhile, there was a negative relationship between the likelihood of growth acceleration and depreciations in Tunisia's terms of trade. In addition to macro variables, policy reforms appear to be associated with growth acceleration as well. The 1988 fiscal reform, which was accompanied by a tax increase, is related to a reduced probability of growth acceleration, while investment incentives introduced in 1993 were positively related to them. Similar results emerge when one includes the growth acceleration and policy history of the comparator Jordan, Malaysia, Turkey, Indonesia, and Egypt.

This analysis confirms the importance of macroeconomic stability for Tunisia's growth prior to the revolution. Regaining macroeconomic stability in the near future will help ensure that macroeconomic risks and distortions do not pose a binding constraint to future growth. No such assurance can be offered if Tunisia were to fail to deal with the current mounting pressures on the country's fiscal balance. As macro stability is restored, micro-policy reforms will re-emerge as the most important source of improved incentives for private investment (Chapter 5).

4.3. Tunisia's Macro Situation in the Aftermath of the Revolution

While macroeconomic stability provided strong support for Tunisia's growth prior to the revolution, recent external and internal events have combined to pose a challenge to its macroeconomic stability. Tunisia successfully overcame one such challenge in 2008 and 2009, which resulted from recession in Europe, the destination for nearly three-quarters of Tunisia's exports and the source of the great majority of the tourists who visit Tunisia. Real GDP growth fell from 6.3 percent in 2007 to 3.1 percent in 2009, although the economy recovered some momentum in 2010 to grow at 3.7 percent. Other macro indicators also improved, including small declines in external and public debt as a share of GDP.

However, political and economic uncertainty following the January 2011 revolution has created a larger challenge to macroeconomic stability. Social unrest,

including widespread strikes and sit-ins, have slowed production, scared off many tourists, and led to a sharp drop in domestic and foreign direct investment and to the closure of some foreign-owned factories. Meanwhile, the revolution in neighboring Libya, one of Tunisia's top trading partners, has reduced export demand and caused the return of many Tunisian workers from Libya. In response to these and related issues, real GDP fell an estimated 2.2 percent in 2011 (Table 4.1). This occurred despite expansionary fiscal policy including a 6.1 percent increase in public consumption, including increased subsidies and support for the Amal ("Hope") program targeting unemployed youth[55].

Reduced tourist spending and FDI inflows contributed to a current account deficit of 7.3 percent of GDP and a 20 percent drop in reserves to US$7.5 billion, equal to 3.8 months of imports. The drop in output and the return of workers from Libya helped push the unemployment rate up to 18.9 percent—42 percent among young people. To counteract a tightening in credit markets due to deteriorating bank portfolios, the Central Bank lowered reserve requirements, increased refinancing to banks, and allowed banks to reschedule loans falling due in 2011. These moves are likely to generate an uptick in inflation in 2012 to between 5 and 6 percent.

Table 4.1: Macroeconomic indicators and forecasts

	2010	2011e	2012f	2013f
Real GDP growth, %	3.7	-2.2	2.2	3.5
Inflation, %	4.4	3.5	5.0	4.0
Fiscal balance, % of GDP, excluding grants	-1.3	-3.6	-6.6	-5.1
Current account, % of GDP, excluding grants	-4.8	-7.3	-7.0	-7.0
Fiscal financing needs, US$ billion, excluding grants	1.6	2.8	3.6	3.5
External financing needs, US$ billion, excluding ggrants	4.1	5.7	5.2	5.3
Public debt, % of GDP	40.4	42.5	43.8	49.2
External debt, % of GDP	48.8	51.1	53.1	55.3
Short-term debt, % of international reserves	53.6	68.4	68.9	69.6

Source: IMF, "Middle East and North Africa: Economic Outlook and Key Challenges," April 2012.
e=estimate; f=forecast.

[55] The program provides a monthly allowance of 200 dinars plus medical coverage to first-time jobseekers who have been unemployed for at least six months since graduation from higher education or from the vocational training system. The allowance provides compensation for up to one year of active job search.

The economic outlook for 2012 appears highly uncertain. The Tunisian authorities have forecast growth of 3.5 percent based on the assumption of a strong recovery in investment (6.4 percent growth) and an improved balance of foreign trade. The IMF is more cautious, forecasting real growth of 2.2 percent, on the assumption that tourists and foreign investors return to Tunisia gradually. The revised budget for 2012 includes a significant increase in capital spending to support growth and job creation, particularly in disadvantaged regions; the actual budget outcome and its impact on the economy will depend on the efficiency of program implementation, a source of problems in 2011. Preliminary data for the first quarter of 2012 suggested that growth had indeed resumed, and that the rate of unemployment had fallen slightly to 18.1 percent. Nevertheless, in light of the enhanced risks surrounding Tunisia's macroeconomic situation, Standard & Poor's (2012) downgraded Tunisia's sovereign credit rating below investment grade in late May, and subsequently cut the ratings of five major banks. These actions will increase Tunisia's external borrowing costs.

Tunisia's current macroeconomic difficulties highlight the value of the fiscal space provided by the conservative budgetary policies of the previous decade, which has allowed the government to pursue expansionary macroeconomic policies to help limit the current downturn. While domestic public debt and external debt are both expected to rise significantly in 2012 and 2013, they do so from a relatively low base and appear manageable at least through 2013. Both the IMF and Standard & Poor's forecast that public debt will rise to 49 percent of GDP in 2013, with most of the increase reflecting the recapitalization of state banks at an estimated cost of 4 billion dinars. Standard & Poor's expects that public debt will peak at this level in 2013 and gradually decline in later years. Tunisia faced significantly higher levels of debt in the recent past, so this debt ratio should be sustainable as long as the government adjusts to achieve a primary surplus within the next few years.

The external debt situation is broadly similar. Past progress in reducing external debt has meant that Tunisia entered 2011 with a ratio of external debt to GDP well below the level it was able to service in 2002. Current account deficits currently forecasted exceed the level previously identified as sustainable in the long run, but in the short to medium

term Tunisia can count on strong support from donors and the international financial institutions. The critical requirement for such support is that an elected government—perceived as legitimate by donors and Tunisians alike—articulate and implement a coherent plan for regaining stability in the medium term.

4.4. Conclusion

Based on this analysis, macroeconomic risks and distortions clearly did not pose a binding constraint to economic growth in Tunisia prior to the revolution. On the contrary, macroeconomic stability was an important source of economic strength. However, social and political tensions unleashed by the revolution, along with events in Europe and Libya, have created economic conditions that pose a serious challenge for maintaining macroeconomic stability. Although starting at relatively low levels, domestic and external debts have been rising at rates that cannot be sustained indefinitely. If these trends are not reversed, macroeconomic risks could emerge as a binding constraint to Tunisia's growth over the medium and long term.

Some domestic voices are currently calling for a sharp increase in public spending in order to stimulate domestic demand. This would be unwise. After successive downgrades of Tunisia's sovereign credit rating and with widespread awareness of the European debt crisis and Tunisia's own unsettled political situation, it cannot be assumed that the market's appetite for Tunisian public debt is as robust as in the prerevolutionary period. In short, Tunisia cannot realistically hope to simply spend its way back to prosperity, and should not try.

Data from early 2012 suggested a return to positive growth. If allowed to gather momentum, growth could produce a virtuous circle by reducing unemployment and thereby helping to reduce the social tensions that in turn threaten investment and growth. Unfortunately, the latest data call these positive signs into question and highlight the existence of various downside risks. These conditions pose a challenge to policymakers to accelerate the implementation of programs, reduce untargeted subsidies, and maintain the right balance between stimulus and restraint as conditions change. In the meantime, Tunisia can rely upon financial support from donors and international financial institutions as long as it demonstrates a determination to return to stability and a coherent plan for doing so.

The revolution has given Tunisia an opportunity to adopt at least some of the critical structural reforms that are needed to increase its rate of growth and enhance the breadth of the growth process. However, it is in the interest of all Tunisians that these reforms be adopted within an overall context of macroeconomic stability. The remainder of this growth diagnostic will proceed on the premise that this understanding will guide future policy, and that the government will take steps to keep the economy on a sustainable macroeconomic path.

4.5. Technical Annex to the Macro Chapter: Overcoming Growth Challenges—Looking for Drivers and Obstacles of Growth Accelerations

This Annex is divided into three sections: (1) identifying periods of accelerating growth; (2) a probit analysis to estimate the impact of various drivers on the probability of accelerating economic growth; and (3) a validation of the results through a probit analysis of panel data on the comparator countries used in the remainder of the growth diagnostic, except Romania.

Identifying Growth Acceleration Periods
A growth acceleration period is identified on the basis of the pattern of growth in GDP per capita, which we label g. Following Hausmann et al., we identify a growth acceleration period spanning years t to t+n as one in which the growth rate (g_(t,t+n)) satisfies the following four conditions:

1) ⟦ g⟧ _(t,t+n)≥2.7% - rapid growth is sustained throughout the period[55]
2) ⟦∅g⟧ _(t,t+n)≥2.0% - growth accelerates
3) yt+n≥ Max{yi} i≤n - GDP per capita at the end of the sustained growth period is greater than the GDP per capita before the beginning of the growth acceleration
4) n≥5 – the growth acceleration lasts at least five years

Probit Analysis of Growth Accelerations in Tunisia

Following Hausmann et al., the analysis of growth drivers focuses on turning points in the growth performance of Tunisia. The quantitative approach developed in this section relies on a definition of “accelerating growth period” as “a

rapid acceleration in economic growth that is sustained for at least three or five years." The left-hand side of Table 4.2 describes the explanatory variables tested in this analysis. Most are dummy variables, taking a value of 1 if certain conditions hold, and 0 otherwise. The right-hand side of the table summarizes the filter applied to generate each variable[56].

Table 4.2: Filters of the Variables Selected for the Probit Analysis

Variable	
Growth acceleration of GDP per cap.	1 if gt,t+n ≥ 2.7% and ∅gt,t+n ≥ 2%
Gross domestic savings (% of GDP)	1 if change > 0 for N ≥ 5 years
Investment rate (% of GDP)	1 if change > 0 for N ≥ 5 years
Openness (Trade as % of GDP)	1 if change > 0 for N ≥ 5 years
Employment/population 15-64	1 if change > 0 for N ≥ 5 years
Real effective exchange rate	Spline regression
Real interest rate	1 if real interest rate > 3% for N ≥ 5 years
Tax rate	1 if change < average change for N ≥ 3 years
Foreign demand	1 if change < average change for N ≥ 3 years
Depreciation of Terms of Trade	0 if change < average change for N ≥ 3 years
Terms of Trade	1 if change < average change for N ≥ 3 years
Macroeconomic stability	1 if primary budget deficit < 1% of GDP
World GDP growth	1 if gt,t+n ≥ 2.7% and ∅gt,t+n ≥ 2%
Fiscal reform (adoption of VAT)	1 for the 5 years beginning in 1988
Adoption of the offshore regime	1 for the 5 years beginning in 1992
Monetary reform (convertibility of dinar in 1993; reform of banking system governance in 2005)	1 for the 5 years beginning in 1993 and for the 5 years beginning in 2005; 0 otherwise
Adoption of the investment code	1 beginning in 1993

Source: ITCEQ Enterprise Survey 2010

[56] This method of generating dummy explanatory variables ensures that they are all exogenous, even in cases where the underlying variable (such as the real exchange rate or the real interest rate) is determined simultaneously with the rate of growth. The lack of correlation of the included variables with the error term is confirmed using the Smith-Blundell test. In the case of the real interest rate variable, the nature of monetary policy in Tunisia suggests a growth acceleration is likely to exert little upward pressure on real interest rates, because (a) in the absence of an active money market or bond market, the central bank controls the money supply and the nominal interest rate; (b) price adjustments are sluggish due to subsidies and controls on retail margins on many products; and (c) the real exchange rate is adjusted in response to changes in foreign exchange reserves. Together, these conditions justify an assumption that the real interest rate is under the control of the Central Bank of Tunisia.

Table 4.3 shows the results of this analysis. The most important result is the strong and robust influence of macroeconomic stability on the likelihood of a growth acceleration—a finding that highlights the importance of regaining macroeconomic stability in the near future. Growth responds positively to increased openness, and negatively to depreciation of the terms of trade and to increased real interest rates. Somewhat surprisingly, the results also suggest that depreciation of the real exchange rate has reduced growth. The fiscal reform of 1988, which was accompanied by a tax increase, slowed growth, while the adoption of the investment code in 1993 increased it.

Table 4.3: Results of Probit Analysis

Dependent Variable : Growth Acceleration		
Macro Stability	2.382 (3.89)***	8.860 (7.56)***
Investment code	6.499 (12.37)***	6.466 (11.34)***
Real Exchange Rate	-0.710 (2.21)**	-6.216 (12.45)***
Terms of Trade Depreciation	-1.549 (3.20)***	-1.577 (2.44)**
Degree of openness		0.963 (2.00)**
Fiscal reform		-3.679 (5.45)***
Real Interest rate		-8.125 (8.06)***
N	50	50

Probit Analysis with Panel Data

The objective of the probit analysis with the country panel data is to identify the common growth drivers within a set of countries selected because (1) they offer a different economic growth model and perform differently in international markets, and (2) some can be considered as benchmarks for Tunisia. Table 4.4 shows the initial set of countries considered. Over the period under review, 1961-2010, Algeria, Mauritania, and Morocco did not experience any growth accelerations, and were eliminated from the panel. After

these exclusions, the panel is composed of Egypt, Indonesia, Jordan, Malaysia, Tunisia, and Turkey. The common events which punctuated the trajectory of each country are gathered in Table 4.5.

Table 4.4: Growth Accelerations among Panel Countries

Country	Period of growth acceleration
Algeria	None
Egypt	2006-2010
Mauritania	None
Morocco	None
Turkey	2002-2007
Jordan	2004-2008
Malaysia	1976-1984 1988-1997 2002-2008
Indonesia	1968-1981 1986-1997

The results, shown in Table 4.6, confirm that for all countries in the panel, macroeconomic stability, trade liberalization and greater openness, and institutional reforms exhibited a positive association with the occurrence of growth accelerations. In contrast, acceleration of inflation, terms of trade depreciation, and financial crises were negatively associated with growth accelerations.

Table 4.5: Major Economic and Political Events in Panel Countries

Country	Political takeover	Trade liberalization	Macroeconomic stability	Reform	Financial crises
Turkey	1971 1980	1987	2001-2005		
Egypt	1970 Anouar 1981 Moubarak	2000		1993-1995 2004	
Jordan		2001 2004	2003-2006	1994	1991
Malaysia		2002-2010	1999-2008	1967 1989	1997
Indonesia	1965 Suharto 1999 Wahid	1994-1999	1999-2008	1997 1989	1997
Tunisia	1987	1995	1999-2005	1988 1993 2005	

Table 4.6: Results of the Probit Analysis with Panel Data

Degree of openness	0.479 (3.78)***
Acceleration of inflation	-0.441 (2.61)***
Terms of trade depreciation	-0.435 (4.02)***
Macro stability	0.328 (2.53)**
Reforms	0.461 (4.01)***
Trade liberalization	0.821 (6.21)***
Financial crises	-1.531 (6.29)***
N	237
Wald chi2	197.9***
Likelihood-ratio test	0.000

* p<0.1; ** p<0.05; *** p<0.01

5. Do Micro Risks and Distortions Pose a Binding Constraint to Growth?

5.1. Introduction

Following the diagnostic framework (Figure 1.1), this study has excluded the high cost of finance as a binding constraint to growth; while the financial sector remains somewhat under-developed and inefficient, the evidence presented in Chapter 3 demonstrates that low demand for investment dominates the supply-side constraints to financing investment. As shown in Chapters 7-9, complementary factors of production (human, natural, and infrastructure capital) are relatively abundant in Tunisia and assets which are generally considered among Tunisia's advantages. Thus the possibility of low social returns to investment will also be excluded by the evidence. The only major branch remaining for identifying Tunisia's primary constraints to growth is the weak appropriability branch. As shown in the previous chapter, macroeconomic management has been sound over the past couple of decades, and thus poor macro conditions could not have been the primary constraints to Tunisia's growth. Thus simply through a process of elimination, weak appropriability at the micro level emerges as a strong candidate binding constraint.

Weak micro-appropriability arises through government policy and institutional failures which create risks and distortions at the micro level and drive a wedge between intrinsic economic returns and private returns to investment. Effective micro policies and supportive institutions are critical for fostering secure property rights; a predictable, transparent, and efficient regulatory environment; a relatively modest, non-distortionary fiscal burden; access to markets and information; protection from predation and monopolistic or unfair competition; and flexible factor markets—all of which are important to potential investors assessing their prospective returns. This chapter presents empirical evidence that weak micro policies and institutional failures represent binding constraints to growth in Tunisia. These findings are broadly similar with earlier findings by Pickard and Schweitzer (2012) that Tunisia exhibits the syndrome of an "over-burdening state." However, this chapter goes into more detail on the underlying policy and institutional roots and pinpoints more specific areas of policy and institutional weakness requiring reform.

Based on the evidence available, we find that the primary constraints to economic growth in Tunisia, leading up to the revolution and today, are: (1) the lack of effective institutions to ensure public sector accountability, the rule of law, and checks and balances on power, resulting in weak protection of property rights, barriers to entry and exit, and corruption; and (2) the high policy costs and risks of employing workers—in particular, high payroll taxes and relatively inflexible labor market regulation.

Corruption has been an issue for many years in Tunisia, and in the years prior to the revolution it had become especially constraining for growth. Under the previous regime, the lack of accountability on the part of the executive and an insufficiently independent judiciary enabled high level corruption and a weakening of the rule of law, which ultimately served to weaken property rights—the certainty that investors would reap the fruits of their investments. These failures also led to barriers to entry designed to protect favored interests in certain sectors. These barriers inhibited free and fair competition to a degree which created the perception of inequities in the business climate, and the absence of effective competition is likely to have limited Tunisia's productivity growth. Although these issues are widely recognized in Tunisia today, and efforts are underway to remedy some of the underlying institutional weaknesses arising from the political system, addressing them fully will require additional time and effort. Corruption has abated somewhat since the change of regime, but as discussed in this chapter, still represents a significant cost to firms, along with uncertainties regarding the ability of the country to adopt more investor-friendly policies and institutions. In addition, addressing these issues will be essential to create a healthy, competitive business environment and to ensure that the weaknesses of the prior regime do not reemerge in the future. Among the measures needed are the successful adoption and implementation of a constitution with appropriate checks and balances, administrative reform of key public sector bodies, and the creation and strengthening of essential democratic institutions.

Of equal or perhaps greater importance is the second constraint—the high fiscal and regulatory cost of employing workers. Various aspects of this constraint pass all four tests of a binding constraint, and the ability to employ workers impacts potentially every sector

of the economy. Labor and skill are indispensable factors of production, yet potential employers face high payroll taxes and ongoing wage and tax obligations should their investments not pay off. Because of these high costs, firms opt to remain smaller and less productive, to substitute labor saving technologies, and to circumvent the constraint by avoiding employment contracts and compliance with payroll contributions. The resulting reduced demand for workers leads to lower market wages and ultimately a declining share of income growth accruing to labor. Moreover, because innovation and productivity growth depend in part on competition and labor market flexibility, these factors have impeded productivity growth both through reduced economies of scale, and through reduced incentives to innovate (see Chapter 6 and e.g., Aghion et al. 2008 and Scopelliti 2009).

A first step in sifting through the potential micro issues is to survey the international indicators from independent organizations such as the World Bank (Doing Business), Fraser Institute of Economic Liberty, Heritage Foundation, and the World Economic Forum. However, these indicators must be interpreted carefully. First, whereas a poor ranking can suggest a deleterious policy relative to other countries, it does not provide conclusive evidence of a high shadow cost for the economy in question. Second, Tunisia's growth performance has been solid if not stellar; therefore, one would not expect Tunisia to rank in the bottom tier for any specific policy area. In fact, Tunisia is rarely the worst among comparator countries in any area, and some of the comparator countries exhibit the same policy weaknesses as Tunisia[57]. Thus, a poor ranking on policies in one area is not sufficient to establish that this policy constraint "binds," just as a relatively favorable ranking on another indicator does not necessarily rule out a constraint as binding. In addition to these considerations, third-party indicators are not always consistent in their ratings, and not all indicators attempt to capture the specific policies which appear potentially constraining for Tunisia. Thus, this chapter will focus on the indicators which appear to contain the most relevant and up to date information on a given topic, based on a contextual understanding of a given issue in Tunisia.

There are some general challenges to any growth diagnostic utilizing the types of micro data available. De jure policies

[57] They may also exhibit the same binding constraints. However, in general, the costs of various policies will differ from economy to economy, as will binding constraints (see HRV 2005).

are seldom equivalent to what enterprises actually experience. As Hallward-Driemeier et al. (2010) point out, there is a difference between "rules" and "deals," and so the realities that businesses face must be checked through enterprise surveys and especially data on enterprise behavior itself. Yet responses from enterprises, while revealing of firm perspectives on costs, are not embedded in an economic framework and thus provide less insight on the aggregate economic impacts of issues they face. Finally, since respondents are by definition enterprises which have survived, average responses must be interpreted in light of this selection bias. The obstacles faced by firms which could not survive in the prior or current policy regime may be missed or under-stated by those who exist. Nonetheless, those who survive would likely report difficulties with constraints that are binding even if they have adapted somewhat to those constraints.

Another challenge in conducting this analysis for Tunisia today is the transitional nature of the current situation. Issues which emerge as binding prior to the revolution have changed form somewhat, particularly the public sector governance constraints. In the aftermath of the revolution, the most immediate short-run concerns of business people center on uncertainties surrounding an upsurge in social unrest, on the government's ability to streamline and rationalize regulation, and on the need to fight corruption (see, e.g., IACE 2011). Thus, while the country's focus has understandably been on managing short term economic issues, opening the political system, and revising the constitution, Tunisia has yet to fully address the policies and institutional weaknesses which undermine the private returns to investors.

5.2. Weak Micro Appropriability

Independent ratings of Tunisia's overall micro- policy and institutional quality differ significantly, but several indicators show particular weaknesses in especially regarding issues of governance and corruption, in labor market efficiency, and in trade freedoms, with mixed scores on regulatory quality. In 2011/2012 the World Economic Forum ranked Tunisia fairly highly—44th out of 142 countries in the policy determinants of goods market efficiency and the World Bank's Doing Business places Tunisia 46th in the world in the overall ease of doing business. Doing business

does gives Tunisia poor rankings in enforcing contracts (76th) and dealing with construction permits (86th) (in addition to getting credit, as discussed in Chapter 3). Although Doing Business no longer reports its rankings on employing workers, the last ranking (in 2010) was 108th [58] and the World Economic Forum ranks Tunisia 106th in the world in labor market efficiency.

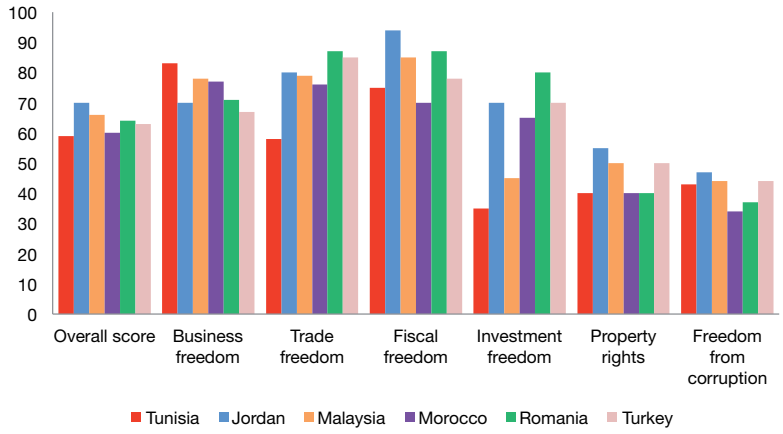
The Heritage Foundation (HF) indicators may be particularly revealing given that they utilize a variety of third-party data to construct measures of "economic freedom" which take into account both de jure policy and actual practice, drawing both from legal codes, enterprise surveys, and local newspaper reports, and thus reflects a more contextualized understanding of the situation in a given country. As shown in Figure 5.1, the Heritage Foundation ranks Tunisia the lowest in overall economic freedom against the comparator countries[59]. This is primarily due to low relative scores in financial freedom, investment freedom, freedom from corruption, and weak property rights. Tunisia ranks the lowest of the comparator groups in trade freedom as well, although this index is higher than for the latter indices[60]. Similarly, the Fraser Institute rankings on economic freedom show that Tunisia's overall economic freedom score has declined since 2000, while those of Turkey and Romania have improved (Figure 5.2). Although these indicators do not provide conclusive evidence that micro policy failures pose a binding constraint to growth, the subsequent sections of this chapter will provide further evidence in diagnosing which of the specific candidate areas of micro policy may be binding constraints.

[58] Doing Business ceased publication of its ratings for employing workers after 2010, but the underlying data are still published on its website and will be discussed further below. In 2010, Tunisia ranked 69thin the world in overall ease of doing business.

[59] These scores have been relatively stable prior to and after the revolution, with the only major change since 2010 being a downgrading of the "property rights" score from 50 to 40 from pre- revolution (2010 and 2011) to post-revolution (2012). The HF investment freedom index is based on a subtraction from the highest possible score (100) based upon the national treatment of foreign investment, as well as the degree to which investment laws and associated bureaucracies are transparent and (as HF estimates) burdensome to investors generally. Data sources and methodology are provided at: http://www.heritage.org/index/ranking.

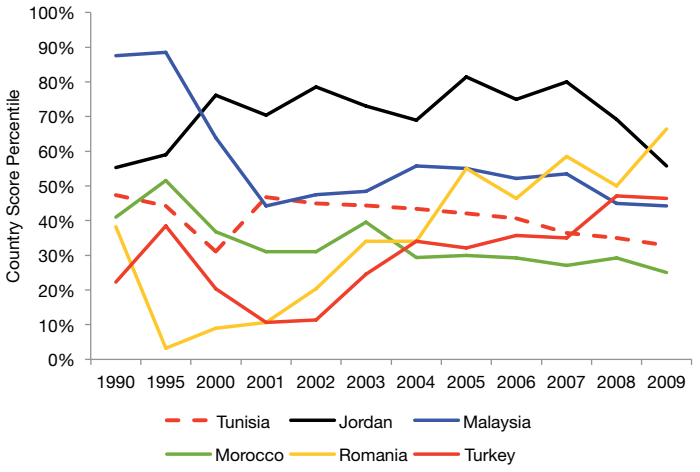
[60] Because the Heritage Foundation does not fully consider all facets of labor market freedoms which are germane to the Tunisian case, the comparison for labor markets is somewhat unreliable, and is not shown. Labor market indicators will be discussed below.

Figure 5.1: Heritage Foundation 2012 Indices of Economic Freedom



Source: Heritage Foundation.

Figure 5.2: Tunisia's Percentile Ranking in Fraser Institute Economic Freedom Index



Source: Fraser Institute.

5.3. Corruption, Weak Property Rights, and Barriers to Entry

The indicators above are suggestive of serious weaknesses in the micro-policy conditions for investment, with one primary issue being a lack of property rights and investment freedom[61]. High level corruption and weak property rights in Tunisia have resulted in part from a lack of checks on the power of the executive and an insufficiently independent judiciary under previous regimes. In 2008 Global Integrity scored Tunisia 45 out of 100, in the lowest category—"very weak"—in transparency and accountability, with special emphasis on the lack of effective checks on the executive[62]. Moreover, Tunisia rated weaker than the comparator countries in government accountability, despite the fact that the comparator countries were generally weak in this area: Jordan, which scored 57 out of 100 (2011), Morocco at 56 (2010), Malaysia at 50 (2010), and Turkey at 68 (2010) were all rated "weak", with only Romania reaching the "moderate" category at 79 out of 100. More detailed scores reveal that the anti-corruption agency and law enforcement were especially weak in controlling corruption. At the same time, government accountability was the weakest for Tunisia with a score of 17 out of 100. As shown in Table 5.2, all major branches of the government scored very weak on accountability.

Table 5.1: Global Integrity Scores on Anti-Corruption and Rule of Law, 2008

Anti-Corruption and Rule of Law	48	Very Weak
Anti-Corruption Law	100	Very Strong
Anti-Corruption Agency	4	Very Weak
Rule of Law	57	Very Weak
Law Enforcement	29	Very Weak

Source: Global Integrity. Scores based on a scale from 0 to 100.

[61] The HF protection of property rights indicator takes into account current uncertainties as well as patterns of expropriation risk prior to the revolution. The strength of investor protection index is somewhat more favorable in the Doing Business indicator, where Tunisia scores 6 out of 10, higher than MENA as a whole. This Doing Business indicator is focused on protection of minority shareholder rights against Director or majority shareholder self-dealing through transparent company disclosures, legal liability of Directors, and ease of shareholder legal suits. Because these do not appear to have been the areas of corporate governance or property rights which have been weakest in Tunisia, the HF indicator is probably more informative in this case.

[62] Based on conditions in 2008, GI states: Tunisia suffer(ed) from very weak levels of transparency and accountability in government, performing poorly across almost all dimensions of governance and anti-corruption. The most serious problem is the monopoly on power exercised by an executive that is subject to few effective checks and balances. … Efforts to hold members of the national legislature accountable are crippled by the absence of conflicts of interest regulations, judicial review of legislative actions, and asset disclosure requirements. Robust anti-corruption laws are in place but they are considerably weakened by the lack of an effective anti-corruption agency (or collection of anti-corruption bodies) to monitor and enforce the law. The police frequently abuse their power and are rarely held accountable for their actions.

Table 5.2: Global Integrity Scores for Government Accountability, 2008

Government Accountability	17	Very Weak
Executive Accountability	34	Very Weak
Legislative Accountability	0	Very Weak
Judicial Accountability	25	Very Weak
Budget Processes	8	Very Weak

Source: Global Integrity. Scores based on a scale from 0 to 100.

Corruption and weak public accountability in Tunisia's case not only affected democratic rights in important ways, but also the incentives to invest in the Tunisian economy. According to multiple reports, members of the former regime and close associates accumulated wealth through a range of tactics which undermined property rights and inhibited free and fair competition in many key sectors. Through the levers of the state, favored parties, rather than entrepreneurs with the greatest capacity and willingness to undertake productive ventures, were able to secure significant or controlling shares of companies in almost all sectors of the economy. Holdings included two private sector banks, automotive imports, logistics, telephony, media, agro industry, fishing, construction, airlines, large distribution chains, and the cement, sugar, and tourism sectors. Some of these were acquired at public expense on advantageous terms during the privatization program which began in early 2000 (Thedrel & Leclerc, 2011)—in some cases through credits through low interest rates and through the acquisition of state-owned properties and small businesses by questionable means (The Economist 2011). Businesses had increasing reason to believe that a high share of their profits could be effectively expropriated if they were seen to be too successful. Based on the number of companies that the transitional government has seized, at least 260 companies had been gained through such illegitimate means. This represents approximately 14 percent of all medium and large enterprises registered in Tunisia and an even larger fraction of domestically owned firms, which—being more captive in Tunisia—were also more vulnerable to such practices.

The protection of investors' interests against arbitrary actions depends in part on the ability of the judicial system to render unbiased and consistent

judgments, to uphold contracts, and to reliably apply the law in the adjudication of commercial disputes. As shown in Table 5.1, in 2008, Tunisia scored in the "very weak" range (57 out of 100) on the rule of law. According to a 2010 enterprise survey a substantial fraction of enterprises in Tunisia considered the judicial system to be a major or very severe obstacle—as shown in Table 5.3, 41 percent of partially exporting and 35 percent of non-exporting companies. Similarly, in a 2004 survey of enterprises only 22 percent of enterprises said that if an agent of the state acts in an illegal manner they can call on another official to ensure correct application of the law, without needing to make a supplementary payment, always or most of the time (ROSES 2005)[63]. This is a lower fraction than in either Morocco or Algeria in that year.

Table 5.3: Firms' Rating of the Judicial System as an Obstacle to Their Business

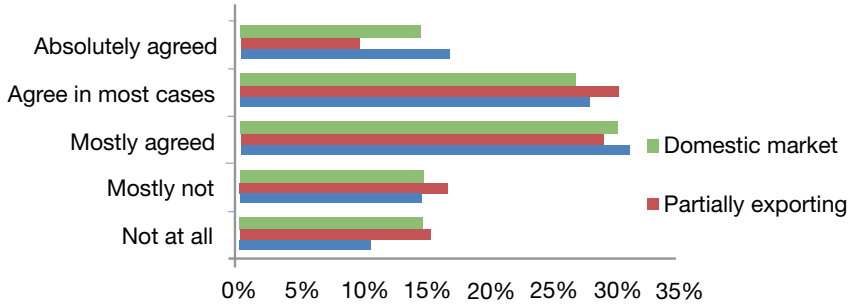
	No obstacle or minor obstacle	Moderate obstacle	Major or very severe obstacle
Totally exporting companies	64.33	12.28	23.39
Partially exporting companies	35.77	22.63	41.6
Companies serving the local market	41.17	24.18	34.65

Source: ITCEQ Enterprise Survey 2010

Since the judiciary was unable to check the actions of the regime and its associates prior to the revolution, the risk of effective expropriation of profits for any successful and growing company and the prospect of additional arbitrary action or harassment would clearly dis-incentivize investment at least by potentially larger, more productive enterprises, to such an extent that it would be difficult to argue that this was not among the principal constraints to growth in pre-revolutionary Tunisia. Although the former regime is gone, the institutional weaknesses have not yet been addressed given the sustained efforts this requires. Confidence in the judiciary does not appear to have improved dramatically—if at all—following the revolution. In 2011, as shown in Figure 5.3, between 29 and 32 percent of firms had little confidence in the judicial system's ability to uphold contractual and property rights.

[63] A third of enterprises did not reply to the question.

Figure 5.3: Confidence in Judiciary among Tunisian Businesses (Agreement with Statement: "I have confidence in the judicial system to ensure that my contractual and property rights are respected in the event of a commercial dispute.")



Source: ITCEQ 2011 Enterprise Survey

Regulatory Barriers and Anti-Competitive Practices

Tunisia's regulatory environment contains a variety of regulatory and entry barriers which inhibit competition, which has been shown in a variety of studies to be essential for innovation and dynamic productivity growth (see, e.g., Acemoglu 2006, Aghion et al. 2003, 2005, and 2009). Existing barriers include requirements for ministerial approval or prohibition of investment in certain activities, particularly by foreign investors. Some barriers have been imposed in an apparent attempt to protect certain firms from competition[64]. In other cases barriers have been designed to protect emerging sectors.

As a result, Tunisian firms generally appear to have faced significantly less competition than firms in other countries of the region. In a 2004 survey of firms in the region, 55 percent of Tunisian firms reported facing increasing competition over the 12 months prior to being surveyed, relative to 71 percent for Algeria and 87 percent for Morocco (ROSES 2005). Tunisian e nterprises also consider unfair and anti-competitive market practices to be

[64] Other regulations, whether designed to protect firms or to keep consumer prices low, may also have foreclosed effective competition and productivity gains. In particular, prices are regulated in sectors representing 13 per cent of production and 20 percent of distribution (UN 2006). In some cases (such as sugar, cement, distribution/retail) this may have protected a dominant firm. In other cases, price regulation has been motivated by the desire to keep key consumer prices low and inflation down. Yet to the extent that price regulations have impeded quality-differentiated pricing, they would have also inhibited investors' incentives to innovate by offering higher quality goods as well.

a major obstacle to their business. Firms surveyed in 2010 report unfair competition and practices in the market—which includes abuse of market position and unfair competition from the informal sector—as the single most serious obstacle to their enterprise, with over 50 percent of domestic firms rating this as a major or severe obstacle (2010 ITCEQ Enterprise Survey) (see Table 5.4). While firms rate anti-competitive practices as somewhat less of an issue than unfair informal competition (Table 5.5), they nonetheless rate this issue as severe as that of high financing costs and high social charges.

Table 5.4: Percentage of Enterprises Citing Practices in the Market as an Obstacle, 2010

Market practices are : (0=not an obstacle 1=a minor obstacle 2=moderate obstacle 3= major obstacle 4=very severe obstacle)						
Firm size by number of workers	**0**	**1**	**2**	**3**	**4**	**3 ou 4**
06-oct	13.11	4.92	34.43	14.75	32.79	47.54
nov-50	11.61	10.11	25.84	30.71	21.73	52.44
51-100	12.41	9.49	30.66	22.63	24.81	47.44
101-200	12.5	7.89	30.92	28.29	20.4	48.69
>200	10.2	12.24	36.05	23.81	17.7	41.51
Responses by Exporting Status						
Totally exporting	23.86	11.36	34.09	15.91	14.78	30.69
Partially exporting	7.22	7.94	29.6	30.69	24.55	55.24
Enterprises serving the local market	9	9.97	28.94	27.97	24.12	52.09

Source: 2010 ITCEQ Entreprise Survey

Table 5.5: Percentage of Firms Citing Unfair Competition and Anti-Competitive Practices as a Major or Severe Obstacle, 2010

	Unfair competition	Anti-competitive practices
Totally exporting companies	28.25	23.29
Partially exporting companies	52.16	47.84
Producers for domestic market only	50.33	43.44

Source: 2010 ITCEQ Enterprise Survey

Following the revolution, market practices continue to represent obstacles to free and fair competition on the basis of quality and price. Concerns regarding anti-competitive practices—collusion, abuse of market position, and predatory pricing—show up as still significant in the 2011 limited Enterprise Survey, with even greater concern about unfair competition—defined in that survey as illegal imitation, fiscal evasion, evasion of social charges, false advertising, and informal distribution networks. As shown in Table 5.6, 49 percent of partially exporting and 60 percent of firms serving the domestic market cite unfair competition as among those issues which compromise their competitiveness the most. The severity of complaints of unfair competition is consistent with wide scale tax evasion and growing informality. Formal firms which have higher cost structures due to their adherence to fiscal and other requirements have difficulty competing on the domestic market with the informal sector, while their incentives to improve quality and innovate are undermined by the lack of clear and fair rules of the game.

In addition, as shown in Table 5.6, the exact nature and expression of micro risks which weaken property rights has evolved since the revolution to raise the issue of security, presumably related to the recent social unrest and possibly labor strikes and sit-ins. "Insecurity" tops the list of immediate concerns for exporters.

Table 5.6: Post-Revolution Views on Market Practices, 2011

Responses to Question: What Factors Compromise your Competitiveness Today? (More than one response possible)	Totally Exporting Firms	Partially exporting	Local Market
Insecurity	60%	49%	51%
Unfair competition	23%	49%	60%
Anti-competitive practices	26%	41%	36%
The parallel market	12%	22%	12%
Other	13%	7%	5%

Source: ITCEQ Survey on Competitiveness 2011
Note: Due to small samples, subsample comparisons may not be accurate

The impact on growth of barriers to competition is difficult to quantify, but is likely to be important, based on the growing body of rigorous empirical evidence on the link between a lack of effective competition and a failure to innovate (See OECD 1996 and Holmes 2010 for an overview). These dynamic effects are likely to be important given Tunisia's mixed record in innovation (See Chapter 6). In the services sector, for example, where there are significant barriers to entry recent analysis concludes that restrictions on FDI in commercial services such as communications, transport, and finance inflict substantial costs on the Tunisian economy, mainly by limiting productivity in the production and marketing of goods, which rely on these services (Jouini and Rebei, 2012). In addition, a recent paper suggests that anti-competitive practices are also likely to have had an adverse distributional impact—with a small number of privileged firms reaping excess profits at the expense of other enterprises and consumers (Dee and Diop 2010)[65].

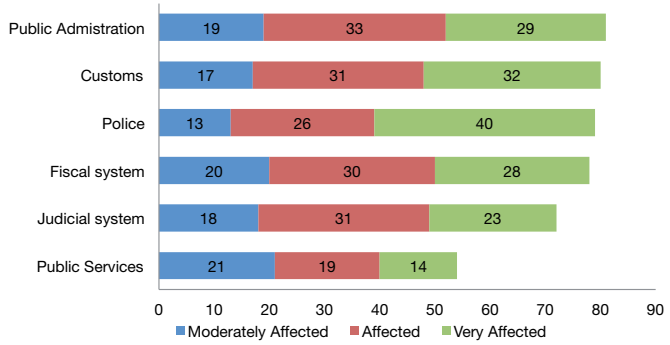
Regulation of Business and the Sources and Costs of Corruption Today

Although the revolution swept a corrupt regime from power, it did not put an end to corruption in Tunisia. Business leaders today place a great deal of emphasis on the damaging effects of corruption on the investment climate (IACE 2011). The ITCEQ 2011 survey of enterprises also reflects the significant corruption in key public service institutions. Figure 5.4 shows the percentage of enterprises rating key public authorities at various levels of corruption. Although public administrators and customs officials are considered at least moderately corrupt by slightly more enterprises surveyed, the police are considered by more enterprises to be "very affected[66]." In Tunisia, a large public administration, including a very large police force with wide discretionary authority to search enterprises and enforce regulations, as well as cadres of inspectors acting under authority of various ministries, appear to engage in opportunistic behavior in their interactions with commerce and enterprise.

[65] This paper estimates a relatively small direct impact on growth of liberalization of the services sector, in contrast to Jouini and Rebei (2012). This is largely because the degree of productivity growth resulting from increased competition is assumed, rather than modeled and estimated, and is assumed to be relatively modest.

[66] This includes labor market regulations. Police have the power to enter an enterprise to enforce these regulations at any time to inspect without a warrant in Tunisia.

Figure 5.4: Perception of Degree of Corruption of Public Authorities by Enterprises[67]



Source: ITCEQ Enterprise Survey 2011

The level of corruption of the Customs Authority indicated above is a potentially tremendous issue for Tunisia, as it could strangle one of the economy's key sources of growth, international trade. According to a recent study, governance and management of the port are relatively poor, due to overly centralized decision-making and the lack of responsive and accountable governance (Comete Engineering 2012).

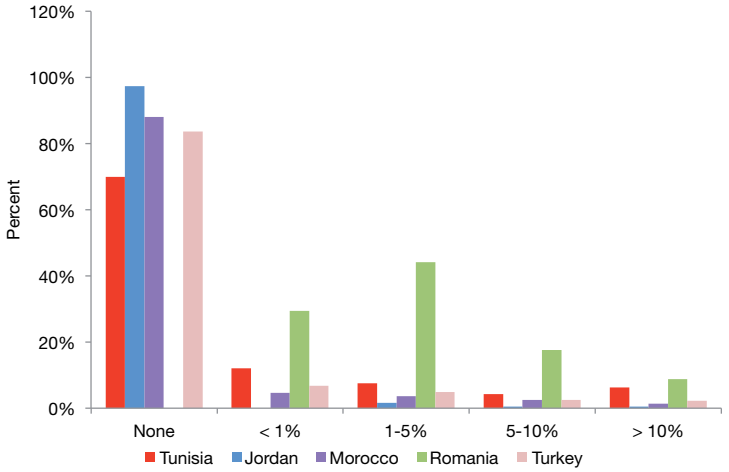
Tunisian firms pay a high cost of corruption. As shown in Figure 5.5, 30 percent of Tunisian firms responding to the 2011 ITCEQ survey of enterprises reported making side payments to public authorities; 12 percent reported payments of less than 1 percent of gross revenues, 8 percent between 1 and 5 percent of revenues, 4 percent between 5 and 10 percent, and 6 percent greater than 10 percent of revenues. These are higher payments than are reported by firms in Turkey, Morocco, or Jordan in their most recent World Bank Enterprise Surveys[68]. These payments are significant as a fraction of total profits—an estimated 9 percent using reasonable assumptions—and contribute negatively to the investment climate in a variety of ways by introducing greater uncertainty on the appropriability of returns and the level of commitment of the government to improve the fairness and health of the business climate.

Diagnosing which among the micro-appropriability constraints are most binding requires an understanding first of the policy and institutional weaknesses which cause or perpetuate corruption.

[67] Possible responses also include 'not affected' and 'little affected.'
[68] The number of observations for Romania was too low to draw firm conclusions, and a significant share of enterprises in Jordan and Turkey refused to answer (18 and 12 percent respectively).

This is because corruption may arise merely as a result of poor checks on public authorities' prerogatives. Alternatively, corruption can arise as a means to circumvent burdensome regulation or taxation, in which case corruption per se would not represent a key impediment to growth.

Figure 5.5: Supplementary Payments as Fraction of Enterprise Revenues



Source: ITCEQ 2011 and World Bank Enterprise Surveys (Jordan 2006, Morocco 2007, Romania 2009, Turkey 2008)[69]

Business regulation certainly occasions corruption in Tunisia. According to ITCEQ (2011), the administrative agencies most affected by corruption are reported to be those which take the most time in their roles to issue licenses or permits or to administer customs procedures and taxes. Entrepreneurs also say that they are motivated to make supplemental payments by a need to expedite service (69 percent of respondents) or avoid a problem (57 percent) (Source: ITCEQ 2011). Even salaried workers with extra sources of income report that they often make side payments to obtain licenses and permits or to avoid paying tax (ROSES 2005). The high fraction of respondents seeking to avoid a problem could indicate either that they find compliance with regulatory and fiscal requirements burdensome.

Yet the evidence tends to suggest that weak accountability, arbitrary application of regulation, and poor public sector

[69] See previous footnote.

governance as the primary cause rather than a poor regulatory framework. Corruption is fairly widespread, yet only 11-19 enterprises surveyed in 2010 perceived the regulatory framework itself to be a major constraint, as shown in Table 5.7.

Moreover, according to the Fraser Institute's rankings, Tunisia's regulatory framework rated better than the comparison countries in price controls, administrative requirements, starting a business, and extra payments/bribes in 2009 (See Table 5.8)[70].

Table 5.7: Level of Obstacle Perceived by Enterprises of Regulatory Framework

0=not an obstacle 1=minor 2=moderate 3=major 4=very severe obstacle	0-1	2	03-avr
Regulatory Framework			
Totally exporting enterprises	73.11	15.59	11.3
Partially exporting enterprises	58.07	22.22	19.71
Enterprises serving the local market	63.3	19.94	16.76
Administrative Formalities			
Totally exporting enterprises	58.8	23.63	17.57
Partially exporting enterprises	60.22	26.16	13.62
Enterprises serving the local market	57.01	26.11	16.88

Source: ITCEQ Enterprise Survey 2010

After the revolution, a minority of 37 percent of enterprises considered the administrative burden associated with regulation to be among the principle causes of corruption (ITCEQ 2011). The most cited perceived causes were a lack of transparency and accountability by the government and the desire or need for public officials to increase their incomes.

[70] It ranked lowest among the comparator countries in bureaucracy costs. However, because this element relates primarily to the stringency of standards on product/service quality and other regulations (outside environmental regulations) as reflected in the World Economic Forum competitiveness survey, and it is difficult to say to what extent Tunisia's stringent standards are justified.

Table 5.8: Fraser Institute Ratings of Regulatory Quality

	Tunisia	Jordan	Malaysia	Morocco	Romania	Turkey
Price controls	6	3	4	4	3	6
Administrative requirements	5.3	4.1	5.1	4	3.2	3.5
Bureaucracy Costs	3.5	4.8	3.5	5.2	5.6	5
Starting a business	9.6	9.1	9.3	9.4	9.6	9.6
Extra payments/bribes/ favoritism	7.3	6.2	5.7	4.6	5.4	4.7
Licensing restrictions	7.8	8.4	6.6	7.8	7.1	7.4
Tax compliance	8.4	8.9	8.4	6	7.5	7.5
Business Regulations	6.8	6.3	6.1	5.9	5.9	6.2

Source: Fraser Institute. Ratings based on a scale from 0 to 10, where 10=most free.

Conclusion

Based upon the above indicators, poor public sector governance, corruption, and barriers to entry have imposed high economic costs which have disincentivized investment and impeded investment, risk-taking, and dynamic productivity gains. Corruption on the part of the former regime was a particularly egregious example, as firms who were most successful faced a high risk of effective expropriation of profits. However, corruption continues to impose high costs on businesses, and the institutional of public accountability and rule of law have not yet been firmly established. Apart from those which restrict entry, the de jure regulation of goods markets do not appear to be so burdensome on their own as to constitute a binding constraint to growth, but the lack of governance to prevent arbitrary, inconsistent, and unaccountable application of them has helped to perpetuate corruption and imposes high costs and risks on businesses—both leading up to the revolution and today. Thus, efforts to improve the investment climate must address corruption as it relates to the application and enforcement of regulations.

5.4. Taxation

Overall taxation of the economy is moderately high in Tunisia, and is somewhat narrowly based. Tax revenues excluding social security and payroll taxes total approximately 20 percent of

GDP, which is higher than for LMICs and all benchmark countries except Morocco (Source: WDI 2009). When payroll taxes are included, the gap between Tunisia and all comparators the total approaches 30 percent and the gap becomes even greater (WDI 2008)[71]. Tunisia's statutory rates of corporate, personal, and consumption/excise tax are moderate to high by international standards. Moreover, when social charges and payroll taxes are added, the overall rate of taxation of certain commercial sectors is relatively high. At the same time, the Government of Tunisia provides a variety of tax incentives and subsidies, whether direct or indirect, to investment and enterprise, which effectively lighten the fiscal burden. Differential treatment of "totally exporting" (or "offshore") firms and "domestic" ("onshore") firms may distort investment incentives, and combined with preferential treatment of agriculture and other priority sectors and high rates of economic informality effectively narrow the tax base and place a high tax burden on the domestic manufacturing and services sectors in particular.

The statutory corporate tax rate on profits in Tunisia is 30 percent (35 percent for certain banking and financial institutions; investment companies; insurance and reinsurance companies; companies operating in the hydrocarbons sector; factoring companies; and telecommunications companies) with the following primary exceptions. Exporters pay no corporate profits tax for the first ten years of operation, and 50 percent of normal profits tax thereafter, at least in principle. However, in practice tax exoneration to exporters has been extended through 2012. Agricultural and fishing profits are subject to a 10 percent corporate tax, and there are a variety of tax breaks for educational and research related activities, new enterprises, and investments in regional development zones.

Taxation of legally registered microenterprises, which constitute the vast majority of firms and approximately 20 percent of non-agricultural employment, is relatively light. Such enterprises may opt for a "forfeiture" system, whereby they pay 2-2.5 percent of revenues rather than a tax on profits. Since 88 percent of microenterprises with a tax identification number do not keep books, reported revenues are likely to be under-estimated. As a result, the effective average rate of direct and indirect taxation of microenterprises is

[71] Because Morocco also has high social and payroll charges, this ranking holds when such charges are included.

estimated to be approximately 4.85 percent of fraction of profits (INS 2007).

The most burdensome taxes in Tunisia are taxes and other charges levied on payroll. Payroll taxes paid by employers include social security and health insurance contributions of 16.57 percent, a vocational training tax of 1-2 percent of total gross wages, and a contribution of 1 percent to fund an employee housing program (Firms can reduce payments of the vocational training tax, but only by spending an equivalent amount of funds on training for their employees.) These charges, along with various other insurance programs and charges can total up to an additional 9 percent (Source: FEMISE 2005 and CNSS)[72], so total charges paid by employers only can be as high as 28.57 percent for firms who have no tax offsets or exemptions. Employees contribute an additional 9.18 percent of payroll. Together, taxes and social charges related to employment approaching 38 percent of payroll for domestic/onshore firms. While these charges ultimately accrue to the benefit of covered workers, they nonetheless represent a high tax on a key input from the employer's perspective they greatly increase the cost of employing workers.

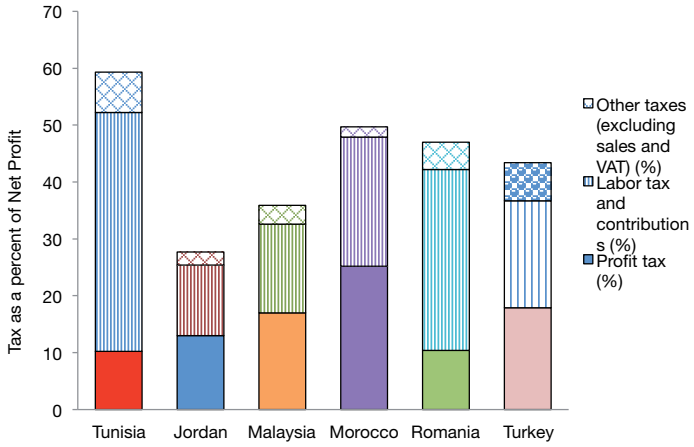
As with profits taxes, there are a variety of exemptions from payroll charges. Agriculture is not subject to the same level of payroll charges, and exporters are exempt from certain payroll contributions totaling 2.5 percent of the wage bill. Offshore or "totally exporting" firms and new enterprises are exempt from all or a portion of payroll charges for the first five years of operation, as are firms investing in priority areas. Moreover, firms are exempt from a portion of social charges on salaries paid to Tunisian workers with a certain level of education (baccalaureat plus 2 additional years). In addition, exporters are exempt from tariffs on imported inputs, as well as from real estate registration taxes of 5 percent of the purchase price.

In addition to personal and corporate income tax, social taxes, and special excise taxes, a value added tax of 18 percent is levied on all domestic consumption of goods and services in Tunisia, with a lower rate of 12 percent for raw materials, craft industry products, medical activities, and canned food, and 6 percent for information technology services, hotels and restaurant activities, and equipment. Since exports are consumed abroad, they are not subject to VAT.

[72] Other charges include group and work injury insurance, health insurance, protective clothing charge, fiscal stamps and others (FEMISE 2005).

Figure 5.6 below shows a comparison of the simulated tax burden for a medium-sized domestic manufacturing (ceramics) firm in Tunisia and the comparator countries, based upon the World Bank's Doing Business 'paying taxes' data. The assumed gross profit rate for all countries is 20 percent of sales, so these numbers are not affected by differential profitability by year or country. The comparison shown includes only corporate profits tax, social security and other payroll taxes paid by employers, and certain excise taxes, but does not include sales taxes, value added taxes (VAT) or payroll taxes paid by employees. In this example, the firm enjoys no special tax exoneration in the Tunisian context. According to this calculation, such firm would pay more than 64 percent through taxes on profits, payroll, and input use[73]. While this simulation is somewhat hypothetical, it nonetheless represents an indicator of the statutory tax burden faced by a potential industrial firm producing for the domestic market in Tunisia. A firm facing such high taxes would be unlikely to invest, expand, or survive in Tunisia without some means to avoid this constraint.

Figure 5.6: Simulated Tax Rates as a Percent of Profits of a Representative Firm



Source: Doing Business (World Bank) 2012, author calculations[74]
Note: The calculation is based on a hypothetical medium-sized firm producing ceramics for the domestic market; the tax rates shown exclude all sales and value-added taxes.

[73] The hypothetical firm is in fact large in comparison to most Tunisian firms. However, the definition of medium-sized is normalized across countries to per capita income to make the comparison valid.

[74] Numbers were adjusted from the original Doing Business calculation to remove any sales taxes from all countries shown (in the case of Tunisia FODEC and municipal sales taxes, which totaled 21 percent of profits), and in the case of Tunisia only to add payroll taxes which were not originally included but should have been included given the definitions used. Profit tax was adjusted accordingly given the deductibility of payroll taxes in Tunisia. Nonetheless, the tax rates for the comparator countries may be understated if they also have additional payroll taxes.

As shown, the largest component of the fiscal burden is composed of taxes on labor and social contributions, which in this simulation comprise 42 percent of profits. Because exporters pay lower labor taxes, no tax on imported inputs, and no tax on profits, their tax burden would be significantly lighter.

There are additional fiscal burdens associated with economic activity not captured in the figure—in particular sales taxes (whether on producer revenues or consumers' consumption). Economic theory indicates that in competitive markets the total burden imposed by a sales tax and the effective burden-sharing are unaffected by which of these actually "pays" the tax[75]. Similarly, the imposition of value added taxes (VAT) drives a wedge between producer and consumer prices, lowering the final producer price and raising consumer prices.

Table 5.9 shows how highly Tunisian firms rate taxation as an obstacle to their businesses. Taxation and particularly the level of taxation are considered a major or severe obstacle for 28 percent of domestic enterprises and firms rank taxation as the third most serious obstacle to their businesses, after unfair and anti-competitive market practices and the cost of bank credit. Moreover, the primary issue seems to be social charges, which 41 percent of domestic firms specify as a major or severe obstacle. Exporters rate these issues much less severe given their preferential tax status.

[75] The actual burden incurred by producers and consumers of a taxed good depends upon the price elasticity of demand and supply.

Table 5.9: Enterprise Ratings of the Severity of Taxation as an Obstacle

Level of obstacle to business (0=Not un obstacle 1=Minor obstacle 2=moderate obstacle 3=major obstacle 4=very severe obstacle			
Responses	**0-1**	**2**	**03-avr**
Taxation			
Totally exporting	69.49	16.95	13.56
Partially exporting	40.72	24.64	34.64
Producing only for the domestic market	37.86	24.29	37.85
Tax Administration			
Totally exporting	71.75	17.51	10.74
Partially exporting	52.85	26.07	21.08
Producing only for the domestic market	53.62	19.24	27.14
Level of Taxation			
Totally exporting	79.31	10.92	9.77
Partially exporting	46.23	20.79	32.98
Producing only for the domestic market	39.24	21.84	38.92
Social Charges			
Totally exporting	50.54	21.51	27.95
Partially exporting	36.43	23.21	40.36
Producing only for the domestic market	37.66	21.2	41.14

Source: ITCEQ Survey of Enterprises 2010

In addition to direct investment subsidies through the Programme de Mise à Niveau (PMN), there are tax breaks for investing in certain areas of the country, and across the board energy subsidies which benefit energy-intensive businesses. Interestingly, although they receive less direct subsidization, it was firms who produce for the domestic market who claim to have been most induced by government incentives to maintain their planned investments in 2011 following the revolution, as shown in Table 5.10.

Table 5.10: Enterprise Motivations for Maintaining 2011 Investment Plans

Percentage responding as follows:	Totally exporting	Partially exporting	Domestic
Incentives offered by the State	24%	17%	37%
More transparent environment	13%	17%	19%
Easier access to finance	16%	28%	30%
Projected demand	60%	52%	37%
Support program conceived by provisional government	4%	14%	26%
Other	20%	21%	11%

Source: 2011 ITCEQ Enterprise Survey

Using efforts to avoid taxation as a conclusive test of burdensome taxation would be problematic, since most economic agents would prefer to avoid taxation and in general tax compliance is related to the quality of enforcement. Nonetheless, there are indications that Tunisian enterprises use various tactics to circumvent the fiscal constraint—especially with regard to social charges. Some firms qualifying for exoneration of fiscal charges for the first five years of operation are reportedly able to avoid full social charges by dissolving and re-incorporating after five years (anecdotal). In other cases, payroll numbers or employees are under-reported. ROSES 2004 survey of firms with at least 10 workers, 87 percent of firms claimed that enterprises in their sector did not declare part of their activity. In fact, the most frequently cited reason for non-declaration of sales or activity was to reduce the cost of workers, while paying lower taxes ranked second. Finally, a relatively large share of the labor force—49.9 percent in the 2000-2004 period—work in positions where no social security contributions are made (World Bank 2011).

Conclusion

Taxes and fiscal transfers to firms in Tunisia appear distortionary and discourage investment particularly by domestic firms and "partially exporting" firms. Corporate and sales tax levels are high but not out of line with international norms. Yet taxes and other charges levied on payroll are extremely high and drive up the costs of employing workers. When combined with other taxes they can inhibit the emergence of successful domestic firms which can compete on

international markets. Equally important is the impact of over-taxing a key input for any potential investor—labor. The issue of payroll taxation as a component of the high cost of employing workers is further analyzed in the following section.

5.5. The Regulatory and Fiscal Costs of Employing Workers

Every country in the world regulates some aspects of its labor market in an attempt to strike an appropriate balance between worker remuneration, workplace safety, and job security and the flexibility that employers need to operate efficiently and grow. From a potential investor's perspective, labor market regulation can increase production costs, reduce productivity, and increase risk, and if such regulation is overly burdensome, it would reduce the demand for labor in the economy generally. Reduced demand for labor pushes down wages, raises unemployment, and impedes the investment and innovation which are essential for productivity growth. Indeed, 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).

Although the objectives of labor protections and economic security are important, as will be shown below, Tunisia's labor market regulations have actually had adverse effects on the welfare of most workers. Tunisia's Labor Code governs possible contractual terms, overtime pay, paid leave and other benefits, and is among the most restrictive in the world regarding the dismissal of workers. According to regulation a firm can hire workers on 12-18 month probationary contracts. Fixed term contracts can be renewed, but after the probationary period certain restrictions apply. After a total of four years of employing a given worker, employers must offer permanent positions (indefinite contracts), after which government approval is required to terminate their employment, whether for economic or performance reasons. This requirement is not pro forma: in recent years only 14 percent of requested terminations were approved (Bchir et al. 2005). In addition, in principle all wages in the economy are set through a system of centralized collective bargaining, which occurs generally every three years and includes

the employers' union, employees' union, and a representative of the Ministry of Labor and Social Affairs. Wages are differentiated among 51 sectors, by job level and tenure of the worker, and there is no differentiation by region, firm size, or within-sector productivity differentials. Employers are free to pay more than these wages, but may not pay less.

International indicators can be used to assess whether Tunisia's labor laws have a high shadow price. Botero et al. (2004) use 60 detailed variables to rank countries on their availability of alternative employment contracts, the costs of increasing hours worked, the costs of reducing workforce, dismissal procedures, laws affecting the power of labor unions, collective action rights, the cost of social security systems, civil rights, and minimum wage requirements. With respect to the flexibility of laws on hiring and firing workers, Tunisia ranks 84th out of the 85 countries, second only to the Russian Federation. This is despite the fact that the ranking measured the cost of firing workers with only 3 years of tenure and thus did not fully take into account Tunisia's requirements for permanent contracts for workers with 4 years of service. At the same time, Tunisia's system of centralized collective minimum wage bargaining was not fully captured in the variables, and this remains a relatively rare arrangement among emerging economies[76].

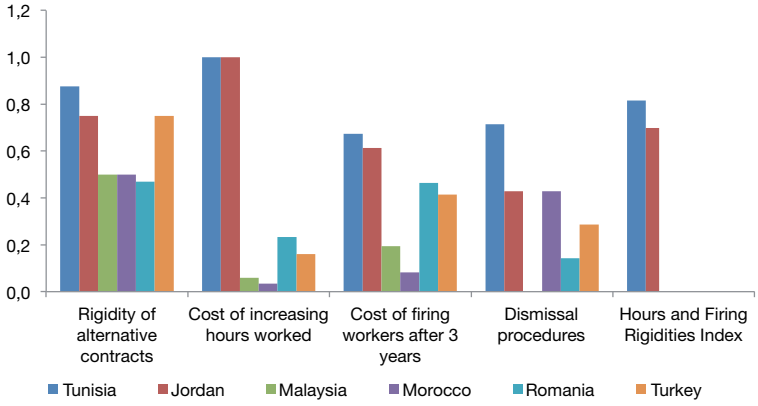
The World Economic Forum uses a combination of de jure and subjective or survey-based measures of labor market efficiency. As shown in Table 5.11, Tunisia's overall rank is 106th out of 183 countries; Jordan, Morocco, and key all have lower rankings on the aggregate measure. However, Tunisia does particularly poorly on a key area for employers: the flexibility of wage determination and the relationship between 'pay and productivity[77].' Although redundancy costs are not estimated to be high in Tunisia (with a relatively good ranking at 29th worldwide), this flexibility is negated by the difficulty of dismissing workers at all, where Tunisia rates poorly. In fact, in the 2012 Doing Business database on Employing Workers, Tunisia ranks 181st out of 183 countries on this subindicator. In addition to requiring government approval to dismiss a worker, Tunisia imposes re-training or reassignment obligations, obligations to prioritize dismissed workers in reemployment, and prioritization rules for

[76] Such systems have been utilized particularly in Scandinavian countries in the past, but have progressively unraveled since the 1980s (see Ortiguerira 2006).

[77] Tunisia also ranks low, along with other Islamic countries apart from Malaysia (Jordan, Morocco, and Turkey), in the rate of female employment. Although low rates of employment of skilled women would adversely impact growth, it is also to some extent a cultural choice.

dismissals. While some countries have similar rules, no other countries attach this full range of restrictions (Doing Business 2012).

Figure 5.7: International Comparisons of Rigidity of Employment Laws as of 1997 (0=Least Rigid; 1=Most Rigid)



Source: Botero et al. 2004

The main cost of regulation of worker dismissal is the disincentive to hire workers or to continue their employment beyond the probationary period (12-18 months), and ultimately beyond 4 years, when all employment contracts must, according to the Labor Code, be indefinite. The impetus to avoid retaining workers as long as 4 years would also dis-incentivize a firm from training its employees and from adopting or developing more complex technologies requiring firm-specific human capital.

Of course, regulations which are never enforced have little effect. The 2011 ITCEQ enterprise survey provides an indication of how strictly enforced labor market regulations are in Tunisia. In fact, enterprises reported a total number of official visits to enforce social security contributions and the labor code of 3.4 and 3.9 visits per year for totally exporting and non-exporting firms, respectively. This suggests fairly routine enforcement, although side payments may be used to achieve greater flexibility in practice.

Table 5.11: Country Rankings in in Labor Market Efficiency

	Tunisia	Jordan	Malaysia	Morocco	Romania	Turkey
Aggregate Indicator	106	107	20	132	92	133
Flexibility	70	39	32	128	101	116
Cooperation in labor-employer relations	67	81	15	120	137	123
Hiring and firing practices	68	102	30	61	91	63
Flexibility of wage determination	119	36	28	81	90	54
Redundancy costs	29	6	104	110	15	124
Rigidity of employment index	104	63	19	136	118	90
Efficient use of talent	125	135	31	130	85	134
Pay and productivity	81	72	4	37	55	75
Reliance on professional management	54	100	20	101	84	80
Brain drain	51	73	19	62	131	97
Women in labor force, ratio to men	132	137	114	134	65	133

Source: World Economic Forum, Global Competitiveness Report 2011-2012.

Tunisian firms do not place labor market regulations at the top of their list of obstacles, but a significant share—between 20 and 25 percent—rated the labor code as a major or severe obstacle in the 2010 enterprise survey, albeit somewhat fewer for small enterprises (Table 5.12). In a 2004 survey focused on the sources of informality, among four different types of regulation (fiscal, labor market, hygiene, and safety), 43 percent of Tunisian firms rated labor market regulation as the most constraining type of regulation, second to fiscal regulation (at 50 percent) (ROSES 2005). This contrasts with only 12 percent of firms in Algeria rating labor market regulation the most constraining, and 28 percent in Morocco. Of all the issues regarding the labor code about which enterprises were surveyed in 2010, the difficulty of firing was rated as the greatest obstacle, although this was considered less of a problem than social contributions (ITCEQ 2011, not shown). In addition, larger firms generally rated the difficulty of dismissing workers as a more

serious obstacle[78]. Overall, while firms do not perceive the labor code as problematic as the cost of finance, taxation (especially social charges), and market practices, it is clear that most firms are unable or unwilling to abide by it.

Table 5.12: Enterprise Survey Responses on Restrictiveness of Labor Code by Firm Size

Size of Firm/Number of Employees	Not an obstacle or minor obstacle	Moderate obstacle	Major or severe obstacle
06-oct	65	10	25
nov-50	56.1	24	19.9
51-100	53.5	23.2	23.2
101-200	46.5	29	24.5
>200	43.7	31.1	25.2

Source: ITCEQ Enterprise Survey 2010

Circumventing the Constraint

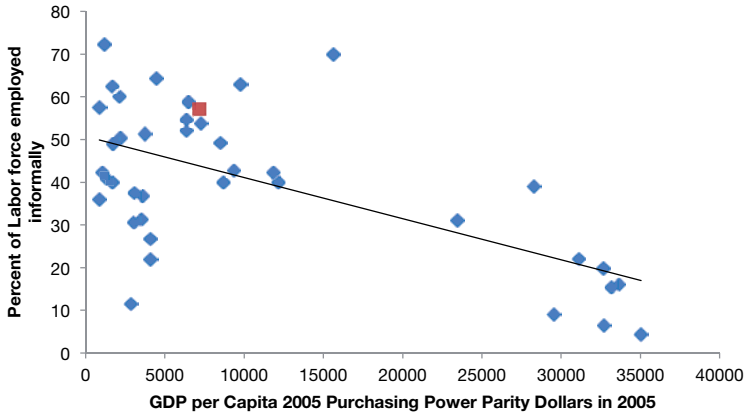
If costly labor market regulation and taxation are a binding constraint to growth, enterprises would attempt to circumvent them. One means of circumvention is to remain informal. As shown in Figure 5.8, relative to its income level, Tunisia has a high level of labor informality internationally relative to its income level. As discussed above, of course, informality can have other root causes as well. However, as shown in Figure 5.8, the level of informality of employment arrangements is out of line with what one would expect based on the size of Tunisia's informal economy. This suggests that the costs of formality in hiring, firing, and meeting payroll tax obligations are among the greatest deterrents to formality and carry costs for businesses that are higher than for other regulatory and tax requirements.

Survey evidence also shows that firms seek ways to employ workers without making them full time salaried workers, which would carry legal minimum wages, hours and firing restrictions, and payroll tax obligations. Among microenterprises only 25.8 percent of workers are salaried (INS 2007). Owner-operators comprise 64.5 percent of jobs and 8.2 percent are family or unsalaried workers (INS 2007). Moreover, many microenterprises pay taxes on revenues;

[78] Flexibility of hours and hiring requirements were not considered major or severe obstacles for many firms, but firms were not asked directly about the issue of minimum wages or pay rigidity.

although these are relatively low, they nonetheless constitute adherence to a formal requirement by firms which do not adhere to formal labor market requirements. In addition, a survey of enterprises with 10 or more workers conducted in 2004 reveals a low percentage of permanent/indefinite contract workers in Tunisia relative to Morocco and Algeria, and a commensurately high fraction of workers in definite or fixed term contracts and sub-contracts which do not carry wage and payroll tax requirements for the 'employer' (Table 5.13). Moreover, the most frequently cited principal motivation for using sub-contractors in Tunisia was to save costs, followed by avoidance of firing restrictions, whereas in Morocco it was both to improve quality and reduce costs (ROSES 2005). Finally, the relatively high use of part time workers Tunisia may be a means to circumvent labor market regulations[79].

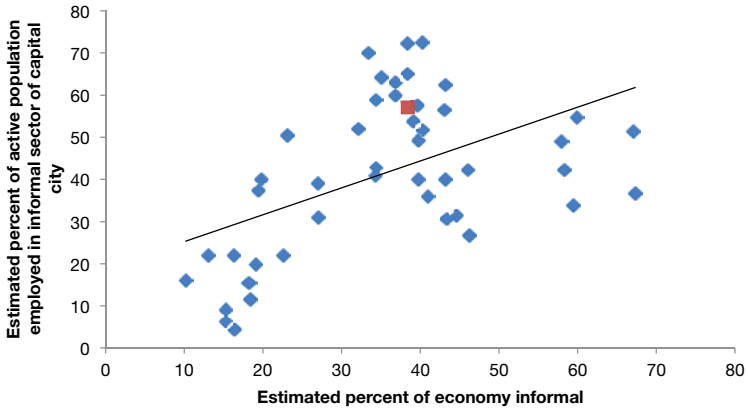
Figure 5.8: Informality of Economic Activity Relative to Income



Source: Botero et al. 2004 (using data from 2000) and WDI

[79] Part time and seasonal employment is still subject to minimum wage requirements.

Figure 5.9: Informal Employment versus Informality of Economy



Source: Botero et al. (2004)

Table 5.13: Percentage of Workers by Contract Type
Tunisia, Algeria, and Morocco (Non-Microenterprises)

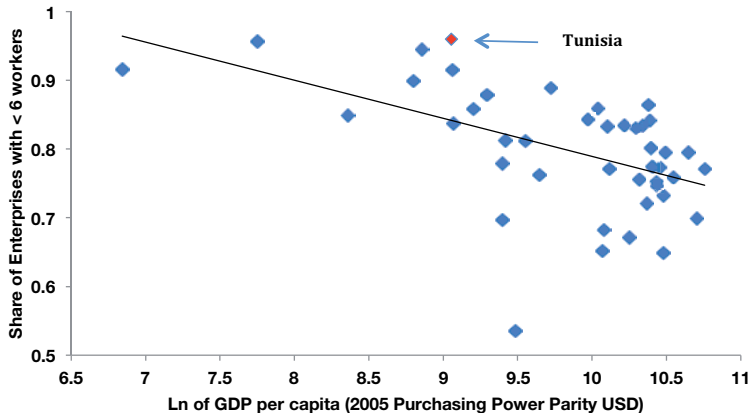
Percent of workers	Tunisia	Algeria	Morocco
Permanent (indefinite contract)	38.9	67.8	82.1
Definite/fixed term contract	44.7	29.5	14.9
Trainees and apprentices	8.2	1.2	2.7
Sub-contractors	8.2	1.5	0.3
Total	100	100	100
Full time	81.5	98.9	95.1
Part time	18.5	1.1	4.9

Source: ROSES (2005)

Test of Intensive Use of Employees

An additional test of labor regulation as a binding constraint is to examine whether relatively few firms with many employees survive and thrive, or rather whether a high percentage of existing firms are "camels" are that employ very few workers. As shown in Figure 5.10, Tunisia has a significantly higher fraction of total firms with fewer than 6 workers (whether formal or informal) than would be predicted for its income level.

Figure 5.10: Fraction of Firms With Fewer than 6 Workers



Source: GEMS data on entrepreneurship (various years) and authors' calculation based on INS data (2010) and INS (2007)[80]

This high concentration of tiny firms does not appear to be due to the corporate tax burden or other regulatory issues: these numbers are based on registered firms with a tax identification number and therefore do not include the more transient informal enterprises without any official contact with the state. Moreover, while microenterprises in Tunisia do generally pay corporate taxes based on estimated revenues, there are very few microenterprises which adhere to formal regulatory and payroll tax requirements. Approximately 86 percent of all firms in Tunisia have no workers for whom social security contributions are paid (source: INS). Moreover, the vast majority of microenterprises (74 percent) are concentrated in the 1-2 employee size range.

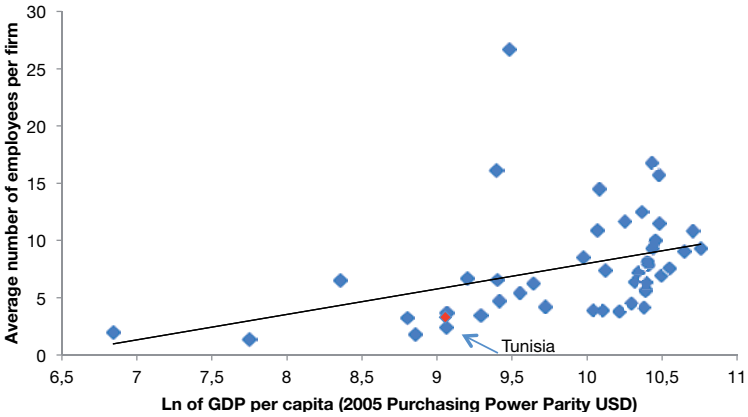
Nor does this high concentration of microenterprises appear to be easily explained by corruption and weak property rights under the previous government. Since only relatively important or large enterprises would have been of interest to the former regime, which succeeded in acquiring interests in firms numbering in the hundreds, not the thousands, some other factor would likely be causing such a high concentration of tiny firms (numbering in excess of 400,000 in 2010).

Similarly, when the size of non-microenterprise firms is taken into account, the average size of Tunisian firms is below the expected level for the

[80] The calculation of firm size shown includes the estimated number of owner-operators, informal, and family workers, whether declared or not.

country's income level, assuming that firms with over 200 workers in Tunisia average 300 workers (extremely large firms wereexcluded for all countries) (see Figure 5.11). ROSES (2005) found that for formal enterprises the average size was 92.6 employees, whereas it was 104.7 in Algeria and 139.7 in Morocco. Although Algeria and Morocco have similar labor market rigidities and patterns of structural unemployment, Tunisia's labor market regulation is nonetheless more restrictive, and Tunisia has the lowest percentage of large firms (ROSES 2005).

Figure 5.11: Average Firm Size (Number of Employees)



Source: GEMS data on entrepreneurship and authors' calculation for Tunisia based on INS data and INS (2007) and ROSES (2005)

A lack of access to credit cannot explain the persistence of such small firms over time, since firms can reinvest their profits and grow. According to survey responses, microenterprises reinvest 7.4 percent of net operating profit on average, which accounts for 52.5 percent of investment value. In addition, "other own resources" are used to finance an additional 27.6 percent of their investments. Over five years, the investment values reported would lead to an average increase of 94 percent in scale of operation. Yet the percentage of employees working in microenterprises with 0, 1, or 2 salaried workers is fairly constant between 2002 (when the earlier microenterprise survey was done) and 2007. There was only a slight increase

in this percentage of people (from 8.8 to 11.7) working in enterprises with 3 or more salaried workers (INS 2007). Thus while access to credit is certainly an impediment to the operation and expansion of some firms, only 27.3 percent of microenterprises cite this as a primary difficulty (INS 2007)[81].

Table 5.14: Firm Size Distribution Tunisia, Algeria, and Morocco 2004-2005

Size of Enterprise	Tunisia	Algeria	Morocco
10-49	54.40%	51.00%	38.30%
50-99	19.50%	16.80%	27.30%
100 or more	26.20%	32.10%	34.40%

Source: ROSES 2005

Other potential explanations have to do with regulatory issues which smaller firms can better avoid. However, microenterprises adhere to price regulations more faithfully than the formal requirements of employing workers: 48 percent of microenterprises reporting that they follow the official price (INS 2007). A primary consideration of a firms' decision to remain small, therefore, appears to lie in the high fiscal and regulatory costs of employing workers. Firms that are required to adhere to formal requirements will hire fewer workers, given these costs, and firms that attempt to circumvent the constraint will only be able to do so to a limited degree without incurring the risk of various legal penalties.

An additional indicator of less intensive use of labor economy-wide—i.e., unusually low demand for labor—would be a persistently low level of employment generally in the economy even in periods of economic growth. This is a key feature of the Tunisian economy, discussed in Chapter 2.

Role of Formal Wage Setting

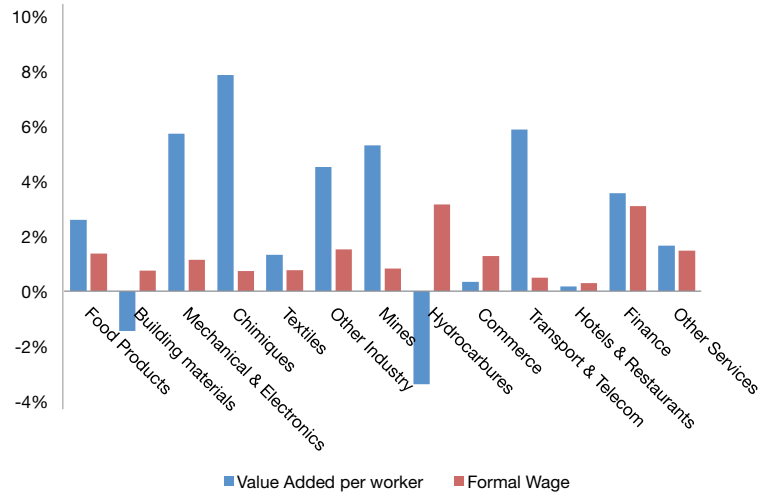
Whereas Tunisia's slow average wage growth over time appears to track worker productivity nationally (see Chapter 2), as noted in Table 5.11 above, firms rate the relationship between pay and productivity as weak in Tunisia relative to other countries. This is likely due to the rigidities associated with centralized setting of formal sector wages.

It is not possible say a priori whether Tunisia's system of centralized wage

[81] Approximately 36 percent cited cash flow as a primary difficulty, but this can be linked both to working capital financing issues and profitability.

bargaining is costly to employers and constraining to investment and growth, how responsive it is to market conditions, or how it impacts wage levels[82]. In perfectly competitive labor markets, wages should equalize across firms and sectors, when adjusted for worker skill. However, in a market where wage levels are centrally set and laborers are relatively immobile between sectors, it may be more efficient for wages to reflect underlying changes in productivity by sector. In fact, since 1998, wage increases have not been associated with productivity increases across broad sectors, as shown in Figure 5. Statistical tests of correlation between wage increases and lagged average 3 year productivity growth also produce no evidence of a relationship[83].

Figure 5.12: Average Growth Rate of Value Added per Worker and Formal (Minimum) Wages of Entry-Level Least Skilled Jobs, by Sector, 1998-2012



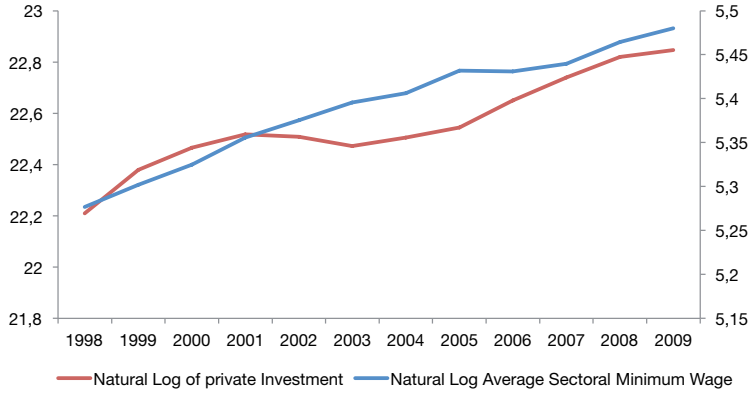
Source: INS National Accounts data and Tunisian Ministry of Social Affairs

[82] In the simplest possible one-sector theory of wage determination with a single (monopsony) employer, a rise in productivity would increase demand for workers as well as their wages, assuming that labor supply is not perfectly elastic. Similarly, if workers' bargaining power completely offsets that of employers, the outcome would be the economically efficient wage and employment levels, which would shift with economic productivity. However, in intermediate cases where employers' rents are partially shared with workers, specific bargaining arrangements, economic conditions, and labor rights and regulations would imply different degrees of bargaining power for employers and workers' unions. This in turn would imply different effects on wage levels, and employment. High unemployment tends to reduce workers' bargaining power; yet the difficulty of firing workers in Tunisia probably strengthens worker unions as it makes strikes a more palatable option. Ultimately, the government's presence during these negotiations may serve to balance competing interests in keeping labor unrest to a minimum while ensuring competitiveness and attractiveness to foreign investors.

[83] These tests did show that the higher the capital intensity of the sector the greater the rate of increase of minimum wages, however.

One way to test whether centrally bargained wages impact investment is to examine their relationship with private investment—a test similar to the correlation test proposed by Hausmann et al. (2008). Using the average accross sectors of all formal wages for the lowest level jobs with no years of experience across sectors as a proxy for the centrally-determined wage structure (management-level minimum wages with similar job tenure are approximately 1.5 times the entry level worker wages for the entire period 1998-2011), Figure 5. shows the trends in (natural log of) formal wages versus investment in Tunisia over the period 1999-2010. Apart from the positive time trend in both investment and formal wages, there is a negative relationship and statistically significant between the two: a one percent increase in formal wages reduces investment in a given year by 3.5 percent[84]. This indicates that the system of wage setting constrains investment and, therefore, employment[85]. Alternative explanations for this correlation could include inflationary expectations which diverge from actual realized inflation rates. Higher expectations would increase the real minimum wage and reduce growth, all else equal. However, inclusion of the only available proxy for inflationary expectations in these years—lagged inflation rates—does not change the result.

Figure 5.13: Private Investment and Centrally Bargained (Minimum) Wage (Log values in Constant 1997 Dinars)



Source: Ministry of Social Affairs (Formal wages) and WDI (private gross fixed capital formation)

[84] The P-value is .068, and the elasticity if -3.482. The coefficient on the year time-trend is .10, and the R squared is .91. These results are not robust to inclusion of 1998, the first year of implementation of centrally bargained minimum wages, as it represents a significant outlier. Investment growth in that year was negative possibly due to the uncertainties surrounding labor market and other regulatory changes.

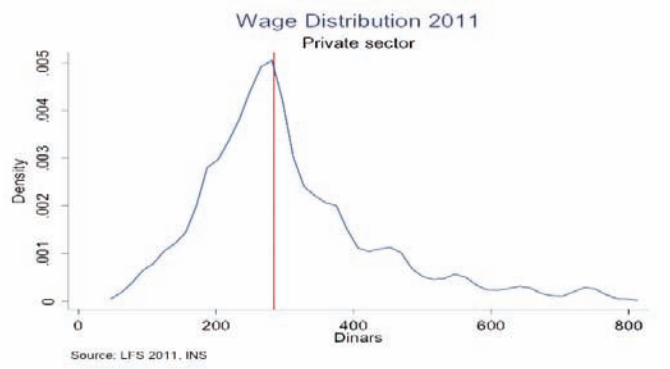
[85] Although this is not a robust causal estimate, the negative correlation is unlikely to be driven by reverse causality: Greater investment should cause higher wages, not lower wages. Nonetheless the omission of other factors not included in the regression could bias this coefficient.

In addition to centrally bargained wages, like most countries Tunisia sets a statutory minimum wage, which differs for industrial and agricultural workers (the SMIG and the SMAG, respectively). Although the objective of such laws is understandable—to guarantee a higher standard of living for workers—if these minima are too high relative to the marginal productivity of labor, they can lead to unemployment and greater informality. The most effective route to sustained wage increases and higher employment is through increases in worker productivity.

To see whether Tunisia's minimum wage is "too high" in the sense that in its absence many firms would pay less and hire more workers, one can examine whether a high proportion of workers are paid precisely the minimum, rather than the fraction one would expect given the rest of the wage distribution. A recent analysis using the 2011 Labor Force Survey by Rutkowski et al. for the World Bank (2013, forthcoming) shows, as depicted in Figure 5., that the private sector wage distribution spans the minimum wage, with a spike in the percentage of workers paid precisely the SMIG applicable in that year[86]. At the same time, if a large fraction of firms pay below the minimum wage, this means that in many cases firms are compelled to circumvent the regulation, despite the risks and costs of doing so. In fact, 66 percent of workers with a definite term contract are paid below the minimum wage, and among workers with an indefinite contract 27 percent are paid less than this wage (Rutkowski et al. 2013). Wage data from microenterprises present a similar picture. In 2007, for which data are available on wages paid by microenterprises, the SMIG was 240 dinars, while the mean wage paid to all microenterprise workers was 241 dinars—only 1 dinar more. The mean salary for women was only 69.5 percent of that for men. Moreover, 54.5 percent of salaried workers had a salary lower than the SMIG (73 percent for women and 47.6 percent for men), up from 48 percent in 2002 (INS 2002)[87].

[86] The SMIG has since risen by approximately 6 percent.
[87] Tunisia's current minimum wage is 255 dinars per month or 216 dinars per month for 48 and 40 hour work weeks, respectively. This minimum is not observed by many microenterprises.

Figure 5.14: Wage Distribution Compared to 2011 SMIG



Source: Rutkowski, J., et al. (World Bank 2013, forthcoming)

Perhaps because Tunisian labor markets have been heavily regulated for decades, Tunisian firms have become used to these realities. As such, they would not necessarily perceive the impacts on their own investment and employment behavior, or equilibrium impacts on the economy. Nonetheless, Tunisian firms do generally claim that with more flexible labor market regulation, they would hire more workers. Approximately 26 percent of exporters and 17-22 percent of partially exporting firms indicate that without the current restrictions, they would hire more workers; less than half this percentage says that they would reduce their employment (ITCEQ 2011, not shown). Yet individual firms are likely to understate the impact on employment of loosening restrictions on pay and redundancy, given the dynamic effects this would have on labor force participation, employment, income growth, demand, innovation, and investment. As principal author of the growth diagnostic Ricardo Hausmann notes, 'Fish do not know they are in water' (Rodrik 2006)[88].

[88] One might expect Tunisia's system of minimum wages to impose a greater cost on smaller firms if such firms are less productive. It is a widely established empirical finding that larger firms generally pay higher wages and salaries than smaller firms, and this wage differential is generally observed to be higher in developing than in developed economies, even after accounting for differences in productivity (Soderbom, Teal, & Wambugu, 2005). There is no consensus regarding the source of this differential, although suggested factors include unobserved heterogeneity in labor quality (that is workers in large firms have unobserved characteristics that make them more attractive than workers in smaller firms) (Brown & Medoff, 1989); structural characteristics markets dominated by fewer, larger firms, which allow them to operate less efficiently; and higher search and worker oversight costs for larger firms, which require them to attract and retain top-quality workers (Oi, 1983). These factors appear to account for some, but not all of the observed difference in pay between large and small firms (Gibson & Stillman, 2009).

Conclusion

The high fiscal and regulatory costs of employing workers pass the tests of a binding constraint that are feasible to conduct with the data available. Labor market regulation and payroll taxation can explain disappointing productivity growth, small firm size (defined by number of workers), a high concentration of informal workers, and low employment. In addition, the problem of youth unemployment is linked to labor market regulation, as discussed in Box 5A. The primary constraints are the rigidities associated with pay; the costs and barriers to firing workers; and high payroll taxes.

The economic cost of this constraint is high. The payroll tax alone places a potential burden on some firms of more than 30 percent of profits. This is high relative to the direct costs of corruption, which would be as high as 20 percent only under the most extreme assumptions, and is likely closer to 5-15 percent on average. The inability to invest at an attractive profit due to an effective "tax" on employing workers reduces the returns to investment and therefore the level of investment in the economy. For the investment which does take place, firms would also minimize insofar as possible their employment levels as much as possible. This reduces the demand for labor and skill in the economy, reduces equilibrium wages, raises unemployment, and narrows the benefits of growth to those fortunate enough to secure a high paying formal sector position. Moreover, because payroll taxation is high, efforts to circumvent it narrow the tax base, potentially compromise the sustainability of this important social transfer program.

In addition, the productivity costs of this constraint are likely to be significant[89]. Economies of scale can be important in many sectors where microenterprises operate[90]. Although not definitive regarding causation, the correlation between size and value added per worker is nonetheless suggestive of important economies of scale: Value added per worker is 33 percent higher for firms with 3-5 workers and 86 percent higher for

[89] The productivity-size differential is likely partly attributable to inherent firm or worker characteristics. Yet it is also an indicator that reallocation of some labor and capital resources to larger enterprises would have a major productivity impact. As Poschke (2010) postulates, as part of the economic growth process firms enter, compete, and those which are most productive expand while less productive firms exit. Through a dynamic process of productivity growth, average firm size rises and the fraction of microenterprises falls with growth in GDP per capita.

[90] These include agricultural and food processing, textiles, clothing and shoes, wood products, metals and metallurgy, commerce, automotive repair, hotels and restaurants, transport, communication, and personal services.

firms with 6 and more workers than it is for firms with 1-2 workers (INS 2007). For the economy as a whole, value added per worker in 2007 was 14,554 dinars, 125 percent higher than that of microenterprises surveyed in that year (6,441 dinars)[91]. Thus, increased investment on the part of larger firms resulting from the reduced policy costs of employing workers would shift workers into more productive activities and ultimately increase productivity and thus the real wage.

Typically, in flexible labor markets workers tend to change jobs as part of ongoing process of a sorting into firms where they are more productive. Yet in Tunisia worker mobility is low, with only about 2 percent of salaried workers having changed jobs in the past 12 months, a slightly lower fraction than in Algeria and a much lower fraction than in Morocco. Moreover, according to INS data on firm size, the fraction of extremely small firms has not changed between 2006 and 2010.

Although in some economies microenterprises are incubators of new ideas and innovation, in Tunisia this does not appear to be the case. Rather, there is no statistical relationship in Tunisia between firm size and firm growth—small firms do not grow faster than larger firms once the age of the firm is taken into account. Instead, larger firms in Tunisia which produce the most jobs—37 percent by firms with more than 100 employees and 20 percent by firms with 11-100 employees. Yet these are the firms most subject to labor market regulations and taxation (Rijkers 2012).

Thus while addressing these issues will be critical to Tunisia's ability to accelerate and broaden the benefits of its future growth, the risks of addressing these issues too rapidly and without adequate protections and political legitimacy would increase the uncertainties surrounding labor unrest which can damage the investment climate as well. Ensuring an adequate safety net for unemployed workers or workers transitioning between jobs must be an important component of labor market reform. Yet because of the widespread avoidance of contributions to the current safety net raises, this program may not be fiscally sustainable. Thus, beginning to address the high regulatory costs of employing workers would require reforms of the country's social security system to reduce the burden on enterprise, to tax work less, and to draw more contribu-

[91] Values expressed are in 2007 dinars.

tors into the system, while also making wages and firing decisions more flexible. Alternatives for designing social security systems and labor market protections should be considered with the aim of protecting people rather than specific jobs (See, e.g., forthcoming World Bank World Development Report (2013)).

5.6. Trade Barriers and Micro Distortions

International trade is critical to Tunisia's economy and its periods of accelerated growth have coincided with measures to open the economy to trade (See Chapter 4). Tunisia acceded to the GATT in 1990 and was one of the first Arab countries to enter into an Association Agreement with the EU in 1995[92]. Implementing this agreement has entailed gradual reductions in tariff barriers on goods imported from the EU, which represent approximately 65 percent of Tunisia's imports. At the same time, tariffs and non-tariff barriers remain significant, and some important opportunities to trade with Tunisia's neighbors may be forestalled by a lack of access to their markets. Moreover, there is a disparity of tariff treatment between imports from the EU and those from other countries which can cause trade diversion, as well as disparity of treatment across products which can cause an inefficient allocation of the economy's resources. Additional reductions in tariffs are planned in order to conform to Tunisia's international agreements. Yet non-tariff barriers related to barriers to entry and distortionary subsidy policies appear to constitute an appreciable obstacle to growth.

On the trade freedom indicator with perhaps the most comprehensive coverage of all trade barriers, the Heritage Foundation trade freedom indicator, Tunisia receives a relatively low score of 58.1 out of 100 and ranks 164th in the world (see Figure 5.1)[93]. Because tariff rates have declined and are now reasonably low for all but agricultural goods, the main issue for Tunisia's growth appears to lie with non-tariff barriers, some of which are the

[92] The Agreement was signed in 1995 and implementation was required by 1998, but Tunisia began implementing it earlier (see Erdle 2011).

[93] This score is based on applied trade-weighted average tariff rates, with additional points subtracted for non-tariff barriers such as import quotas; export limitations; voluntary export restraints; import–export embargoes and bans; countertrade, price restrictions, regulatory restrictions—licensing; domestic content and mixing requirements; sanitary and phytosanitary standards (SPSs); safety and industrial standards regulations; packaging, labeling, and trademark regulations; advertising and media regulations, Investment restrictions—exchange and other financial controls, customs restrictions and direct government intervention—subsidies and other aid; government industrial policy and regional development measures; government-financed research and other technology policies; national taxes and social insurance; competition policies; immigration policies; government procurement policies; state trading, government monopolies, and exclusive franchises. For full details, see http://www.heritage.org/index/trade-freedom.aspx. Trade-weighted average tariffs are based on the most recent available information.

same barriers to entry and competition and subsidy programs discussed in general terms earlier in this chapter. Figure shows average applied tariff plus excise tax rates for imports to Tunisia from the European Union, Tunisia's most important trading partner[94]. As shown, tariff rates have dropped considerably from 2002 to 2011[95]. Tariff protections also vary greatly across product categories, and are highest for food and animal products. Average tariffs and taxes in 2010 for all goods were 7.0 percent with the European Union (6.8 percent provisionally for 2011), and 16.7 percent with the rest of the world (15.2 percent provisionally for 2011). As shown in Figure 5.15, the relative pattern is similar for non-EU country imports, but the level of protection is substantially higher, potentially causing trade diversion with respect to goods imported for consumption or domestic production purposes[96]. Nonetheless, the disparity between tariff rates on equipment and other imported inputs is not so great as to suggest a key impediment to investment or appropriability.

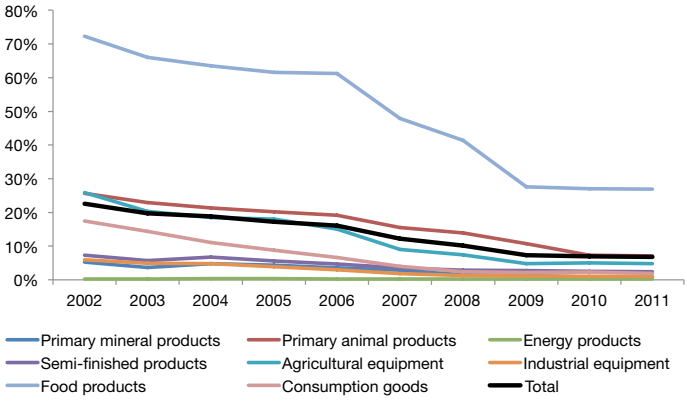
To promote exports and regional development, Tunisia uses an array of policy measures including price supports, input subsidies, tax exemptions for imported inputs, direct investment or production subsidies, marketing regulations, tariff quotas (whereby tariffs increases when import volumes exceed a certain level), and subsidized credit. These measures can distort investment and production decisions and may increase uncertainty over the ultimate viability of various agricultural investments. In a recent paper the African Development Bank calculated the effective rate of protection for agriculture and industry taking into account domestic pricing policy and taxes and subsidies on inputs and outputs. As shown in Figure 5.16 and Figure 5.17, cereals and livestock have enjoyed positive protection in most years, but arboriculture has been negatively protected in most years. Agriculture as a whole had an effective rate of protection in 2009 of 1.16, or 16 percent above the unprotected level. Manufacturing remains also slightly protected in 2008 with an effective rate of protection of 1.08.

Tunisia's tariff rates continue to fall and the effects of further liberalization could be significant. Recent estimates by Dee and Diop (2010) of the gains from unilaterally removing trade barriers in agriculture, even on a preferential basis

[94] These numbers were provided by the Customs Authority and are therefore considered accurate. However, the taxes reported on equipment imports appears to contradict a law instituted in 2000 which exempts industrial equipment from tariffs, regardless of the country of origin.
[95] Numbers for 2011 are provisional.
[96] Goods imported as inputs to export production are imported duty-free.

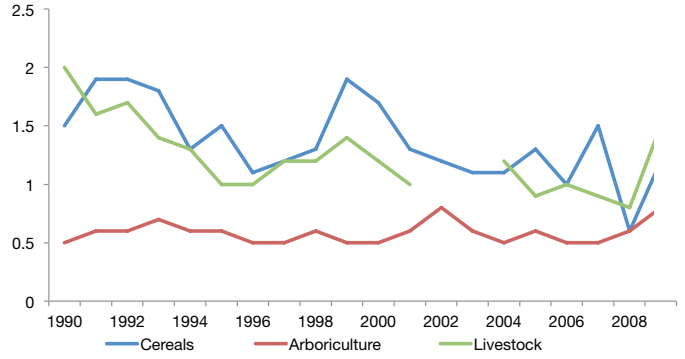
only with the EU, show significant welfare gains. After 10 years, estimated gains would total $114 million per year, or .28 percent of current GDP. If the removal of barriers is reciprocated by the EU, and productivity rose 10 percent, the total estimated welfare benefit of agricultural liberalization would be 733 million US dollars per year or 1.8 percent of current GDP. In contrast, lowering tariffs on manufactured goods imported from the EU would not result in a net welfare gain, as this would lead to greater trade diversion.

Figure 5.15: Actual Applied Tariff and Excise Tax Rates on Imports from EU



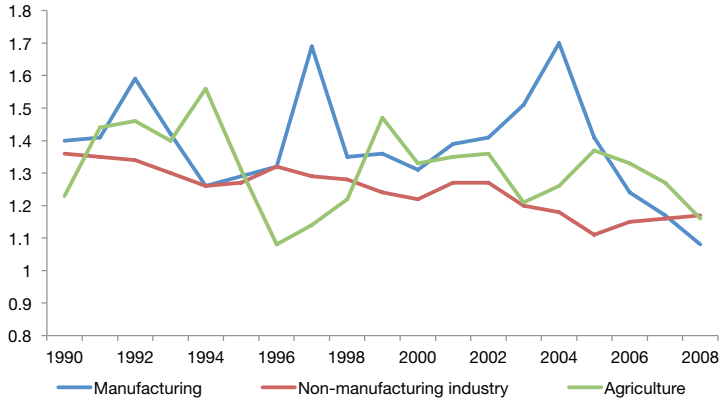
Source: Customs Authority

Figure 5.16: Applied Tariff and Excise Tax Rates on Imports from non-EU Countries



Source: African Development Bank (2012)

Figure 5.17: Effective Rate of Protection, Industry and Agriculture



Source: African Development Bank (2012)

Based on these estimates, the shadow price of trade distortions and restrictions is appreciable. The net effects of Tunisia's trade policy regime are to introduce an export bias and a mild pro-agriculture (albeit anti-arboriculture) bias in the allocation of resources; to increase consumer prices for some food products and manufactured goods, and to reduce the incentive to innovate and raise productivity introduced by greater competition.

If all the estimated benefits derived from full trade opening with the EU were realized and those benefits accrued linearly over a 10 year period, the additional increment to GDP of 1.8 percent would add 0.18 percentage points to GDP growth per year. Nonetheless, the primary gains would be in agricultural productivity, where growth has been relatively slow despite a high degree of protection; and in reduced consumer prices for food and manufactured products, which would in turn raise real household incomes. However, the net impacts on investment in the key growth sectors of Tunisia—services and manufactures—would be indirect.

Although tariffs do not present a binding constraint to growth, non-tariff barriers designed to restrict entry and competition in the services sector pose more important impediments, as discussed above, (Jouini and Rebej 2012). These non-tariff barriers reinforced the constraints identified—in particular, the lack of healthy competition in key sectors necessary for productivity growth.

In addition, barriers to market access particularly within the North African region could impede growth. As suggested by J. Regolo (2011) export diversification and sophistication typically vary with the income level of trading partners: bilateral trade between Southern countries tends to be more sophisticated than bilateral trade from Southern to Northern countries, while trade between more similar countries tendsto be more diversified[97]. Nonetheless, the gravity analysis of trade flows presented in Chapter 9 (Natural Capital) suggests that Tunisia is trading with the regions that one would expect given income levels and distance to those trading partner markets. A focus on removing barriers to entry generally, including in accessing regional markets, must be part of resolving the microappropriability constraints and constructing a more successful economic model for Tunisia.

5.7. Conclusion

This chapter presents evidence based upon the available tests of a binding constraint that the regulatory and fiscal requirements of employing workers pose a binding constraint to economic growth in Tunisia. The payroll tax alone increases the cost of employing workers by 30 percent for those firms who comply. Labor market regulations—in particular the difficulty of dismissing workers and formal wage requirements-impose a substantial further increase in the cost and risk of employing workers. As a percentage of revenues, these added costs are likely to surpass the costs of supplemental payments to public authorities to avoid regulations and taxation: labor costs represent a high share of costs, and therefore, te combined cost labor taxes and regulations are likely to total well over 10 percent of revenues for firms meeting formal requirements. Faced with these costs and risks, firms are less likely to make a sufficient profit, discouraging many from investing. Moreover, those firms that do invest are likely to adopt technologies and productive choices that use less labor-i.e., to stay smaller and employ fewer workers, whether skilled or unskilled.

In addition to this constraint, the lack of strong institutions to ensure public sector accountability and the rule of law have failed to check executive authority and have created three particular constraints to private investment and entrepreneurship: weak property rights, barriers to entry and competition, and

[97] Free trade agreements with the West African Economic and Monetary Union (UEMOA) and or other African Economic Communities (UEA, CEDEAO, and CEEAC) could also be pursued, but given their smaller markets and the longer distances to those markets, these are not likely to become key trading partners for Tunisia.

corruption. Although it is hoped that the political transition in process will provide the constitutional and political basis for resolving these issues, additional deliberate measures to strengthen key institutions and reform public administration are likely to be needed, in combination with a resolution of the barriers to entry which have impeded healthy competition and productivity growth.

Related to the two broad constraints identified above are the issues of social unrest and insecurity, which could become binding constraints if they are not well managed- along with the macroeconomic uncertainties which these pressures create.

Addressing the key binding constraints identified in this chapter within the current transitional political context in Tunisia will be a complex and difficult task, requiring a gradual, sequenced approach that prioritizes social cohesion and the legitimacy of reforms. The overall goal should be to reorient Tunisia's system of social protection from its current focus on protecting specific jobs to one that provides a robust safety net for people regardless of their employment status. Doing so would preserve or improve social protection while providing greater flexibility for employers (see, e.g., World Bank World Development Report 2013, forthcoming). Key priorities include reforming Tunisia's social security programs to better target the safety net while reducing the level of payroll taxation, expanding the tax base to fund these programs, and ensuring fiscal sustainability. If successful, such a reform program would unlock Tunisia's growth potential and enhance prosperity for a broader segment of the population.

BOX 5A: The causes of Youth Unemployment

Why is Youth Unemployment Relevant?

In a 2009 publication on Youth Unemployment, the OECD describes youth as a particularly important focus area for several reasons, including the social conflict, violence and juvenile delinquency that can be triggered by a lack of employment opportunities for young people and have high social costs[98]. Young people also face more challenges in accessing the labor market, despite their generally higher education levels than their parents, and are more likely to emigrate if they cannot find adequate employment at home. When the large portion of the workforce that is considered "youth" is underutilized, it is difficult for a country's citizens to break out of the cycle of intergenerational poverty and social exclusion[99].

What are the Causes of Youth Unemployment?

While many factors may contribute to youth unemployment rates and unemployment rates in general, many studies have shown that rigid labor laws can also have an important impact. The World Bank Doing Business Report (2010) finds that "Young people are disproportionately affected by rigid employment regulation. Lack of training and experience is already an obstacle to find a first job; burdensome regulation and high redundancy costs can further deter potential employers." A recent article in the New York Times cited differences between French and German towns located just across the border from one another that show vast differences in youth unemployment rates. The author proposes that French social protections and fixed minimum wages are a direct cause of their high unemployment rate among youth[100].

Other more rigorous studies examine the increases in youth unemployment that resulted from the passage of specific laws and regulations. In a study of the manufacturing sector in India, Besley and Burgess (2004) found that Indian states which passed "pro-worker" legis-

[98] The youth unemployment rate is defined as the number of unemployed youth (15-24 years) divided by the youth labor force (employment + unemployment). The International Labor Office defines unemployed youth as all persons between the age of 15 and 24 who, during the reference period, were: (a) without work; i.e. had not worked for even one hour in any economic activity (paid employment, self-employment, or unpaid work for a family business or farm); (b) currently available for work; and (c) actively seeking work; i.e. had taken active steps to see work during a specified recent period (usually the past four weeks).

[99] "Promoting Pro-Poor Growth Employment" OECD, 2009

[100] Erlanger, Steven: "French-German Border Shapes more than Territory". New York Times, March 3, 2012.

lative amendments (e.g. minimum wages, increased job security, higher unemployment benefits, etc.) "experienced lower output, employment, investment and productivity in registered or formal manufacturing." Urban poverty also increased as a result of these regulations[101]. Another study in Brazil shows that institutional changes to the Constitution in 1998 that were meant to protect workers resulted in increased unemployment in the formal sector, and a corresponding surge in the informal sector, where these laws could be more easily circumvented. (Estevao and Carvalho Filho, 2012)[102]. Neumark and Wascher (2004) also provide evidence that minimum wage laws cause unemployment among youths. However, this unemployment result is seen most strongly in countries with the least regulated labor markets, suggesting that there may be other labor market policies (such as those designed to bring the unemployed into the workforce) that can offset the negative effects of minimum wage laws[103].

Finally, Nickell (1997) states that correlations between specific features of labor markets and unemployment levels show which types of policies cause increases and which cause decreases in unemployment levels. He suggests that explanations stating that unemployment is a result of labor market rigidity are overly simplified. His research shows the following labor market policies to be associated with high unemployment:

1) "Generous unemployment benefits that are allowed to run on indefinitely, combined with little or no pressure on the unemployed to obtain work and low levels of active intervention to increase the ability and willingness of the unemployed to work;
2) "High unionization with wages bargained collectively and no coordination between either unions or employers in wage bargaining;
3) "High overall taxes impinging on labor or a combination of high minimum wages for young people associated with high payroll taxes; and
4) "Poor educational standards at the bottom end of the labor market[104]"

Assuming that restrictive labor policies are not the result of high youth unem-

[101] Besley, Timothy and Robin Burgess, "Can Labor Regulation Hinder Economic Performance? Evidence from India" 2004
[102] Estevao, Marcello M. and Irineu E. Carvalho Filho, "Institutions, Informality and Wage Flexibility: Evidence from Brazil." International Monetary Fund. 2012
[103] Neumark, David and William Wascher, "Minimum Wages, Labor Market Institutions, and Youth Unemployment: A Cross-National Analysis." 2004
[104] Nickell, Stephen, "Unemployment and Labor Market Rigidities: Europe versus North America". The Journal of Economic Perspectives, 1997

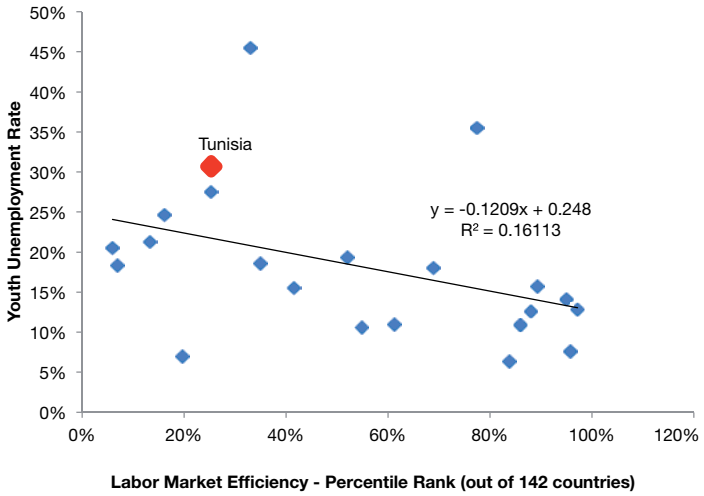
ployment—a reasonable assumption, given that youth unemployment rates have risen since many of these policies have been adopted, rather than before—a correlation between labor market regulation and youth unemployment can be interpreted as evidence that increased regulation has caused higher rates of youth unemployment.

To assess whether labor market regulations in Tunisia are an important factor explaining Tunisia's high youth unemployment rate, we analyzed the correlation between youth unemployment rates and labor market regulations across a range of comparator countries; that is 24 countries of Europe, MENA and Malaysia (a comparator country). In almost all cases, the regulations pre-date currently high youth unemployment rates. The measures of labor market regulation used were drawn from the World Economic Forum's 2011/2012 Global Competitiveness Report. Its index of Labor Market Efficiency takes account of hiring and firing practices, the flexibility of wage determination, an index of employment rigidity, and national survey results regarding pay and productivity and other measures of efficient use of talent. (In contrast, the World Bank's Doing Business Report, the Fraser Institute's Economic Freedom of the World Report, and the Heritage Foundation's Labor Freedom Index are all calculated without taking into account the existence or restrictiveness of minimum wages which exceed the single minimum wage, whether set through central regulation or collective bargaining – a key feature of Tunisia's labor market.)

The result of this simple analysis is as shown in the graph below. The key results is a negative relationship between labor market efficiency scores (expressed in percentiles among country rankings) and youth unemployment[105]. This relationship is statistically significant at the 1 percent level. This finding suggests that across countries, each 1-percentile improvement in a country's ranking in the distribution of labor market efficiency lowers the youth unemployment rate by 12 percent.

[105] The percentile rank is calculated by subtracting a country's rank from 142 (the number of countries ranked in the World Economic Forum Global Competitiveness Report), then dividing by 142. Thus, countries with a higher percentile rank in Labor Market Efficiency are those in which the labor markets are operating most efficiently, with the fewest barriers and distortions.

Youth Unemployment Rates vs. Overall Labor Market Efficiency
Comparison and European Countries
Source: World Economic Forum 2011/2012



Labor Market Efficiency - Percentile Rank (out of 142 countries)
Source: World Economic Forum Global Competitiveness Report 2011-2012

In addition, we examined the sub-components of this indicator, in particular the measure of "Pay and Productivity," calculated using answers to the Executive Opinion Survey question: "To what extent is pay in your country related to productivity?"[106] Once again, a negative coefficient of approximately 0.12 emerged between countries' percentile rank on this indicator and their youth unemployment rates; this coefficient was statistically significant at the 10 percent level (P-value .054). This finding provides further evidence that labor market regulations can lead to higher rates of youth unemployment, to the extent that those regulations prevent firms from paying workers in line with their productivity.

[106] Other sub-indicators of regulation itself (rather than outcomes) used to construct the overall index were not statistically significantly related to youth unemployment.

6. Are Market Failures in Innovation a Binding Constraint to Growth in Tunisia?

6.1. Introduction

Innovation—the development or adoption of new technologies, techniques, products and services—is a key driver of economic growth. Like policy failures discussed in Chapter 5 and macroeconomic risks discussed in Chapter 4, market failures surrounding innovation can directly reduce the appropriability of returns to investment. Innovation externalities, for instance, arise when the returns to innovation are not fully captured by the innovator, but also shared by others who copy or learn from them. Thus, without effective government intervention to correct these failures, investments in innovation would not take place at the efficient level, thus reducing growth[107]. Similarly, the phenomenon of learning-by-doing by innovating firms would shift returns into the future and reduce investment and innovation today[108]. As Grossman and Helpman (1991) show, growth depends in part upon the ability of producers to climb quality ladders. Similarly, Hausmann et al. (2007) posit a theory of "self-discovery" in which firms must discover their own productivity or costs. Either of these latter theories may explain the correlation which Hausmann et al. (2007) document between what countries produce initially and their subsequent per capita growth rates. A more advanced stage of "discovery" or learning will help countries overcome market failures more quickly. At the same time, because Hausmann et al. (2007) do not rigorously reject other explanations for this correlation—including policy conditions which cause both export sophistication and growth—there are no clear policy implications of this result[109].

Although it is generally agreed that market failures in innovation are a reality, testing whether they pose a binding constraint to growth in a given country is difficult. One way to approach this question is to assess the strength of government efforts to address such market failures. In addition, one can examine whether a country's performance in innovation is poor relative to its overall investment and growth performance—if so, this could be a drag on otherwise more robust growth. Finally, one can

[107] See e.g., Romer (1986).

[108] This factor would not inhibit innovation unless also combined with credit market imperfections. See Mookherjee, D. and D. Ray (1993).

[109] The authors claim that through the use of instruments they have established causality, but note that third, omitted factors could be responsible both for initial export characteristics and subsequent growth. One such potential factor which the authors do not test is trade openness or other unmeasured policies.

assess the strength of other explanations for any lack of innovation. Innovation is complementary to many of the factors considered in the growth diagnostic tree and a lack in these areas could contribute to any failure to innovate and grow. A high cost of financing, low skill levels, or lack of key infrastructure, for example, would make innovation less profitable. In addition, barriers to competition—especially through international trade—a key determinant of innovation (Grossman and Helpman 1990) would impede innovation as would other appropriability issues, such as corruption or macro risks, which tend to reduce the incentives to innovate.

The Tunisian economy has restructured and diversified over previous decades, diversified, and introduced new, higher-technology exports. While it has lagged comparator countries in developing more sophisticated exports, given its early lead in export sophistication, issues of self-discovery or learning by doing cannot explain this result. Moreover, the Tunisian government has pursued a relatively active industrial policy which has been, if anything, generous, in offsetting potential delays or sharing of the returns to innovation. To the degree that Tunisia's performance in innovation disappoints, the two binding constraints identified in the micro-appropriability area (Chapter 5) can go a long way to explaining this. Micro policies and poor performing public institutions are significant deterrents to investment, including foreign investment, which provides the greatest potential for technological catch-up, but also for domestic firms who may otherwise compete and supply export firms or export directly. If there is a strong possibility that success will result in higher taxation or effective expropriation, firms are unlikely to grow, learn "by doing," or invest in innovation. At the same time, Tunisian firms have diversified and innovated to an appreciable degree, and the Tunisian Government has actively promoted innovation through a variety of tax exoneration and subsidy programs. Thus, based on the indicators available, there is no compelling evidence that market failures in innovation themselves pose a binding constraint to Tunisia's growth.

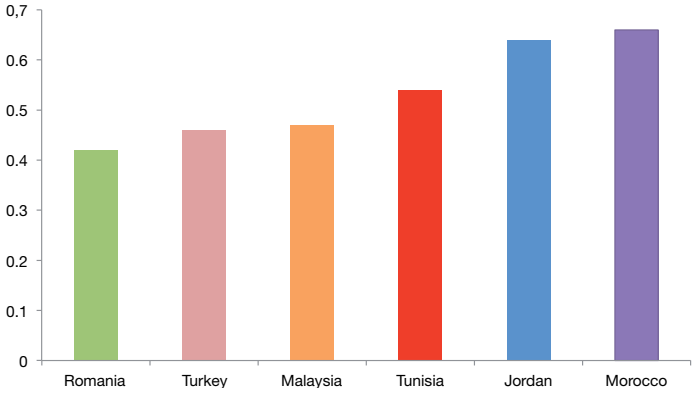
6.2. Transformation and Innovation Performance

The Tunisian economy has undergone significant structural change since the mid-1960s. The shares of industry and services in Tunisia's output and employ-

ment have increased, as shown in Chapter 2. Whereas Tunisia was primarily an exporter of oil, phosphates and agricultural products in the 1970's it shifted to exporting garments, electronics and chemicals by 2008 (see export basket composition, Figure 2.8). Moreover, from less than 10 percent at independence, the share of manufacturing in Tunisia's export basket reached 72 percent in 1992, and has remained above 70 percent ever since. Since the end of the Multi-Fiber Agreement in 2005, which had protected Tunisia from strong global competition in the textile sector—in particular from Asia, Tunisia has shifted its specialization towards higher technology products. The share of textile exports has decreased over the past five years, while the share of mechanical and electronic industries rose from 24 percent in 2005 to 34 percent in 2010. In addition, recent growth in services, some of which generate relatively high value-addition, shows that Tunisia can introduce new project classes, compete in them internationally, and diversify to some extent.

A commonly used indicator of export diversification is the Herfindahl-Hirschman Index of diversification, which captures the export share concentration by product class (using 3-digit SIC codes) and ranges from 0 to 1 (1=extremely undiversified economy to 0=extremely diversified economy). By this measure, as shown in Figure 6.1, Tunisia is the most diversified among its regional comparators but less diversified than Romania, Turkey and Malaysia, albeit less diversified than developed economies.

Figure 6.1: Herfindahl-Hirschman Index of Diversification



Source: UNCTAD, 2012

While Tunisia's recent export growth has been rapid (averaging 7 percent over the last decade), close observers and policymakers are concerned about an apparent lack of growth and technological progress in its manufacturing sector. As recently as 2009 Tunisia's manufacturing share of value added accounted for only 16.5 percent, compared to 34 percent in China and 27.7 percent in South Korea[110]. Meanwhile, export growth and labor productivity have been much faster in the East Asian economies (Chapter 2) and have fueled significantly higher average growth rates.

In fact, Tunisia has achieved some success in technological upgrading of its manufactured exports. As shown in Figure 6.2, the fraction of higher technology content in Tunisia's manufactured exports has risen substantially over the past decade, from 2.6 to 12 percent of manufactured exports, and from 27 to 34 percent for medium-high technological content, while low technology exports have fallen from 62 to 41 percent. In addition, Tunisia's registrations of new patents has risen over the past decade and on a per million population basis, is now performs better on a per capita basis than Morocco, Romania, and Turkey, but shows less patent activity than in Malaysia, as shown in Figure 6.3.

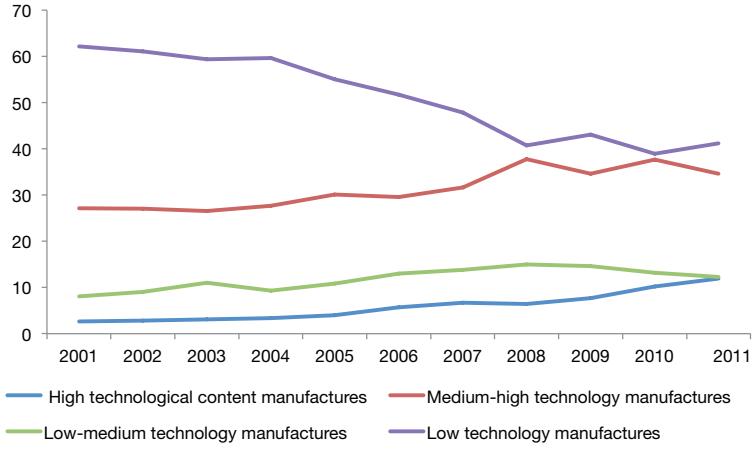
Another measure of export "sophistication," proposed by Hausmann et al. (2007), can be constructed which essentially represents the income level of other exporters of a given country's export basket[111]. Although this is an imperfect measure of technologicalcontent or value addition, it can be used as one indicator of countries' ability to join the value chains of rich country producers, particularly at final production stages[112].

[110] WDI

[111] Each product is assigned a product complexity score (PRODY) equal to the weighted average of the income levels of the countries that export that product. Then, a country's overall EXPY value is computed as a weighted average of the PRODY values of its exports, with the weights depending on the value share of each product in the export mix.

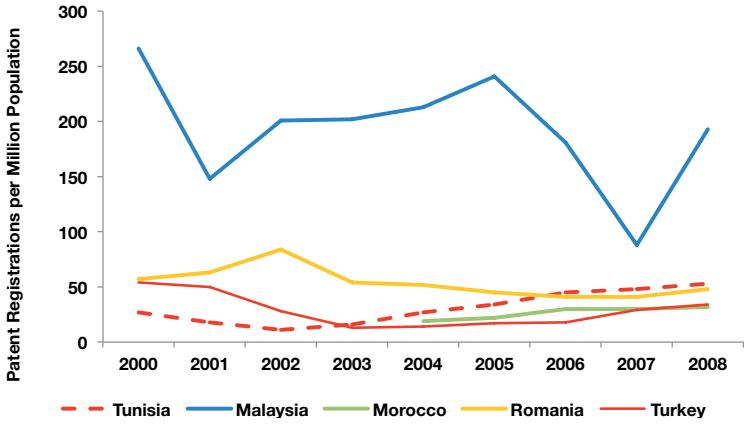
[112] Baldwin (2011) has criticized the empirical work underlying the Hausmann-Huang-Rodrik model, noting that trade statistics attribute the full value of exported products to the country that ships them, whereas in reality many such countries are simply carrying a limited set of tasks as part of an international supply chain that together produces the final product. Baldwin argues that "[p]roduct characteristics may tell us something about the embodied factors and technology, but very little about the nationality of those factors and technologies. To take a well-known example, China's Ipod exports tell us more about the US industry than it does about Chinese industry."

Figure 6.2: Fraction of Manufacturing Exports by Level of Technological Content



Source: INS and Customs Authority (Using 2008 OECD Definitions)

Figure 6.3: Patent Registrations per Million Population

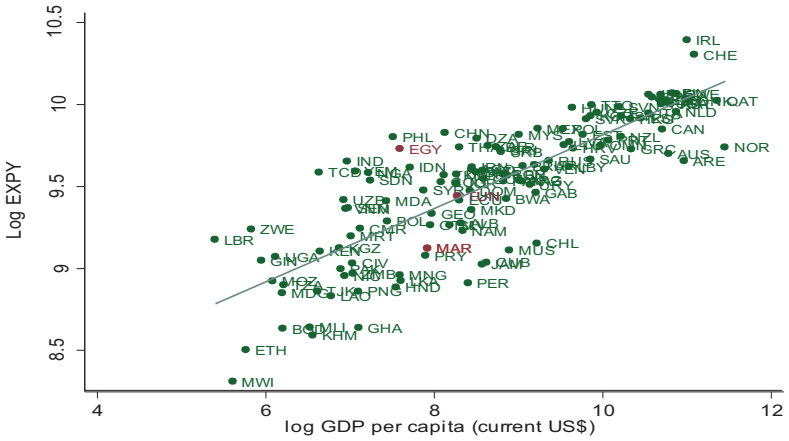


Source: WIPO Statistics Database and World Bank (World Development Indicators), December 2011

Figure 6.6 displays the cross country correlation between real per capita income (2008) and countries' export sophistication indices (denoted EXPY), with a regression line indicating the expected level of sophistication at a given level of economic development. Tunisia is located on the predicted regression line, suggesting that it does not have an unusually low level of export sophistication for its level of development. Based on trends in this measure, however, it appears that Tunisia has not capitalized fully on its potential to enhance its export sophistication. Figure 6.5 shows that in relative terms Tunisia's export sophistication declined from 1980 to 1995. Since 1995, Tunisia's EXPY measure has risen somewhat more quickly than the average among upper middle income countries and most of the individual comparator countries, but less rapidly than that of Turkey. Nonetheless, the level of Tunisia's export complexity remains substantially lower than that of Malaysia, Romania, Turkey, or the upper middle income countries as a group. Moreover, as shown in Figure 6.6, Tunisia's export sophistication has been far surpassed by the East Asian economies of China, Korea and Thailand, despite a similar starting point in 1960.

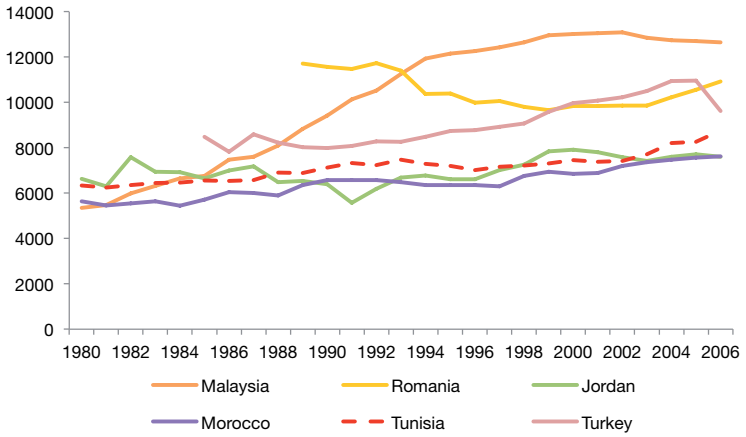
Nonetheless, neither Tunisia's mixed performance in increasing "export sophistication" nor its relatively modest productivity growth can be explained by the market failure theory proposed in Hausmann et al. (2007)—Tunisia's initial sophistication (in 1980) was higher than that of most comparator and middle income countries (LMICs and UMICs) (Figure 6.5) and was higher than that of Morocco, Egypt, and Thailand in 1960 (Figure 6.6). According to the market failure (or "discovery externalities") theory, per capita growth of Tunisia's economy should have been higher than that of these countries given this lead. Yet Malaysia and other middle income countries were able to innovate and grow much more quickly. Thus market failures which compound any initial disadvantages in export sophistication cannot explain Tunisia's relatively disappointing increases in this sophistication over recent decades, or indeed its modest growth record compared to the East Asian economies.

Figure 6.4: Export Sophistication versus Income Per Capita, 2008



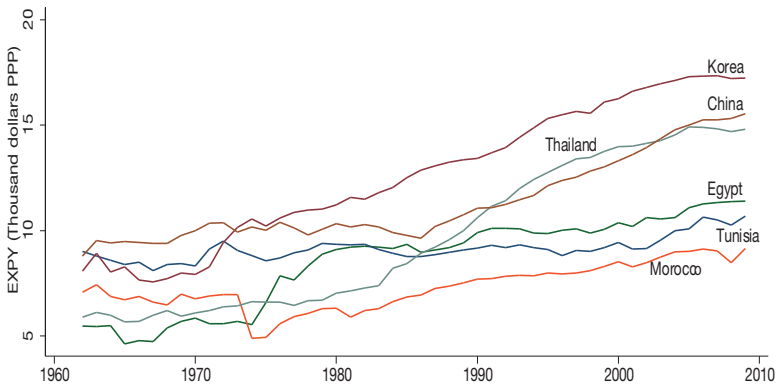
Source: Own calculations using COMTRADE data

Figure 6.5: Country Export Complexity, Tunisia vs. Comparators



Source: World Bank Economic Policy and Debt Department.

Figure 6.6: Export Sophistication with Additional Comparators

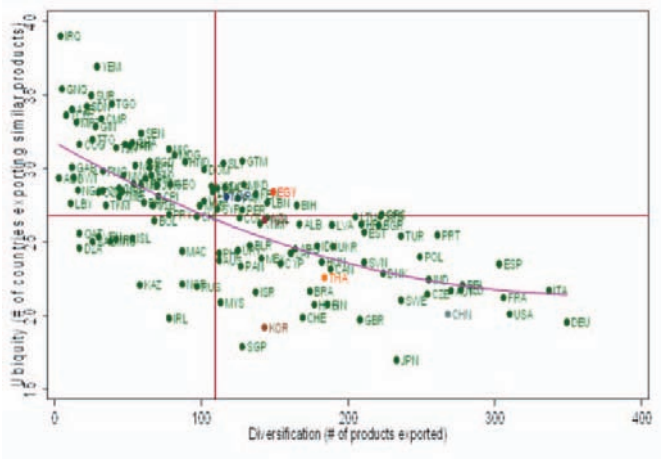


Source: Own calculations based on Hausmann, Hwang and Rodrik 2007, using PRODY of year 2000 for the calculation of EXPY for every year.

The degree of commonness or "ubiquity" of a country's products may also illustrative its productive capabilities, where capabilities are defined as the full range of factors and conditions which make a country competitive in a range of specific products. Lower ubiquity is a sign that a country has capabilities which are relatively rare in the world; and greater diversity would be a sign of varied capabilities. Thus low ubiquity and high diversification confer sustained advantages in competitiveness. As shown in Figure 6.7, Tunisia's export basket shows the lowest ubiquity of its regional comparators (Morocco and Egypt). Yet Korea, by contrast, has almost the same diversification as Egypt and Tunisia, but is producing goods that are much less common, suggesting their greater complexity. Turkey and Thailand are much more diversified than Tunisia and their products are on average less ubiquitous. Further investigation using the "product space" literature introduced by Hidalgo et al. (2007) also indicates that Tunisia has the capabilities to achieve rapid technological upgrading and introduce new products in export markets. The product space is illustrated using a spatial map of the "distance" between products—that is, the ease of transition from specific products to others based upon the observed frequencies of such

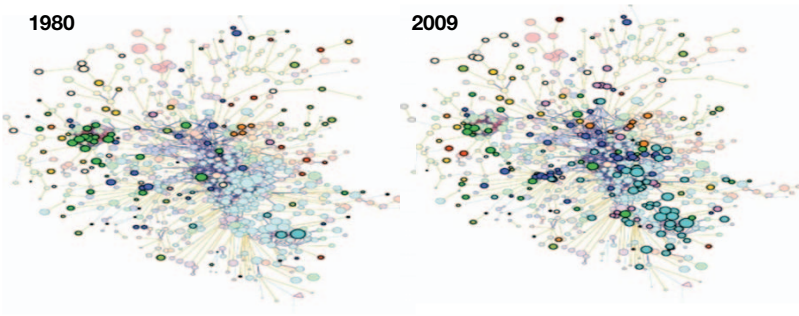
jumps internationally. The evolution of Tunisia's location in this space between 1980 and 2009 may be seen by comparing the left and right panels of Figure 6.8. In these diagrams, the opaque nodes illustrate Tunisia's activity and larger nodes represent higher levels of activity. The 1980 product space shows that Tunisia's clusters were distant from one another. According to the product space literature this would limit opportunities for coordination and imply that firms would need to make large technological leaps to move to productive sectors with higher value added. However, the 2009 product space shows evidence of innovation over the succeeding 30 years, with a presence on many nodes in the Electronics sector and some in the Machinery sector, implying that firms have been successful in climbing the value added ladder. These strong technological shifts that would not have been expected from the 1980 position in the product space, and may be due to Tunisia's opening to international trade and investment from a relatively closed position.

Figure 6.7: Diversification and Ubiquity



Source: Own calculations using COMTRADE data

Figure 6.8: Evolution of Tunisia's Product Space 1980-2009



Source: Hidalgo CA. Klinger B, Barabasi A-L, Hausmann.R, Science 317, 482-487 (2007)

These indicators demonstrate a mixed, but generally positive experience, except when compared to East Asian economies, which have surpassed the region's growth as a whole. Nonetheless, there are indications that Tunisia has had the necessary capacities to innovate quickly over recent decades, including through the development of high technological content and high value added exports. When Tunisian firms are exposed to international competition and the lighter regulatory and fiscal burden which accompanies "offshore" status, the leaders among them are able to innovate and increase productivity.

6.3. Government Policies to Address Market Failures in Innovation

Tunisia has generally followed an active industrial policy with the aim of promoting innovation and improving its competitiveness (see Erdle 2011 for details). In order to help emerging exporters overcome potential information and innovation market failures, the Tunisian government introduced generous tax exemptions for exporters in 1972[113]. It has also created several trade support institutions, the Industry Promotion agency (API), the Export Promotion Center (CEPEX), and the Tunisian Export Market Access Fund (FAMEX). Moreover, the government and donors have supported an Upgrading Program (Programme de Mise à Niveau (PMN)) and an Industrial Modernization Program (PMI). The PMN is supported by the

[113] Law 72-38 provided a host of incentives to foreign investors for approved industrial projects, largely for export production. Incentives included a wide range of tax concessions (e.g. exemption from corporate income tax during the first ten years of operation and repatriation of profits free of tax), and duty-free import of capital equipment, raw materials and semi-processed goods.

European Union under 1995 the Euro-Mediterranean free trade agreement and was designed as a transition arrangement to help domestic firms face increasing international competition, but it has become a key element of Tunisia's industrial policy. The PMN provides direct financial subsidies to private sector firms that are deemed to have room for growth, who plan to grow, and who face an expanding market. In 2008 the Tunisian government adopted a new strategy called "Horizon 2016" designed to create a more quality-based, innovation-oriented and knowledge-intensive economy[114]. The declared objectives were to double exports, triple industrial investment, and raise total factor productivity, thereby raising the average annual GDP growth rate from 5 to 6 percent over 2008-2010. In addition, Tunisia has a fairly streamlined patent protection system for registering patents which would protect domestic innovations and which presents little obstacle to the lawful import or introduction of foreign technologies[115].

Although Tunisia's industrial and export promotion programs have most likely achieved some successes, it is not clear that their impacts have justified their costs. For instance, a study by Lederman, Olarrega and Pyto (2006) of the impacts of export promotion programs found that they can have a positive impact on export growth, but that results have been disappointing in MENA. They estimate that one dollar invested in export promotion can yield up to $227 in exports in Asia and $137 in Sub-Saharan Africa, but only $96 in MENA. The Tunisian Export Market Access Fund (FAMEX) was estimated to generate only $20 of additional exports. Although the PMN is generally perceived as successful, rigorous evidence of impacts is lacking. According to the 7th survey of enterprises conducted by the Bureau de Mise á Niveau (BMN), 60 percent of firms assert that PMN assistance was satisfactory. Some firms have noted that access is difficult, however. Although since the launch of the upgrading program in 1996, more than 3,500 applications have been approved and only 18 rejected, more than 45 percent of firms surveyed report that receiving the premium payment is rather difficult. Moving beyond firms' impressions to

[114] Since the plan's launch in 2008 and coincided with the onset of the global financial crisis, it is difficult to evaluate its impact. Following the collapse of global demand in 2009, Tunisia's exports of machinery and electrical products become one of Tunisia's largest export sectors. However, it is difficult to attribute innovation in this sector to the Horizon program, given that its rapid growth commenced in 2003.

[115] Tunisia applies the principal of "International exhaustion" to protections of foreign patents, which means that the exclusive right of exploitation of the patented product does not extend to the offering, importing, stocking or use of this product or the product obtained by means of a patented process, on Tunisian territory, after that product has been lawfully introduced into the commerce of any country, by the owner of the patent or with his explicit consent.

impacts is more difficult, however. A recent evaluation report (ITCEQ 2010) compared the results of participating firms with those of non-participating firms and found that those participating invested and grew more. Unfortunately, this otherwise competent study did not have the necessary data to address the potentially serious selection bias issue: firms with greater abilities, opportunities, motivation, or other attributes would access the program whereas others would not, making the comparison between these groups invalid.

In practice, the taxation and transfer of investment subsidies through the FODEC/PMN reinforces the fiscal bias towards exporters, and, according to some authors, has most benefited firms with preferential regime affiliations (see Erdle 2004 and Cassarino 2004)[116]. Funding is provided through a 1 percent FODEC (Fonds de Développement de la Compétitivité Industrielle) levy, which is imposed on all domestic sales of industrial products, despite the fact that few domestic manufacturers access the program. Although the program was meant to assist import competing firms, a very large share of the funds flowed to exporters who were already competing internationally. Fourteen percent of industrial enterprises who participate in the PMN produced for both the domestic and export market, and only 17 percent were oriented only to the domestic market (ITCEQ 2010).

6.4. Alternative Drivers of Tunisia's Mixed Performance in Innovation

Tunisia's record of innovation has been mixed, but broadly on par with its general growth performance. Yet its growth in productivity per worker has been slow (see Chapter 2), suggesting that it has unexploited opportunities to raise productivity through innovation. In fact, the binding constraints identified in Chapter 5—which have constrained growth and continue to do so—are highly likely to contribute to any failure Tunisia has shown in innovating. One of those constraints relates to a system of governance which has inhibited entry and free and fair competition in domestic markets. Uncompetitive markets combined with strong incentives for firms to stay small directly impede the process of learning by doing and achievement of scale economies. In many economies, domestic markets serve as launching grounds for new products and future exporters. However, if the investment climate impedes the growth of firms with

[116] In fact, a careful and thorough evaluation of the Programme de Mise a Niveau shows differences in investment, sales, and exports between nonparticipating versus participating firms.

the greatest competitive potential, this process will stall. There is growing empirical evidence establishing the importance of entry and competition in inducing innovation and productivity growth. With lower barriers to entry, the resulting competition induces innovation by the most competitive firms and in the most advanced sectors and fosters a dynamic shift of resources towards the most competitive and innovative firms and sectors (See, e.g., Aghion et al. 2005, Acemoglu et al. 2006; Aghion et al. 2009, Scopelitti 2009). However, freer entry and labor market policies are complementary: more intense competition tends to have a greater impact on growth in environments with more flexible labor market regulations (Aghion et al. 2008). Moreover, simple learning-by-doing theories, which have implications similar to the product space literature, emphasize the importance of "doing"—investment must take place and firms must "do" as a means of learning and innovating as well. Thus, burdensome investment climates which dis-incentivize investment or skew the choice of production technologies (such as, for example, towards less labor usage and smaller scale) can directly impede innovation and productivity growth. Well-targeted measures to level the playing field for onshore firms and remove the disincentives found in Chapter 5 are likely to stimulate a more rapid transformation to a higher value added and technologically sophisticated economy.

6.5. Conclusion

The information presented in this chapter shows that Tunisia has been somewhat successful in climbing technology ladders and diversifying into new products. The private sector has innovated in response to opportunities created by an opening to international trade. Government policies to encourage innovation have been generous, but it is not possible to say how cost effective they are. Although Tunisia's ability to introduce more technologically complex products has been disappointing to some, these outcomes can be explained more readily by micro policy failures described in Chapter 5. The key weaknesses in Tunisia's growth appear to be due to low levels of investment overall, disincentives to grow and employ workers, rather than a failure to progress technologically. Thus, there is little indication from the information available that market failures in innovation pose a binding constraint to the country's economic growth.

7. Does a Shortage of Human Capital Represent a Binding Constraint to Tunisia's Growth?

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 reasonably aim for a more 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. As will be demonstrated below, the empirical evidence shows that there is no shortage of skilled labor in Tunisia. Rather, at present, the demand for skilled labor falls significantly short of the available supply. The most compelling evidence for this conclusion comes from the high rates of youth unemployment that affect essentially all types of university degree. It is reinforced by the relatively high levels of emigration of tertiary-educated workers from Tunisia. Moreover, in international comparisons, Tunisian businesses rate the availability of scientists and engineers as abundant relative to their needs.

The chapter briefly considers four strands of evidence relevant to this topic: demographic trends, health, schooling and training, and labor market outcomes. Of these four areas, the evidence on schooling is the most complex and suggests that to promote regional equity, economic mobility, and faster long-term growth, Tunisia should undertake reforms to ensure that the nation's already heavy investments in schooling are more cost-effective. Nevertheless, in the short- to medium-term the solution to the key challenge of high structural unemployment rates is to remove constraints to growth and employment so that the economy creates sufficient demand for the education and skills already embodied in its workforce.

7.1. Demographic trends

When countries experience major shifts in birth rates, life expectancy, and fertility, those changes affect the size of the working-age population (and thus the potential labor force) in relation to the overall population. They also interact with investments in schooling and workforce training to affect the level and mix of skills embodied in the labor force.

The evidence suggests that over the past several decades Tunisia has rapidly progressed through the demographic transition from high fertility and high mortality rates to low total fertility, low mortality, and long life expectancy. Tunisia's total fertility rate dropped from 7.2 children per woman in 1956 to 2.9 children in 1994 and 2.0 children in 2010, slightly below replacement level fertility of 2.1[117].

One important consequence of this has been a shift in the age composition of the population toward a growing share in their working-age years: the share of the total population aged 20-59 has risen from 44.8 percent in 1990 to 57.7 percent in 2010. Over the same period, the absolute size of the working-age population grew from 3.7 million to 6.2 million. The experience of high-growth East Asian economies shows that such an increase in the relative size of the working-age population can provide an important boost to growth as long as the economy is generating demand for labor (Bloom, Canning, and Malaney 2000).

Tunisia's growth in per capita income—and therefore living standards—has benefitted from these demographic trends. Tunisia's growing working age population (as a percent of total) and declining population growth rate have helped translate relatively modest growth in aggregate GDP into faster growth in GDP growth per capita.

A second important implication of Tunisia's relatively early demographic transition is that its "youth bulge" has already peaked and is beginning to decline over time. The share of the population aged 15-24 rose from 20.3 percent to 20.8 percent between 1990 and 2000, but has since fallen to 19.3 percent and will continue to fall as smaller cohorts enter this age bracket and those already in this age bracket grow out of it. Over the same period, the population aged 25-39 rose from 21.3 to 26.4 percent of the population.

7.2. Health

In principle, poor health among a nation's population can limit the availability of human capital, either directly by making it difficult for workers to exert themselves physically or mentally on the job, or indirectly by undermining students' ability to learn in school. Table 7.1 makes clear that neither of these potential problems is relevant to Tunisia.

[117] These trends were encouraged by a range of socioeconomic factors including increasing age at marriage, increasing rates of primary and secondary schooling for women as well as men, improving rates of infant and child survival as noted above, and increasing urbanization. The trend was reinforced by government policy that promoted awareness of and access to modern methods of contraception.

On virtually all internationally comparable measures of health outcomes, Tunisia out-performs the average among the upper middle-income countries, a group of relatively prosperous developing countries whose average incomes are generally substantially higher than that of Tunisia. In the two areas where Tunisia does slightly worse than the upper middle income average—wasting and overweight among children under 5—its performance is still much closer to the average among the upper middle-income countries than to that among the lower middle-income countries[118]. The fact that Tunisia's health conditions exceed those of a set of richer countries implies that health issues cannot pose a binding constraint preventing Tunisia from achieving a higher income level. More generally, the health outcomes shown in Table 7.1 provide clear testimony to the success of the Tunisian government's efforts to improve health conditions for the nation's population since the 1960s, along with the health benefits of rising living standards since that time[119].

[118] Given Tunisia's status as a middle income country, a more comprehensive analysis of the burden of disease would also entail examination of indicators of non-communicable disease, such as cancer, diabetes, and cardio-vascular disease, which may entail an increasing burden in the future. Nonetheless, at present, Tunisia's performance in basic indicators of mortality and morbidity is generally better than that of richer countries.

[119] There is some evidence of significant regional disparities in access to health services. In particular, a recent study from the African Development Bank includes a figure showing the ratio of population to pediatricians (in 2004) ranging from about 25,000 in Greater Tunis to about 86,000 in the Center-West region, and over 130,000 in Kasserine (AfDB 2011). The growth diagnostic did not investigate other measures of disparities in access to services, or whether they lead to similar disparities in health outcomes—important issues in their own right, but beyond the scope of the current study. For purposes of growth diagnostics, the key point is despite such disparities, the overall population and labor force are quite healthy.

Table 7.1: Health Outcomes, Tunisia versus Comparators

Indicator Name	Lower-Middle Income 2009	Tunisia 2006	Upper-Middle Income 2009
Low-birthweight babies (% of births)	21.0	5.3	5.4
Malnutrition prevalence, height for age (% of children under 5)	41.8	9.0	12.6
Malnutrition prevalence, weight for age (% of children under 5)	31.7	3.3	4.1
Prevalence of overweight (% of children under 5)	5.9	8.8	7.1
Prevalence of wasting (% of children under 5)	16.0	3.4	2.7
Indicator Name	**Lower-Middle Income 2009**	**Tunisia 2006**	**Upper-Middle Income 2009**
Life expectancy at birth, female (years)	66.8	76.5	75.1
Life expectancy at birth, male (years)	63.4	72.5	70.3
Life expectancy at birth, total (years)	65.0	74.5	72.6
Mortality rate, adult, female (per 1,000 female adults)	177.2	70.5	100.5
Mortality rate, adult, male (per 1,000 male adults)	246.5	124.9	162.6
Mortality rate, infant (per 1,000 live births)	51.4	14.8	17.4
Mortality rate, neonatal (per 1,000 live births)	29.9	10.0	11.4
Mortality rate, under-5 (per 1,000)	71.2	17.2	20.8
Survival to age 65, female (% of cohort)	70.3	86.7	81.9
Survival to age 65, male (% of cohort)	61.7	78.4	72.0
Incidence of tuberculosis (per 100,000 people)	177.0	24.0	91.0

Source: World Development Indicators, December 2011

7.3. Schooling and Workforce Training

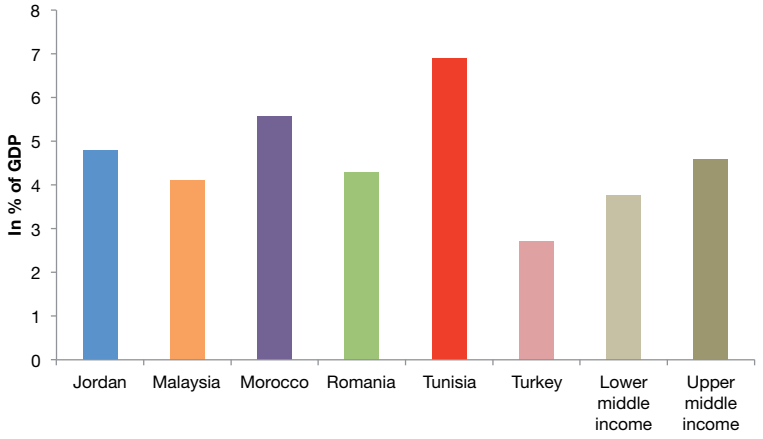
While health conditions and demographic trends indirectly affect the supply of human capital in an economy, a nation's investments in schooling play a much more direct role in equipping its labor force with the general skills needed to work productively in a modern economy, and to gain further, job-specific skills through workforce training[120]. Similarly, policies affecting the acquisition of workforce training either before or after young people become employed play an addi-

[120] In many successful economies, education at the primary, secondary, and even tertiary levels is general education and provides a general capacity in language, mathematics, the humanities, and the sciences, and such education provides the flexibility to acquire more job-specific skills as demand for skills shifts, whether through on the job training or focused vocational or technical training.

tional role in affecting the supply of human capital in the economy.

Tunisia has invested heavily in education since the early 1960s. The most recent available data on the share of GDP devoted to public spending on schooling at all levels show Tunisia substantially exceeding all its comparators at 6.3 percent (Figure 7.1)[121]. This investment has resulted in rapidly rising levels of schooling attainment among younger cohorts, which over time has steadily increased average schooling among the working-age population, as well as nearly universal literacy among Tunisians under the age of 50. At the same time, evidence from international testing raises some concerns about the quality of schooling in Tunisia. The following section first reviews the evidence on attainment and enrollment trends, then turns to the more mixed evidence on quality.

Figure 7.1: Public Spending on Education at All Levels
Most Recent Data Available



Source: World Development Indicators

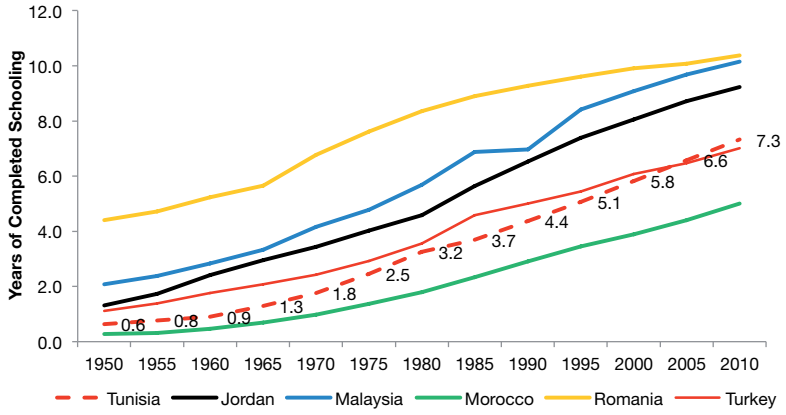
As seen in Figure 7.2, schooling attainment was extremely limited in 1960, averaging less than a single year[122]. Over the subsequent five decades, average years of schooling among the population 15 years or older rose steadily, reaching 7.3 years in 2010. Growth in attainment roughly paralleled that in

[121] The value cited for Tunisia applies to 2008, while those for the other countries vary from 1999 for Jordan to 2009 for Malaysia and Morocco. Tunisia's public spending on education averaged 6.4 percent of GDP during 1999-2009.

[122] Estimate of school attainment are drawn from the work of Robert Barro and Jong-Wha Lee, April 2010, "A New Data Set of Educational Attainment in the World, 1950-2010." National Bureau of Economic Research Working Paper No. 15902 and online at www.barrolee.com

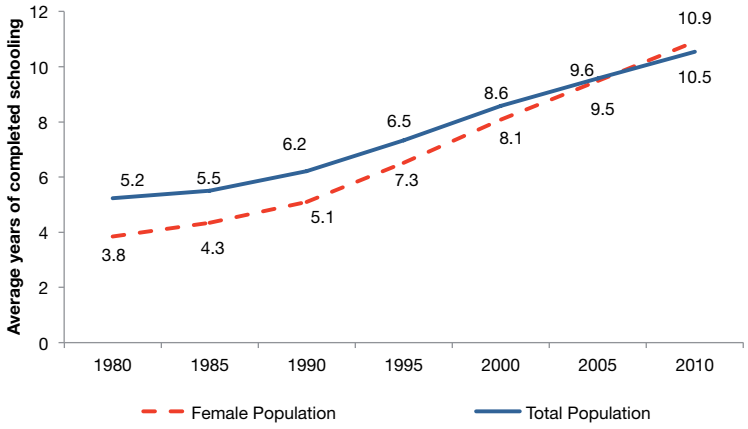
several comparator countries, though Tunisia overtook Turkey in the mid-2000s. Moreover, the pattern of schooling investments appears to have benefited women at least as much as men, suggesting that Tunisia has increased its ability to utilize its female talent pool. As recently as 1980 average schooling among Tunisians 25 or older was 3 years for men and only 1 year for women; by 2010, the average attainment gap remained at 2 years, but the relative gap had shrunk dramatically, with women aged 25 or more averaging 5.5 years of schooling versus 7.5 years among men. Finally, schooling attainment among younger cohorts continues to rise and now favors women: as of 2010, Tunisian women aged 20-24 averaged 10.9 years of schooling, compared with 10.1 years among their male counterparts. Schooling attainment continues to rise rapidly for young people, especially for women (Figure 7.3).

Figure 7.2: Average Schooling Attainment, Population 15 and Above



Source: World Development Indicators

Figure 7.3: Schooling Attainment for Young People 20-24 Years Old



Source: World Development Indicators

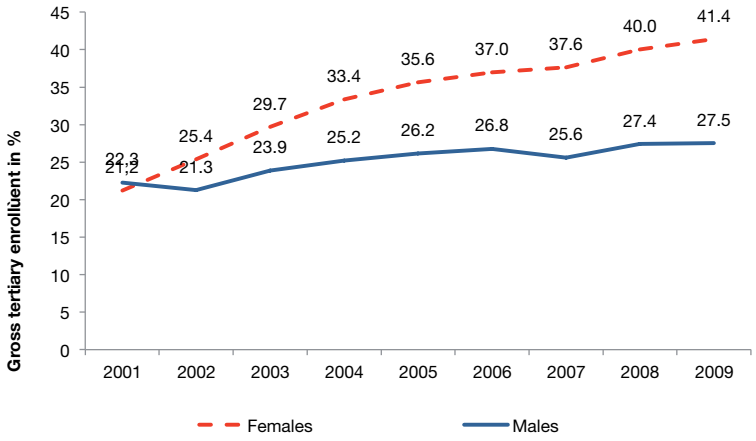
School Enrollment

Rising school attainment in Tunisia is mirrored by high levels of enrollment at the secondary and tertiary levels. In 2009, gross secondary enrollment was 91 percent (93 percent for females and 88 percent for males). In the same year, gross enrollment at the tertiary level reached 34 percent overall, up from 19 percent in 2000. Most of this increase has reflected rapidly growing female enrollment. The tertiary enrollment rate for women was slightly lower than that for men in 2000 but by 2009 had reached nearly 150 percent of the male enrollment rate (Figure 7.4.)

The rapid growth in tertiary enrollment has been driven in part by Tunisia's attainment of near-universal secondary completion, along with generous public subsidies for students attending university[123]. The impact of this growth on Tunisia's labor market is explored in Section 7.4.

[123] According to calculations cited by Jaramillo and Melonio (2011), Tunisia spent 203 percent of its per capita GDP in educating each tertiary graduate in 2010, apparently all paid with public funds. While this funding level has declined (from 483 percent) since 2000, it remains more than five times the comparable per-graduate cost reported by OECD countries.

Figure 7.4: Gross Enrollment Rates in Tertiary Schooling



Source: World Development Indicators

Educational Quality: Evidence from International Testing

Alongside universal acclaim for Tunisia's achievements in raising the quantity of schooling among its population, some observers have raised concerns about the quality of schooling being delivered[125]. The most objective source of evidence to examine this issue comes from comparative performance on internationally comparable tests, notably PISA (Programme for International Student Assessment) sponsored by the OECD. The PISA tests, administered to 15-year olds, are designed so as to produce a mean score of 500 and a standard deviation of 100 among students in the OECD countries. Year-to-year variation leads to shifts relative to this target distribution. Table 7.2 shows the actual distribution of scores from each of the PISA tests conducted in 2009, comparing performance among Tunisian students with those in the OECD countries. Average performance among Tunisian students was approximately one standard deviation below that of OECD students in both mathematics and science, and nearly a full standard deviation below in reading. Despite this weakness relative to OECD students Tunisia's performance has improved significantly since 2003, particularly in reading (OECD 2010a).

Table 7.2: Distribution of PISA Scores, 2009

	Reading		Mathematics		Science	
	Tunisia	OECD	Tunisia	OECD	Tunisia	OECD
Mean	404	493	371	496	401	501
Standard Deviation	85	93	78	92	81	94
Score at 95th percentile	538	637	499	643	531	649
% Tunisians above OECD mean	14.5		5.3		10.6	
Tunisia 2003 Mean	375		359		385	

Source: OECD, PISA 2009 Results: What Students Know and Can Do.

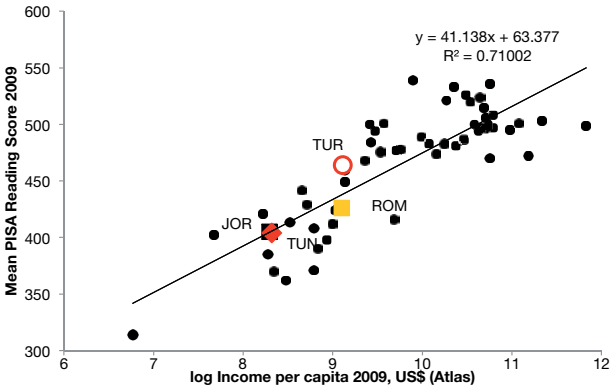
Because cognitive performance is generally correlated internationally with income levels, it is more informative for the purposes of diagnosing whether a skills deficit poses a binding constraint to economic growth to compare Tunisian students' performance to those of more similar groups of countries. Only some of the comparator countries chosen for this study also participated in the PISA tests. In reading, Jordan (405) scored roughly the same as Tunisia, while Romania (424) and Turkey (464) scored significantly higher. Tunisia's poor showing in mathematics placed it significantly below all of its comparators: Jordan (387), Romania (427), and Turkey (445). Similarly, in science Tunisia fell significantly below Jordan (415), Romania (428), and Turkey (454).

Figure 7.5, Figure 7.6, and Figure 7.7 plot average test scores against the (natural) log of per capita income in each country. In each case, there is a strong and significant relationship between test scores and national income. These figures suggest that Tunisia's low scores on reading and science are in line with its income level; only in mathematics is Tunisia's performance conspicuously low. These results suggest that the average quality of schooling in Tunisia is not currently placing a drag on Tunisia's ability to raise its income level—with the possible exception of mathematics. However, the current level of educational quality does not offer much promise for rapid growth based on widespread skill-intensive technological upgrading, should the investment climate produce

the other conditions necessary for such growth. This concern is further reinforced by the very small share of Tunisian students who demonstrate high levels of cognitive skills, particularly in mathematics and science—a group that Hanushek and Woessmann (forthcoming) show to be particularly important for long-term growth. Using statistical techniques to combine data from different international tests, Hanushek and Woessmann estimate that only 0.3 percent of Tunisian students fall into this top-scoring group—a higher proportion than in Morocco (0.1 percent) but far lower than in Turkey (3.9 percent), Romania (4.6 percent), or Malaysia (6.5 percent).

More broadly, the very modest performance of Tunisian 15-year olds on international tests raises serious concerns that many are not acquiring the basic skills needed for further learning—either in further schooling or in job-specific training. If these concerns are valid, they raise some troubling questions regarding the economic and social benefits of sending a high and rising share of Tunisian students on to university, where their education is fully covered through public subsidies. Focusing more strongly on improving learning outcomes at the primary and secondary levels might yield a larger economic and social return than continuing to invest public resources so heavily at the tertiary level[124].

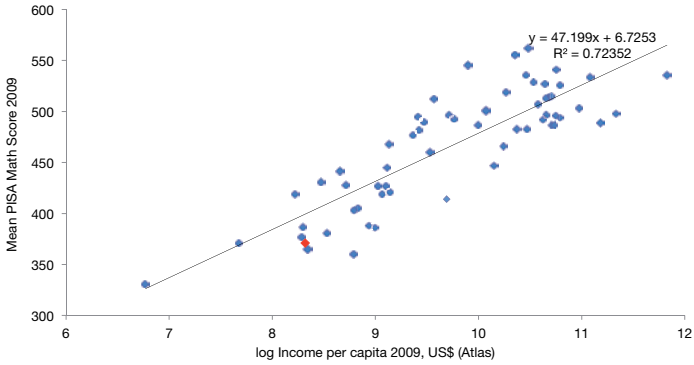
Figure 7.5: Country Scores on PISA Reading Test, 2009 Plotted Against Log of Income per Capita



Source: OECD 2010a and World Development Indicators.

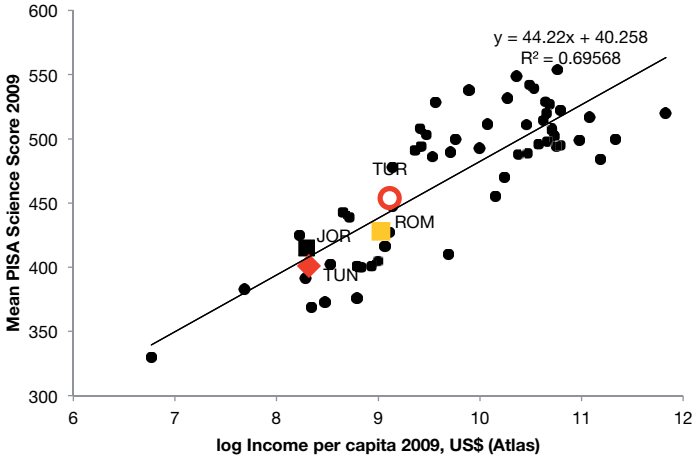
[124] The reform of higher education is a large and complex topic, beyond the scope of this diagnostic. However, it is worth noting a recent study of options for achieving higher quality and greater financial sustainability in higher education in the MENA region (Jaramillo and Melonio, 2011). Regarding Tunisia, this study cites quality/relevance, equity, and the public financing gap as strong concerns, and recommends seeking additional sources of funding (including contributions from families that can afford them), the adoption of mechanisms to link university funding to performance, and better targeting of public subsidies to those students who actually need such subsidies.

Figure 7.6: Country Scores on PISA Math Test. 2009 Plotted Against Log of Income per Capita



Source: OECD 2010a and World Development Indicators.

Figure 7.7: Country Scores on PISA Science Test, 2009 Plotted Against Log of Income per Capita



Source: OECD 2010a and World Development Indicators.

Tunisian Firms' Perspective on Human Capital as a Constraint

In contrast to the preceding international perspective on the quality of schooling in Tunisia, firms actually operating in Tunisia give relatively high marks to the country's educational system and quality of training, compared with firms operating in the comparator countries (Table 7.3). Thus, although on average the quality of education in Tunisia is not high relative to its income level, existing firms are generally able to find the skills and training resources they require.

Further confirmation that firms currently operating in Tunisia view the human capital of their workers with relative satisfaction comes from the 2010 ITCEQ survey on competitiveness (Table 7.4). Among all categories of firms—exclusive exporters, partial exporters, and firms producing for the domestic market—a majority rated the training and qualifications of their workers as at most a minor obstacle to their competitiveness. A somewhat larger proportion (28.7 percent) of the exclusive exporters rated training a "major" or "very serious" obstacle to their competitiveness, but this group was nonetheless a minority. Meanwhile, among all firms, worker skills and training came in fifth place as an obstacle to competitiveness, behind the high cost of finance, the quality of the judiciary, noncompetitive market practices, and high taxation.

The findings reviewed in this section and the previous one make clear that there is considerable room for improvement in Tunisia's education and training system. Tunisian students perform relatively poorly on international tests, while some employers complain that many job applicants are "unemployable." Nevertheless, in the short term at least, the evidence makes it clear that the supply of workers with the skills needed by the market is adequate—suggesting that the economy is generating a relatively low demand for skills.

Table 7.3: World Economic Forum Rankings on Education and Training

	Tunisia	Jordan	Malaysia	Morocco	Romania	Turkey
Primary education (based on quality and enrollment)	31	73	27	98	71	80
Quality of primary education	40	60	21	98	62	100
Higher education and training	44	59	38	98	55	74
Quantity of education	65	60	91	110	33	72
Quality of education	33	52	19	75	69	89
Quality of the educational system	41	51	14	93	90	94
Quality of math and science education	18	44	23	65	45	103
Quality of management schools	31	85	27	51	92	110
Internet access in schools	53	52	36	87	58	64
On-the-job training	34	72	14	58	98	73
Availability of research and training services	34	56	18	49	112	69
Extent of staff training	38	103	9	74	79	86

Source: World Economic Forum 2012

Table 7.4: Firms' Rating of Worker Training and Qualifications as an Obstacle to Their Competitiveness

	Exclusive exporters	Partial exporters	Firms producing for domestic market
Not an obstacle	33.0	32.3	38.1
Minor obstacle	20.0	18.6	15.4
Moderate obstacle	18.4	23.3	20.8
Major obstacle	14.1	15.4	13.8
Very serious obstacle	14.6	10.4	11.9

Source: ITSEQ Survey on Competitiveness, 2010

7.4. Labor Market Outcomes: Employment, Unemployment, and Migration

Tunisia has shown mixed performance in education and training: the quantity of schooling has grown rapidly, but the modest quality of schooling has limited the growth of the skills embodied in the labor force. Nonetheless, from the standpoint of growth diagnostics, the critical question is whether a shortage of skills currently poses a binding constraint to private investment. In addition to the evidence from employer surveys reviewed in the last section, two other types of evidence strongly suggest that a shortage of skills does not currently pose a binding constraint to growth: the high rates of unemployment among more educated Tunisians (especially young Tunisians), regardless of the type of degree they hold, and the high rates of emigration by more educated Tunisians, which suggests that the returns to skill within Tunisia are relatively modest.

Unemployment

As noted in the Overview chapter, the level of unemployment in Tunisia has been high for some time and has remained over 12 percent since at least 2005[125]. Unemployment in Tunisia is also much higher than that of its comparator countries, with the exception of Turkey. In particular, unemployment in Tunisia is far higher than in Malaysia, the fastest-growing country among the comparators, and also much higher than the latest (2007) average among upper-middle income countries.

From the standpoint of assessing whether human capital represents a binding constraint to growth in Tunisia, the pattern of unemployment by education level is particularly relevant. That pattern points to a lack of demand for skills and knowledge. As shown in Table 7.5, the rate of unemployment among workers with a secondary or tertiary education is much higher than among those with no education. Since 2005, the rate of unemployment among those with a primary education has steadily fallen as the rate among those with a tertiary degree has risen sharply, reaching a level more than double that among members of the labor force with only primary schooling. From this pattern alone it is clear that Tunisia's economy is currently not generating sufficient demand for the skills that the educational system is producing. Although as discussed above the

[125] This is the first year for which figures are available based on a new series that conforms to the standard definition of the labor force used by the International Labor Office (ILO).

quality of basic education leaves much to be desired, and the current mix of skills produced by the educational system might not be adequate to support a more technologically advanced growth path, this pattern of unemployment would be reversed if the demand for skills acquired through schooling exceeded the existing supply.

The Annex to this chapter provides further evidence on some of the major trends that account for the growing level of teriary-educated unemployment in Tunisia.

Table 7.5: Unemployment Rate by Level of Education

	2005	2006	2007	2008	2009	2010
No education	6.3	6.4	4.4	4.2	6.1	5.7
Primary	14.3	13.0	11.5	10.6	10.4	9.2
Secondary	13.3	12.5	13.5	13.4	14.0	13.7
Tertiary	14.0	16.9	18.2	20.0	21.9	22.9
Total	12.9	12.5	12.4	12.4	13.3	13.0

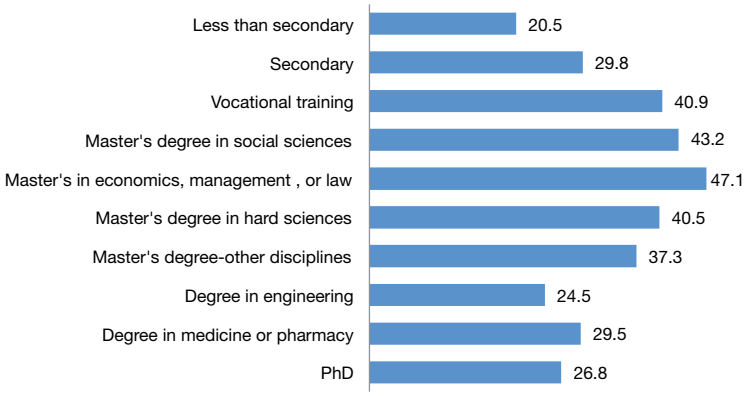
Source: Labor Market Survey 2010.

Youth Unemployment

As is widely recognized, unemployment in Tunisia is heavily concentrated among younger cohorts: in 2009, the rate of unemployment stood at 33.6 percent among youth aged 15-19, 29.9 percent among those aged 20-25, and 25.7 percent among those aged 25-29. The unemployment rate drops to 11.4 percent among those aged 30-34, 5.6 percent among 35-39-year olds, and continues to fall for older cohorts. In principle, these differences in unemployment rates by age cohort could help explain the rising level of unemployment with educational attainment seen above. That is, higher rates of unemployment among the youth population, which is increasingly educated, would raise the tertiary unemployment rate, even if obtaining a tertiary degree would improve a given individual's prospects for employment. However, when one takes into account age group, the patterns remain. A recent study of youth unemployment (Stampini and Verdier-Chouchane 2011) shows that rates of youth unemployment in 2007 were lowest among

those with less than a secondary education, and generally higher for tertiary educated individuals. They are highest among those with Masters' degrees in economics, management, or law (Figure 7.8). Among young people with degrees in engineering, medicine, or pharmacy, or for those with Ph.D.'s youth unemployment rates were somewhat lower and similar to those with secondary degrees. However, these rates are still clearly very high at over 20 percent in each of these categories. Such high unemployment rates among highly educated individuals, regardless of their specific fields of study, indicate that a lack of skills is not currently a binding constraint to Tunisia's economic growth.

Figure 7.8: Youth Unemployment Rates by Educational Level and Degree, 2007



Source: OECD 2010a and World Development Indicators.

These results offer valuable perspective on the topic of "skills mismatch," a common theme in discussions of the educational situation in Tunisia[126]. This phrase lacks precise definition, but suggests a situation in which the educational system is generating an excess supply of some degrees relative to market demand, while producing an undersupply of other degrees valued by the labor market. But the results documented by Stampini and Verdier-Chouchane offer

[126] See, for example, Subrahmanyam (2011).

no support for this interpretation. Rather, the pattern of youth unemployment suggests an excess supply of all identified degrees. Excess supply of some degrees (like Masters in social science) may be particularly high relative to current or likely future demand, but high rates of unemployment prevail among all categories of graduates, including engineers. Moreover, among employees of private sector firms in Tunisia surveyed in 2004, over 70 percent indicated that their job was related to their training or degree, a significantly higher fraction than in Algeria (52 percent) or Morocco (58 percent) (ROSES 2005).

There may be a mismatch in the sense that unemployment of some educated groups is higher than for others. However, the facts offer clear evidence that neither a general shortage of skills nor a skills mismatch currently poses a binding constraint to investment and growth in Tunisia.

Some may consider a "skills mismatch" to refer not to a mismatch between skills provided and skills demanded currently, but rather to a lack of the technical skills that would be required if the economy were to shift to a path of greater technological dynamism and to increasing shares of high-value manufactured exports. The product space literature suggests that such "jumps" to higher technological content seldom occur suddenly, and heavy investment in technical training or in the promotion of higher technology sectors is unlikely to pay off in the form of faster growth unless the underlying constraints in the business climate and labor market are successfully addressed.

On the other hand, if and when Tunisia resolves these identified binding constraints and so better positions itself to climb the technological ladder, it is entirely possible that the demand for technical skills could increase rapidly. In that event, the educational system would likely have difficulty responding to an increased demand for such skills. As Subrahmanyam (2011) observes, 49 percent of Tunisian university students were enrolled in social science, education, and humanities courses in 2003, while 31 percent pursued degrees in scientific, technical and engineering subjects—versus over 40 percent in high-performing East Asian countries. Subrahmanyam argues that this situation has its roots in the primary and secondary schools, where the curriculum

prioritizes language instruction over math and science: Tunisian students spend less than half the time learning science as the global average. And, of course, the same "comparative disadvantage" in math and science learning emerges clearly in the international test scores reviewed above. This weakness cannot be resolved through any "quick fix," but rather depends on a long-term effort to build the capacity to teach math and science, and to ensure that those skills receive proper emphasis in the curriculum beginning in the earliest grades. In short, even though Tunisia is currently unable to productively utilize its existing scientific and technical human capital, attention to this issue could prove highly relevant to Tunisia's economic future over the medium and long term.

Another commonly cited labor aspect of the youth unemployment issue requires further diagnosis. Stampini and Verdier-Chouchane and others have suggested that many university-educated young people deliberately remain unemployed in order to queue for public-sector jobs, which offer greater job security and relatively high pay[127,128,129]. If true, this would indicate the presence of structural rigidities in the labor market. Segmentation between formal and informal labor markets and between the public and private sectors is in part a symptom of a disequilibrium introduced by wage rigidities and other labor market regulation. If individuals deliberately forego jobs in the private sector, this must be due in substantial part to low private-sector salaries and in turn to low demand for educated workers[130].

[127] Stampini and Verdier-Chouchane cite work by the World Bank (2004a) and Boughzala (2004) which point to the rigidity of regulations restricting the termination of work contracts, as well as the conclusion of the World Bank (2004b) that public sector wage policies create a bias in favor of the public sector that works to the disadvantage of the private sector.

[128] For example, a recent presentation (Tunisian National Institute of Statistics and World Bank, 2012) finds that tertiary-educated workers in the public sector command a 32 percent salary premium over their private sector counterparts, while nearly 90 percent are covered by indefinite-period contracts, compared with fewer than 30 percent of workers in the private sector. This does not fully explain why individuals would opt to remain unemployed rather than gaining private sector experience, while they continue to apply for public sector positions, however. Indeed, formal positions in the private sector also carry a high degree of job security.

[129] Different calculations reach different conclusions on the relative level of pay in the public and private sectors in Tunisia, depending on the set of jobs compared. As noted in the preceding footnote, one set of calculations finds tertiary-educated workers in the public sector to be substantially better paid than their private sector counterparts. However, calculations performed as background for this study found higher wages in the profit-making sector—including large public enterprises operated on private-sector lines, notably in oil, electricity, and telecommunications—than among those in the non-market sector, including most government employees.

[130] There may be a cultural issue or systematic preferences surrounding the type of work or status associated with public sector work as well. While this preference may be stronger in Tunisia than in many countries, it is a preference exhibited in many countries, especially developing countries. Yet in spite of these preferences, private sectors are able to grow and attract workers. If preferences for public sector work are stronger in Tunisia, in fact, public sector wages could fall to levels somewhat below those of private sector wages for an equivalently skilled worker.

One contribution of this diagnostic approach could be to help inform the discussion underway in Tunisia regarding the perceived skills mismatch and high unemployment of educated youth. Potential educational reforms and other government efforts will be more effective if informed by the key facts presented: educational quality appears to be an issue, and possibly a greater issue for growth and employment in the future than is a "skills mismatch" in the sense of under-investment in skills which are currently in high demand. High rates of unemployment of educated labor mainly result from low demand for educated labor, and cannot be solved by increasing the supply of educated labor to the economy. Chapter 5 of this report, on "micro risks and distortions," discusses these issues in further depth.

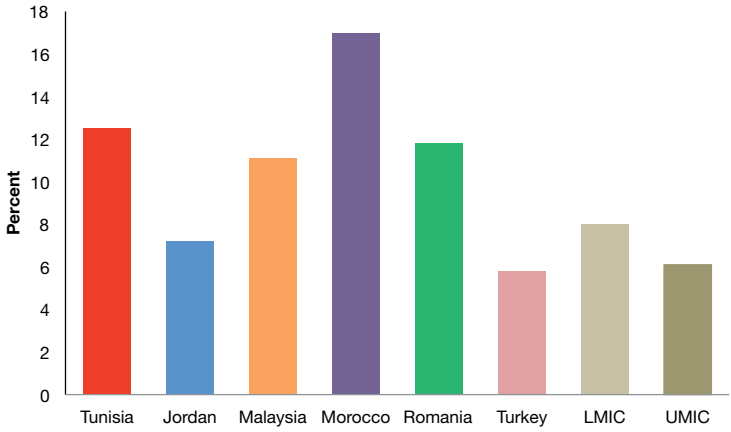
Migration

Figure 7.9 shows estimates of the percentage of the tertiary-educated population of Tunisia and its comparators who were living abroad in 2000[131]. As seen in the figure, the share of tertiary-educated Tunisians living abroad was relatively high, particularly compared with upper middle income countries as a group. Although these data are older than would be desirable, they reinforce the view that Tunisia's economy has not been creating sufficient demand for tertiary educated labor to absorb the supply that already exists[132]. The high prevalence of educated emigration casts further doubt on the likelihood that a shortage of workforce skills poses a binding constraint to growth in Tunisia.

[131] To be more precise, the figures shown in the chart show the "stock of emigrants ages 25 and older, residing in an OECD country other than that in which they were born, with at least one year of tertiary education as a percentage of the population age 25 and older with a tertiary education."

[132] Subrahmanyam (2011) similarly attributes the high level of skilled emigration to the failure of the domestic labor market to productively employ its highly skilled workers, noting that emigration offers an attractive alternative to the "brain waste" of being unemployed or doing low-skilled jobs, while also reducing pressure on the labor market.

Figure 7.9: Share of Tertiary-Educated Population Living in OECD Countries, 2000



Source: World Bank, Migration and Remittances Factbook 2011.

Further evidence of low returns to schooling

In principle, it would be helpful to examine the market returns to additional schooling in Tunisia, using Jacob Mincer's approach that measures the impact of years of schooling, years of labor-market experience, and other relevant variables on labor-market earnings (Mincer 1974). A finding that (1) the returns to an additional year of schooling are especially high compared with other countries, and (2) the returns to schooling rise and fall over the business cycle, would provide support for the conclusion that a shortage of human capital poses a binding constraint to growth. Unfortunately, the data required to conduct such a test are not publicly available and could not be accessed in time for completion of this report[133].

In the absence of the data needed for a full estimate of Mincerian returns to schooling, a simplified calculation was

[133] The most recent identified estimate of the Mincerian return to schooling based on economy-wide data found high private returns to secondary and tertiary schooling, but this estimate applied to labor market conditions in 1980 and is therefore of limited relevance to current conditions (Psacharopoulos and Patrinos, 2002). A more recent study by Maurel and Beuran (2005) used wage level categories showed that the years of education are associated with increasing wages, but precise returns cannot be computed from these estimates, and they are also dated relative to current labor market conditions.

produced for this study, comparing for each economic sector the average earnings of employees who had completed different levels of schooling. On average, employed tertiary graduates earn about 8 percent more than their colleagues with a secondary education, for each additional year of school needed to earn their degree; this premium has fallen slightly since the mid-1980s. However, adjusting this premium for the much higher rate of unemployment facing tertiary graduates, including the long spell of initial unemployment endured by the average graduate, implies a "return to tertiary schooling" far below 8 percent per year, and even farther below the average 10 percent wage increment reported by Psacharopoulos and Patrinos (2002) among non-OECD countries, 2002. This calculation reinforces the conclusion that the returns to tertiary schooling in particular are quite low in Tunisia[134].

7.5. Conclusion

The evidence reviewed in this chapter provides consistent support for the conclusion that a shortage of human capital does not currently represent a binding constraint to growth in Tunisia. In particular, the high rates of unemployment affecting more educated Tunisians across specialties provides strong evidence that the Tunisian economy does not generate sufficient demand for educated labor to absorb the available supply. Firms report that the quality of education and training are satisfactory relative to their current needs. Unemployment is a major economic issue, but there is no evidence that it results from a lack of an educated workforce or indeed a skills mismatch. Rather, high unemployment appears to be due to a lack of growth and other policy issues driving firms' employment decisions, as discussed in Chapter 5. This conclusion should not be misunderstood to justify complacency regarding the need for continuing improvements in Tunisia's educational and training sector. On the contrary, the evidence points to the need for ongoing, though more cost-effective and equitable efforts to improve educational quality particularly at the primary and secondary levels and especially for young people attending schools in rural areas and smaller towns (See Annex 7.6.1). Further examination of the quality, equity, cost-effectiveness, and market relevance of the system for delivering tertiary and vocational training may also be warranted in the context of fiscal and other reforms. Yet the payoff

[134] Similar calculations point to a somewhat higher wage premium for completing secondary school – 10.5-11 percent per year.

to such efforts normally takes many years to emerge, while the impact of economic reforms that boost the demand for skills can be felt much more quickly (Hanushek and Woessmann, cited). Thus the key to employing existing and future cohorts of workers appears to lie in alleviating other constraints to economic growth and employment.

7.6. Annex to Chapter 7

Annex 7.6.1: Educational Inequality and Further Diagnostics on Tunisia's Educational Outcomes

PISA test results allow one to compare the overall degree of inequality in learning outcomes internationally as well. In fact, this inequality is relatively low in Tunisia, at least as it pertains to reading. The total variance in reading scores among Tunisian students is 84 percent of that in the OECD countries (set through normalization at 100), slightly higher than that fraction for Turkey (77 percent), but lower than for Romania (94 percent) and Jordan (95 percent).

Tunisia also stands out for the fact that differences in students' socio-economic background statistically account for a relatively small share of the variance in their test scores. An analysis by the OECD (2010b) suggests that if the gap between the socioeconomic background of students in Tunisia and that among students in the OECD countries were eliminated, Tunisia's test score in reading would rise to 426 (from 404). This impact is much higher in all of the comparator countries.

Perhaps most strikingly, to the extent that test scores differ among students in Tunisia, those differences appear to be most strongly linked to location—in particular, to a pattern of poor learning outcomes in smaller towns that reinforce prevailing socioeconomic disadvantage of those smaller towns. Table 7.6 compares test scores and socio-economic status among students in five sizes of communities: villages with fewer than 3,000 residents; small towns (3,000-15,000 residents); mid-sized communities (15,000-100,000 residents); cities (100,000-1 million), and large cities with populations above 1 million.

Because only a small share of students live in the smallest communities, the table focuses on comparing the second-smallest category to the largest, over 1 million (which in Tunisia includes only Tunis.) As the right-hand column of the table shows, the gap between average socioeconomic conditions in these two locations is especially large in Tunisia compared both with the OECD countries and with Jordan, Romania, and Turkey. Similarly, the gap between scores in those two locations is exceptionally large

in Tunisia—much larger than in the OECD or in any of the three comparator countries. Moreover, after test scores are adjusted for socioeconomic status, half or more of the raw difference in test scores disappears for the OECD countries and the three comparators. In contrast, only about a quarter of the locational test score gap is erased in Tunisia, leaving a very large gap in school performance between small towns and Tunis.

This finding suggests that schools in small towns in Tunisia perform very badly compared with those in Tunis, even taking into account the fact that they serve poorer students. Small-town schools are underperforming in equipping their students with the cognitive skills needed to gain access to more promising job opportunities, if such opportunities emerge.

Table 7.6: Differences in Reading Scores across Location

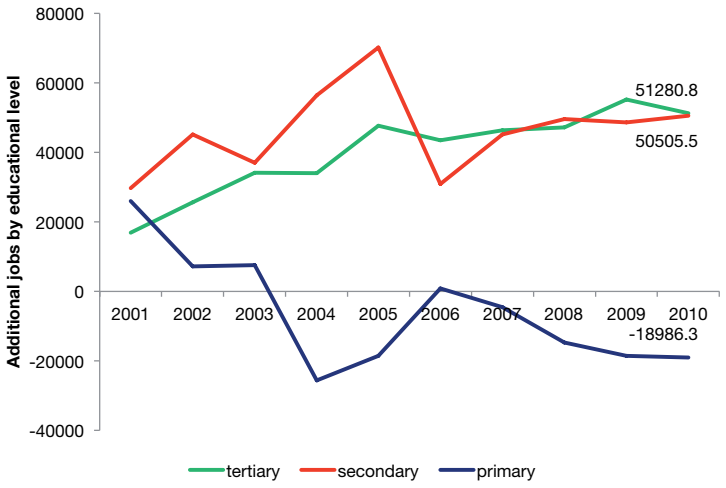
		Size of Town or City					
		< 3000	3000-15000	15000 - 100000	100000 - 1 million	> 1 million	Difference, 3000-15000 to > 1 million
Tunisia	Percent of students	6.2	30.2	44.8	14.9	4.1	
	Socio-economic status	-2.09	-1.67	-1.06	-0.62	-0.03	1.64
	Average reading score	365	389	401	437	480	91
	Reading score adjusted for socio-economic status	378	396	399	428	463	67
OECD	Percent of students	9.9	21.6	34.1	23.1	16.0	
	Socio-economic status	-0.30	-0.16	0.01	0.19	0.10	0.26
	Average reading score	467	482	495	509	503	21
	Reading score adjusted for socio-economic status	477	487	495	502	497	10
Turkey	Percent of students	3.0	9.7	28.1	27.9	31.3	
	Socio-economic status	-2.50	-1.53	-1.19	-1.00	-1.05	0.48
	Average reading score	360	443	467	481	464	21
	Reading score adjusted for socio-economic status	397	453	468	477	461	8

		Size of Town or City					
		< 3000	3000-15000	15000 - 100000	100000 - 1 million	> 1 million	Difference, 3000-15000 to > 1 million
Jordan	Percent of students	6.1	26.8	26.8	18.6	21.6	
	Socio-economic status	-1.01	-0.81	-0.62	-0.44	-0.19	0.62
	Average reading score	363	396	406	413	426	30
	Reading score adjusted for socio-economic status	373	402	407	410	417	15
Romania	Percent of students	9.2	15.5	38.3	28.0	9.1	
	Socio-economic status	-0.97	-0.55	-0.33	-0.19	0.08	0.63
	Average reading score	371	419	423	443	438	19
	Reading score adjusted for socio-economic status	392	426	423	438	424	-2

Annex 7.6.2: Trends Affecting the Growth of Tertiary Unemployment in Tunisia

A full examination of the Tunisian labor market is beyond the scope of this study. Nevertheless, several key trends underlying one notable aspect of that market—the high and growing prevalence of unemployment among tertiary graduates—deserve particular attention. Figure 7.10 shows that the Tunisian economy has been gradually shifting its employment mix toward greater reliance on secondary- and tertiary-educated workers in recent years. The number of new jobs requiring primary schooling or less has undergone a corresponding sharp decline. Calculations show that demand for tertiary-educated workers has been growing about 1.9 times as fast as real GDP in recent years. Nevertheless, the extraordinarily rapid growth in the numbers of tertiary graduates has far outstripped the economy's ability to absorb them. As a result of this imbalance between supply and demand for tertiary schooling, the share of unemployed adults with a tertiary degree rose from 8.7 percent in 2000 to 21.9 percent in 2010 (Jaramillo and Melonio, 2011).

Figure 7.10: Added jobs by educational level, Tunisia 2001-2010



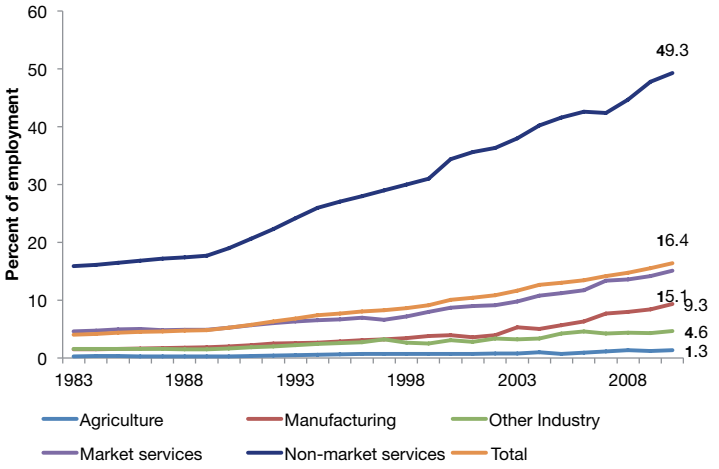
Source: ITCEQ

Figure 7.11 points to wide differences in the demand for tertiary workers by sector, based on the share of each sector's employees with a tertiary degree. While the tertiary share of employment in each sector has been growing over time, only non-market services—mainly government—generates a high demand for graduates. By comparison, manufacturing and other industry generate much lower levels of demand for graduates. Market services—the largest and fastest-growing segment of the economy—is closer to the overall average in terms of relative demand for tertiary graduates.

The data in Table 7.7 suggest that there are substantial differences in the reliance of firms on tertiary-educated workers, depending on the nature of their ownership. Public enterprises have by far the highest share of tertiary-educated employees, while fully foreign-owned private firms have by far the smallest share. Joint ventures and wholly Tunisian-owned firms closely resemble one another in this measure, each employing more than twice the share of tertiary-educated workers as do foreign-owned firms. This table reinforces the picture of the "offshore" sector as one that mainly employs

relatively low-skilled workers. Of course, there is no reason why this pattern could not change in the future if Tunisia offered a better environment for foreign investors seeking to produce goods and services with higher value added.

Figure 7.11: Share of tertiary-educated workers by sector



Source: ITCEQ

Table 7.7: Tertiary Share of Employment by Ownership of Firm

	Public	Private, Foreign-Owned	Private Joint Venture	Private Locally Owned
1998	17.2	4.9	12.3	11.7
1999	19.8	4.3	12.8	12.0
2000	21.7	4.4	10.3	11.4
2001	18.8	4.5	11.9	12.1
2002	19.5	5.0	14.0	13.3
2003	19.4	4.9	13.6	12.9
2004	22.0	6.1	14.0	15.2
2005	23.3	6.0	13.9	13.9

Source: ITCEQ

Finally, the data show significant change in the mix of degrees produced by the Tunisian higher education system over the past decade, in the general direction of those degrees more highly demanded by the market (as revealed by lower unemployment rates). Between 2000-2001 and 2008-2009, the number of graduates with degrees in science and technology more than doubled from 70,700 to 165,000, while the number with degrees in law, management, and economics—the degree with the highest unemployment rate—stabilized at just under 100,000 per year. While a step in the right direction, this still meant that the system was producing large numbers of graduates each year with very bleak employment prospects. Meanwhile, over the same period the number of graduates in humanities and letters continued to grow steadily, from 58,000 to 97,000. Under the system used to assign entering students to academic fields, this was the track reserved for the least well-prepared students. This pattern suggests continuing grounds for concern regarding what Tunisia is getting for its very heavy investment in tertiary education.

8. Is a Lack of Adequate Infrastructure a Binding Constraint to Growth in Tunisia?

Infrastructure is a key factor of production, which is complementary to physical and human capital, labor, and innovation. Thus, a lack of adequate infrastructure can significantly reduce the social (economic) returns to capital, and thereby the private returns to investment [135]. Therefore, inadequate provision of infrastructure would reduce investment levels and economic activity, potentially stalling growth. This chapter analyzes the available empirical indicators in four infrastructure areas relevant to economic activity: Transport, Energy, Water and Sanitation, and Communication. It finds that Tunisia's infrastructure is generally in line with comparator countries. Overall, current demand for infrastructure services is being met, and the shadow price of infrastructure does not appear to be high. There may remain opportunities to make important economically viable investments in Tunisia's infrastructure, particularly in the transport sector, particularly over the medium to long run as demand expands. However, a lack of infrastructure today cannot be considered as a binding constraint to Tunisia's economic growth.

8.1. General Quality and Supply of Infrastructure

Among the potential obstacles to their businesses, Tunisian enterprises rank infrastructure quality far below issues such as the high cost of finance, taxation, regulation, and other issues in the micro policy environment, as shown in the 2010 enterprise survey conducted by ITCEQ (Table 8.1).

Table 8.1: Percentage of Enterprises Identifying Infrastructure as an Obstacle, 2010

Infrastructure: (0=not an obstacle 1=minor obstacle 2=moderate obstacle 3= major obstacle 4=very severe obstacle)					
	0	1	2	3	4
Communication	31.5	16.5	29.5	15.5	7
Power/Electricity	44	12.4	19.2	14.7	9.8
Water	65.8	12.3	10.4	7.5	4
Sanitation	61.3	10.1	10	8	10.6
Transport	41.5	11.5	19.7	15.3	12.1

Source: ITCEQ 2010

[135] The relative roles of the public and private sectors in providing infrastructure can vary, depending on the type of infrastructure in question and on a country's stage of development. In general, public investment is most dominant in supporting the construction of road networks, because of the need for roads to connect different parts of a country and the inefficiency of charging tolls on most roads. Many other types of infrastructure lend themselves to private investment or to various kinds of public-private partnerships. Nevertheless, most forms of infrastructure involve a natural monopoly, requiring effective regulation to ensure appropriate pricing. More generally, the large scale and interdependence of many infrastructure projects creates an important coordinating and facilitating role for the public sector.

In addition, the World Economic Forum has ranked Tunisia 43rd out of 139 countries in the overall quality of infrastructure. Although ranked lower than Malaysia, Turkey, and Jordan, it is ranked significantly higher than Morocco and Romania in this area.

Table 8.2: Rankings in Overall Quality of Infrastructure

Country	Rank
Tunisia	43
Jordan	41
Malaysia	23
Morocco	66
Romania	139
Turkey	34

Source: World Economic Forum report 2012

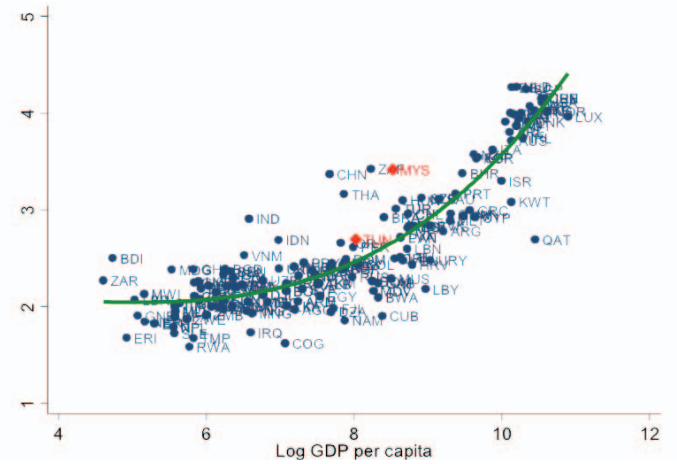
8.2. Transportation Infrastructure

Transport infrastructure—in particular ports and roads—is critical for the growth of a trade-oriented economy like Tunisia's. The 9th (1997-2001) and 10th (2002-2006) Development Plans called for the establishment of an efficient transport system, with the aim of better integrating the country into the global economy. Special efforts were made to modernize the road network, enhance development of industrial zones, and upgrade ports and airports. Infrastructure investment accounted for 30 percent and 32.5 percent of total investments (public and private) under these plans. As a result, overall transport infrastructure appears adequate for Tunisia to meet its current needs.

Figure 8.1 displays the correlation between real income level per capita (2005-2010) and an index of the quality of trade and transport related infrastructure, with a regression line indicating the expected level of transport infrastructure at a given level of economic development. Tunisia is located on the predicted regression line, suggesting that Tunisia has attained an adequate level of infrastructure performance for its level of development. However Tunisia's level of infrastructure pales in comparison to that of

Malaysia, Thailand, South Africa, or China. Table 8.3 shows a more detailed comparison of the quality of Tunisia's air, port, road, and railway transport networks with those of Egypt, Malaysia, Morocco, and Turkey, as well as volume indicators on ports and railways. As shown, Tunisia rates second—behind Malaysia—in all areas within this group.

Figure 8.1: Trade and Transport Infrastructure Quality 2010



Source: WDI 2011.

Table 8.3: Transport Network in Tunisia and Comparators

	Air transport	Port		Roads		Railways	
	Quality	Quality	Container port traffic*	Quality	Paved Road in %	Quality	Goods transported **
Tunisia	5.6	5.0	418 722	5.1	68	4	2 073
Egypt	5.5	4.2	6 709 053	3.7	78	3	3 840
Malaysia	6.0	5.7	15 843 486	5.7	75	5	1 384
Morocco	4.7	4.4	1 222 000	3.4	52	4	4 111
Turkey	5.5	4.2	4 521 713	4.8	89	3	9 681

Source: World Development Indicators 2012 and Global competitiveness report 2012. All data are from 2011 or latest available year.
Notes: *TEU=20 foot equivalent units; **million ton-km

Roads

Roads dominate land transportation of passengers and goods, accounting for more than 80 percent of the country's cargo traffic (Oxford Business Group 2007)[136]. In recent years Tunisia's road network has improved noticeably, particularly in terms of quality at the national and regional levels (see Figure 8.2). Today, essentially all national roads, 72 percent of regional roads, and 46 percent of local roads are paved with a 7 meter width, signaling very high quality for a country of Tunisia's income level. Tunisia's share of paved roads (75 percent of all roads) is on par with the Arab world generally, and substantially exceeds the average (45 percent) among middle income countries (WDI 2008).

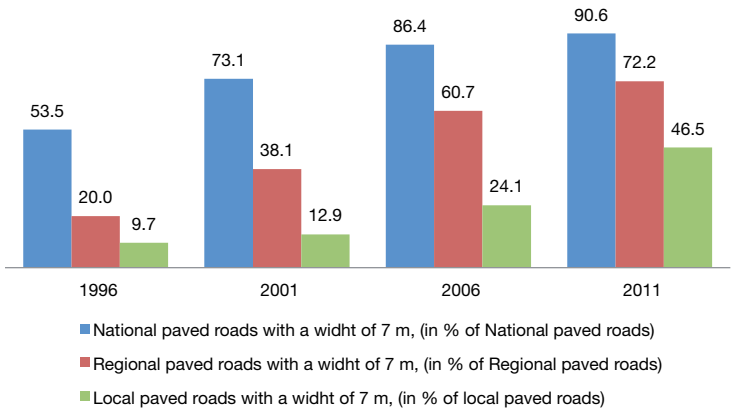
Given the spatial pattern of economic activity and the inevitable tradeoffs within public expenditure categories, Tunisia's road network has been designed primarily to provide quality connections between major internal markets and metropolitan centers, and to serve export markets. Tunisia possesses a long coastline where most of the population and transport facilities are concentrated. More recently, however, Tunisia has also embarked on raising its regional east-west highways as part of an east-to-west Maghreb axis in order to facilitate better regional integration[137].

There is a great deal of concern within Tunisia today about the fortunes of economically lagging regions, including the role of regional disparities in infrastructure. However, it is difficult without more data to say whether there is an inordinate or economically unjustified lack of transport links connecting inland areas to each other or to major economic centers, or whether any such lack is the result of under-investment in roads relative to their economic benefits. In comparative terms, Tunisia's road density per hectare of arable land is lower than any of the comparator countries, while its per capita road density is lower than that of Malaysia and Turkey, but slightly higher than that of Morocco and Jordan, which have more similar geography. The best indicators of a high shadow price of roads would be (a) evidence of high levels of traffic and poor road conditions along a substantial fraction of tertiary or secondary roads serving those areas; or (b) origin destination studies showing large volumes of traffic

[136] Tunisia's existing rail system is primarily used for transport of phosphates, and large investments in rail have generally not been deemed economically viable, given the small size of the country, concentration of economic activity in the north, and declining demand relative to road transport (World Bank 1990).
[137] Unlocking North Africa's Potential through Regional Integration, AfDB 2012.

with significant route deviations that add substantially to the time costs of transport. Such traffic data are typically the best available indicator of demand, and high potential savings in time costs or vehicle operating costs are the best indicator of inadequate supply. As shown in Figure 8.4, traffic volumes in urban areas are high, and drop the further one travels from urban centers. Unfortunately, the map does not provide further disaggregation of traffic levels between 0 and 21,000 vehicles per day, so the more remote roads could have 50 vehicles or 20,000—a large range that tells us nothing about the economic viability of road network improvements in lesser served regions of the country[138]. The only other available indicator of demand is vehicle density per kilometer of road. This indicator is slightly higher than is typical for Tunisia's level of urbanization, as shown in Figure 8.5, but is within range of the expected value. The most urbanized countries, such as Singapore, Hong Kong, Monaco, and Kuwait, are outliers with very high vehicle counts per kilometer.

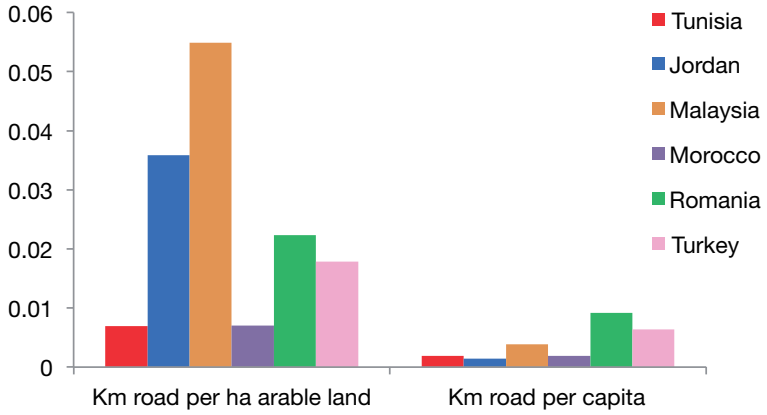
Figure 8.2: Quality of Roads, 1996-2011



Source: Ministry of Transport- Tunisia 2011

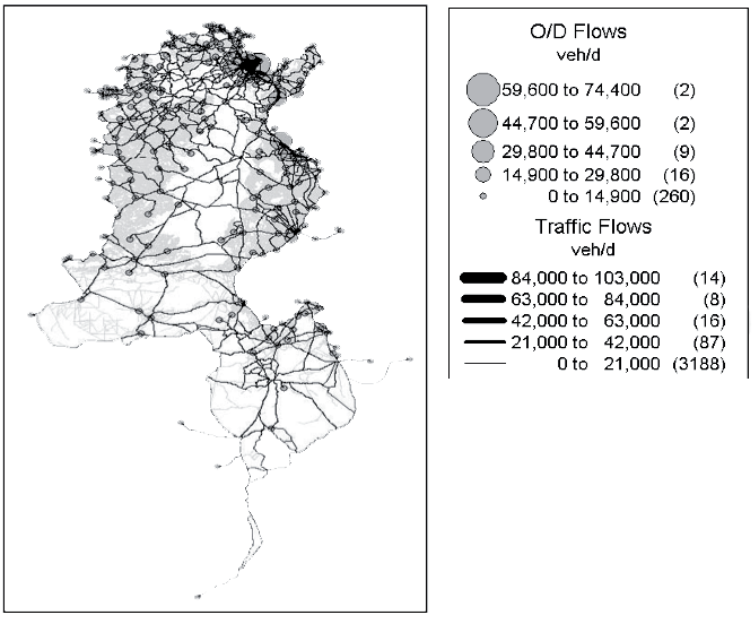
[138] For feeder roads projects included in the 4th World Bank road sector loan, traffic was under 1,000 vehicles/day (according to counts carried out by the technical studies consultancy firms) (World Bank 1990).

Figure 8.3: Road Density in Tunisia and Comparators



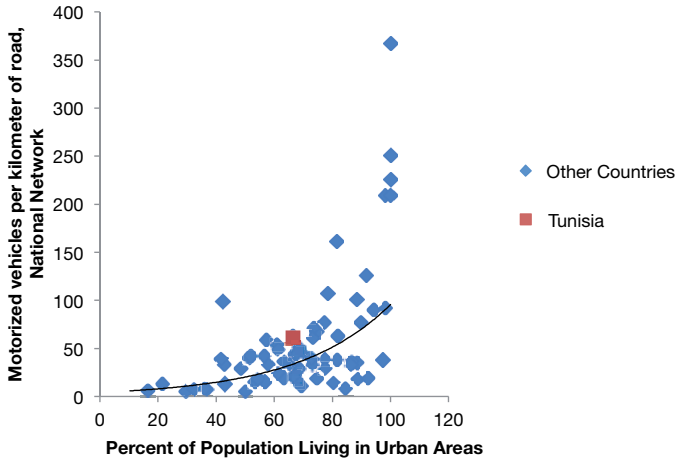
Source: World Development Indicators, 2011

Figure 8.4: Map of Tunisia's Traffic Density



Source: World Development Indicators, 2011

Figure 8.5: Vehicle Density versus Urbanization, 2008



Source: World Development Indicators, 2011

Ports

Tunisia has seven ports, which handle more than 95 percent of its international trade. The main port is the Port of Rades (see Annex to Chapter 8), which handles 400,000 containers per annum. Thanks to its geographical location in the central Mediterranean, Tunisia has the potential to become a strategic location for transshipment between parts of the EU, the Maghreb and some Sahel countries. Its ports currently service some destinations in Algeria, in part due to the relatively low cost of domestic transport (Table 8.4), which in turn reflect Tunisia's generous fuel subsidies (4 percent of GDP in 2011)[139].

Despite Tunisia's favorable logistics performance (Table 8.4) and transport infrastructure quality within the expected range (Figure 8.1), the costs of maritime container transport to and from Tunisia are relatively high compared with countries like Malaysia, China and Egypt (Table 8.4). However, neither waiting times due to inadequate capacity or

[139] Unlocking North Africa's Potential through Regional Integration-AfDB, 2012

infrastructure quality appear to explain Tunisia's higher costs, since Tunisia does relatively well on those indicators. Tunisia's rating in the timeliness of shipments is higher than its regional comparators but just slightly lower than that of China, Thailand, and Malaysia. Rather, costs of shipping to and from Tunisia are raised by a lower degree of connectivity and inability to achieve economies of scale. Tunisia's liner shipping connectivity index[140] is 7.14 out of 100, compared to 77.6, 35.6 and 29.8 respectively in Malaysia, Turkey and Morocco[141]. Similarly, Tunisia has the lowest container port traffic among the comparators and cannot service large vessels.

The available data indicate that Tunisian ports are sufficient meet its needs at current trading levels and serving its predominant trade routes with Europe. However, to the extent that Tunisia diversifies its maritime trading partners and expands its trading volumes in the future, its existing port infrastructure may not be adequate.

In view of the potential advantages of deep water port facilities, including greater connectivity, in early 2007 the government launched a 1.4 billion-euro deep water port project at Enfidha, which will be 17 meters deep and able to accommodate 80,000-ton vessels. The goal of this project is to capture a flow of 3 million additional containers per annum by 2020[142]. Some experts, however, consider the proposed site sub-optimal for a transshipment facility and propose Bizerte as a better location[143].

[140] LSCI is generated from five components: (a) the number of ships; (b) the total container-carrying capacity of those ships; (c) the maximum vessel size; (d) the number of services; and (e) the number of companies that deploy container ships on services from and to a country's ports. The data are derived from Containerisation International Online. The index is generated as follows: For each of the five components, a country's value is divided by the maximum value of that component in 2004, and for each country, the average of the five components is calculated. This average is then divided by the maximum average for 2004 and multiplied by 100. In this way, the index generates the value 100 for the country with the highest average index of the five components in 2004.

[141] World Trade indicators, 2011

[142] Ports, Logistics, and Trade in Africa, AfDB publication

[143] A map of North Africa's coast suggests that Bizerte is better situated relative to the shipping connectivity line between Tangier (Morocco) and Port Said (Egypt) than is Enfidha.

Table 8.4: Logistics Performance Index, Tunisia and Comparators

Country	LPI - Timeliness of shipments	LPI - Domestic transportation costs	LPI - Trackability of shipments	DB - Cost to export (US$ per container)	DB - Cost to import (US$ per container)
Year	2006-09 Latest				
Tunisia	3.6	3.2	2.6	783	858
Algeria	2.8	3.2	2.3	1,248	1,428
China	3.9	3.0	3.6	500	545
Egypt	3.3	2.8	2.6	737	823
Indonesia	3.5	2.8	2.8	704	660
Malaysia	3.9	3.1	3.3	450	450
Morocco	2.9	2.4	2.0	700	1,000
Thailand	3.7	3.2	3.4	625	795
Vietnam	3.4	3.3	3.1	756	940

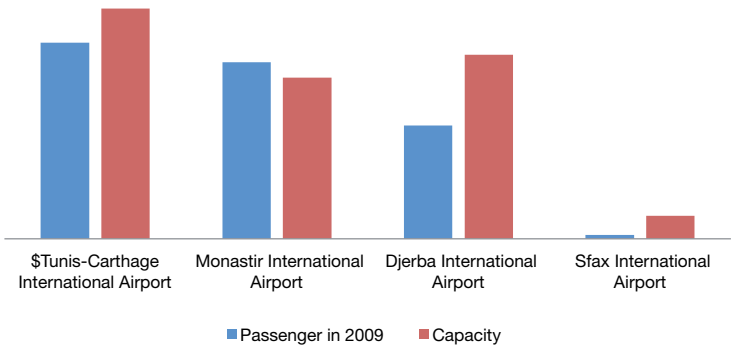
Source: World Trade Indicators, 2011

Airport infrastructure

Efficient air transport is important for Tunisia, given the role of tourism as an engine of growth and a principal source of hard currency. Tunis Carthage Airport is the largest among Tunisia's six international airports. Figure 8.6 shows that Tunisia's principal airports have not yet reached capacity, with the one exception of Monastir. In addition, an airport at Enfidha (100 km from Tunis) was recently constructed and can absorb any increase in passenger traffic. As there is currently no indication of excess demand for airport infrastructure services, such infrastructure does not pose a constraint to economic growth[144].

[144] http://www.air-journal.fr/2012-04-19-ue-tunisie-les-discussions-sur -lopen-sky-vont-reprendre-547929.html

Figure 8.6: Passengers Carried and Capacity of Most Important Airports, 2009



Source: Office de l'aviation civile et des aéroports OACA

8.3. Energy

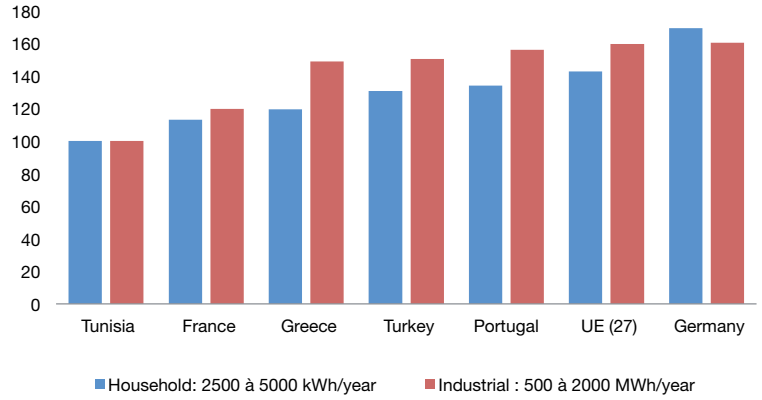
It is well established that adequate provision of reliable, accessible and affordable energy is critical to support economic growth. Cross-country evidence is provided by Serven and Calderon (2004), among others; Abid and Sebri (2012) highlight the causal relationship between energy production and growth in Tunisia.

Since the early 1990's, Tunisia has witnessed sustained growth of 5 percent per annum in power demand, broadly in line with its rate of economic growth. The main consumer of electricity in Tunisia over the period 1990-2009 was the industrial sector, at 60 percent of the total, while the tertiary and agricultural sectors together accounted for 35 percent in 2009. Only 5 percent of electricity is consumed by households.

Tunisia's national development strategies have placed a clear focus on ensuring adequate power distribution at reasonable cost, including the replacement of hydrocarbons by natural gas as a means to reduce the nation's energy bill and increase Tunisia's energy independence. Partly because of generous subsidies, the consumer price of energy is low in Tunisia, with little or no difference in price between industrial and household uses. Moreover, connection rates are very

high, with more than 99 percent of households connected to the grid[145]. According to the latest Doing Business report, procedural obstacles to obtaining electricity are acceptable compared to those prevailing in Morocco, Romania, Malaysia and Turkey. However, except for the case of Morocco it is relatively more expensive to be connected in Tunisia than in these countries.

Figure 8.7: International Comparison of Average Price for Electricity (before tax)



Source: Rapport de la STEG 2010
Note : Data apply to the first quarter of 2010 ; they are normalized to an index with Tunisia=100.

Table 8.5: Doing Business Getting Electricity Rankings, 2012

Economy	Getting Electricity - Rank	Getting Electricity - Procedures (number)	Getting Electricity - Time (days)	Getting Electricity - Cost (percent of income per capita)
Tunisia	45	4	65	894.1
Jordan	36	5	43	274.2
Malaysia	59	6	51	95.5
Morocco	107	5	71	2588.6
Romania	165	7	223	556.9
Turkey	72	5	70	624.4

Source: Doing Business 2012, World Bank

[145] INS infrastructure report 2010.

Despite the efforts deployed to expand connections to all regions[146] and to lower costs, power infrastructure was still considered as major constraint to economic activity by 25 percent of firms in 2011 (ITCEQ survey). Nonetheless, this obstacle was ranked 15th in terms of severity, and thus there is no indication that its shadow price is high[147].

We conduct the second test of a binding constraint by testing whether there is a significant correlation between the (lagged) supply of electricity and economic growth in Tunisia over the period 1980-2009. Such correlations can be interpreted as "causal" in some circumstances, but are not conclusive[148]. The results provide another indication that a lack of electricity is not a binding constraint: they indicate that GDP growth increases the production and consumption of electricity in the following year—presumably through increased demand—but that Tunisia does not experience shortages in electricity that would cause dips in growth. There was no indication that changes in the production of electricity directly impacted growth over this period[149].

8.4. Water and Sanitation

Tunisia has invested in the provision of access to drinking water and sanitation as part of its poverty reduction and regional development objectives, while also ensuring service is adequate for productive purposes. Thanks to various water development strategies implemented by the government, regional inequities in water provision have been reduced. Access to drinking water reached 100 percent in urban areas in 2011 and 93.5 percent in rural areas, connection rates which are close to those observed in OECD countries and very high compared with the average for the North Africa region[150]. Moreover, with less than 15 percent of firms considering water and sanitation infrastructure as an obstacle to their business activity (2010

[146] Tunisia Strategy paper 2012-2012- AfDB

[147] here are no data available on firms' attempts to generate their own back-up power in Tunisia, but it is not commonly observed.

[148] In particular, we use Granger causality tests. Additional restrictive assumptions regarding the determinants of the independent variables are needed to interpret this as direct causality. To estimate the cointegration of series on infrastructure with the growth series, we must first test for stationarity. These tests are explained in the Annex to this chapter. With the data available, we cannot reject the null of a unit root, which suggests that Granger causality tests can be done. However, given that the Dickey-Fuller test used has weak power, and the number of observations is very low, there is a strong possibility of a Type II error which would invalidate the results. See methods and results in Annex 8A.

[149] Granger causality tests found an impact of growth on electricity production but not the reverse.

[150] WDI 2011

ITCEQ enterprise survey), there is no indication that water and sanitation infrastructure is a binding economic growth in Tunisia.

Gaps in access remain, with poorer regions enjoying lower connection rates (Table 8.6).

8.5. Communications Infrastructure

Because investment in telecommunications infrastructure had been restricted until recently to a publicly owned company, Tunisie Telecom, it is possible that inadequate public investment in communication infrastructure has constrained investment, at least in the past. The results of statistical tests of whether telephone lines caused economic growth and vice versa over the period 1980-2009 suggest that expansion of fixed telephone lines in a given year may have contributed to growth in the subsequent year. But they also indicate that growth stimulates further expansion of telephone lines in the subsequent year, perhaps through demand-side effects (see the Annex to this chapter).

Table 8.6: Water, Sanitation, and Poverty Indicators by Region

Region	Percentage of households with access to drinking water*	Percentage of households with access to sanitation facility*	Headcount Poverty Rate (Percent) **
Grand Tunis	98.7	94.6	6.9
North East	85	93.3	9.6
North West	63.5	92.5	11.1
Center East	92.3	81.1	5.4
Center West	63.4	79.9	29.4
South East	89.8	52.3	11.4
South West	90.9	70.2	14.7

Source: INS
Notes: * 2011 estimates; ** Ministry of Social Affairs estimate 2011.

Since liberalization of the communication sector and privatization of Tunisie Telecom, communications services are provided in part by the private sector. Thus, supply side constraints should not be as restrictive; private companies would normally invest and expand service in response to demand. As such, indicators of cellular telephone and internet use may be considered proxies for demand, rather than supply constraints. Today, Tunisia's communications infrastructure appears to be adequate to support business development and investment. Access to telecommunication services is broadly in line with that prevailing in comparator countries. Trends are similar to those seen in other transition economies, with high level of mobile cellular subscriptions and relatively low level of fixed telephone subscriptions (African Economic Outlook 2009). Table 8.7shows that Tunisia's fixed line telephone subscription rate is on par with that of Morocco, while cellular subscription rates exceed those of Turkey and Morocco. The same table shows that the percent of Tunisians using the internet is relatively low at 37 percent. Seventy percent of businesses use the internet, but a much lower fraction of these, 30.5 percent, have a web presence, and only 14.5 percent routinely use the internet. Yet as shown in Table 8.7, Tunisia has more internet bandwidth per capita than Morocco, but less than the other comparator countries. Thus demand appears somewhat low considering the quality of communication infrastructure, the level of education of the Tunisian workforce, and the importance of the internet in the global economy. To some extent this may have been due to the negative investment climate under the prior regime, where a successful business would have less incentive to publicize itself widely, and possibly due to the more limited benefits of the internet in a society with restrictions on the free flow of information and ideas. Nonetheless, it is somewhat likely that Tunisia will transition quickly to a greater level of internet use post-revolution for both business and other purposes.

Table 8.7: Telecommunication: Basic Indicators, 2011

Country	Fixed telephone subscriptions per 100 inhabitants	Mobile cellular subscriptions per 100 inhabitants	Percentage of Individuals using the Internet	Internet bandwidth, kb/s/capita[151]
Malaysia	16	119	56	6.4
Morocco	12	100	49	2.4
Tunisia	12	106	37	4.9
Turkey	22	85	40	7.6

Source: International Telecommunication Union (ITU), 2012

8.6. Conclusion

Based on the indicators available, it appears that Tunisia has adequate infrastructure to meet its current needs. There will still be a need to invest and expand in keeping with the economy's broader growth trends, and a higher level of investment may be economically justified in transport infrastructure—roads and ports in particular—to provide access to under-served areas and to enhance Tunisia's trade links. Nonetheless, given that supply side indicators appear on par with other countries at Tunisia's level of development, and businesses rate these issues low in their ranking of obstacles, there is no evidence that infrastructure is a binding constraint in Tunisia.

[151] Internet bandwidth is measured as the sum of capacity of all Internet exchanges offering international bandwidth. The data were rescaled for the sake of readability. The capacity is measured in kilobits per second (kb/s) per capita.

8.7. Annex to Chapter 8

Annex 8.7.1: Testing the Stationarity of Infrastructure and Economic Growth in Tunisia

To perform time series econometric analysis, one first needs to test if these economic series are stationary—that is, that they do not have a unit root in an autoregressive model. For this purpose, we have used an augmented Dickey-Fuller unit root test without a trend to check the stationarity of GDP per capita in PPP (constant 2005 international $), electricity production (kWh) and telephone lines (per 100 people); over the 1980-2009 period. The results indicate that GDP per capita, electricity production, and telephone lines are not stationary. The number of lags used when running ADF tests corresponds to 0 for GDP per capita, electricity production; and 1 for the telephone lines.

Table 8.A.1: Results of Augmented Dickey-Fuller (ADF) unit root test

---------- Interpolated Dickey-Fuller ---------				
	Test Statistic	Critical Value		
		1 percent	5 percent	10 percent
Log_gdppc	1.956	-3.723	-2.989	-2.625
MacKinnon	approximate p-value for Z(t) = 0.9986			
Log_power	-2.157	-3.723	-2.989	-2.625
MacKinnon	approximate p-value for Z(t) = 0.2224			
Log_tel	-1.951	-3.730	-2.992	-2.626
MacKinnon	approximate p-value for Z(t) = 0.3086			

Note: Log_gdppc: logarithm of GDP per capita in PPP (constant 2005 international $); Log_power: Logarithm of Electricity production, in kWh; Log_tel: Logarithm of telephone lines per 100 people.

As it is not possible to reject the null of a unit root, OLS using these series will produce invalid estimates. Nonetheless, Granger causality tests can be used to test whether infrastructure causes economic growth in Tunisia and vice versa. Shown below are Wald tests of Granger Causality between real income per capita and electricity production and telephones, respectively.

The results shown in Table 8.A.2 indicate that growth in real income per capita has led to increased production of electricity, whereas increased electricity production has not led to increased incomes. Table 8.A.3 shows that causation between telephone lines and income per capita has run in both directions, in each case with a one-year lag: on the one hand, increased installation of telephone lines has led to an increase in per capita income in the following year, while an increase in per capita income has caused an increase in telephone lines the following year.

Table 8.A.2: Results of Causality Tests: Economic Growth and Electricity Production

Wald tests of Granger Causality				
Equation	**Excluded**	**chi²**	**df**	**Prob > chi²**
Log_gdppc	Log_power	6.9307	2	0.031
Log_gdppc	ALL	6.9307	2	0.031
Log_power	Log_gdppc	0.9052	2	0.636
Log_power	ALL	0.9052	2	0.636

Note: variables defined as in table above.
The number of lags used when running ADF tests is 0 for both GDP per capita and electricity production

Table 8.A.3: Results of Causality Tests: Economic Growth and Telephones

Wald tests of Granger Causality				
Equation	**Excluded**	**chi²**	**df**	**Prob > chi²**
Log_gdppc	Log_tel	4.7199	1	0.030
Log_gdppc	ALL	4.7199	1	0.030
Log_power	Log_gdppc	16.124	1	0.000
Log_power	ALL	16.124	1	0.000

Note: variables defined as in Table 8.A.1 above
The number of lags used when running ADF tests is 0 for GDP per capita and 1 for telephone lines

Annex 8.7.2: Port of Rades: Limits and Recommendations

The port of Rades was created in 1985 in order to meet changing traffic of general cargo from the port of Tunis (Goulette). The port of Rades is an important part of the national transport chain through its specialization in container traffic and rolling units (essentially trailer traffic). It provides 28% of total traffic, 88% of the tonnage of containerized goods, 76% of the tonnage of goods loaded on rolling units, 91% of container traffic in TEUs, 79% of the traffic rolling units and 24% of traffic ships registered in all Tunisian commercial ports.

The port of Rades was originally designed for roll-on/roll-off cargo. With a draft not exceeding 10 m, the port is unsuitable for second generation of containership. This feature is quite disadvantageous and restricts the port of Rades to benefit from its geographical position to become a transshipment port, and generates fragmentation flows of goods that do not allow owners to generate economies of scale. Ship-owners are therefore obliged to raise their rates for traffic originating from or destined for the port of Rades. A congestion problem may also be inherent for the same tonnage of goods because of the low number of berths (the number of berths need to be significantly higher than that of a deepwater port).

Minimizing costs related to shipping in order to improve the competitiveness of Tunisian products in international markets will inevitably involve an extension of the Port of Rades and the launch of a major transshipment port in the country that will be positioned as a major hub in the region.

Source: Étude portant sur la performance du port de Rades (2011), Comete Engineering

9. Does a lack of natural capital represent a binding constraint to Tunisia's growth?

9.1. Introduction

Natural resource limitations or unfavorable geographical attributes can hinder rapid economic growth by impeding viable investment opportunities. Tunisia lacks many of the resource advantages of its neighbors, but its economy is not constrained by any natural disadvantages. Land and water resources are sufficient for current needs, though they may require strong conservation efforts to meet growing demand. And while Tunisia does not have abundant mineral wealth, the country is strongly advantaged by its geographic location, which gives exporters privileged access to major economies.

Tunisia is the smallest and northernmost positioned country in the Maghreb. It is situated on the Mediterranean Sea, and is flanked by Libya to the east and Algeria to the west. The country has 1,148 km of coastline, which is nearly equivalent in length to its land borders. Due to its north-south extent, there is great environmental diversity within the country. The northern areas are more temperate and fertile, while the central plain tends to be hot and dry, leading into the semi-arid south that merges into the Sahara. As expected, the more hospitable northern areas are more densely populated.

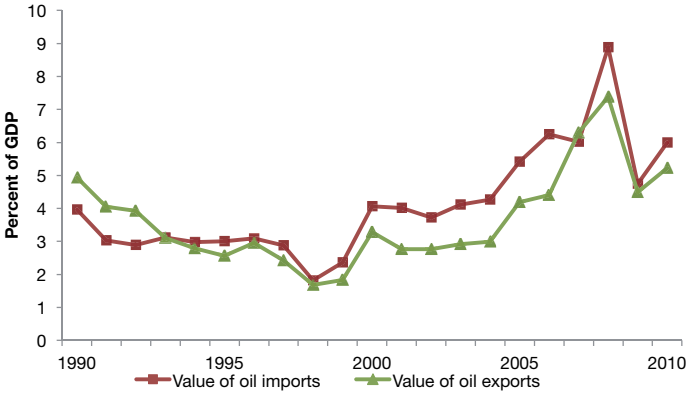
9.2. Mineral Wealth

Tunisia is not endowed with great mineral wealth, especially when compared to its two large, oil-exporting neighbors. Its domestic oil reserves are not large enough to meet internal demand, making the economy a net importer of oil. However, the net value of oil imported is not particularly great (see Figure 9.1) when compared to the other oil importers in the comparators group. As a percentage of GDP, Tunisia's oil imports are similar to those of Romania and far less than Morocco and Jordan, which in 2010 spent 8.7% and 12.5% of GDP on oil, respectively (see Figure 9.2).

While Tunisia does not have deep oil reserves, it is one of the two largest exporters in the world of phosphates (along with Morocco). The mineral, which is used mainly to produce fertilizer, accounts for around 80 percent of mining exports from the country. As

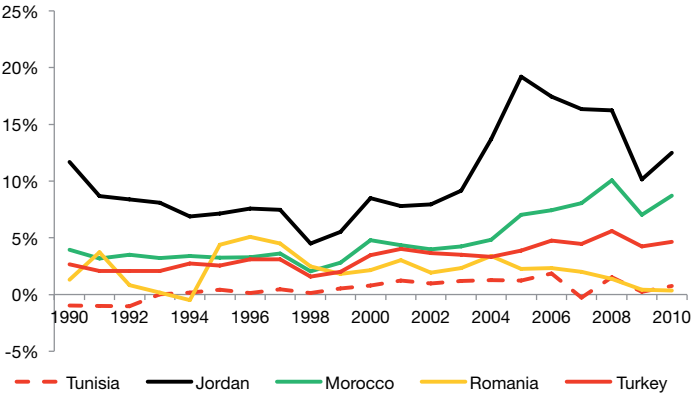
Figure 9.3 shows, mining products accounted for over three percent of GDP and over nine percent of exports in 2010. Mineral products peaked in 2008, with USD 2.6 billion in exports, but over the past 15 years they have averaged 2.8 percent of GDP. The extractive industry contributes a substantial amount to the country's accounts and provides an important source of foreign exchange, but it does not dominate or distort the economy.

Figure 9.1: Tunisian Oil Imports and Exports



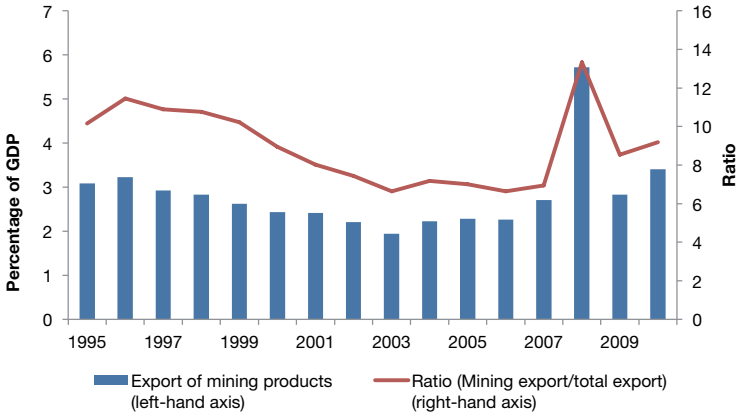
Source: World Economic Outlook Database/ WDI

Figure 9.2: Net Oil Imports as a Percentage of GDP



Source: World Economic Outlook Database/ WDI

Figure 9.3: Tunisian Mining Exports

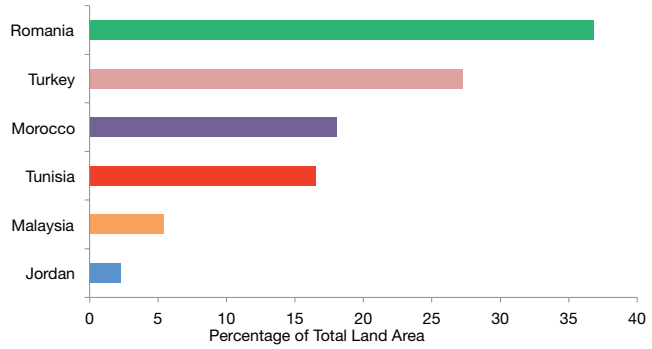


Source: National Institute of Statistics

9.3. Land Resources

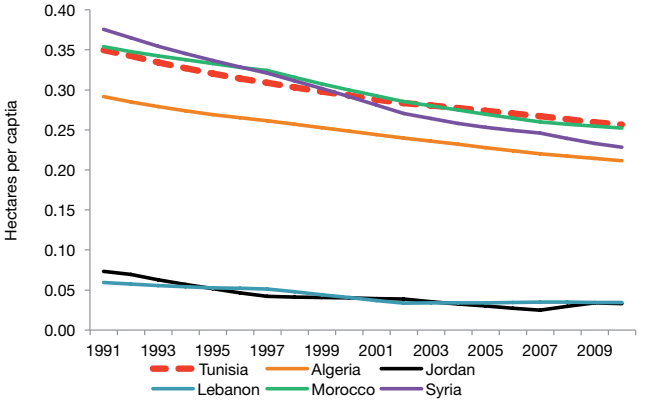
Tunisia's surface area is 16.3 million hectares, of which only 16.5 percent is arable land. Against the benchmark countries, the proportion of arable land in Tunisia is only greater than Malaysia and Jordan (see Figure 9.4). However, when normalized by the size of the population, Tunisia is relatively abundant in arable land with 258 hectares per 1000 inhabitants (Romania has the most arable land per person with 409 hectares/1000 inhabitants). It is prudent also to compare Tunisia's land resource to other countries in the region. As Figure 9.5 shows, Tunisia has a very high amount of arable land per capita for its geographic location. Though the proportion is decreasing due to population growth, Tunisia's lower birthrate has made the decline slower than in the comparator countries.

Figure 9.4: Arable Land as a Percentage of Total Land Area



Source: AQUASTAT database - Food and Agriculture Organization

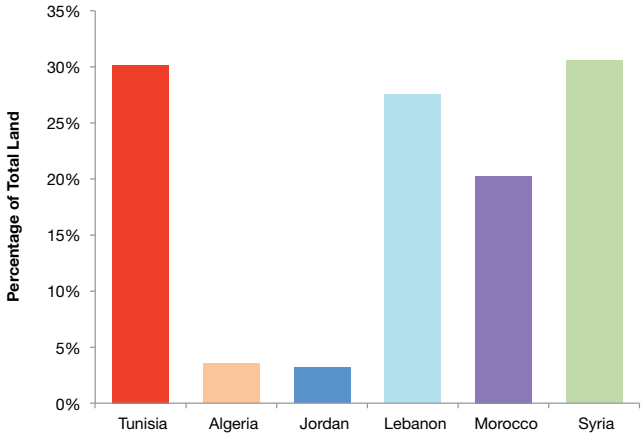
Figure 9.5: Arable Land Per Capita



Source: AQUASTAT database - Food and Agriculture Organization

Agriculture is an important component of the Tunisian economy, representing over eight percent of GDP in 2009. Over 30 percent of total land area is under cultivation, which is one of the highest proportions in the region (see Figure 9.7). However, government subsidies on certain food products and price floors on others have led to perverse incentives for farmers. The land is not being used to its full capacity due to these distortions. Regardless, the abundance of land per capita compensates for the low productivity, and land as resource is not a binding constraint to the economy.9.4.

Figure 9.6: Cultivated Land as a Percentage of Total Land Area



Source: AQUASTAT database - Food and Agriculture Organization

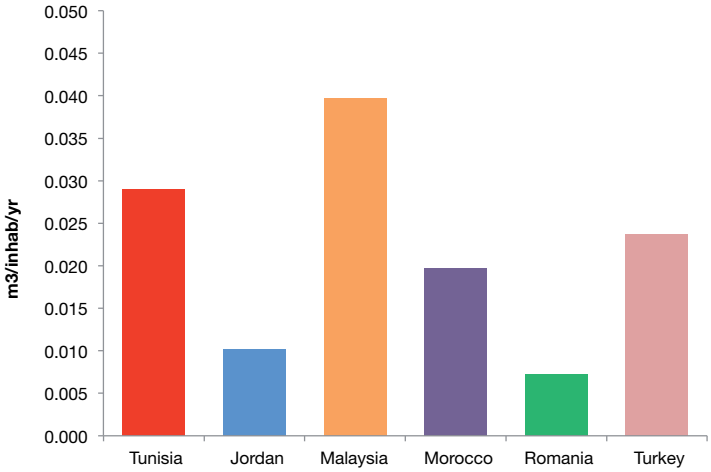
9.4. Water Resources

Tunisia is endowed with 4.8 km3 of annually renewable water resources, which is not an abundant supply for its population. Over half of the internal water supply comes from surface water, while around 44 percent is found in underground aquifers. On a per capita basis, Tunisia's water supply, at 404.7 m3 per inhabitant per year, is similar to many countries in the region—though much lower than the benchmark countries other than Jordan (see Figure 9.8).

Currently, the population is using about half of the renewable supply per year, with over three-quarters of this usage going towards agriculture. While the country is far from the limits of available resources, an overreliance on ground water is becoming an issue. Farmers are finding it easier and cheaper to tap into aquifers than to channel water in from more sustainable sources. The number of surface wells doubled to 120,000 between 1980 and 2000, and this proliferation has continued in the past decade due to falling borehole costs.

The extraction of water from underground sources is outpacing the rate at which the wells can be replenished. Seventy-one of Tunisia's estimated 273 aquifers are currently being overexploited, mainly by the agricultural sector. On average, water is being extracted at 146 percent of the rate at which it can be replaced.

Figure 9.7: Internal Renewable Water Resources (per capita)



Source: AQUASTAT database - Food and Agriculture Organization

Table 9.1: Renewable Water Resources Used

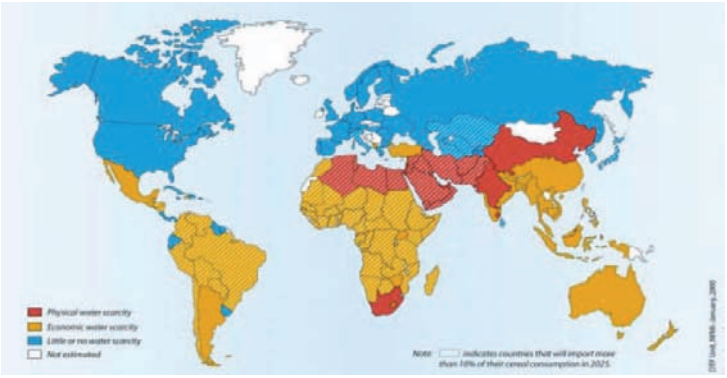
	Tunisia		Morocco		Algeria	
	Mobilizable Resources	Resources Used	Mobilizable Resources	Resources Used	Mobilizable Resources	Resources Used
Total Volume (billion m3/year)	4.8	2.4	23	19.2	18.9	6.4
Of which surface water	56%	22%	83%	86%	65%	48%
Of which ground water	44%	78%	17%	14%	35%	52%
Population (m)	10.7		32.3		35.4	

Source: Agricultural Use of Groundwater and Management Initiatives in the Maghreb (2011), AfDB

As Table 9.1 shows, Tunisians are relying disproportionately on ground water, even though surface sources are more abundant. This overdependence on ground sources does not reflect the typical reality in the region. Though Morocco and Algeria both have smaller aquifer reserves, their usage of water sources is more in line with their distribution of available resources. The trend in Tunisia is unsustainable in the long run, and could potential become a constraint unless dealt with appropriately.

A warmer and more varied climate is expected in Tunisia by 2030. Projections of water availability over the next decade portend a dire situation for Tunisia. The International Water Management Institute predicts that the country (and most of the region) will suffer from physical water scarcity by 2025. Though water is not an obstacle to growth at present, the trend in water usage suggests that it could become a constraint in the near future. With the potential vulnerability to water, Tunisia's water policy is expected to shift towards better control of this resource, as well as improved distribution to users.

Figure 9.8: Projected Water Scarcity in 2025



Source: International Water Management Institute

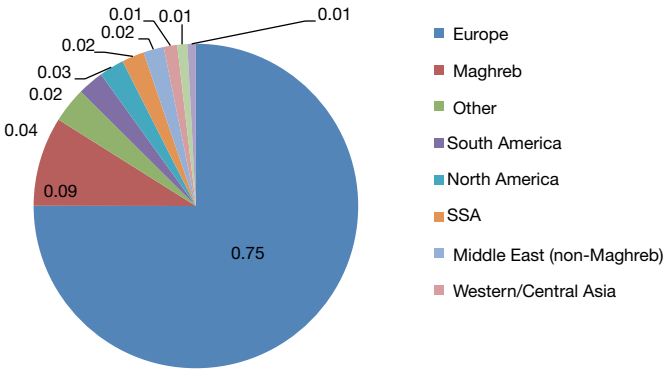
These expected changes in climate and water resources will have a significant impact on agriculture and related industries. Other sectors and/or activities are also particularly vulnerable to climate change, namely health, tourism and the coastal strip where a considerable part of the country's socio-economic development activities are concentrated. Climate change will result in increased pressure on natural resources and force changes in major socio-economic activities. In 2050, the impact is expected to be close to TND 102 million (0.3% of GDP). This warrants effective environmental mainstreaming in management and governance

9.5. Distance to Markets

Tunisia's greatest natural advantage is its geographical position. The smallest country of the Maghreb is in the center of North Africa, and just across the Mediterranean Sea from European markets. Given that Tunisia's domestic market is only 10 million people, trade with surrounding economies has been the main engine of growth for the country. The importance of this proximity is evidenced in the large share of national income Tunisia derives from exports (in 2011, it was nearly 40 percent of GDP).

In addition to proximity, the relative size of neighboring markets makes them a boon to Tunisia's economic growth. For example, Europe produced 32 percent of world GDP in 2010, a share that dwarfs that of many other regions. This combination of economic size and proximity has given Europe the lion's share of Tunisian exports (Figure 9.9).

Figure 9.9: Tunisian Export Destinations by Region, 2010



Source: UNCTAD

The gravity model of trade that best fits empirical trends predicts that the level of trade between two countries will be proportional to the product of their GDPs and inversely proportional to the square of the distance between them (Anderson, 2011). A simple gravity model, computed using data from Tunisia's 20 largest export markets in 2010, confirms the advantage conferred on Tunisian exporters by their proximity to very large export markets, including the EU countries with which Tunisia has free trade relationships. Table 9.2 shows the results of this model for selected countries[152].

Several points emerge from this simple model. First, France and Morocco, and to a lesser extent Libya, absorb a much larger share of Tunisia's exports than might be expected, while Italy and Spain absorb much less. This finding provides indirect evidence of the impact of language commonalities and previous commercial ties on the pattern of Tunisia's trade. It also suggests that Tunisia may have under-exploited some opportunities to trade with Italy and Spain, which the model identifies as natural trading partners. Meanwhile, the total export share of the seven EU countries included among the top 20 is slightly lower (by 7 percent) than the total predicted by the model. This finding runs counter to the common assertion that Tunisia is excessively dependent on

[152] The trade shares shown in this table are calculated on the basis of Tunisia's merchandise exports to all markets. In contrast, the numbers in the right-hand column compare the gravity model's predicted market share for each of Tunisia's top 20 export markets with its actual market share of Tunisia's total exports to those 20 countries. This total equaled 92.6 percent of Tunisia's total merchandise exports in 2010

European export markets. Finally, the gravity model suggests the need for caution in assessing claims that Tunisia is missing a large opportunity due to the relatively small share of exports sold to Sub-Saharan Africa. Most Sub Saharan African markets remain relatively small, and are in fact relatively distant from Tunisia when measured by marine shipping routes and overland transport costs rather than by the distance measures used in the simple gravity model (that is, the shortest curvilinear distances between two capitals).

Table 9.2: Export Market Shares versus Predictions of Gravity Model, 2010

	Exports (million US$)	Rank	GDP (billion US$)	Distance between Capitals (km)	2010 Export Share Compared with Prediction of Gravity Model
France	4,717.3	1	2,549.0	1,484	3.22
Italy	3,264.9	2	2,043.6	602	0.46
Germany	1,388.1	3	3,258.9	1,766	1.05
United Kingdom	824.8	4	2,251.9	1,826	0.96
Libya	732.3	5	80.4	506	1.84
Spain	637.1	6	1,383.3	1,272	0.59
Algeria	474.7	7	161.9	635	0.93
USA	388.5	8	14,447.1	7,358	1.15
Netherlands	360.1	9	774.2	1,760	1.14
Belgium	320.3	10	466.7	1,629	1.44
Morocco	232.0	13	90.8	1,573	4.99
Egypt	92.3	16	218.8	2,092	1.46

Source: UNCTAD/ World Economic Outlook Database/ WDI

In addition, this calculation demonstrates that although the Maghreb is generally considered among the least economically integrated regions in the world, Tunisia has been fairly successful in exploiting opportunities to export within the North African region. It exports more than predicted by the model to Morocco, Egypt, and Libya, albeit slightly less than predicted to Algeria.

9.6. Conclusion

Tunisia is a well-positioned country with many natural advantages to aid its eco-

nomic growth. While not as mineral-rich as its neighbors, Tunisia has deep phosphate deposits that make it one of world's largest producers. In terms of land and water, the resources are abundant enough to meet the country's current needs. However, overexploitation of aquifers may pose a future scarcity problem as usage outpaces replenishment. Additionally, climate and environmental changes will have significant impacts on the availability of water in the foreseeable future. Tunisia's natural capital at present does not pose an obstacle to viable investment or growth. In fact, its geographic position is a boon to its economy as trade with proximate partners continues to fuel growth.

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