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Using Lebanon's Large Capital Inflows to Foster Sustainable Long-Term Growth

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1 LBP	=	US$0.000664
US$1	=	1507.5 LBP

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ABBREVIATIONS AND ACRONYMS

ACRLI	Arab Center for Development of the Rule of Law and Integrity
BdL	Banque du Liban – Central Bank of Lebanon
BSE	Beirut Stock Exchange
CD	Certificate of Deposits
CDR	Council for Development and Reconstruction
CPS	Country Partnership Strategy
EdL	Electricité du Liban
EDP	Education Development Project
ESDP	Education Sector Development Plan
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
ICA	Investment Climate Assessment
IMF	International Monetary Fund
IPA	Intellectual Protection authority
LBP	Lebanese Pound
MEHE	Ministry of Education and Higher Education
MENA	Middle East and North Africa
MoF	Ministry of Finance
MTEF	Medium- Term Expenditure Framework
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
OLG	Overlapping Generations
PFM	Public Finance Management
R&A	Research and Adaptation
R&D	Research and Development
RWA	Regional Water Authority
SME	Small and Medium-Sized Enterprise
TIMSS	Trends in International Math and Science Studies
TSA	Treasury Single Account
GoL	Government of Lebanon

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REPUBLIC OF LEBANON
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Table of Contents

List of Tables ii

List of Boxes ii

List of Charts iii

EXECUTIVE SUMMARY v

INTRODUCTION 1

CHAPTER 1: FOREIGN FINANCIAL INFLOWS - SHORT TERM MANAGEMENT AND LONG TERM IMPLICATIONS 3

Section 1: Determinants of Foreign Financial Inflows 3

Section 2: Benefits and Costs of Foreign Inflows and Impact on Economic Activity 12

Section 3: Monetary Policy, Regulation, and Macroeconomic Management by the Central Bank of Lebanon - BdL 24

Section 4: Improving the Management and Use of Foreign Financial Inflows - Policy Choices and Long-term Implications 26

CHAPTER 2: STRUCTURAL REFORMS, FINANCIAL FLOWS AND LONG-TERM GROWTH IN LEBANON 31

Section 1: Potential Constraints on Lebanon's Growth Prospects 31

Section 2: An Analytical Framework 47

Section 3: Policy Experiments 51

CHAPTER 3: PROMOTING STRUCTURAL REFORMS-POLICY ADVICE AND OPERATIONAL FRAMEWORK 59

Section 1: Investment in Infrastructure 59

Section 2: Improved Efficiency of Public Expenditure 66

Section 3: Enforcement of Property Rights 70

Section 4: The Growth Payoff of Different Reform Packages 71

Section 5: Conclusion 74

APPENDIX - A **80**

APPENDIX - B **82**

I. ANALYTICAL FRAMEWORK **82**

1. Households 83

2. Production of Final Goods and Services 83

3. Production of Intermediate Inputs 85
4. Human Capital Accumulation..... 86
5. Research and Adaptation (R&A) Sector..... 86
6. Government..... 88
7. Market-Clearing Conditions 89
8. The Economy's Long run Growth Rate..... 90
II. CALIBRATION..... 90
REFERENCES..... 94

List of Tables

Table 1 Remittances and Net Foreign Inflows – Share to GDP..... 3
Table 2 Relation between Gross Foreign Inflows and Banks Deposits over 1990-2010..... 5
Table 3 Unit Root Test – H0: Variable Has a Unit Root 5
Table 4 Johansen Co-integration Test - H0: x and y Are Not Co-integrated..... 5
Table 5 Granger Causality Test– H0: x Does Not Cause y..... 5
Table 6 Determinants of Foreign Financial Inflows 6
Table 7 Determinants of the Dynamic of Deposits between 1971 and 2010 10
Table 8 Unit Root Test – H0: Variable Has a Unit Root 10
Table 9 Johansen Co-integration Test - H0: x and y Are Not Co-integrated..... 10
Table 10 Granger Causality Test– H0: x Does Not Cause y 10
Table 11 Share of Imports of Machinery to GDP, Imports and FDI 16
Table 12 Relation between Banks' Deposits and Growth 23
Table 13 Unit Root Test – H0: Variable Has a Unit Root..... 23
Table 14 Johansen Co-integration Test - H0: x and y Are Not Co-integrated 23
Table 15 Granger Causality Test– H0: x Does Not Cause y 24
Table 16 Sector Distributions of Banks Lending to the Private Sector..... 29
Table 17 Employing Workers..... 44
Table 18 Primary Reason for Difficulty in Finding Workers..... 44
Table 19 Doing Business Indicators, 2009 and 2010 47
Table 20 Indicators for Enforcing Contracts, Lebanon and Comparators 47
Table 21 Matrix of Policy Objectives and Actions ..... .77
Table 22 Calibrated Parameter Values – Benchmark Case..... 93

List of Boxes

Box 1 Estimating the Relation between Foreign Financial Inflows and Deposits in the Banking Sector..... 5
Box 2 Oil Wealth, Policy Choices and Impact on Foreign inflows and Deposits Base 9
Box 3 Benefits and Costs of Capital Inflows and Financial Openness..... 13
Box 4 The Development of Non-Traded Sectors in Lebanon: Importance and Different Views 18
Box 5 The Channel of Banking Intermediation and the Fluctuations in Economic Activity . 23

Box 6 The Weakness of the Capital and Financial Market and the Absence of a Structural Response to the Distortive Impact of Foreign Inflows 26
Box 7 Resource Booms, Capital Inflows and Dutch Disease – Policy Options and the Role of Financial Market Development as a Structural Response to the Distortive Impact of Foreign Inflows 27
Box 8 Foreign Direct Investment and Growth: Recent Evidence 34
Box 9 How Infrastructure Affects Growth 36
Box 10 Lebanon's Infrastructure Constraints 38
Box 11 Economic and Fiscal Impacts of Introducing Broadband Networks and Services in Lebanon 40
Box 12 From Privilege to Competition: Key Messages 43
Box 13 Linking Financial Flows, Structural Reforms, and Growth: A Formal Model 48
Box 14 Budget Neutrality, Public Spending and Private-Public Partnerships: A Dilemma? 52

List of Charts

Chart 1 Ratio to GDP of Gross Foreign Financial Inflows (left-hand axis) and of Change in Deposits (right-hand axis) 4
Chart 2 Ratio to GDP of Change in Deposits (left-hand axis) and Oil Prices in Constant US$ (right-hand axis) 7
Chart 3 Ratio to GDP of Change in Deposits (left-hand axis) and Nominal Spread between Average Rate on Deposits and Libor-3 Months (right- hand axis) 7
Chart 4 Ratio to GDP of Change in Deposits (left-hand axis) and of Gross Foreign Currencies Reserves (right- hand axis) 8
Chart 5 Ratio to GDP of Change in Deposits (left- hand axis) and Periods of War and High Insecurity (right- hand axis) 8
Chart 6 Output Gap (left-hand axis) and Foreign Financial Inflows (right-hand axis)- Expressed in Natural Logarithm 14
Chart 7 Average Value of a Real Estate Transaction (right-hand axis) and Value of Compensated Checks (left-hand axis) 16
Chart 8 Gross Financial Inflows and Indicators of Real Estate and Construction (Index, Base Year 2000 =100) 17
Chart 9 Debt to GDP (left-hand axis) and Deficit to GDP (right-hand axis) 19
Chart 10 Evolution of Deposits (right-hand axis – billions of US$ at the prices of 2010) and of the Real Exchange Rate (left-hand axis - index) 20
Chart 11 Share of Lending to Private Sector, Public Debt (left-hand axis) and Deposits and Reserves with the Central Bank (right-hand axis) in the Total Assets of Commercial Banks 28
Chart 12 Lebanon: Leading Constraints on Enterprises, 2009 37
Chart 13 Losses Related to Investment Climate Weaknesses, Including Unreliable Infrastructure – Lebanon and Comparative Countries 38
Chart 14 Middle East: Collateral Value as Percentage of Most Recent Loan Value 42
Chart 15 Quality and Innovation Indicators, Lebanon and Comparators 46
Chart 16 OLG Framework - Production Structure 50

Chart 17 Increase in Share of Spending on Infrastructure Investment υ_I for Different Values of ε and $\varphi 1$ (Absolute deviations from baseline growth rate, in percentage points)..... 53
Chart 18 Increase in Efficiency Parameters of Government Spending on Infrastructure, χ^I and Education, χ^E (Absolute deviations from baseline growth rate, in percentage points)..... 54
Chart 19 Reduction in Perceived Macroeconomic Volatility, F, for Different Values of $\varphi 2$(Absolute deviations from baseline growth rate, in percentage points) 54
Chart 20 Improved Competition Measured by the Drop in θ and for Different values of η (Absolute deviations from baseline growth rate, in percentage points) 56
Chart 21 Improved Enforcement of Property Rights Measured by an Increase in χ^M, for Different Values of χ^F, and $\varphi 3$ (Absolute deviations from baseline growth rate, in percentage points) 57
Chart 22 Electricity Indicators - 2009..... 61
Chart 23 Water Indicators - 2008..... 62
Chart 24 Telecom Access Indicators - 2009 65
Chart 25 The Growth Payoff of Investing in Infrastructure, Improving Spending Efficiency, Improving Competition, Reducing Macroeconomic Volatility, and Enforcing Property Rights & Promoting Innovation Improved Competition..... 72
Chart 26 The growth Payoff of Investing in Infrastructure, Improving Spending Efficiency, Improving Competition and Reducing Macroeconomic volatility..... 73
Chart 27 The Growth Payoff of Investing in Infrastructure, Improving Spending Efficiency and Improving Competition 74
Chart 28 OLG Framework: Production Structure…….…… 89

EXECUTIVE SUMMARY

Background

I. ***The Government of Lebanon is exploring new directions to promote broad-based growth that creates enough jobs for all segments of job seekers, especially young Lebanese.*** Large inflows of foreign financial resources, continuous import of low skilled labor, outmigration of skilled labor and a booming real estate market have been key features of the Lebanese economy over the past two decades. In recent years, growth has been strong if narrowly based, fueled by steadily increasing foreign financial inflows. It is thus important to gain a better understanding of the nature and drivers of these inflows, how they are managed at the macro-level by monetary and fiscal authorities and whether and to what extent they can foster sustainable, broad-based growth in Lebanon.

II. ***Lebanon is indeed another case where foreign financial inflows have a strong impact on a small open economy.*** Lebanon has been consistently attracting inflows from the region over the past few decades. These inflows are related to regional oil wealth, to the attractiveness of the country's real estate assets and banking sector considered as safe heavens in times of crisis and to the existence of a large Lebanese Diaspora. The inflows have witnessed a strong acceleration in the years 2007-2010 due to increases in oil prices followed by a strong confidence crisis in the international and regional financial and capital markets. The inflows have contributed to shaping the structure of the economy and have strongly influenced the economic policies of Lebanon. The authorities, especially the Central Bank – BdL, have tightened regulation and followed a policy of sterilization and built-up substantial reserves in foreign currencies to avoid asset bubbles and further appreciation in the real exchange rate which would have further deteriorated competitiveness. The flows have however relaxed the budget constraint of the country as a whole and may have delayed much needed fiscal adjustment.

III. ***Notwithstanding the authorities' efforts, foreign financial inflows seem to be fueling an increase in aggregate demand and fluctuations in economic activity rather than stimulating sustainable, long-term, broad-based growth.*** Economic activity in Lebanon is strongly affected by exogenous factors, is limited to few sectors and does not generate enough employment for Lebanese nationals. Short-term economic fluctuations are highly dependent on foreign inflows and foreign demand related to regional oil wealth and oil prices. In parallel, highly productive industries and innovative activities do not seem to benefit from financial inflows that mainly end as short-term deposits in Banks or real estate acquisitions. Infrastructure bottlenecks and structural dysfunctions are acting as key impediments to broad-based endogenous growth and are contributing to keep investments in productive capacity at low levels. The ICA survey for Lebanon has indeed identified infrastructure bottlenecks in electricity as the second leading constraint for firms' activity and investment, after political instability.

Corruption and governance problems have been identified as the third leading constraint and scarcity of skilled and qualified labor, which is massively migrating, ranked sixth.

Key Objectives

IV. ***This report aims to provide a diagnostic of the Lebanese economy and policy advice to a broad audience.*** To that effect, an analysis of the dynamics of foreign inflows and of the economy over the past decades is undertaken. Looking forward, the growth pay off of various critical structural reforms is examined in detail in order to inform the debate on policy choices and structural reforms needed to stimulate broad-based endogenous and shared growth.

V. ***Specifically, this report attempts to provide a vision for where would Lebanon be in 15 to 20 years if needed structural reforms are implemented.*** National accounts data for 1997-2009 shows that growth potential in Lebanon did not exceed 4.0 percent, and remained around 3.7 percent.[1] For a country with high endowment in human resources, large and dynamic Diaspora and persistent and large foreign financial inflows, the growth outcome could be much higher. Much of the reforms needed to unlock Lebanon growth potentials have already been well identified by the Government with the support of different international counterparts. This report provides a quantification of the growth impact of these reforms, taken individually or combined. By doing so, it gives both an indication on the opportunity costs of not reforming and provides a vision on what the development stage could be in Lebanon in 15 to 20 years if reforms are implemented.

Methodology

VI. ***The analysis of the dynamics of foreign inflows and of the economy focuses on the determinants of foreign inflows, the way these inflows are managed, their impact on economic activity, and their relation to long-term growth.*** This analysis uses Balance of Payments data from BdL and IMF; deposits, lending and interest rates figures from BdL; official national accounts data and IMF estimations for some years; and various sources of data that are systematically referred to in the text or in the references appendix. The report includes a set of econometric simulations and analysis aiming (i) to establish the relation between the dynamic of foreign financial inflows and deposits over a period of 20 years, (ii) to establish the relation between deposits as proxy for foreign financial inflows from one side; and oil price as proxy for regional wealth, macroeconomic and security stability, and policy variables from the other side and, (iii) to estimate the relation between economic fluctuations from one side; and bank lending

[1] Growth potential would have been even lower at 3.0 percent if we have excluded the years 2008 and 2009 that witnessed a strong acceleration to an average of 8.9 percent due to massive foreign inflows and strong domestic and regional demands for Lebanon's goods, services, and assets. We keep the year 2007 in this alternative calculation because we consider it as a recovery year following the 2006 war.

as one of the channels of transmission of foreign financial inflows, and debtor interest rate from the other side.[2]

VII. ***For the simulation of the impact of foreign inflows on long-term growth, the report uses a small-scale analytical model.*** This model captures some of the key channels through which these flows (especially FDI) may affect economic growth in the small open economy of Lebanon. We use an overlapping generations (OLG) model where individuals live for three periods, childhood, adulthood, and old age. Children allocate all their time to education. Adults supply labor, and wages in adulthood are the only source of income. The economy has four sectors: the first produces a final good, the second intermediate inputs, the third human capital, and the fourth, the research and adaptation (R&A), engages in research and adaptation of foreign goods and services. The model will attempt to account for some of the key constraints on economic growth in Lebanon ranging from excessive macroeconomic volatility, lack of access to infrastructure services, inefficient government spending, distortions in competition, insufficient promotion of higher education research, and insufficient reliance on "brain circulation". The long-run growth rate derived from the model is calibrated using data for Lebanon and, where needed, parameters based on the relevant literature for comparable countries. Various policy experiments are conducted to assess the impact of foreign financial inflows on growth, under alternative assumptions about the constraining factors. The simulations emphasize the role of policy complementarities in Lebanon's strategy to reap the growth benefits from capital inflows.

Main Results

VIII. ***The analysis shows a solid relation between foreign financial inflows and key exogenous and endogenous determinants.*** The analysis first shows a strong relation between foreign financial inflows and banks deposits over the period where actual (2002-2009 from BdL) and estimated (1990-2001 from IMF and World Bank) data on foreign inflows are available. The relation between banks deposits, as proxy for foreign financial inflows, and determinants of foreign inflows has also been examined. Oil price is a key direct and exogenous determinant of foreign inflows, a 1 percent increase in oil prices leading to 0.32 percent increase in deposits over the period 1974-2010, an increase that is limited to 0.25 percent in years of instability. The accumulation of foreign currency reserves is a key indirect endogenous determinant of foreign inflows, a 1 percent increase in reserves in one year leading to a 0.54 increase in deposits in the next year. In addition we find that, the spread between domestic creditor rates and international interest rates, lagged dollarization, and the exchange rate regime, contribute to the determination of foreign financial inflows to Lebanon.

IX. ***Foreign inflows have strongly benefited Lebanon but have also generated costs in terms of distortions and increased volatility.*** Foreign inflows have fueled an increase in consumption – which averaged 100 percent of GDP between 1997 and 2009 - and provided

[2] The team was compelled to use gross lending data since it is the only time-series available over the long term.

resources for investment (24.7 percent of GDP on average in 1997-2009). Foreign inflows have helped improving the efficiency of the banking sector in all aspects related to processes, practices, and regulations aiming to create an environment conducive to the attraction of foreign resources and their stabilization within the domestic banking system. Further, the stabilization of exchange rate and the accumulation of reserves are among the policy choices that helped secure financial inflows into the banking sector and were in turn reinforced by these inflows. The foregoing of the use of inflation tax and the monetary discipline it requires is another major achievement in terms of macroeconomic stability. This might have stimulated foreign financial inflows by securing real returns on deposits in banks. These important benefits notwithstanding, capital inflows have contributed to shaping the economic structure in favor of non-tradable sectors and relaxed the budget constraints of both public and private sectors. Indeed, in a context of political polarization and lack of decision-making, the availability of foreign inflows made possible the financing of large fiscal and current account deficits, delaying important structural reforms to reduce distortions in the economy. Finally, the analysis underlines the role of banking intermediation as one of the major channels through which foreign inflows affect short-term economic fluctuations. Indeed, a change in lending by US$1 million can lead to a change in short-term GDP by US$1.3 million over the period 1988-2009.

X. ***There are several constraints that reduce the ability of Lebanon to benefit from foreign financial inflows for the implementation of an innovation-based long-term growth strategy.*** Lebanon's core infrastructure in electricity, roads, and sanitation remains deficient in several respects and access to reliable and cost-effective infrastructure services remains a major constraint on economic activity. At the same time, efficiency of public spending is poor and many infrastructure sectors suffer from deficiencies in their regulatory frameworks, poor governance, and inefficiencies of public utilities. These deficiencies are detrimental to long-term investments, both domestic and foreign. Gross private returns to education are relatively low compared to international standards (9 percent against 21 percent worldwide) and the quality of education outcomes has also come into question. Also, Lebanon is not benefiting from the role that can be played by the Diaspora and there seems to be little "brain circulation" between skilled members of the Diaspora and the home country. The financial sector's incentives to intermediate a large share of its liabilities towards productive investments remain weak and collateral requirements in proportion of loans are high. Product regulations have also tended to bias investment decisions in Lebanon in favor of either liquid instruments or real estate; an asset that also serves as a "safe haven" in a volatile environment. Legal impediments to competition, in particular, have slowed the pace of firm creation. The weakness of intellectual property rights protection and of the legislation for patent protection in Lebanon is an impediment to innovation because the economic rewards for their efforts are not guaranteed to innovators (both domestic and foreign). An improvement in property rights protection would impact the composition of foreign inflows by stimulating "technology-driven" FDIs. Finally, macroeconomic volatility, the risk of continued fiscal imbalances, and severe macroeconomic shocks that these imbalances may create, affect the behavior of domestic and foreign investors and constrain longer-run

growth prospects. Reducing macroeconomic imbalances helps shifting the composition of foreign inflows towards longer-term capital and increases autonomous "growth-driven" FDIs.

XI. ***The simulations of the model have shown the growth rewards of structural and macroeconomic reforms.*** Taken individually, increase in public investment, improved efficiency of public spending, reduction of macroeconomic volatility, and enforcement of property rights lead each to an increase in steady state growth. Indeed, an increase by 50 percent in public investment can add 0.6 percentage points to the benchmark growth calculated at 4.0 percent. An improvement by around 25 percent in the indicator of efficiency of public spending in infrastructure and education generates an additional 0.5 percentage point of growth. The reduction in volatility and macroeconomic imbalances, as measured by an increase in the autonomous component of FDI by 80 percent, adds 0.08 percentage points to long-term growth. An improvement of the enforcement of property rights index by 40 percent stimulates "technology-driven" FDIs and generates up to 0.8 percentage points additional growth. The improvement in competition has contrasted effects. An increase in the competition in the intermediary goods market may raise GDP growth up to 0.1 percentage points, while an increase in the competition in the R&A sector, by depriving innovators from protection, can reduce GDP growth by 0.3 percentage points.

XII. ***Taken together, higher public investments, improved efficiency of public spending, improved competition and reduced macroeconomic volatility add 1.3 percentage points to the average yearly long-term GDP growth***. While the growth reward can start materializing at the first year of the implementation of reforms, the full growth impact will not materialize before the completion of all reforms, which may take up to 5 years. Practically, this means that in a horizon of fifteen years after reforms are implemented, an additional 1.3 percentage points to the average yearly long-term GDP would lead to a real GDP per capita 21 percent higher than it would have been if long-term growth had remained at the benchmark rate of 4.0 percent per year on average. Including property rights enforcement in the R&A sector brings the rise in long-term GDP up to 2.9 percentage points and real GDP per capita in 15 years would be at least 50 percent higher than at the benchmark rate of 4.0 percent. Such a qualitative move into an innovative and productive era together with the quantitative jump in GDP growth would have important consequences on the developmental indicators of Lebanon and on the general welfare of the population.

Policy Implications

XIII. ***Domestic monetary policies in Lebanon have been constantly oriented towards securing permanent financial inflows to the country.*** These policies, together with strong banking regulation and tight monitoring from the Central Bank, have magnified foreign inflows that are essentially related to oil wealth and regional oil price. These policies have created an environment conducive to the attraction and stabilization of foreign financial inflows in the

country. However, the exclusive reliance on monetary policies to manage foreign inflows, ensure macroeconomic stability, and manage risks associated with macroeconomic imbalances and political fragmentation and volatility, had put excessive burden on monetary policy instruments. Indeed, a developed capital and financial market would have reduced the need for reserves accumulation. Moreover, monetary policies have had so far little impact on the nature and final use of foreign financial inflows, despite the recent efforts of BdL to promote lending to the private sector. In the longer run, a well articulated and focused reform program that reduces uncertainty and opens opportunities for productive and innovative activities would attract longer-term capital flows, and promote "technology-driven" FDIs within these flows. Simultaneously, the improvement of macroeconomic and growth prospects would reduce both the need for accumulating large reserves and for keeping high spreads, and would also attenuate the perception of real estate assets as "safe haven" in a volatile environment.

XIV. ***Structural reforms are indispensable if Lebanon is willing to generate employment for young and skilled segments of the population, to increase wealth generated domestically, and to raise the welfare of the population in general.*** Many reforms have been identified since several years and they only need the political will to implement them. The reforms needed to improve infrastructure and basic services provision, to improve public financial management and the efficiency of public spending, and to improve competitiveness and reduce macroeconomic volatility; have all been assessed and analyzed by different domestic and international stakeholders and solutions have been proposed. Investment needs in electricity, telecommunications, transportation, and water have been studied at length; including in the Country Partnership Strategy of the World Bank for Lebanon. The Government has already moved with some investments in these fields. These moves need to be consolidated and reinforced in order to show tangible results and to build the credibility needed for the future involvement of the private sector, which also requires a strong and sound regulatory framework.

XV. ***The management of public spending in general; and in infrastructure and education in particular; has also been well examined and some measures have started to be implemented.*** For instance, the Ministry of Finance is progressing on the consolidation of all public financial operations within the budget, including the operations of the Council for Development and Reconstruction, the main investment arm of the Government. Permanent qualitative change in public financial management remains however tributary to the preparation and enforcement of a new public accounting law. In the education sector, a whole set of reforms are awaiting implementation and would help matching the outcomes with the large financial resources that are attributed to the sector. A draft law on competition already exists and there have been an attempt to remove exclusive agencies on imports. The Government may want to reactivate the debate on competition and explore new paths to advance this agenda. Finally, the reductions of macroeconomic instability and fiscal imbalances have been progressing in recent years, and more can be accomplished on both revenues and expenditures side. At this level, increasing the reliability of public services in electricity can be a driver for reduced subsidies and improved

sector and fiscal balances. Moreover, the growth pay-off of structural reforms would by itself improve macroeconomic picture which would in turn enhance growth prospects.

XVI. ***One new reform proposed in this report is related to protecting property rights and promoting innovation.*** Simulations show that including property right enforcement and promoting innovation would at least double the growth pay-off of reforms. This outcome is significant and draws on international experiences. Innovation has been the driver of growth and development in many small and resource poor economies around the world. Efficient infrastructure and basic services, and stable macroeconomic environment are prerequisites for the development of productive and innovative industries. However, innovation and research and adaptation need legislative, technical, and financial accompanying. Lebanon has a good patency law, but the Intellectual Property Authority operates more as a registry rather than an experts' agency. In some of the best practices in the world, in Malaysia for example, we can find a configuration where the bureau of patency provides both legal, technical, financial, and business feasibility assessments and advices to innovators. Also, research and development; the scientific backbone for innovation; is weak in Lebanon and the Government may envisage promoting these activities through public funding or initiatives.

Political Economy Implications

XVII. ***Lebanon's political economy is characterized by a political system based on confessions, and by the existence of powerful interest groups in key economic sectors.*** This mix leads to frequent conflicts between political leaders from different sectarian groups as well as to the capture of the decision process in the areas of economic and social policies. The most powerful groups are in the banking and real estate sectors. On the one hand, and because of the sectarian polarization of the system, bargaining, cliental behavior, and political rent shape the functioning of institutions. On the other hand, internal political divergences and the influence of vested interests have a strong impact on the legal process regulating social and economic life. And, finally, the electoral system is playing a major role in perpetuating political, social, and economic dominance. In this configuration, little room is left for skilled and independent young entrepreneurs and specialists. This makes it more difficult to create consensus around a long-term reform program, but at the same time creates room for a "coordination role'' by international institutions.

XVIII. ***The allocation of rents within the public sector corresponds to a sensitive political equilibrium.*** As a consequence, no reform will be successful in any sector if it reduces the political rent of one sectarian leader while other leaders keep their rents in other sectors. No matter the quality or soundness of technical advice, key structural and sector reforms have often been delayed and stalled because of potential disruptions to the political equilibrium. Even within the same sector, divergent sectarian and political interests have to be taken into consideration while investigating reform options. Although a difficult challenge, designing an

appropriate compensation mechanism and promoting a comprehensive reform package would bring the system to a new equilibrium. In parallel, substantial efforts might be worth deploying in order to explain that reform is not a zero-sum game, particularly in a growth context, since the "size of the pie" will be increasing for all.

XIX. ***In this context, it might be difficult for Lebanon to implement altogether the five sets of reforms advocated in this report, and international organizations might therefore play an important role in facilitating coordination and conveying the sense that reform is not a zero-sum game.*** Issues related to competition and exclusive agencies might be difficult to deal with in an environment where a fragmented political sphere has to deal with powerful groups of interests with political and confessional ramifications. Also, reinforcing macroeconomic stability by modifying both taxation and primary current public spending might be faced with strong resistance by groups benefiting from tax exemptions or low taxation, and by groups depending on public spending. However, the Government seems to have a larger margin of action in expanding public investment and increasing the efficiency of public spending, and tangible moves have started in this direction. Improved infrastructure is by itself a driver for growth and stimulates productive and innovative activities that can be accompanied by a gradual empowerment of property right protection and by initiatives to promote innovation. Lebanon will gain a lot by having an increased number of its qualified youth involved in productive and innovative domestic activities. A growing domestic productive sector would increase the demand for reforms by larger segments of the population and the current configuration of political and economic interests might gradually shift towards a new and more stable equilibrium with solid social foundations.

XX. ***Enhancing the prospects of endogenous sustainable long-term growth and involving additional segments of Lebanese youth in productive and innovative activities will slowly but surely move the whole system towards a new equilibrium.*** Young Lebanese who are migrating and their families are essentially the silent middle-class paying the price of the lack of opportunities to invest and work in Lebanon. This migration has important costs for the whole society because the country is losing its vital forces and the potential growth benefits they would have brought. Removing the impediments to investment and growth and leveling the playing field would help increasing the prospects for a dynamic and independent private sector. This new economic sphere will be developing in parallel to the traditional sectors already captured by vested interests, and independently from the channels of rent distributions and from sectarian cliental behavior. And, as experienced through history, economic independence contains the seeds for internal political dynamic and for external independence.

XXI. ***Recent developments in the Arab region and in host countries of Lebanese Diaspora have underlined the urgency for the decision makers to build an economy more resilient to external shocks, in a context of a growth strategy that promotes employment.*** Banking, trade, construction and tourism have been the key pillars of Lebanon's economy. However, given the

limited employment opportunities created by these sectors, considerable labor migration has been witnessed during the past decades towards the GCC, African, European and North American countries. The recent turmoil in neighboring countries and in Ivory-Cost underlined the vulnerability of Lebanon towards shocks that can affect the flows of goods, services, financial resources and workers between Lebanon and the rest of the world. Facing this vulnerability can be considered as a national interest for Lebanon. And the country has the potential to do so, thanks to the advantages in human capital and financial resources. From there, what is needed is the political will to engage in a process of reform that would create a more diversified, innovation-driven economy, capable of generating the high number of jobs required to absorb sustained increases in skilled labor force; and ultimately benefit the country as a whole and bring the society to new levels of development. Many countries with initial conditions by far less advantageous than those of Lebanon managed to breakthrough, the example of neighboring Cyprus being one of the most striking in modern history.

INTRODUCTION

1. ***The Government of Lebanon is exploring new directions to promote broad-based growth that creates enough jobs for all segments of job seekers, especially young Lebanese.*** Large inflows of foreign financial resources, continuous import of low skilled labor, outmigration of skilled labor and a booming real estate market have been key features of the Lebanese economy over the past two decades. In recent years, short-term growth and economic activity have been strong if narrowly based, fueled by steady inflows of foreign financial resources. It is thus important to gain a better understanding of the nature and drivers of these inflows, how they (particularly short-term flows) are managed at the macro-level by relevant authorities, and whether and to what extent they can foster sustainable, broad-based long-term growth and development in Lebanon. It is also crucial to understand the extent to which causality works in reverse, that is, the extent to which domestic policies aimed at promoting growth can help to change the composition of flows and improve their intermediation in a way that may help to further stimulate economic growth.

2. ***The proposed study aims to address these issues.*** Specifically, it aims to analyze: (i) the short-term policy mix used to manage foreign financial inflows and aggregate demand; (ii) the efficiency of the banking sector in managing foreign inflows and orienting their impact; (iii) the supply side bottlenecks and the structural policies needed to unlock growth potentials and; (iv) the policy actions needed to enhance the capacity of the real sector in adapting to foreign inflows and in using them for deploying productive capacities and increasing productivity.

3. ***The study will look into the interactions between policy reforms, long-term growth and foreign financial inflows.*** We define foreign financial inflows as being the gross inflows of services, income, transfers and capital. These foreign inflows are having a strong impact on economic activity and on year to year fluctuation in short-term GDP growth in Lebanon. This study is looking to options that would help Lebanon using foreign inflows to foster long-term growth and enhance growth potentials on a higher and relatively stable path. It appears however that the large short-term component of foreign financial inflows is playing in favor of higher economic fluctuations. Policy options and reforms that enhance long-term growth prospects and help Lebanon benefiting from foreign inflows would also promote the modification of their composition towards longer-term inflows. Also, better long-term economic prospects would help improve banking intermediation towards longer term and higher value added activities. These interactions between policy reforms, growth and foreign financial inflows will be studied quantitatively to assess the net effects on long-term growth.

4. ***The analytical framework will exclude other areas of interest,*** including the role of the development of capital and financial markets in mitigating the distortive impact of foreign inflows and the policy mix needed to manage the resource boom expected in case Lebanon

becomes an oil producer. These areas will be described in the document as information for future and additional analytical work.

5. ***This study aims to fill the knowledge gap about Lebanon,*** a country with large exposure to exogenous chocks - both positive and negative – and where the policies influencing the interaction between foreign inflows and growth can have a strong impact on sector dynamics, employment, and poverty reduction. The interaction of foreign inflows with labor market dynamics will not be addressed directly. However, because we look at the long-term growth with the aim of devising policies that help transforming foreign inflows into an endogenous component of growth dynamics, we implicitly look at the link between foreign financial inflows and the labor market and their impact on employment.

6. ***The study will be structured around three main chapters, plus annexes, appendices and references.*** The first chapter seeks to set the historical, empirical and conceptual backgrounds to the relation between foreign inflows, economic activity, and aggregate demand. Second, it aims to bridge the short-term approach to foreign inflows with the longer term concerns. The second chapter is the core component of the study and stresses on the role of supply-side structural policies, on the endogenous response of capital flows to these policies, and on how both structural policies and capital flows affect economic growth in a medium to long-run perspective. This chapter will explore, among other options, the growth potentials of diversification and will explore the prospects of developing research and adaptation towards high value added activities. The last chapter dwells on the previous two and draws together a program of tangible policy packages that will allow policymakers to make a better use of foreign inflows to promote long-term growth. The chapter will start by looking into what can be done at the margin and does not require major political decisions and will then move to more substantial policy actions.

CHAPTER 1: FOREIGN FINANCIAL INFLOWS - SHORT TERM MANAGEMENT AND LONG TERM IMPLICATIONS

7. ***Lebanon is another case where foreign financial inflows have a strong impact on a small open economy.*** Inflows to Lebanon have been persistent over a long period. These inflows have contributed to shape the economy and the economic policies of Lebanon, have created challenges to the country, and have also been influenced by domestic developments. In the following, we will present an analysis of the determinants of foreign financial Inflows (Section 1), then we will look into the benefits and costs of foreign financial inflows with focus on their impact on economic activity and aggregate demand and macroeconomic stability, and we highlight the two ways causality between foreign inflows and policy choices (Section 2). In Section 3 we look into the management of foreign inflows by the Central Bank of Lebanon - BdL. We finally conclude in the last section on policy questions and options for improving the management and use of foreign inflows, and we make the link with Chapter 2.

Section 1: Determinants of Foreign Financial Inflows

8. ***Foreign Financial Inflows to Lebanon are related to regional oil wealth, to the attractiveness of Lebanon's real estate and banking sectors, considered as safe heavens in times of crisis, and to the existence of a large Lebanese Diaspora.*** Whatever the form of these inflows, they end up increasing deposits in banks since domestic saving to GDP[3] has been almost

Table 1 Remittances and Net Foreign Inflows – Share to GDP[4]

In Percent	2002	2003	2004	2005	2006	2007	2008	2009	2010
Net Workers' remittances	0.2	1.3	7.4	4.5	8.2	10.6	7.3	4.8	1.3
Inflows	13.3	19.7	23.8	19.5	20.6	20.0	19.2	18.3	n.a
Outflows	-13.1	-18.4	-16.4	-15.0	-12.4	-9.4	-11.9	-13.5	n.a
FDI Inflows	7.0	14.2	11.4	15.2	14.0	13.5	14.4	13.8	12.7
Net Foreign Inflows of Services, Income, Transfers and Capital	28.5	49.6	26.8	32.0	28.4	29.1	61.1	56.8	39.2

Source: Central Bank of Lebanon – BdL, Quarterly Bulletins, World Bank Staff calculation

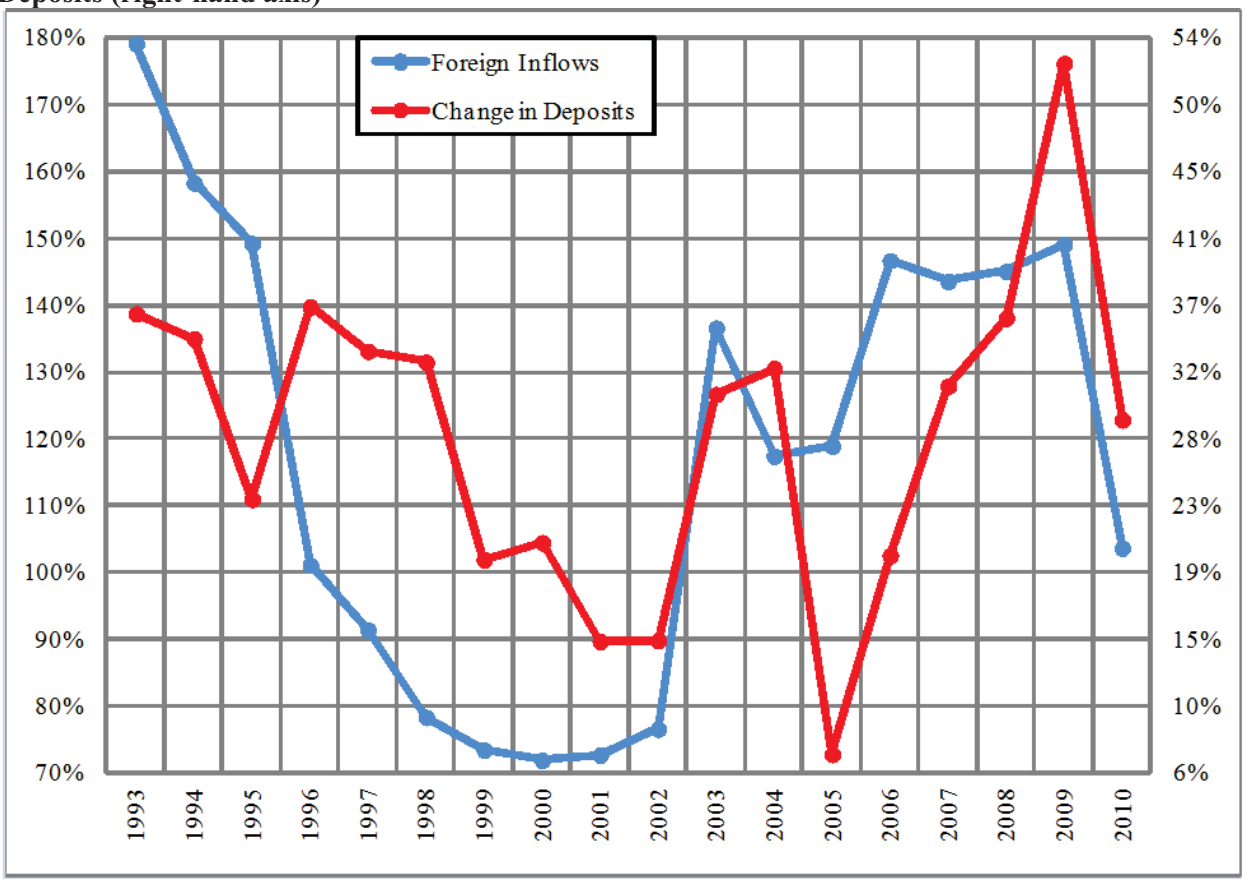
[3] Domestic saving in Lebanon has often been negative and in the few instances where it has been positive, it remained at a very low level. In both cases of small surplus or deficit, domestic saving cannot explain the levels of accumulation of deposits in the banking sector which is essentially related to the inflow of foreign financial resources. Indeed, from national accounts data, we find that, while domestic saving reached an average of 3.6% of GDP in 1970-72, it is estimated to have been negative at 23% of GDP on average in 1991-1996 after the end of the 1975-1990 war. For the period 1997-2009, National Accounts Statistics show an average domestic saving of 0.6 percent of GDP, with an average public saving of negative 5.5 percent and an average private saving of 6.1 percent.

[4] The breakdown of inward and outward remittances by nationality is available for a very limited number of years and there are no details on channels of utilization. In general, disaggregated BoP data beyond what is published in the Quarterly Bulletins of the Central Bank is sparse. BdL relies solely on banking and financial information and cannot cross-check and fine tune information in the absence of any capture of remittances, FDIs and other flows through surveys that should be conducted by a reinforced and strengthened Central Administration of Statistics.

zero. Foreign savings and inflows have witnessed an exceptionally strong acceleration in the years 2007-2010 due to large increases in oil prices followed by a strong confidence crisis in the international financial and capital markets. As a consequence, between end-2008 and end-2010 only, deposits in the banking sector increased by US$30 billion, which is equivalent to 86 percent of the GDP of 2009. The number of real estate transactions registered per year increased by 66 percent between 2007 and 2009 and the average value of a transaction increased by 36 percent over the same period. The consolidated balance sheet of commercial banks reached 334 percent of GDP in 2009 up from 328 and 188 percent respectively in 2007 and 1997. Moreover, bank secrecy and favorable monetary and tax policies have helped to channel foreign inflows into banks. Table 1 in the above shows the evolution and the composition of gross foreign financial inflows to Lebanon over the period from 2002 to 2010.

9. ***There is a strong relation between foreign inflows and deposits in the banking sector.*** Data available for the years 2002-2010 shows a strong relation between the gross inflow of services, income, transfers, and capital from one side; and deposits in the banking sector from the other side. The coefficient of correlation between deposits and foreign inflows is indeed high at 0.86. The small size of the sample does not allow for econometric work. It is however possible to

Chart 1 Ratio to GDP of Gross Foreign Financial Inflows (left-hand axis) and of Change in Deposits (right-hand axis)



Box 1 Estimating the Relation between Foreign Financial Inflows and Deposits in the Banking Sector

In the following, we are going to establish an econometric relation between foreign inflows and banks' deposits, both expressed in domestic currency. The correlation is high at 0.91 between the reconstituted series for foreign inflows and deposits over the period 1990-2010. We estimate two relations between foreign inflows and deposits:

$$\Delta D_t = a + bF_t \text{ (E-1-1) and } \ln D_t = \alpha + \beta \ln F_t \text{ (E-1-2)}$$

with ΔD_t the year to year change in deposits in absolute value and F_t the gross foreign inflows of services, income, transfers and capital. $\ln D_t$ and $\ln F_t$ are the logarithmic forms of the two variable described in the above. $Dum05-06$ and $Dum90-92$ are respectively the dummies for 2005-2006 and 1990-1992.

Table 2 Relation between Gross Foreign Inflows and Banks Deposits over 1990-2010

Dependent Variables	ΔD_t			$\ln D_t$	
	1	2	3	1	2
Independent Variables					
Constant	-9.1*10^11 (-0.7)	-9.6*10^11 (-1.0)		-10.9 (-2.1)	
F_t	0.2721 (7.4)	0.2959 (10.9)	0.2738 (18.9)		
$\ln F_t$				1.3696 (8.0)	1.0187 (280)
Dum 05-06		-7.6*10^12 (-4.3)	-7.6*10^12 (-4.3)		
Dum90-92					-0.7957 (-2.2)
R2	0.7422	0.8720	0.8654	0.7708	0.7759
Durbin-Watson	1.3553	1.9558	1.9163	0.3769	0.8879
Degrees of Freedom	21	21	21	21	21
Residuals' Unit Root – H0 : Variable has a Unit Root					
Augmented Dickey-Fuller	-3.1260	-4.2992	-4.1800	-1,3890	-2.2558
Probability	*0.0035	*0.0002	*0.0003	0.1481	**0.0266

Note: for the regression, Student statistic is between brackets. For the residuals' unit root test we have * for H0 rejected at 1% , ** for H0 rejected at 5% and, *** for H0 rejected at 10%

Table 3 Unit Root Test – H0: Variable Has a Unit Root

	ΔD_t	F_t	$\ln D_t$	$\ln F_t$
Level Test				
Augmented Dickey-Fuller	-0.4127	0.9543	0.9089	2.4191
Probability	0.5217	0.9034	0.8956	0.9942
First Difference Test				
Augmented Dickey-Fuller	-4.7771	-3.3884	-2.0600	-2.8841
Probability	*0.0001	*0.0018	**0.0405	*0.0063

* H0 rejected at 1%, ** H0 rejected at 5% and, *** H0 rejected at 10%

Table 4 Johansen Co-integration Test - H0: x and y Are Not Co-integrated

	ΔD_t & F_t	$\ln D_t$ & $\ln F_t$
Maximum Eigenvalue	17.4970	36.8357
Critical Value	14.2646	14.2646
Probability	**0.0149	*0.0000

*H0 rejected at 1%, ** H0 rejected at 5% and, ***H0 rejected at 10%

Table 5 Granger Causality Test– H0: x Does Not Cause y

	Fisher Statistic	Probability
ΔD_t does not granger cause F_t	2.1628	0.1640
F_t does not granger cause ΔD_t	6.9401	**0.0103
$\ln D_t$ does not granger cause $\ln F_t$	1.0962	0.4147
$\ln F_t$ does not granger cause $\ln D_t$	5.0525	**0.0206

* H0 rejected at 1% , ** H0 rejected at 5% and, ***H0 rejected at 10%

re-build the series for the years 1990-2001 using IMF data.[5] In Chart 1 we compare the evolution of changes in deposits and foreign financial inflows as share of GDP over the period 1993-2010. Then, we perform the econometric analysis presented in Box 1 and we show that for equation E-1-1, and once we account for the troubled period of 2005-2006, around 27 percent of all gross foreign inflows end as increases in deposits of the banking sector. More important, the results of the estimation for equation E-1-2 show that, when we account for the year 1990; the last year of the 1975-1990 war; and for the year 1992; a year of large depreciation of the exchange rate, a 1 percent increase in foreign inflows generates almost the same increase in banks deposits over the period 1990-2010. This strong relation between banks deposits and foreign inflows allows us to use deposits as a proxy to foreign inflows over the long-term. This is particularly convenient since data on deposits is available on monthly basis over a period of 40 years, while consistent foreign inflows data is available only since 2002 and can be reconstituted from various sources back to 1990.

10. ***There is a robust and long-term relation between banks deposits, used as proxy for foreign inflows, from one side and regional oil wealth and domestic policies from the other side.*** The inflow of financial resources to Lebanon is conditioned by four major variables, two of which – oil price and interest rate spread - have a direct impact on inflows, the two remaining variables – gross foreign reserves and overall stability – are affecting financial inflows indirectly. Chart 2 compares the change in deposits in Lebanese banks with the price of the Brent, expressed in constant US$, Chart 3 compares the change in deposits with the spread, Chart 4 with gross reserves in foreign currencies and Chart 5 with the overall stability.

Table 6 Determinants of Foreign Financial Inflows

	Direct	**Indirect**
Exogenous	Oil Price	Overall Stability & Dollarization
Endogenous	Interest Rate Spread	Reserves & Peg

11. ***The econometric analysis we present in Box 2 shows that although oil wealth and large Lebanese Diaspora contributed to the high level and persistence of foreign inflows; other features of monetary policy have also played an important role.*** Over the period 2002-2010, we find a correlation of 0.67 between oil price and gross foreign inflows, both expressed in constant prices. However, interest rates, reserves, overall stability, and dollarization are key determinants of foreign financial inflows. The spread between average domestic interest rate and international

[5] Monthly data on Banks' deposits are available from the site of the Central Bank - BdL from 1970 onward. We use the end of year stock of deposits in Lebanese Pounds. Foreign inflows are converted into Lebanese Pounds using the exchange rate of the month of December for each year. Detailed balance of payment data under a consistent methodology is available from BdL only for the period 2002-2010. For 1993-2001, we have used the series available from IMF's Article IV and applied the annual changes of these series on the results of 2002 backward in order to re-build a historically consistent data set. Worth noting that discrepancies are minimal between the series of IMF and BdL over the period 2002-2009. Finally, for the years 1990-1992, we have recalculated the data set based on the reports of Eken et al. (IMF, 1995 and 1999).

Chart 2 Ratio to GDP of Change in Deposits (left-hand axis) and Oil Prices in Constant US$ (right-hand axis)

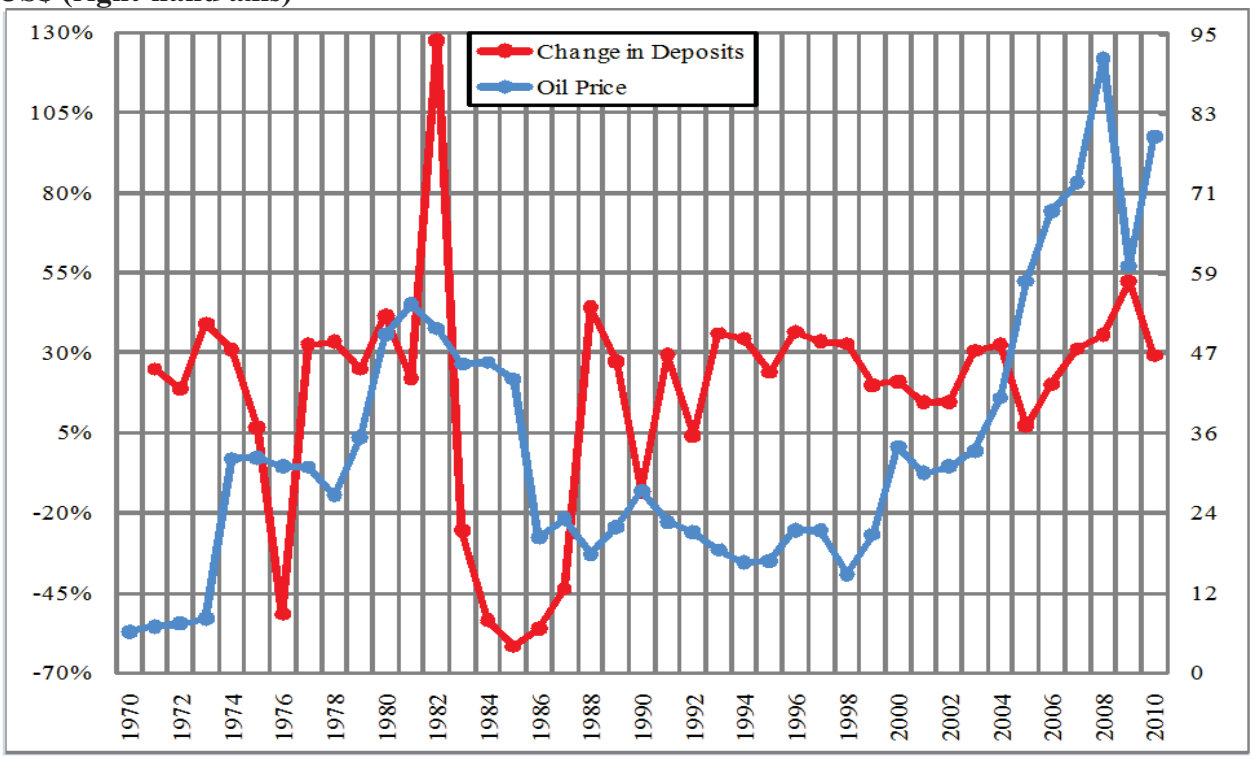


Chart 3 Ratio to GDP of Change in Deposits (left-hand axis) and Nominal Spread between Average Rate on Deposits and Libor-3 Months (right- hand axis)

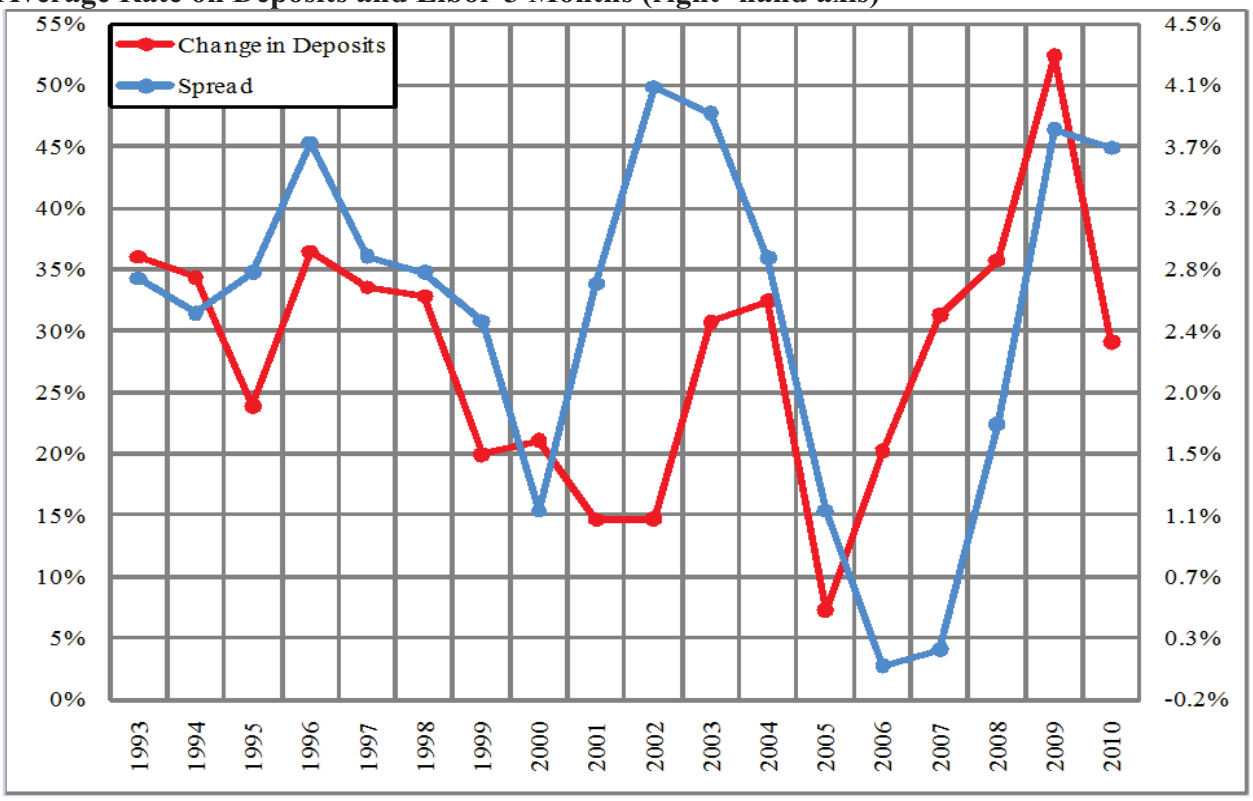


Chart 4 Ratio to GDP of Change in Deposits (left-hand axis) and of Gross Foreign Currencies Reserves (right- hand axis)

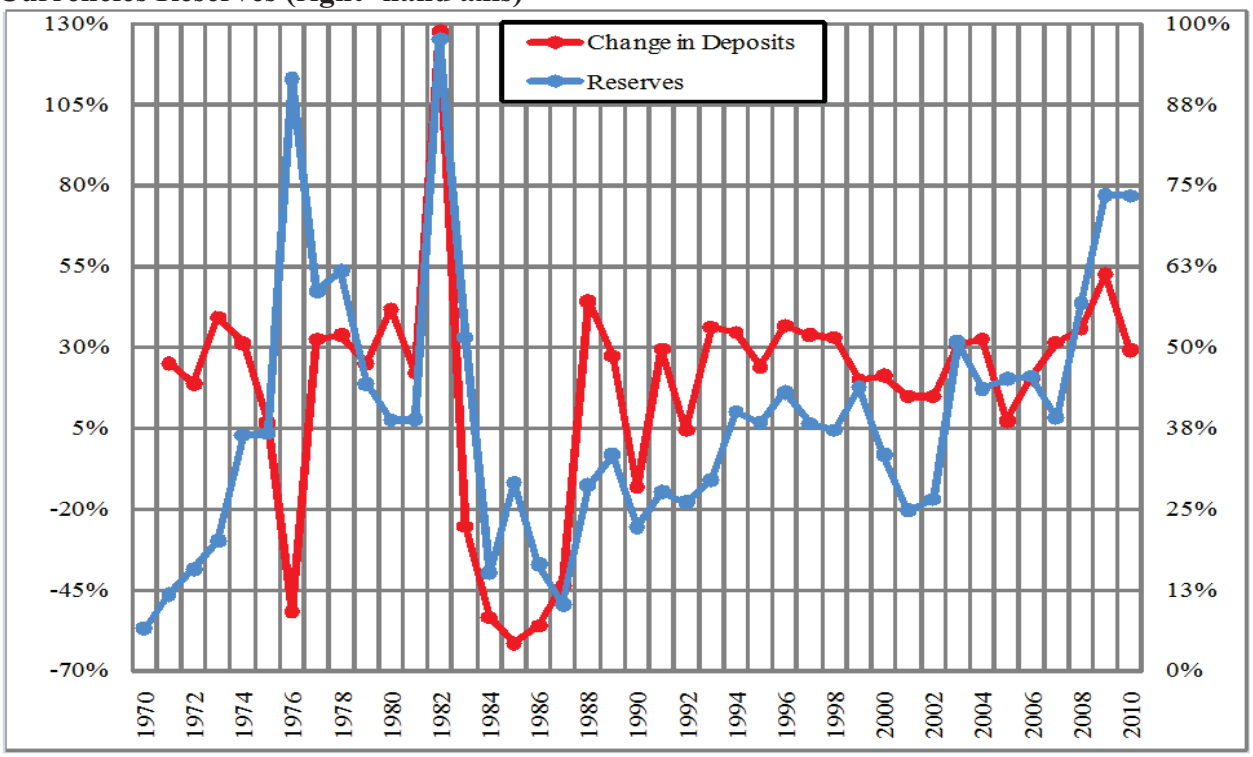
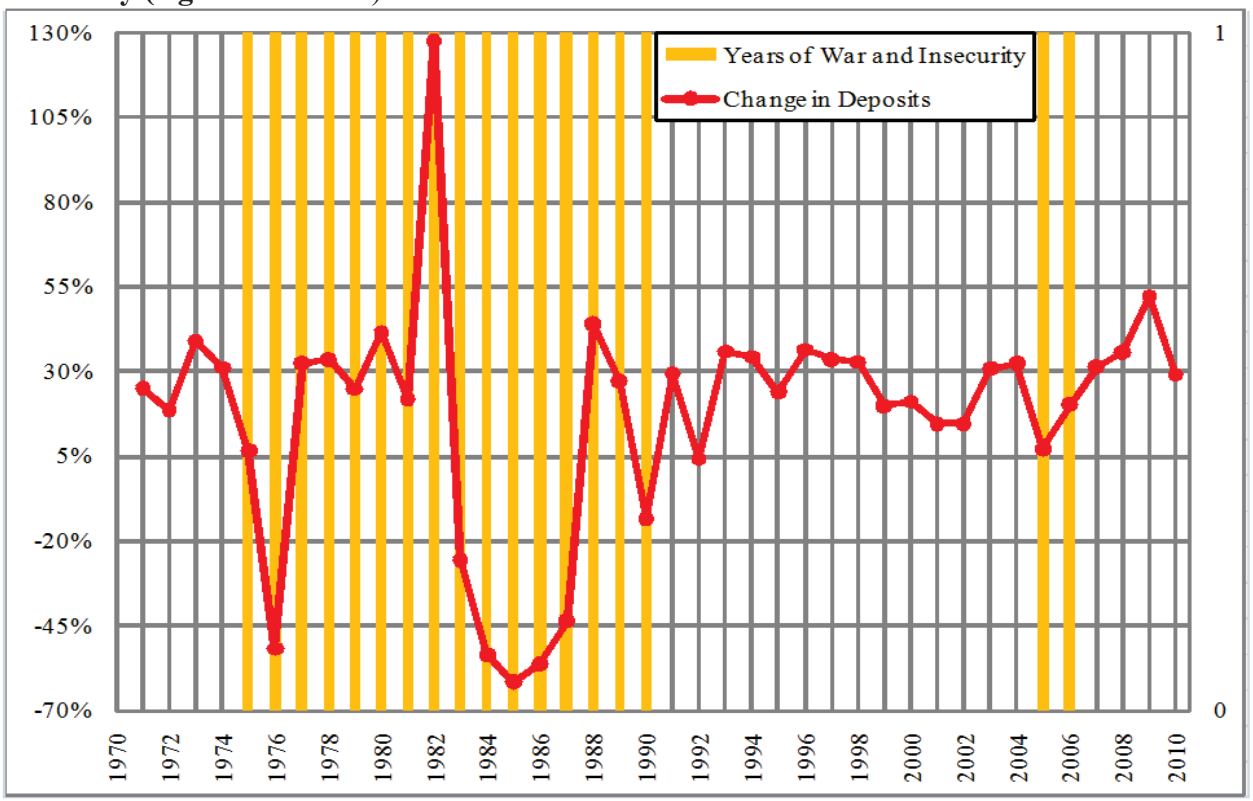


Chart 5 Ratio to GDP of Change in Deposits (left- hand axis) and Periods of War and High Insecurity (right- hand axis)



rates, together with oil prices, is indeed another direct determinant of foreign inflows. Also, the high and increasing level of gross foreign currency reserves and the de-facto peg in place for the past 12 years are among the main indirect factors behind the stability of foreign inflows over the long-term. Other indirect determinants are overall macroeconomic and security stability or volatility. We can capture some effects of these indirect determinants through dollarization that can be considered as a confidence indicator. Dollarization results from a choice of portfolio and has been varying in a range of 55-80 percent over the past two decades, increasing in times of instability and decreasing when confidence is restored, but never dropping below 55 percent. This relative inertia reflects the fact that investors remain worried about the economic and financial situation and believe that it may deteriorate at any time. Hence, the ability of holding deposits in foreign currencies and the open and unrestricted convertibility between the local currency and foreign currencies are likely to be stimulating foreign financial inflows to Lebanon. We can also introduce dummies to account for years of war and high security tensions.

12. ***In the following, we describe the rationale behind the estimation and we also describe the variables that we are using.*** We are trying to assess the importance of oil prices as an exogenous variable explaining the dynamic of foreign inflows towards Lebanon. Some endogenous policy variables are either attenuating or amplifying the inflow of resources and the increase in banks deposits. The first policy variable we introduce is foreign reserves. Reserves accumulation can have two contradictory effects on banks deposits. The first one is the sterilization effect with a slowdown in the growth of deposits due to the fact that an increased amount of foreign inflows are blocked in reserves. The second one is the signaling effect related to the fact that the decision to accumulate reserves increases the attractiveness of the banking system and enhances financial flows to Lebanon. We believe that the second effect prevails in the case of Lebanon. The second policy variable is the exchange rate to the US dollar that was flexible until 1999 and is pegged since. The assumption is that exchange rate volatility will have

Box 2 Oil Wealth, Policy Choices and Impact on Foreign inflows and Deposits Base

Data on deposits, reserves and oil prices are available staring 1970. However, data on dollarization is available only starting 1971. Since we are using lagged dollarization in the regression, the starting year is then 1972. We therefore perform the regression over the period 1972-2010 to find the econometric evidence of the relation between deposits and oil price and some policy variables. We introduce the spread starting 1993 since no data on interest rates is available before that date. Let P be the price of oil, A the level of gross reserves in foreign currencies, both expressed in constant US dollars, Sp the spread between average interest rates on deposits and the three months Libor rate and Dol the dollarization rate measured as the share in total deposits of deposits in foreign currencies. Let $Dumexch$ be the dummy for exchange rate, $Dumwar$ the dummy for the years of war (1975-1990) and high insecurity (2005-2006) that we will interact with oil prices, and $Dumw98$ the dummy for 1998 identified as an outlier year for the regression that includes the spread. We estimate the following equation:

$$\ln D_t = c + \alpha \ln P_t + \beta \ln A_{t-1} + \theta \ln Dol_{t-1} + \sigma \log Sp_t + \delta Dumexch + \phi\left(Dumwar \times \ln P_t\right) + \varphi Dum98 \qquad \text{(E-1-3)}$$

Table 7 summarizes the results of the regressions. Table 8 shows the unit root tests and shows that the first differences of the five variables are stationary. Table 9 includes co-integration tests and shows that independent variables are each co-integrated with the dependent variable. Finally, Table 10 shows the Granger causality tests which show that oil prices, lagged reserves, lagged dollarization, and spread cause a change in deposits.

Table 7 Determinants of the Dynamic of Deposits between 1971 and 2010

Dependent Variables	$\ln D_t$				
	(1) 1972-2010	(2) 1972-2010	(3) 1974-2010	(4) 1993-2010	(5) 1993-2010
Independent Variables					
Constant	12.3592 (9.0)	12.9195 (10.1)	11.4 (8.3)	-8.8163 (3.4)	14.6050 (8.5)
$\ln P_t$	0.0345 (0.4)	0.2029 (2.1)	0.3184 (3.1)	0.0143 (0.1)	0.3507 (3.5)
$\ln A_{t-1}$	0.5418 (8.6)	0.4903 (8.0)	0.5389 (8.7)	0.7321 (5.2)	0.3995 (4.8)
$\ln Dol_{t-1}$	0.1716 (1.6)	0.0907 (0.9)	0.2719 (2.2)	1.6814 (2.0)	
$\ln Sp_t$				0.0499 (1.1)	0.0572 (2.0)
$Dumexch$	-0.6602 (-5.1)	-0.5550 (-4.5)	-0.3923 (-2.9)	-0.3362 (-2.8)	-0.4688 (-5.1)
$Dumwar \times \ln P_t$		-0.0724 (-2.7)	-0.0636 (-2.5)	-0.0022 (-0.1)	
$Dum98$					0.4781 (3.4)
R2	0.9274	0.9406	0.9471	0.9580	0.9703
Durbin-Watson	1.3727	1.4397	1.6196	1.3850	1.5919
Degrees of Freedom	39	39	37	18	18
Residuals' Unit Root - H0: Variable has a Unit Root					
Augmented Dickey-Fuller	-4.5043	-4.6414	-4.9815	-4.2450	-4.1671
Probability	*0.0000	*0.0000	*0.0000	*0.0003	*0.0005

Note: for the regression, Student statistic is between brackets. For the residuals' unit root test we have * for H0 rejected at 1% , ** for H0 rejected at 5% and, *** for H0 rejected at 10%

Table 8 Unit Root Test – H0: Variable Has a Unit Root

	$\ln D_t$	$\ln P_t$	$\ln A_t$	$\ln Dol_t$	$\ln Sp_t$
Level Test					
Augmented Dickey-Fuller	1.2856	0.8632	1.3909	-1.5782	-0.5537
Probability	0.9471	0.8924	0.9566	0.1066	0.4622
First Difference Test					
Augmented Dickey-Fuller	-3.7399	-5.9792	-6.1529	-5.2802	-3.3039
Probability	* 0.0004	* 0.0000	*0.0000	*0.0000	*0.0031

* H0 rejected at 1%, **H0 rejected at 5% and, ***H0 rejected at 10%

Table 9 Johansen Co-integration Test - H0: x and y Are Not Co-integrated

	$\ln D_t$ & $\ln P_t$	$\ln D_t$ & $\ln A_{t-1}$	$\ln D_t$ & $\ln Dol_{t-1}$	$\ln D_t$ & $\ln Sp_t$
Maximum Eigenvalue	19.350	15.9708	14.3311	30.2601
Critical Value	14.26460	14.2646	14.2646	14.2646
Probability	* 0.0072	**0.0266	*0.0488	*0.0001

* H0 rejected at 1% and ,** H0 rejected at 5% and, ***H0 rejected at 10%

Table 10 Granger Causality Test– H0: x Does Not Cause y

	Fisher Statistic	Probability
$\ln D_t$ does not cause $\ln P_t$	7.5141	*0.0094
$\ln P_t$ does not cause $\ln D_t$	8.4541	*0.0061
$\ln D_t$ does not cause $\ln A_{t-1}$	4.8445	0.1100
$\ln A_{t-1}$ does not cause $\ln D_t$	6.2571	***0.0787
$\ln D_t$ does not cause $\ln Dol_{t-1}$	0.2846	0.5971
$\ln Dol_{t-1}$ does not cause $\ln D_t$	3.8669	***0.0572
$\ln D_t$ does not cause $\ln Sp_t$	7.5516	0.1620
$\ln Sp_t$ does not cause $\ln D_t$	2.2314	**0.0102

* H0 rejected at 1%, ** H0 rejected at 5% and, ***H0 rejected at 10%

a negative impact on foreign inflows while exchange rate stability will have a positive impact. The third policy variable is interest rates that we introduce only starting 1993 due to the lack of data before this year. In addition to the three policy variables, we introduce the dollarization of deposits as a confidence indicator impacting foreign inflows and the increase in deposits. Indeed, the dollarization of deposits increased from 38 percent in 1985 to 73 percent in 1986 and has remained above 55 percent ever since. In the years before 1986 dollarization averaged 32 percent and, from 1986 onward, the average dollarization is 69.6 percent. Dollarization and the exchange rate are highly correlated and the two variables are, to a lesser extent, correlated to reserves. To avoid the risks of collinearity, we introduce a dummy for exchange rate with a value of 1 for the years of flexible exchange rate prior to 1999 and a value of 0 for the years of de facto fixity from 1999 onward. In addition, we introduce a dummy for high insecurity and war periods and we interact this dummy with oil price with the assumption that insecurity and war reduce the impact of oil price in terms of foreign financial inflows.

13. ***The results of the estimation illustrate the impact of exogenous factors on the dynamics of foreign inflows and deposits.*** Oil prices are significant in the regression only when we introduce the interaction variable between oil price and the years of war and high insecurity. The dollarization becomes significant starting 1974, since the dollarization rate of deposits for the years 1971 to 1973 was stable at 27 percent. For the years 1972 to 2010, we find that an exogenous increase by 1 percent in international oil prices leads to a 0.20 percent rise in banking sector's deposits. However, if we exclude the years prior to 1974 and to the oil shock, we find that a 1 percent increase in oil prices triggers a 0.32 percent rise in deposits, which reflects the dynamics of foreign inflows to Lebanon. The interaction variable shows the negative impact of war and insecurity on foreign financial inflows and on the rise in deposits that are related to oil wealth. War and insecurity cut one fifth of the elasticity of deposits to oil prices and 1 percent of increase in oil prices produces 0.25 percent increase in deposits in troubled years. Dollarization is also having a positive impact on foreign inflows, and the transition from low dollarization to high dollarization has moved upward the trend of foreign inflows and increase in deposits.

14. ***Beyond the exogenous factor, the monetary policy has a strong endogenous impact on foreign inflows.*** The variation in foreign currency reserves is one of the main policy instruments affecting foreign financial inflows. Indeed, an increase by 1 percent in gross reserves in one year would generate a 0.54 percent increase in deposits in the following year, which means that the signaling effect prevails on the sterilization effect, and the overall impact on deposits of an increase in reserves is positive. The spread can be introduced only starting 1993. For the period 1993-2010, the interaction between oil price and war and insecurity is not significant and we eliminate it. The spread becomes significant only when we remove dollarization and introduce the dummy for 1998. The dollarization rate has indeed stabilized on an average of 67.2 percent over the period 1993-2010 with an average change of +/- 4.4 percentage points around this rate. The dummy for 1998 is significant and captures an increase in deposits that is contradictory with the dynamic of explanatory variables that would have suggested a decrease. Finally, the

exchange rate dummy is significant all over the period of estimation from 1972 to 2010, and shows a negative impact of exchange rate volatility on foreign inflows and deposits in the banking sector. In addition to the monetary policy, some aspects of the fiscal policies might have played in favor of foreign inflows. Fiscal policy might have favored foreign inflows towards the banking and real estate sectors. Indeed, fiscal pressure on interest revenues is low, with a flat taxation rate of 5 percent and capital gains on real-estate transactions are not taxed; the sector being in general subject to weak taxation.

Section 2: Benefits and Costs of Foreign Inflows and Impact on Economic Activity

15. ***The relation between foreign inflows and long-term growth has been subject to many analyses in the past years.*** In the 1960s, the economic theory initially looked at foreign financial inflows as a contribution to relax the foreign currency constraint that exerts a strong limitation on the capacity of developing economies to import technology and equipment. Later, in the 1990s, the availability of foreign finance was seen as beneficial for economic development in economies that suffer from poor access to finance and low savings rates. More recently, a new stream of literature, inspired by the work of Corden and Neary in the 1980s on the impact of a resources boom in terms of deindustrialization and Dutch Disease, has been looking to the distortive effects of foreign inflows. These studies often conclude that foreign inflows are source of important short-term fluctuations in economic activity while their positive impact on long-term growth and development is subjected to specific conditions that will be explored in Chapter 2 of this work.

16. ***Capital inflows in the Mediterranean area had differentiated impact on long-term growth depending on medium to long-term economic policies followed by countries.*** Laureti and Postiglione examined in 2005 the impact of capital inflows on economic growth in eleven Mediterranean countries[6] for the period 1990-2000. They used different topologies of capital inflows (FDI, Portfolio Equity, Portfolio Bonds, Bank Credits, and Short-term Debt) and included some additional variables (Openness to Foreign Trade, National Saving, and Government Consumption). The document concludes that capital inflows produced positive impact on long-term growth only in countries that adopted trade openness and stimulated exports, promoted domestic investment, and followed a policy aiming to increase the productive capacities of the economy. This study classified Lebanon among the countries that were not able to benefit from capital inflows to promote sustained and long-term broad-based growth.[7]

[6] These countries are: Algeria, Cyprus, Egypt, Jordan, Israel, Lebanon, Malta, Morocco, Tunisia, Turkey, and Syria.

[7] Prasad, Rajan and Subramanian examined in 2007 the impact of aggregate capital inflows, which is the current account balance, on long-term growth in a group of 102 countries over the period 1970-2004. The study does not find evidence of any direct link between increased foreign capital inflows and enhanced growth in developing countries. The first reason behind this outcome is institutional weaknesses, including in financial and capital markets, which reduce prospects for an efficient allocation of international flows of resources. The second reason is the real appreciation related to these international inflows which affects export performance through exchange rate

17. ***After the breakout of the global financial crisis, there has been a renewed interest in the literature on the benefits and costs of foreign financial inflows.*** Moreover, all previous work performed in the past twenty years on the pros and cons of foreign inflows is being reexamined and fine tuned. In a recent paper, Agénor has summarized this extensive literature. He has looked to potential costs and benefits of foreign inflows, searched for evidence, and examined possible policy responses. The five main potential benefits are: consumption

Box 3 Benefits and Costs of Capital Inflows and Financial Openness

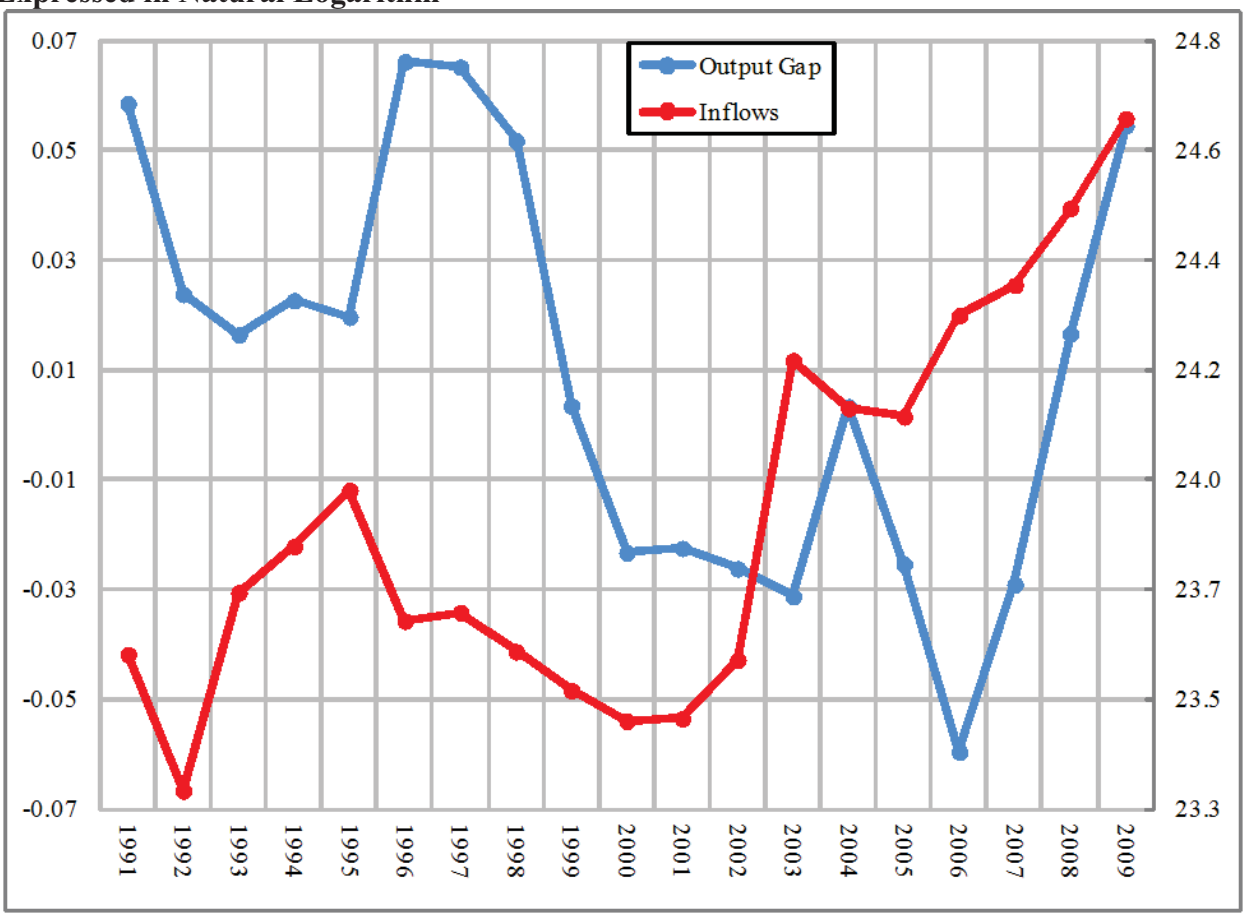
There are several potential benefits associated with capital inflows and increased financial integration. Capital inflows and financial integration can play a countercyclical role by allowing households to ***smooth their consumption*** by borrowing in bad times and lending in good times. On the longer term, capital inflows can ***promote investment and growth*** by providing capital-poor countries with access to financial resources (see the review of the evidence in Box 8). The impact on growth is higher the larger is the FDI share in capital inflows. Regarding macroeconomic discipline, it is believed that the fear of losing access to international financial resources incite countries to ***enforce rigorous macroeconomic policies***. Hence, by promoting macroeconomic discipline, capital flows can ensure a more efficient allocation of resources and higher growth. Also, by bringing foreign banks and more resources into the domestic market, financial openness can ***enhance the efficiency of financial intermediation*** and reduce markups associated with cartelized markets. This leads to increased banks' efficiency and to a more stable financial system. Finally, financial integration and liberalization ***strengthen incentives for structural reforms***. Improved legal environment, improved infrastructures, and a flexible labor market are often seen as the key structural outcomes of financial openness and liberalization.

Capital inflows and increased financial integration can also generate some costs for emerging economies. The ***concentration and lack of access*** occur when capital inflows are directed to few countries and few beneficiaries within countries, while the poorest countries and the poor within countries continue to be deprived from access to international financial resources. The ***misallocation of capital inflows*** result in a sub-optimal impact on long-term growth. This occurs usually when flows of capital finance speculative and low-quality / low productivity investments such as investments in the real-estate sector. Financial openness and capital inflows can induce ***increased macroeconomic volatility***. Indeed, rapid monetary expansion, inflation, real appreciation, and widening current account and budget deficits are among the undesirable externalities of a boom in domestic spending fueled by foreign financial inflows. ***Procyclicality*** seems to be a dominating feature of capital inflows with important short-term component. This behavior of short-term capital flows is related to the frequency and importance of economic shocks in developing countries and to the asymmetry of information that blurs risk perception and triggers herding behaviors. ***Herding and, more specifically, contagion*** have occurred frequently in the past few years with crisis in one country leading investors to rationally and adversely update their beliefs about fundamentals in other countries. Finally, ***foreign banks can distort the local market*** for two reasons: first, they may ration credit to small firms which reduces the efficiency of intermediation and, second, their lower operational costs might incite domestic banks to merge and create banks that are "too big to fail" and exacerbate moral hazard problems.

variations. The document concludes that (i) real appreciation and institutional weakness are interrelated, (ii) effective and well regulated institutions that are implementing consistent policies would help attenuating real appreciation, (iii) increased domestic saving has a positive impact on growth and, (iv) development of manufacturing sector is related to the development of local financial institutions which are able to channel resources, both local and foreign.

smoothing, increased domestic investment and growth, enhanced macroeconomic discipline, increased banking system efficiency and financial stability, and increased incentives for structural reforms. The six main potential costs are: the concentration of capital flows and the lack of access to these flows, the domestic misallocation of capital flows, the loss of macroeconomic stability, the procyclicality of short-term flows and risk sharing, the herding and contagion cases and the volatility of capital flows, and the risk of entry by foreign banks. We summarize the findings of this review in Box 3 and we focus on the specificity of the Lebanese case in the following paragraphs.

Chart 6 Output Gap (left-hand axis) and Foreign Financial Inflows (right-hand axis) - Expressed in Natural Logarithm



18. ***Looking into the case of Lebanon, there are evidences of a sustained positive impact of foreign inflows on consumption and domestic investment.*** Economic activity is highly dependent on foreign financial inflows that have been attracted from the region in the past 40 years. There are periods of strong correlation between foreign inflows and short-term

fluctuations in GDP, as shown in Chart 6 that compares output gap[8] to inflows over the past 19 years.[9] This correlation reaches 0.85 for the period 1996-2002 and 0.99 for the period 2006-2009. Foreign inflows have indeed fueled an increase in aggregate demand and contributed to the increase in consumption – which averaged 100 percent of GDP between 1997 and 2009. Foreign inflows have also provided resources for investment in both physical and human capital. Investment; including construction; averaged 24.7 percent of GDP between 1997 and 2009, with a minimum of 18.7 percent in 2002 and a maximum of 34.3 percent in 2009. Private investment averaged 19 percent of GDP in 1997-2006, and rose to 30.5 and 34.3 percent respectively in 2008 and 2009. Public investment has declined from 6.3 percent of GDP in 1997 to 2.1 percent in 2009. Imports of goods reached between 40 and 50 percent of GDP. Finally, banks lending to the private sector accelerated, increasing by 15 percent in 2009 and by 25 percent in 2010.

19. ***Other benefits that can be attributed to the occurrence of large foreign financial inflows are essentially the improvements witnessed in the efficiency of the banking sector,*** especially in all aspects related to processes, practices, and regulations aiming to create an environment conducive to the attraction of foreign resources and their stabilization within the domestic banking system. As we have already seen in Section 1, the stabilization of exchange rate and the accumulation of reserves are among those policy choices that were key for securing financial inflows into the banking sector, and were in turn reinforced by these inflows. Also, the foregoing of the inflation tax and the monetary discipline it requires is a major achievement in terms of macroeconomic stability and might have stimulated foreign financial inflows by securing real returns on deposits in banks.

20. ***One of the potential costs that seem to be materializing in Lebanon is related to the misallocation of foreign financial inflows which seem to be benefiting essentially to sectors producing non-traded goods.*** National accounts show a decline in the share of manufacturing and agriculture sector in the real GDP at factor cost from 21.5 percent in 1997 to 17.0 percent in 2009. Recent figures are even more striking: while real GDP increased by 9.3 percent in 2008 and by 8.5 percent in 2009, the value added in the manufacturing sector declined by 0.4 and 4.2 percent respectively. In construction and trade sectors, value added increased by respectively 17.1 and 20.1 percent in 2008 and by 10.0 and 17.4 percent in 2009. We also observe a strong similarity between the long-term evolutions of compensated checks and real estate transactions, which suggests that real estate and construction became directly and indirectly the main determinant of economic activity in Lebanon (see Chart 7 in the below). Chart 8 shows the strong correlation between foreign financial inflows, excluding those related to exports of goods,

[8] The output gap we calculate here is the natural logarithm of the ratio of observed GDP to trend GDP estimated using the Hodrick-Prescott filter. For this calculation, we used real GDP figures and foreign financial inflows corrected for the USA CPI inflation with 2010 as base year.

[9] For GDP, figures for 1997-2009 are available from national accounts. There are also official GDP figures for 1994-1996 prepared under a different methodology of national accounts. For the period 1990-1993, we have used GDP figures available from Eken et al. (IMF, 1995 and 1999).

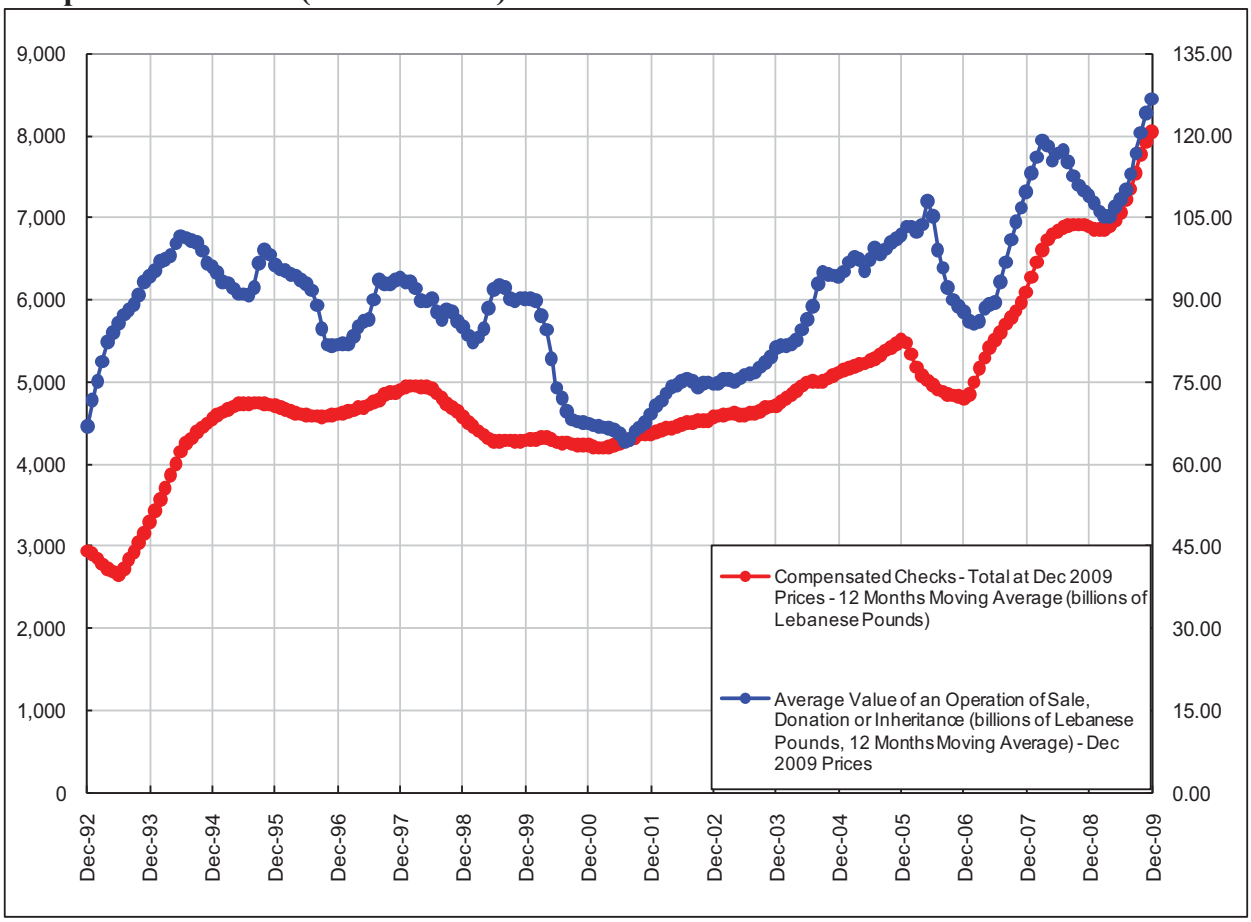
and the indicators of the real estate and construction sectors. Moreover, up to 68 percent of total investments were concentrated in Construction and Public Works in the period 1997-2009. Also, industries providing input to the construction sector have absorbed a large part of the remaining investments. In both construction and industries related to this sector, employees are mainly foreign unskilled labor. Another indicator of low investment in productive capacities is the import of machinery which did not exceed US$139 million per year between 1997 and 2009 and remained below 0.7 percent of GDP on average over the same period (See Table 11).

Table 11 Share of Imports of Machinery to GDP, Imports, and FDI

In Percent	2002	2003	2004	2005	2006	2007	2008	2009
Share to GDP	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6
Share to Imports	1.6	1.5	1.4	1.5	1.4	1.4	1.2	1.2
Share to FDI Inflows	7.8	3.8	5.4	4.1	4.1	4.8	4.3	4.1

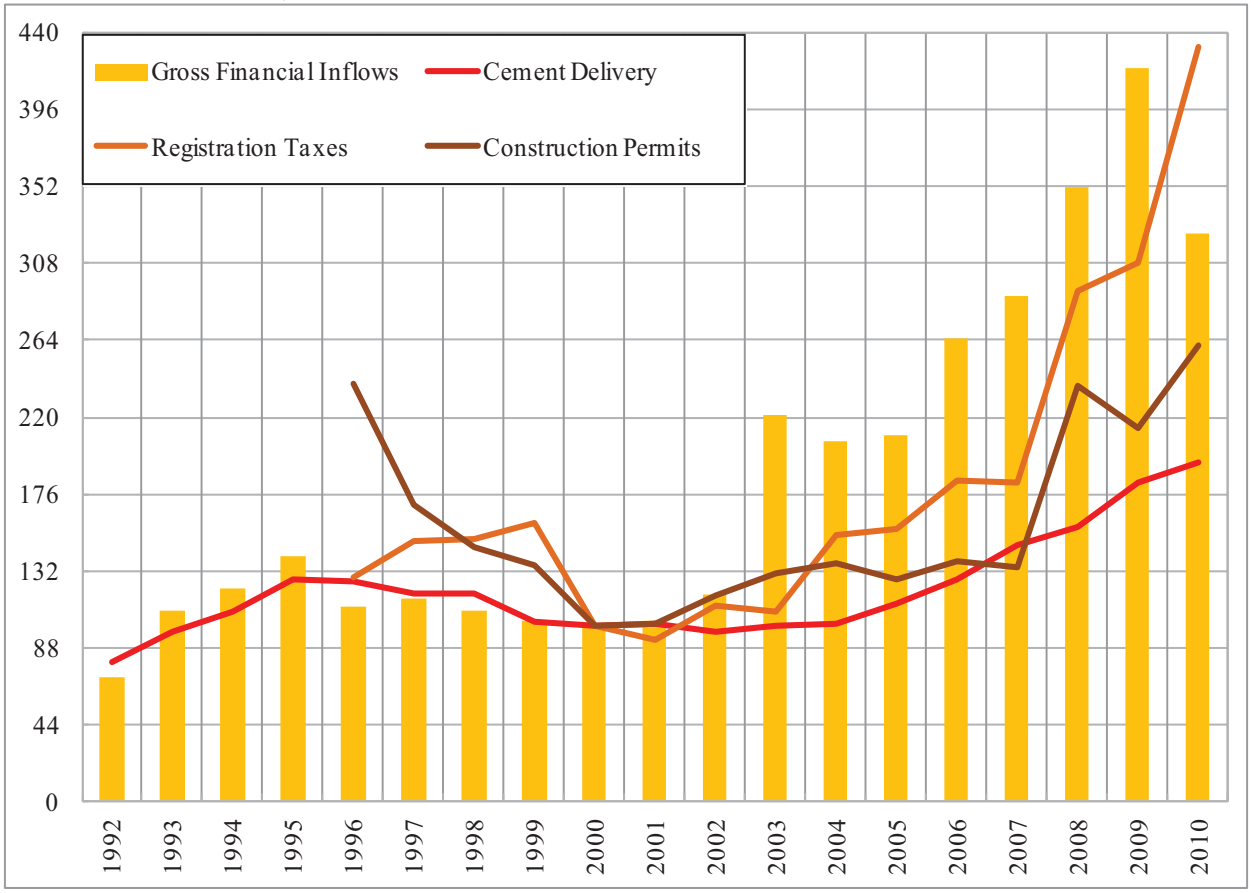
Source: Central Administration of Statistics – CAS, www.cas.gov.lb, Lebanese Customs – www.customs.gov.lb, National Accounts – www.pcm.gov.lb

Chart 7 Average Value of a Real Estate Transaction (right-hand axis) and Value of Compensated Checks (left-hand axis)



Sources: Central Bank of Lebanon – BdL, www.bdl.gov.lb and Central Administration of Statistics – CAS, www.cas.gov.lb, World Bank Staff Calculation

Chart 8 Gross Financial Inflows and Indicators of Real Estate and Construction (Index, Base Year 2000 =100)



Sources: Central Bank of Lebanon – BdL, and Central Administration of Statistics – CAS, World Bank Report, "Real Estate market Activity and Exposure to the Financial Sector in Lebanon", June 2010 – Not Published

21. ***Another potential cost related to the availability of foreign financial inflows is the loss of macroeconomic stability.*** Aside from the relative stabilization of inflation mentioned in paragraph 19, macroeconomic imbalances deepened in Lebanon over the past twenty years, with large external current account and public deficits. Observers often express their surprise to the resilience of the Lebanese economy towards these major distortions and other important shocks. It is possible that foreign inflows provided easy financing to the Lebanese economy which allowed a relaxation of the budget constraint of the Government, Households, and the private sector in general. This relaxation of constraints led to the expansion of public and private spending and demand. As a consequence, Lebanon managed to live through major distortions and deficits, which meanwhile continued to deepen, making the reliance on foreign financial inflows even more crucial.

22. ***The political polarization and fragmentation in Lebanon and the lack of decision making and enforcement of reform measures might have played significantly in favor of using foreign financial inflows to overcome distortions.*** Also, the struggle over the capture and the

redistribution of foreign inflows and their benefits, especially those inflows going into the real estate sector, might have contributed to shaping political polarization. Indeed, if foreign inflows were fueling investments in innovative, productive, and export oriented sectors; or if opportunities in these sector were attracting inflows and banks lending; then the social and economic fabric that would have developed around these sectors would have contributed to modifying the political configuration in the country. Macroeconomic policy choices would then have taken into account the interest of growing sections of the population involved in productive

Box 4 The Development of Non-Traded Sectors in Lebanon: Importance and Different Views

Among the comments the team received, there are important observations and views from the Ministry of Economy on the place of non-traded sectors, essentially the real estate and construction, in the economy. In the following, we report the comments as received: "The report mentions that Foreign Financial inflows (FFIs) are being misallocated since investments are highly concentrated in sectors producing non-tradable goods, namely real estate, construction and banking. The Ministry recognizes that FFIs are highly concentrated in these sectors, but it is important that the World Bank mentions all implications and relevant impacts, either positive or negative. Actually, investments in the real estate sector in Lebanon are not of a speculative nature. They are mainly made for housing and lodging purposes, usually driven by improvements in income given the high level of emigration. In addition, the Lebanese real estate has historically been regarded as a safe haven for investors due to continuous local and regional instability. In fact, real estate, construction and banking have been supporting economic growth especially in the last four years. These sectors have contributed in terms of value added to the economy, job creation, capacity-building and generation of business opportunities. This role has augmented thanks to the growing regional expansion of the activities of Lebanese operators and particularly banks. Hence, apparent distortions related to the Dutch Disease may have been applicable over the 1987-2000 period due to real effective exchange rate appreciation. Since 2000 however, Lebanon has been benefiting from FFIs by channeling investments into more productive sectors, including tourism, technology, industry, agro-industry, ICT, media and agriculture".

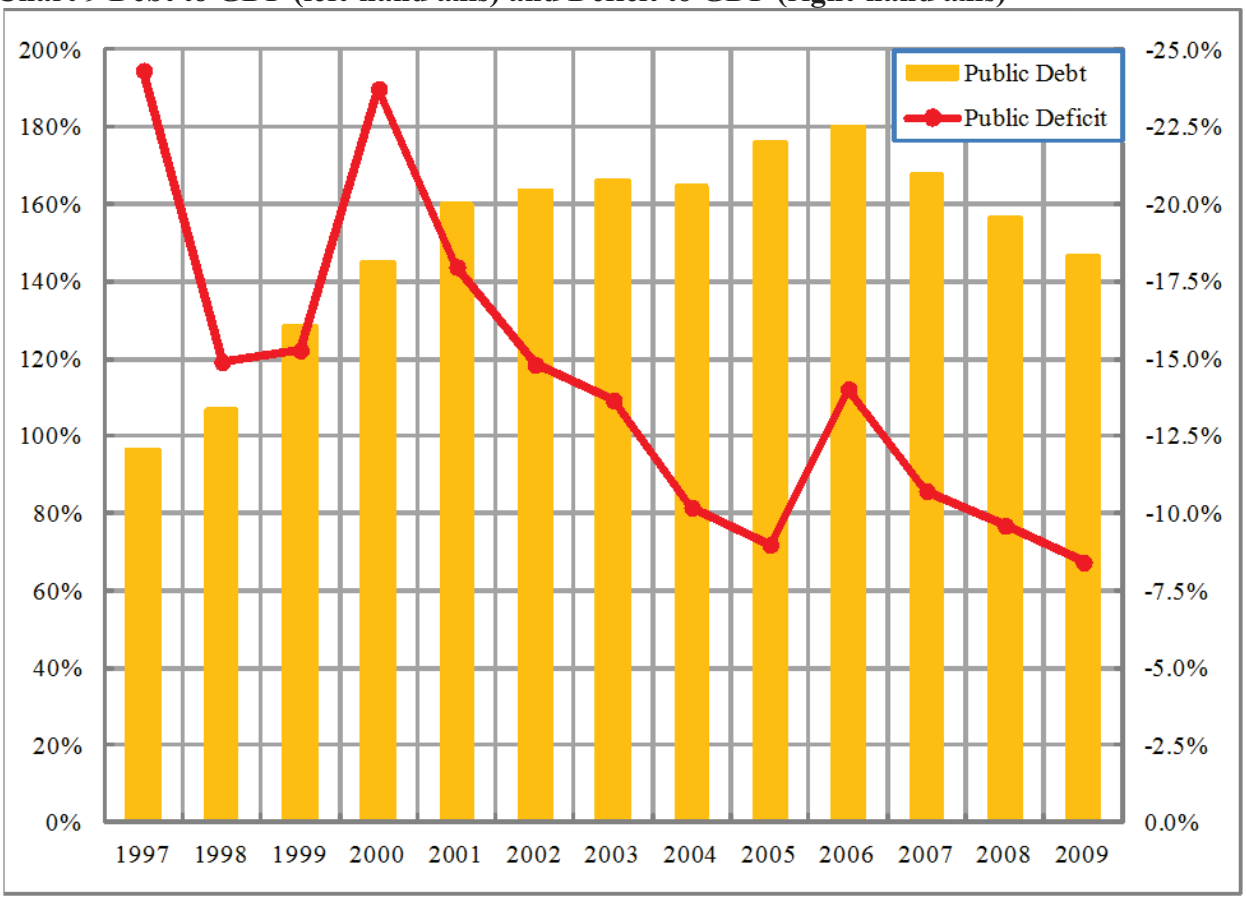
The team acknowledges the importance of the above-mentioned sectors in Lebanon and is actually calling for improved management and allocation of FFIs to build on the strengths of the Lebanese economy and promote broad based, diversified and inclusive long-term growth. The relation between Diaspora wealth and demand for real estate and the role of the sector as safe haven clearly mean that demand for real estate in Lebanon is not of short-term speculative nature, but it also means that the most plausible reasons for real estate acquisition could be secondary housing and, more important, asset diversification. One consequence of this high demand is an increase in prices that reduces the accessibility of housing for residents and undermines business opportunities for many activities using real estate as input. And; following a period of decline in 2002-2005; the overall price increase in the economy seems to be leading to a recovery in real appreciation, as shown through several indicators mentioned later in the report, including price series extracted from National Accounts. While the report does not intend to perform sector diagnosis, it is however important to mention that value chain and sector backward and forward linkages in the above-mentioned sectors are short or extraverted. Indeed, these sectors rely heavily on imported inputs and employ a large number of unskilled or semi-skilled foreign labor. In general, these sectors seem to have little contribution to job creation. A recent World Bank regional report* showed that manufacturing and other services (communications, business services, financial services, software and IT services, healthcare, space and defense) absorbed only 25 percent of total FDIs in the Middle East region over the period 2003-2011, but contributed to 74 percent of jobs creation. In parallel, tourism and real estate absorbed 46 percent of FDIs and contributed to only 19 percent of jobs creation.

* Reference: *Investing for Growth and Jobs*, Economic Developments and Prospects-September 2011, The World Bank, Middle-East and North Africa Region, pages 30 to 34.

and competitive activities. For example, pressures to deal with real exchange rate appreciation would have increased in an environment with strong, competitive, and export oriented innovative

industries. At the end, the interaction between political polarization and the composition of foreign inflows have prevailed over the potential macroeconomic disciplining effect of these inflows in the case of Lebanon.

Chart 9 Debt to GDP (left-hand axis) and Deficit to GDP (right-hand axis)

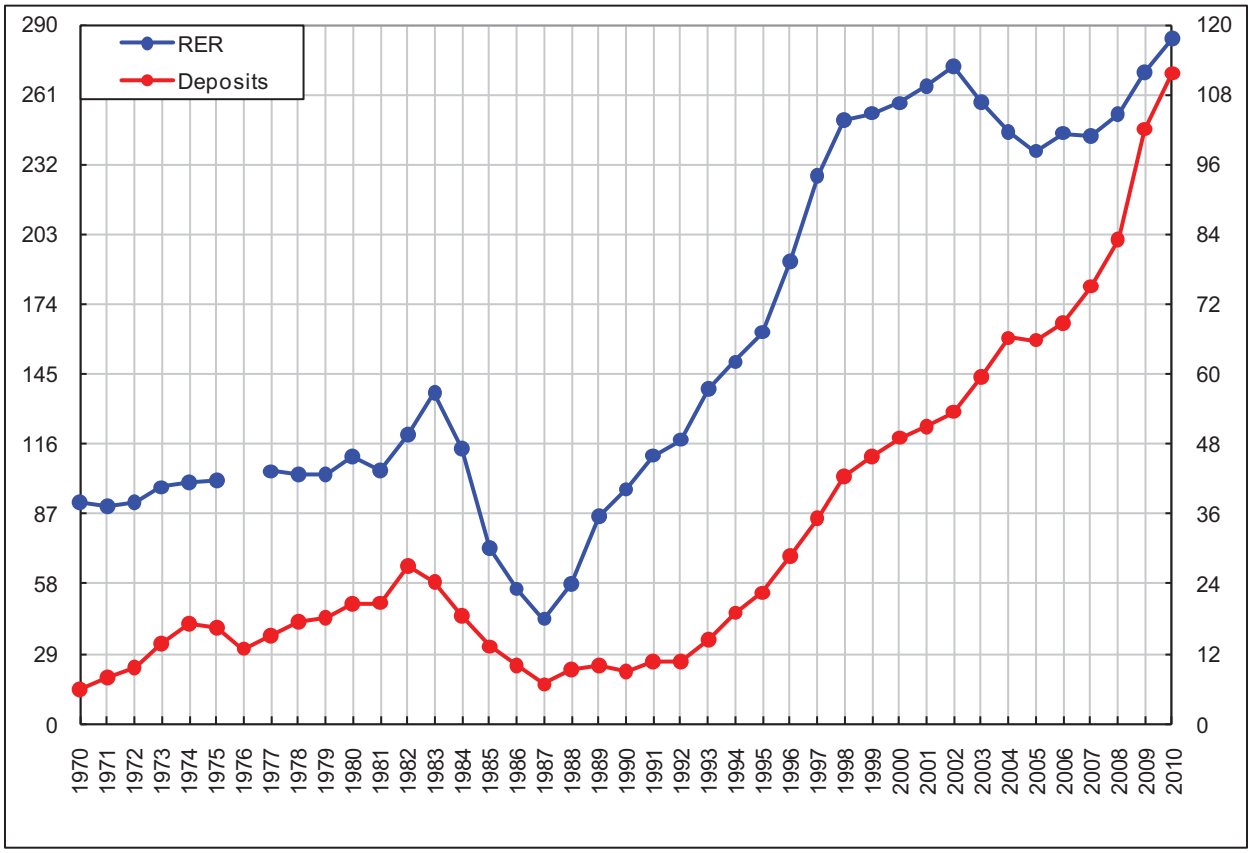


Sources: for GDP figures, National Accounts www.pcm.gov.lb, for debt and deficit, Ministry of Finance, www.finance.gov.lb

23. ***Several indicators help to illustrate the loss in macroeconomic stability and discipline in Lebanon that can be associated with large inflows of financial resources.*** Indeed, the trade-in-goods deficit has always remained over 30 percent of GDP during the years 1997 to 2009. Also, current account deficit has constantly remained above 10 percent of GDP with peaks of 20 percent and above in some years. Overall public deficit before grants remained high at 8.4 percent of GDP in 2009, although much lower than the 24.3 percent reached in 1997. Debt to GDP remained high at 146.5 percent in 2009[10], although declining from the 180 percent peak of 2006 (see Chart 9 in the above). This resulted in a structural deficit in external accounts and in

[10] The Ministry of Labor observed that the level of the debt would have been higher hadn't the Government benefited from grants and financial engineering related to Paris-I, Paris-II and Paris-III conferences and from several debt reductions from BdL Treasury Bills portfolio using the gold valuation account. While acknowledging the

Chart 10 Evolution of Deposits (right-hand axis – billions of US$ at the prices of 2010) and of the Real Exchange Rate (left-hand axis - index)



Note: the real exchange rate is the yearly average of monthly RER calculated using (i) the average monthly exchange rate of the Lebanese Pound to the US Dollar, (ii) the monthly Consumer Price Index for Lebanon calculated by the Central Administration of Statistics until 1975 and by the Consultation and Research Institute starting 1977 and, (iii) the Manufacturing Unit Value index calculated by the World Bank.

the accumulation of a large public debt. These macroeconomic imbalances have pushed BdL to accumulate a substantial amount of foreign reserves that helped to secure a continuous inflow of resources which, in turn generated an additional accumulation of reserves. The reserves of BdL have indeed increased by 75 percent in 2008 and by 50 percent in 2009, reaching a high 74 percent of GDP (US$25.7 billion and 19 months of imports of goods).

24. ***In parallel to fueling short-term growth and fluctuations in economic activity and reducing macroeconomic stability, foreign financial inflows have generated an appreciation of the real exchange rate.*** All over the period from 1970 to 2009, we observe a striking similarity between the evolutions of the real exchange rate and of deposits in the banking sector[11] that are,

pertinence of this observation, we do not think it has any consequence on the relevance of the analyses presented in this report and we have chosen to use the officially published figures of the public debt.

[11] Another option would have been to use the lending of the banking sector. However, by doing so, we would have forgone any chance to track the impact of those inflows that do not transit directly through the banking sector but affect the money supply when they are absorbed and used by other sectors of the economy.

as discussed earlier, the best proxy for foreign inflows on the long-term in Lebanon. Chart 10 in the above illustrates the behavior of deposits and the evolution of the real exchange rate and shows that real exchange rate might have been multiplied by more than two over 1992-2009, despite the decline observed between 2002 and 2005[12]. In addition, national accounts data available from 1997 to 2009 are quite informative about the evolution of relative prices both internally and internationally. Indeed, the relative price of sectors producing non-traded goods (construction, services, trade, and transport and communication) to sectors producing traded goods (agriculture and industry) has increased by 11 percent between 1997 and 2009, which means that producers have more incentive to reallocate factors of production towards sectors that produce non-traded goods. Also, relative domestic prices, measured by the deflator of GDP, to international prices, measured by the deflator of international trade (imports + exports) have increased by 21.4 percent over the same period. The relative price of domestic traded goods to international prices has increased by 21.3 percent as well. Both increases in relative prices point to a deterioration in Lebanon's competitiveness on the international market.

25. ***Some potential benefits from foreign financial inflows are not materializing in the case of Lebanon.*** Foreign financial inflows do not seem to have promoted structural reforms. On the contrary, structural reforms are lagging behind, which might be a direct result of the composition of foreign inflows. Indeed, the interaction between political polarization and the composition of foreign inflows that produced a relaxation of constraints at the expense of overall macroeconomic stability seems also to be detrimental for structural reforms. The situation of the electricity public company in Lebanon (EdL) offers a striking example of the possible distortive impact of the availability of easy financing through large foreign financial inflows on the relaxation of budget constraints and on the delays in structural and sector reforms in a politically fragmented and polarized environment. Serious measures to deal with the deficiencies of the electricity sector have been pending for the past 15 years and, meanwhile, the deficit of EdL increased from 1.4 percent of GDP in 2003 to 4.3 percent in 2009, with a peak of 5.4 percent in 2008. In turn, the lack of structural and sector reforms are likely to deter both the intermediation of resources and the inflows of FDIs in favor of productive and innovative sectors.

26. ***Some potential costs related to foreign financial inflows are either irrelevant for Lebanon or are being neutralized through policy measures.*** For instance, Lebanon can be considered among the countries benefiting from the concentration of foreign inflows and does not seem to lack any access to the international flows of financial resources. Moreover, the country seems to follow policies aiming to magnify the inflows of financial resources (see Section 1). The risks of procyclicality and volatility of short-term capital inflows are being dealt with through a tight management by BdL with substantial accumulation of foreign reserves (see paragraph 23 and Section 3) that, as confidence factor, is in turn stimulating inflows of foreign

[12] Worth noting that this decline occurred despite the introduction of the VAT in 2002; which is supposed to increase domestic prices relatively to international prices.

financial resources into the country. This however raises the questions of the sustainability of such a policy and of the cost of sterilization and reserve accumulation associated to it. Finally, the majority of foreign banks have already left the country in the years when sovereign risks became alarming and debt to GDP ratio steadily increased beyond 100 percent.

27. ***There are several channels through which foreign financial inflows and increase in deposits affect activity and short-term growth, one of these channels and for which data is available and quantification is possible is Banking intermediation.*** The level of foreign inflows directly impacts the level of deposits which is in turn affecting lending to the private and public sectors and economic activity. The correlation between bank lending and bank deposits is very high at 0.98 over the period 1988-2009 and it is possible to find a strong and positive relation between bank lending and economic activity. Together with lending, other variables are also impacting economic activity. Interest rates on loans are one important variable that can have a major impact on short-term economic activity. Indeed, increases in interest rates on loans are expected to have a negative impact on short-term growth. In addition, it is expected that periods of instability and insecurity would have an impact on interest rates. Since we are using data starting 1988, we cover the years 1989 and 1990 that witnessed one of the longest and most destructive episodes of the Lebanese war of 1975-1990. Also, we account for the impact of the years of economic downturn (1998-2000) where the impact of lending on economic activity was likely to be attenuated due to the overall negative environment and expectations.

28. ***The results of the regressions underline the role of banking intermediation as one of the major channels through which foreign inflows affects short-term economic fluctuations.*** The econometric analysis presented in Box 5 shows a strong relation between short-term growth fluctuations and bank lending to the private sector. In all regressions, the coefficient associated with the change in lending to the private sector is around 1.3, meaning that a change in lending by US$1 million can lead to a change in short-term GDP by US$1.3 million. For the period 1988-2009, the impacts of the change in private lending interest rates are significant. A change by 1 basis point in debtor interest rates would generate a change in the opposite direction in GDP amounting from US$3.8 to 8.5 million. The coefficients related to the interaction variables are very important. The interaction between the war dummy and debtor interest rates shows that instability tends to reverse the relation between interest rates and short-term economic activity. This indicates that interest rates become more a confidence indicator in times of high risk, and an increase corresponds to an effort by the authorities to compensate for these risks. The interaction between the 1998-2000 dummy and change in lending is also important and shows that in years of strong downward in activities, the impact of lending on short-term growth is attenuated. While in this document we only present the results of the analysis related to private lending; we have also performed additional econometric analysis on the impact on economic activity of public borrowing, and of public and private borrowing taken together. The analysis shows a disconnect between economic activity and interests rates on public borrowing and on public and private borrowing taken together. In addition, we find that the coefficient associated with the change in

Box 5 The Channel of Banking Intermediation and the Fluctuations in Economic Activity

Let ΔGDP be the change in the Gross Domestic Product and ΔLo the change in lending to the private sector, both expressed in US dollars at the prices of 2010. Let ΔInt be the change in debtor interest rate on loans, $Dum9800$ the dummy accounting for the downturn in economic activity during the years 1998-2000, that we will interact with the change in lending and $Dumwar$ the dummy for war and insecurity years that we will interact with the change in debtor interest rate. The correlation between GDP and lending and GDP and debtor interest rate are respectively 0.98 and -0.94. Since data on GDP for 2010 is not yet available from official sources, we estimate the following equation for the period 1989-2009:

$$\Delta GDP_t = c + \alpha \Delta Lo_t + \beta \Delta Int_t + \theta\left(Dum9800 \times \Delta Lo_t\right) + \delta\left(Dumwar \times \Delta Int_t\right) \qquad \text{(E-1-4)}$$

Table 12 shows the results over three time horizons to take into account (i) the problems arising from the absence of official national accounts for 1988-1993 and (ii) the methodological break between the national accounts for 1994-1996 and 1997-2009. We have also performed the estimation for 1988-2009 with the two dummy variables accounting for the 1989-1990 and 2005-2006 war and insecurity episodes and for the economic downturn of the years 1998-2000. Tables 13 to 15 summarize respectively the tests of stationnarity, cointegration and causality.

Table 12 Relation between Banks' Lending and Growth

Dependent Variable: ΔGDP_t	(1) 1989-2009	(2) 1989-2009	(3) 1995-2009	(4) 1998-2009
Independent Variables				
Constant	2.4*10^8 (0.8)			
ΔLo_t	1.2125 (6.1)	1.3134 (8.8)	1.2868 (10.4)	1.3039 (8.0)
ΔInt_t	-3.3*10^10 (-2.2)	-3.8*10^10 (-2.7)	-6.1*10^10(-1.9)	-8.5*10^10 (-2.2)
$Dum9800 \times \Delta Lo_t$	-1.0212 (-3.0)	-1.0086 (-3.0)	-1.0245 (-3.8)	-1.0861 (-3.7)
$Dumwar \times \Delta Int_t$	9.3*10^10 (2.0)	8.5*10^10 (1.9)		
R2	0.7545	0.7453	0.8514	0.8695
Durbin-Watson	1.8708	1.8072	1.7761	1.5060
Degrees of Freedom	21	21	15	12
Residuals' Unit Root - H0: Variable has a Unit Root				
Augmented Dickey Fuller	-4.0794	-3.9495	-3.35358	-3.4620
Probability	*0.0003	*0.0005	*0.0026	*0.0029

Note: for the regression, Student statistic is between brackets. For the residuals' unit root test we have * for H0 rejected at 1% , ** for H0 rejected at 5% and, *** for H0 rejected at 10%

Table 13 Unit Root Test – H0: Variable Has a Unit Root

	ΔGDP_t	ΔLo_t	ΔInt_t
Level Test			
Augmented Dickey-Fuller	-0.4509	-0.3136	-1.1168
Probability	0.5072	0.5603	0.2289
First Difference Test			
Augmented Dickey-Fuller	-3.8502	-3.9748	-5.7156
Probability	* 0.0006	*0.0004	*0.0000

* H0 rejected at 1%, **H0 rejected at 5% and, ***H0 rejected at 10%

Table 14 Johansen Co-integration Test - H0: x and y Are Not Co-integrated

	ΔGDP_t & ΔLo_t	ΔGDP_t & ΔInt_t
Maximum Eigenvalue	14.4063	14.8215
Critical Value	14.2646	14.2646
Probability	* *0.0475	* *0.0408

* H0 rejected at 1%, **H0 rejected at 5% and, ***H0 rejected at 10%

The unit-root tests indicate that all series are stationary in first differences and the co-integration tests reject the null hypothesis of no co-integration. The causality tests do not confirm the causality from the change in lending to change in economic activity. These tests fail to conclude also on the direction of the causality between the dependent variable and the change in debtor interest rates.

Table 15 Granger Causality Test– H0: x Does Not Cause y

	Fisher Statistic	Probability
ΔGDP_t does not cause ΔLo_t	0.8052	0.5148
ΔLo_t does not cause ΔGDP_t	0.8868	0.4756
ΔGDP_t does not cause ΔInt_t	1.0806	0.3974
ΔInt_t does not cause ΔGDP_t	0.1825	0.9061

* H0 rejected at 1%, ** H0 rejected at 5% and, ***H0 rejected at 10%

public debt is around 0.7 percent over the period. This result reflects the low stimulating impact of public deficits; which is consistent with the large share of debt servicing in public spending and public deficits. Finally, the coefficient on overall public and private borrowing varies between 0.53 and 0.83 over the period of analysis.

Section 3: Monetary Policy, Regulation, and Macroeconomic Management by the Central Bank of Lebanon - BdL

29. ***Foreign financial inflows have significant policy implications and the management of these inflows is under close scrutiny from BdL.*** Foreign financial inflows lead to an expansion of the deposits base and the authorities in Lebanon, especially BdL, constantly face the risk of seeing these large inflows fueling higher fiscal imbalances, increased trade and current account deficits, asset bubbles, and generating appreciation in the exchange rate with deterioration in competitiveness, as already mentioned in the previous section. As response to the increase in foreign inflows, BdL has so far tightened regulation and followed a policy of sterilization and built-up substantial reserves in foreign currencies at high cost. Other policy options would have had limited impact: the nominal exchange rate is pegged to the US$ at the rate of 1507.5 Lebanese Pound (LBP) per US$ since the year 2000. Interest rate policy still has some impact, despite the dollarization rate of deposits and loans to the private sector reaching respectively 65 and 81 percent. The BdL has also tried to stimulate lending to the private sector by subsidizing loans and by providing exemptions on compulsory reserves.

30. ***Bank secrecy is an advantage for the banking sector in Lebanon.*** Banks also have had a strong reputation for resilience to economic, political, and security shocks.[13] Starting June 2008, BdL has tightened regulations on asset choices by banks and reinforced risk assessment and monitoring requirements. These new regulations included securing "the approval of the Central Bank of Lebanon prior to any direct or indirect investment or contribution in any foreign financial institution," extending the control of BdL over "the investments and contributions done

[13] This resilience has been reinforced by the commitment of the Central Bank to support merger and acquisitions operations in the sector, especially in the late 1990s and early 2000s. Indeed, in December 2005, loans from the Central Bank amounted to 28 percent of Commercial Banks' capital account. Since then, Banks increased their capital substantially and the share of BdL's loans declined to 8 percent of total Banks' capital by December 2010.

by companies and funds in which the Lebanese Banks own parts and shares of capital"; BdL also restricted lending to the construction sector to "60 percent of the value of the project, except for primary residences." BdL has also issued four basic circulars aiming to: (i) compel each bank to establish an internal audit committee; (ii) instruct banks to review their capital adequacy in line with Basel II norms; (iii) regulate credit risk mitigation techniques; and (iv) regulate external audits using a greater rotation of external auditors. In addition, BdL also issued intermediary circulars asking banks to: (i) release to BdL their operations statements more frequently, including on documentary credit operations; (ii) report more details in their loan portfolio to the Central Office of Credit Risk at BdL; and (iii) increase the reserves for unspecified risks.

31. ***Sterilization, including the building-up of reserves in foreign currencies, is one of the main tools of managing foreign inflows for BdL.*** The main sterilization tools for BdL are LBP-denominated certificates of deposits (CDs) and compulsory reserves in LBP and reserves in foreign currencies. Reserve requirements on LBP denominated deposits are quite high: 25 percent on demand deposits and 15 percent on term deposits. These LBP denominated reserves are not remunerated. In addition, banks are required to deposit with BdL 15 percent of all customers' deposits in foreign currency. These required deposits are remunerated. BdL has always considered the build-up of substantial foreign reserves as a buffer against the absence of serious structural reforms and fiscal consolidation, and against the high regional and internal volatility facing Lebanon. Foreign currencies reserves have reached US$28.6 billion at end-2010. Nevertheless, the confidence signaling effect of reserves accumulation is prevailing on the sterilization effect and higher reserves are improving the confidence in the system which is then able to attract an increasing amount of deposits (see paragraph 14 and Box 2). Almost half of the counterparts for foreign currency reserves are either required or free deposits by banks and the average interest rates on these deposits reached 3.4 percent in December 2010. The CD portfolio held by banks increased to US$18.5 billion at end-2010. The average rate on these CDs was 9 percent in December 2010. With the average cost of resources at 2.8 percent in foreign currencies and at 5.7 percent in LBP, the spread realized by banks is allowing them to attenuate the impact of quantitative sterilization on their margins.

32. ***In the immediate aftermath of the global economic crisis, BdL has deliberately kept interest rates high, raising the spread between domestic rates and the international market.*** Lebanon benefited then from increased foreign inflows from investors looking to secure assets and attracted by the large spread between Lebanon's and international market's deposit interest rates. The large spreads between local currency deposits and foreign currency deposits also triggered a conversion into the local currency and boosted foreign reserves. Because of the cost of the sterilization policy, and the risks and costs for banks related to the strong increase in liquidity from large foreign inflows, BdL initiated a new interest rate policy in October 2009 to gradually reduce the spread on depositor rates between Lebanon and the international market. The tangible impacts of this policy are: (i) a slowdown in inflows into the banking sector, (ii) a

stabilization or an increase of dollarization rates, and (iii) a slowdown in the accumulation of reserves.

33. ***In conjunction with the modification of interest rate policies, BdL has introduced several measures to promote private sector credit and help banks improve the use of their excess liquidity.*** These measures include schemes to subsidize interest payments, the extension of special guarantees to borrowers, and exemptions from mandatory reserves to creditors. Initially focusing on projects in agriculture and industry, these schemes were gradually expanded to include other sectors, such as tourism and housing. Although the special schemes exist also for loans denominated in foreign currencies, they are essentially directed toward lending in Lebanese pounds (LBP). All currencies combined, these schemes are well developed and represent more than 50 percent of total lending in agriculture, tourism, housing, and industry. Without these schemes, some sectors would have been crowded out from the credit market, including agriculture, where more than 95 percent of loans are through special schemes. Also, with the sharp rise in real estate prices, these schemes improve the access to housing for middle class. The modification of interest rate policy and the increased lending to private sector widened the spread between uses and resources of banks in LBP to 159 basis points (bps) in December 2010 (from 111 bps in December 2009), and in U.S. dollars to 167 bps (from 148).

Section 4: Improving the Management and Use of Foreign Financial Inflows - Policy Choices and Long-term Implications

34. ***There is a need to examine options of using foreign financial inflows to foster long-term growth, beyond their impact on aggregate demand and on the provision of easy alternatives to reform.*** Lebanon needs to improve the potentials of long-term growth and employment generation. The availability of foreign financial inflows and of a well educated and entrepreneurial labor force are two major advantages on which the country can capitalize in order to move to a new path of development and growth. Although foreign inflows are essentially an

Box 6 The Weakness of the Capital and Financial Market and the Absence of a Structural Response to the Distortive Impact of Foreign Inflows

The challenge of managing foreign inflows in Lebanon is reinforced by the weakness of the financial and capital markets. Indeed, while the banking sector is the main instrument for channeling foreign inflows, the Beirut Stock Exchange (BSE) remains small with capitalization not exceeding 43 percent of GDP in 2009; and the financial market lacks sophisticated instruments. The financial and capital markets are neither re-exporting resources through sophisticated and diversified instruments nor channeling them to the productive sector. Of the 11 companies listed in the BSE, 6 are commercial banks and represent 72 percent of market capitalization, 3 are cement plants and there is one car trade company and one real estate company that represents alone 25 percent of market capitalization. In sum, the weakness of the capital market and the imperfections of the financial market (i) are not allowing for an efficient management of foreign inflows, which puts a strain on macroeconomic policies leading to a substantial accumulation of reserves and, (ii) are limiting the efficient channeling of resources to the economy and the built-up of broad-based growth potentials.

Reference: Beirut Stock Exchange – www.bse.com.lb

Box 7 Resource Booms, Capital Inflows and Dutch Disease – Policy Options and the Role of Financial Market Development as a Structural Response to the Distortive Impact of Foreign Inflows

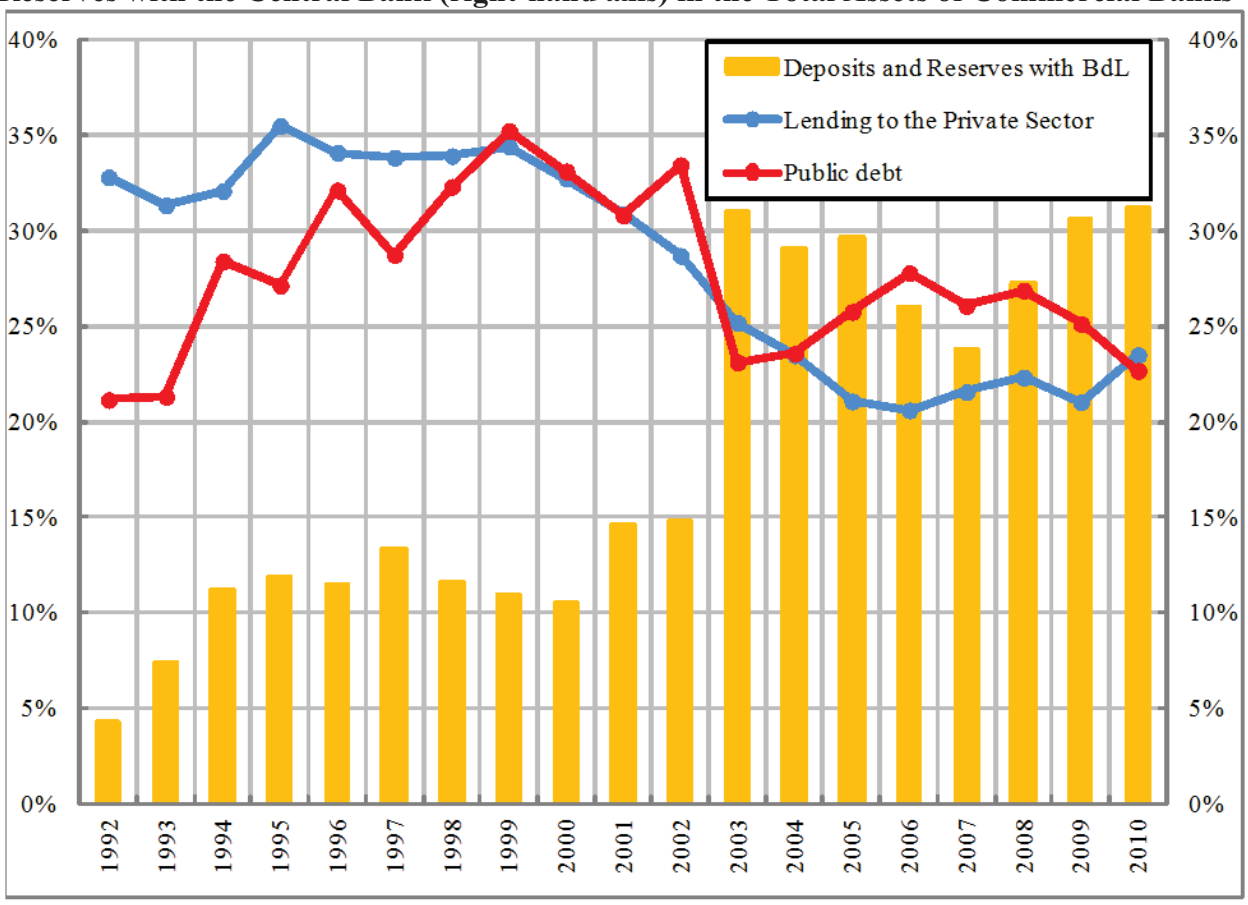
While this work does not aim to study the policy mix needed to manage the resource boom expected in case Lebanon becomes an oil producer, it is nevertheless useful to point to some of the recent work done on this subject. Indeed, Brahmbhatt, Canuto and Vostroknutova have examined the adequate macroeconomic and structural policies that would attenuate the distortive effects of natural resources booms and capital inflows. They focus on the role of policy choices and governance in managing resource booms and determining their effects. The authors identify the spending effect as being the main channel of negative impact transmission of Dutch Disease in developing countries. They suggest that the adequate fiscal policy should be balanced between the need to implement development objectives and the need to constrain the spending effect. Other instruments are the monetary and exchange rate policies, through inflation targeting. On the longer run, authorities may want to relieve the demand pressure on sectors producing non-traded goods, either by liberalizing trade or by orienting investment towards enhancing the productivity in these sectors. Finally, authorities can implement reforms that enhance the productivity of all economic sectors.

Saborowski has studied the relation between the long-term development of financial and capital market institutions, and the attenuation of the real appreciation induced by capital inflows. He examined the relation between capital inflows and Dutch Disease for 84 countries over the period 1990 to 2006, while controlling for financial development. The analysis found evidence of Dutch Disease in the case of FDI flows only. Saborowski then found that a well-developed financial and capital market attenuates the impact of FDI on REER. A deep financial market and an active stock market increase the efficiency of the financial sector in allocating FDI inflows, and attenuate their appreciation effect on the real exchange rate. Soborowski finds that these results are stronger when the country follows a flexible exchange rate regime, but he doesn't explain his finding. One possible explanation might be that flexible regimes allow for nominal appreciation that has in turn a dampening effect on capital inflows; leading to the attenuation of real appreciation. The inclusion of other policy variables (fiscal balance, reserves, growth of money supply) does not seem to affect the results of the regression. Saborowski concludes that by developing financial and capital markets, developing countries can attenuate real appreciation and take advantage of capital inflows without having to make painful policy choices.

exogenous shock – magnified as we have seen by endogenous policy choices – the composition of these flows and their final intermediation are essentially endogenous and depend on a set of structural policies, sector policies, and macroeconomic management policies. While this work does not intend to focus on the development of the capital and financial markets, it is worth noticing that the current situation of these markets suggests that they are not up to playing their role in improving the intermediation and the macroeconomic management of foreign inflows as exposed in Box 6. In Box 7, we present a summary of policy options in case of a resources boom, which seems a credible hypothesis in the case of Lebanon following the recent discoveries of off-shore oil and gas reserves. Box 7 also includes a summary on the role of developed capital and financial markets in managing foreign financial inflows and reducing the pressure on macroeconomic policies. Looking into the composition of banks assets and their allocation between sectors and activities, we find that banking intermediation is skewed in favor of some sectors and is not promoting diversification and broad based growth and development (see paragraph 35). Finally, employment of Lebanese nationals does not seem to benefit from the economic activity induced by foreign inflows (paragraphs 36 and 37)[14].

[14] In their comments on the first draft of the present work, the Ministry of Economy recognized the relation between

Chart 11 Share of Lending to Private Sector, Public Debt (left-hand axis) and Deposits and Reserves with the Central Bank (right-hand axis) in the Total Assets of Commercial Banks



Sources: Central Bank of Lebanon - BdL and Association of Lebanese Banks - ABL, World banl Staff calculation

35. ***Sectors producing non-traded goods seem to benefit from the largest part of banks lending.*** Public debt, which is the cumulative financing of the public sector that is by definition producing non-traded goods and services, represented 25.2 percent of banks assets at the end of 2009 (see Chart 11 in the above). In addition, up to 30.6 percent of banks assets remain with BdL, and are sterilized or help enhancing the foreign currencies reserves of the country. Table 16 in the below shows that in 2009, of the 21 percent of assets that went to the private sector, 32 percent went to Construction, Housing and Other Real-Estate Activities and 40 percent went to Trade, Transport, Storage and Individual Loans (other than Housing loans). In 1999, these shares

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weak economic management and mismanagement of foreign financial inflows. The Ministry highlighted the areas of improvements that are currently under discussion: (i) capital market, with the recent ratification by the Parliament of the capital markets law, which creates a legal framework to regulate capital markets and bans insider trading. The Ministry expects this law to increase investor protection and raise confidence in Lebanese markets, (ii) Improving business environment, with the establishment in June 2010 of an Inter-Ministerial Committee to follow-up on World Bank Doing Business Report, (iii) education, where the need to re-engineer the entire system is crucial to bring adequate skills to the labor market, (iv) research, adaptation, innovation and quality where the Ministry underlines the development of creative industries (fashion, jewelry, IT), and other activities (health, health tourism and leisure) and, (v) infrastructure where gaps in energy, transport, telecommunication and water need to be addressed urgently.

were respectively 28 and 46 percent. The access to lending of agriculture, industry and innovative activities remains limited and would have been more difficult without the special schemes that have flourished recently (see paragraph 33). The potential constraints banking intermediation is exerting on long-term growth and development prospects in Lebanon are examined in more details in Chapter 2.

36. ***Growth observed in Lebanon does not seem to generate employment for Lebanese nationals or to stimulate their labor participation.*** It is worth noticing that household survey data for 2004 and 2007 shows an increase by 0.9 percent in the resident Lebanese labor force over three years, a very low rate compared to the yearly 1 percent increase in the population. Also, according to the household budget surveys of 2004 and 2007, the Lebanese resident labor force shifted massively towards services and trade sectors. Reservation wages of Lebanese workers seem to be suffering from an upward pressure exerted by the increase in real exchange rate and the structure of the labor market is changing radically. Lebanese workers are moving away from sectors producing traded goods and from the construction sector and are being replaced by foreign labor, essentially low-skilled workers. Lebanese workers are increasingly concentrating in services sectors, trade, and public administration; or are migrating.

Table 16 Sector Distributions of Banks Lending to the Private Sector

In Percent	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Agriculture	**1.5**	**1.6**	**1.3**	**1.4**	**1.4**	**1.1**	**1.3**	**1.1**	**1.0**	**1.0**	**0.9**
Industry	**12.6**	**12.6**	**13.0**	**12.6**	**13.8**	**14.3**	**14.8**	**13.9**	**13.4**	**12.8**	**11.8**
Construction	**22.2**	**22.4**	**20.7**	**19.3**	**17.3**	**17.2**	**15.5**	**14.7**	**13.7**	**15.4**	**15.3**
Trade and Services	**44.7**	**43.8**	**44.5**	**45.1**	**45.3**	**44.2**	**42.5**	**42.3**	**43.0**	**41.0**	**38.2**
o/w Wholesale & Retail Trade	32.4	31.7	32.2	32.1	32.0	31.3	29.4	27.5	25.8	23.7	21.9
o/w Transport & Storage	2.6	2.6	2.8	3.0	2.6	3.1	3.0	4.3	6.5	4.9	5.1
o/w Real Estate Renting	5.7	5.6	5.4	5.5	5.6	4.8	4.7	5.2	5.9	7.9	7.7
Fin. Intermediation	**2.9**	**2.9**	**3.2**	**3.2**	**3.4**	**3.5**	**4.2**	**4.7**	**5.4**	**7.4**	**8.2**
Others	**5.1**	**4.8**	**4.9**	**5.2**	**3.7**	**3.7**	**4.3**	**4.1**	**4.0**	**4.0**	**3.4**
Individuals	**11.1**	**11.8**	**12.4**	**13.3**	**15.0**	**16.1**	**17.4**	**19.2**	**19.5**	**18.3**	**22.2**
o/w housing loans	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.9	5.7	6.3	8.9

Source: Central Bank of Lebanon – BdL, Quarterly Bulletins, www.bdl.gov.lb

37. ***A recent Investment Climate Assessment by the World Bank has identified salary competition from Gulf Countries and increase in prices in Lebanon as the two major reasons behind the recent scarcity of skilled labor, which is massively migrating.*** A vicious circle seems to be in place with foreign inflows increasing the incentive to migrate and migration increasing foreign inflows that are in part invested in educating new candidates to migration. This outcome is tightly related to the composition of foreign financial inflows and to their final use and intermediation. Indeed, if a larger part of FDIs and investments were "technology-driven", they would have then generated an additional demand for skilled labor which would have helped

keeping more Lebanese workers at home. There are of course other factors that stimulate migrations; including political instability, family ties … In sum, while analyzing labor market's dynamics remains beyond the scope of this work, some aspects related to labor will be examined in more details in Chapter 2.

38. ***Infrastructure bottlenecks, structural dysfunctions, and low investment in productive capacity are key impediments to broad-based growth.*** The ICA survey for Lebanon identified infrastructure bottlenecks in electricity as the second leading constraint for firms' activity and investment, after political instability. Corruption has been identified as the third leading constraint and scarcity of skilled and qualified labor ranked sixth. In more general terms: (i) investment in Lebanon remains relatively low, (ii) the composition and the intermediation of foreign financial inflows is promoting short-term growth with significant fluctuations in economic activity, (iii) there is a need to identify the constraints that are limiting the investment in productive and innovative sectors that would generate long-term broad based growth and development and, (iv) removing constraints and unleashing long-term growth potentials are likely to promote longer-term capital flows and FDI in innovative sectors, which would further contribute to higher growth. All these aspects and different options to deal with them will be examined at length in Chapters 2 and 3.

CHAPTER 2: STRUCTURAL REFORMS, FINANCIAL FLOWS AND LONG TERM GROWTH IN LEBANON

39. ***Lebanon has completed much of the post 1975-1990 war reconstruction, and the issue of what the country's long-term growth and employment strategy should be has come back to the fore of the policy agenda.*** In the context of this work, a particular aspect that needs to be better understood is the role of foreign financial flows in sustaining growth and, in turn, the extent to which these flows depend on growth itself and the policy environment. From that perspective, it is important to identify the structural reforms that may allow Lebanon to fully exploit the gains, while minimizing the risks, associated with external financial flows.

40. ***Building on the previous discussion, this chapter addresses these issues by specifying and quantifying a formal framework that captures some of the key determinants of, and constraints on, economic growth in Lebanon.*** The premise of the analysis is that Lebanon's comparative factor advantage, given its abundant human capital (both inside and outside the country), and geographical position, make the country well positioned to build a sustainable long-run growth strategy based on broad-based innovation, with a strong regional focus in a first phase. Such a strategy would gradually transform the Lebanese economy from a traditional, service-oriented economy into an innovation-based economy, with the capacity to create the thousands of jobs that the country will need in the coming years.[15]

41. ***As a backdrop to this analysis, Section 1 presents a brief overview of the potential constraints that Lebanon faces in implementing an innovation-based growth strategy.*** Section 2 presents the analytical framework, whereas calibration is described in Appendix – B at the end of the document. Section 3 considers a variety of policy experiments, namely, some key structural reforms that would help the country to alleviate the constraints identified earlier and achieve its long-term growth and employment objectives.

Section 1: Potential Constraints on Lebanon's Growth Prospects

42. ***There is a large consensus that improving Lebanon's performance in terms of growth and employment creation will require addressing deep structural economic causes.*** This section provides an overview of the main structural constraints that may impede the implementation of an innovation-based growth strategy in Lebanon. These potential constraints include macroeconomic volatility; infrastructure bottlenecks; inadequate financial support

[15] Data available from the Central Administration of Statistics and from a recent employer-employees survey of the World Bank shows that there has been virtually no net employment creation in Lebanon during the last decade; and informality seems to be quite high. Current estimates from the MILES work of the World Bank suggest that over the next 10 years, the Lebanese economy will need to create up to 5 times the number of jobs it is currently creating in order to absorb new entrants in the labor market.

mechanisms to promote innovation; product and labor market regulations; insufficient higher education research and the role of the Diaspora; and shortcomings in governance.

43. ***Before doing so, it is important to clarify what "innovation" means in the context of this discussion.*** In the broad sense that is considered here, innovation can be defined as the application of new ideas, technologies, or processes to productive activities (Bizri et al. 2010, page 5). Thus, it does not only encompass the creation of new knowledge and technology and the adaptation of existing ones, but equally important, the diffusion and use of all technologies, products, processes, and practices that are "new" to the country and the region—although not necessarily to the world.[16]

44. ***Innovation is, therefore, also about the transformation of traditional sectors into higher value-added, knowledge intensive sectors,*** through the local adoption of already existing technology and processes, as well as increased investments in new and emerging technology-intensive sectors. From that perspective, innovation is of equal relevance to high-technology or research-dependent sectors (such as biotechnology and information technology) and low-technology sectors, such as agriculture, food processing, textiles, and manufacturing.[17] In the particular case of Lebanon, innovation in the so-called *creative industries* (architecture, film, music, advertising, fashion design, gaming, crafts, visual arts, and performing arts) represents a promising avenue.[18]

45. ***Since the inception of the Civil War in 1975, Lebanon has experienced periodic bouts of high macroeconomic volatility, fueled mainly by large fiscal imbalances.*** As documented in Chapter 1, Lebanon's sovereign gross debt is large, amounting to almost 146.5 percent of GDP (as of end-2009). Domestic-currency debt accounted for about 58 percent of total government debt and carries a relatively short average maturity (1.6 years), whereas foreign-currency debt has a higher average maturity of 4.7 years. Government debt at end-2009 was mainly held by commercial banks (57 percent) and the Central Bank (13 percent).

46. ***Despite an overall improvement of key macroeconomic indicators over the last decade (including a primary budget surplus since 2002), fiscal consolidation remains a short-term challenge.*** As noted in Chapter 1, the debt-to-GDP ratio has fallen quite significantly since the peak of 180 percent reached in 2006, but this is due mainly to the growth spurt induced by a boom in construction in subsequent years. At 8.4 percent of GDP in 2009, Lebanon's fiscal deficit before grants remains high and continues to feed a high public debt. Sustained fiscal deficits have forced the government to offer large spreads to domestic banks, to induce them to

[16] A strong bias on Research and Development (R&D) or Science and Technology (S&T) in the understanding of innovation is common.

[17] At the same time, it is clear that the constraints identified next may affect different sectors in different ways, when it comes to promoting innovation; in what follows, these differences are highlighted when relevant.

[18] See American University of Beirut (2007) and British Council (2008) for a broad review of policies aimed at promoting creative industries in Lebanon.

buy and hold domestic government debt. In turn, high spreads have been detrimental to the private sector, discouraged long-term productive investments, and fueled short-term capital inflows, especially in the context of loose monetary conditions in industrial countries. Even though the nominal exchange rate is fixed, the real exchange rate has displayed an upward tendency with significant volatility in the past years.

47. ***The risk of continued fiscal imbalances, and possibly severe macroeconomic shocks that these imbalances may create, represent a key constraint on Lebanon longer-run growth prospects.*** Unless Government borrowing needs decline in a sustained fashion, investors will continue to prefer to invest in highly remunerative short-maturity bonds - thereby foregoing productive investments. More generally, to the extent that fiscal imbalances are perceived to persist, they may fuel anticipations of a financial crisis, thereby inducing agents to transfer more of their savings abroad and/or avoid domestic productive investments with a long gestation period, in favor of short-term or liquid instruments. Bouts of inflation may translate into high volatility in the real exchange rate, which may blur relative price signals and affect the behavior of domestic and foreign investors' alike, thereby constraining growth.[19]

48. ***As documented in the previous chapter, Lebanon receives massive financial transfers and capital inflows from abroad.*** Net foreign inflows of services, capital, income, and remittances reached 57 percent of GDP in 2009, and an average of 39 percent of GDP during the period 2002-09. However, a large part of these financial resources are consumed or invested in sectors that are not directly productive or sectors where productivity gains are relatively small - implying therefore a limited impact on economic growth and job creation. The real estate sector, in particular, has accounted for anywhere between 50 and 70 percent of total gross fixed capital formation (GFCF) since 1997. Most of the remaining investments go to metallic industries that provide the construction sector with intermediate goods. The banking sector has attracted around 10 percent of GFCF over the period 1997-2009. GFCF and foreign direct investment (FDI) in knowledge-intensive or innovation-prone activities remain very small.

49. ***There is broad evidence that FDI is positively associated with economic growth, and that the relationship is bidirectional: high growth rates themselves may promote FDI*** (see Box 8). In addition, there is also evidence that macroeconomic instability (as captured for instance by a high degree of real exchange rate volatility) may have an adverse effect on FDI—and thus, indirectly, on growth. In the case of Lebanon, this is a particularly important consideration, given the discussion earlier. In addition, empirical studies have identified a number of structural factors that condition the extent to which a country may benefit from FDI and other financial flows: these factors include access to infrastructure, the quantity and quality of human capital, the degree of financial development, governance (or more generally institutional quality), and the

[19] There is strong evidence that macroeconomic volatility, and in particular fiscal policy volatility, can be harmful to growth; see for instance Astorga (2010) and Woo (2011).

flexibility of the labor market. Several of these factors are both drivers of financial flows and a prerequisite for positive spillovers from these flows.

Box 8 Foreign Direct Investment and Growth: Recent Evidence

Studies examining the impact of FDI on domestic investment and growth include Borensztein et al. (1998), Bosworth and Collins (2000), Edison et al. (2002), Agosin and Machado (2005), Carkovic and Levine (2005), Honig (2008), Adams (2009), and Azman-Saini et al. (2010).
Among these studies, Bosworth and Collins (2000) used panel regression techniques to evaluate the impact of capital inflows on investment for a group of 58 developing countries during the period 1978-95. They found that FDI flows have a positive (and almost one for one) impact on investment, whereas portfolio flows have no discernible effect. Borensztein et al. (1998), using FDI flows from industrial countries to 69 developing countries during the period 1970-89, found that the link between FDI and growth was positive and significant. Moreover, they also found that there is complementarity between FDI and human capital (proxied by a measure of educational attainment) in affecting growth. Another study showing evidence of nonlinearities is Azman-Saini et al. (2010), who found that the positive impact of FDI on growth "kicks in" only after financial market development exceeds a threshold level. By contrast, Agosin and Machado (2005), using panel data for 36 countries for the period 1971-2000, found that although FDI had a "crowding in" effect on private domestic investment in Asia, and to a lesser extent in Africa, it had a strong "crowding out" effect on domestic capital formation in Latin America. In the same vein, Adams (2009) found that FDI had a net crowding-out effect on domestic investment in Sub-Saharan Africa over the period 1990-2003.

Some studies provide evidence of strong effects of FDI on factor productivity growth, which operate through stock market and banking sector development, and changes in the quality of institutions. A related result is obtained by Choong et al. (2010); they found that FDI has a positive impact on growth, while both foreign debt and portfolio investment have a negative impact. However, the latter result is conditional on the degree of development of the stock market.

The evidence also suggests that the relationship between FDI and growth may be *bidirectional*: capital inflows may have a positive effect on growth, but growth in turn may tend to stimulate the inflow of FDI. This is an important result because it highlights the possibility of a "virtuous circle" between capital flows and growth-enhancing policies. It also helps to explain, as argued by Honig (2008) for instance, why some studies do not find a significant effect of capital account liberalization - namely, *reverse causation*: if low growth countries liberalize in order to spur growth, the observed correlation between growth and liberalization will underestimate the impact of capital account openness. More generally, it also implies, as emphasized by Edison et al. (2004), that studies of the impact of FDI on growth that do not account for the endogenous nature of capital flows (that is, the fact that FDI can be itself influenced by the economy's growth rate) are likely to produce estimated coefficients that are subject to significant bias. Some of the early literature does not account for this problem; by contrast, studies such as Carkovic and Levine (2005) and Edison et al. (2002, 2004), do account for endogeneity, as well as a host of other potential econometric problems. Using advanced panel data econometric techniques, these authors failed to find a robust, independent effect of FDI on growth. These results are consistent with the view that poorer countries do not have the legal, social, and political institutions necessary to fully reap the benefits of FDI.

Macro studies that find a positive link between FDI and growth are also corroborated by the microeconomic evidence on the effects of FDI. This evidence, which is discussed by Eichengreen (2001), suggests that private capital flows may enhance productivity, particularly in countries with a relatively skilled labor force and a well-developed physical infrastructure. Haddad and Harrison (1993), for instance, in a study of the impact of foreign investment on firms in Morocco's manufacturing sector during the period 1985-89, found that although domestic

firms exhibit lower *levels* of total factor productivity, their rate of productivity *growth* is higher than that for foreign firms. Moreover, domestic firms exhibit higher levels of productivity in sectors with a larger foreign presence.[20] At the same time, however, there is some evidence suggesting that domestic firms may not be able to capitalize on the transfer of knowledge associated with FDI because the entry of foreign firms may lead to losses in market share and reduced productivity, as a result of a contraction in output (Aitken and Harrison - 1999). More generally, microeconomic evidence is important in judging the impact of capital flows on the *quality* of domestic investment.

50. ***In particular, many empirical studies corroborate the fact that foreign investors tend to be attracted to countries where the provision of infrastructure services is sufficient and of good quality,*** (particularly in the area of telecommunications) because it reduces the cost of doing business. [21] Thus, infrastructure promotes growth not only via a number of direct channels (as summarized in Box 9) but also indirectly, by promoting foreign investments. This issue is discussed in more detail next.

51. ***In the case of Lebanon, as noted earlier, macroeconomic imbalances and related perceived risks (resulting in relatively high interest rates), as well as barriers reducing competitiveness and investment opportunities, are among the key factors that discourage longer-term productive investments in the economy.*** Thus, reducing macroeconomic instability - by reining in fiscal deficits, cutting borrowing, lowering interest rates, and crowding in the private sector - would help to attract longer-term capital inflows. Financial intermediaries would need to invest elsewhere than in government debt or in Central Bank's highly remunerated CDs and would provide the resources to finance private sector activity, outside the real estate and trade sectors. Thus, in the long run, by inducing more stable and productive investments through capital flows, macroeconomic stability will improve prospects for fostering sustainable growth based on productivity gains and job creation.

52. ***Another important component of financial flows to Lebanon, as documented in the previous chapter, is remittances.*** There is strong evidence to suggest that remittances in developing countries tend to reduce household consumption instability, that is a "smoothing" effect. There is also solid evidence to suggest that remittances tend to promote financial development, measured either in terms of the ratio of banks deposits to GDP or the ratio of bank credit to GDP.[22] Both effects may encourage private savings, which in turn may help to promote growth.

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[20] Haddad and Harrison also found that there is no significant relationship between higher productivity growth in domestic firms and greater foreign presence in the sector. They argue that this result may be due to the distortionary effects associated with tariff protection - foreign firms lag behind domestic firms in productivity growth in protected markets.

[21] See Wheeler and Mody (1992) for a study of US firms, Campos and Kinoshita (2003) for transition economies, Nunes, Oscategui, and Peschiera (2006) for Latin America, Lan (2006) for Vietnam, Vijayakumar and Rao (2009) for Brazil, Russia and South Africa, and Ford et al. (2010) for China.

[22] On the impact of remittances on consumption instability, see Combes and Ebeke (2011), who use data for 89 countries covering the period 1975-2004. On the effect of remittances on financial development, see Aggarwal et al. (2011), whose study is based on data for 109 developing countries over the period 1975-2007.

Box 9 How Infrastructure Affects Growth

Much recent evidence supports the view that core infrastructure plays an important role in the growth process. Calderón and Servén (2004), for instance, in a study covering a large sample of countries over the period 1960-2000, found that growth is positively affected by the stock of infrastructure assets. Along the same line, Loayza, Fajnzylber, and Caldéron (2004) found that infrastructure (measured by the number of telephone lines per capita) has a positive and significant effect on growth in Latin America and the Caribbean.

Infrastructure, particularly when it is publicly provided, is usually viewed as promoting growth through two main channels. First, if production inputs are gross complements (as is normally the case), it tends to increase the marginal productivity of private inputs, thereby lowering production costs. Second, (public) infrastructure can exert a positive effect on growth through its impact on private capital formation. As noted earlier, infrastructure increases the marginal productivity of production inputs; in so doing, it raises the perceived rate of return on, and may increase the demand for, physical capital by the private sector. For instance, the rate of return to building a factory is likely to be much higher if the country has already invested in power generation, transportation, and telecommunications. This growth-enhancing, complementarity effect has been well documented in the empirical literature on private investment in developing countries, despite the fact that the flow of public investment itself can mitigate it through crowding-out effects.

In addition to these conventional effects, core public infrastructure may spur growth through a variety of other channels.[23] First, by facilitating the reallocation of capital across sectors following from shocks to relative prices (e.g., an increase in the relative price of tradables, which would draw resources away from the nontradables sector), public infrastructure may reduce the magnitude of adjustment costs associated with increases in private capital formation. An expansion in the road network may not only reduce congestion and facilitate the shipment of goods across the country (thereby reducing unit production costs, as noted earlier) but it may also reduce the cost of building a new plant or the transportation of heavy equipment for installation to a new location for future production.

Second, the durability of private capital may be significantly improved by improving the availability, and quality, of core public infrastructure. Reliable power grids and well-maintained roads tend to reduce the need for the private sector to spend on maintenance of its own stock of physical capital (for instance, the trucks that are used to move goods across the country). Better roads, by reducing the rate of depreciation of private capital, may raise the rate of return on physical assets, thereby stimulating private investment and growth.

Third, core infrastructure (most importantly, electricity, roads, and sanitation) may have a significant impact on health and education outcomes - particularly in countries where, to begin with, infrastructure assets are low. Access to clean energy for cooking and better transport (particularly in rural areas) may contribute significantly to better health. Electricity allows for more studying and access to technology, such as computers, which enhance the quality of human capital. Schools that lack access to basic water supply and sanitation services tend to have a higher incidence of illnesses among their students.

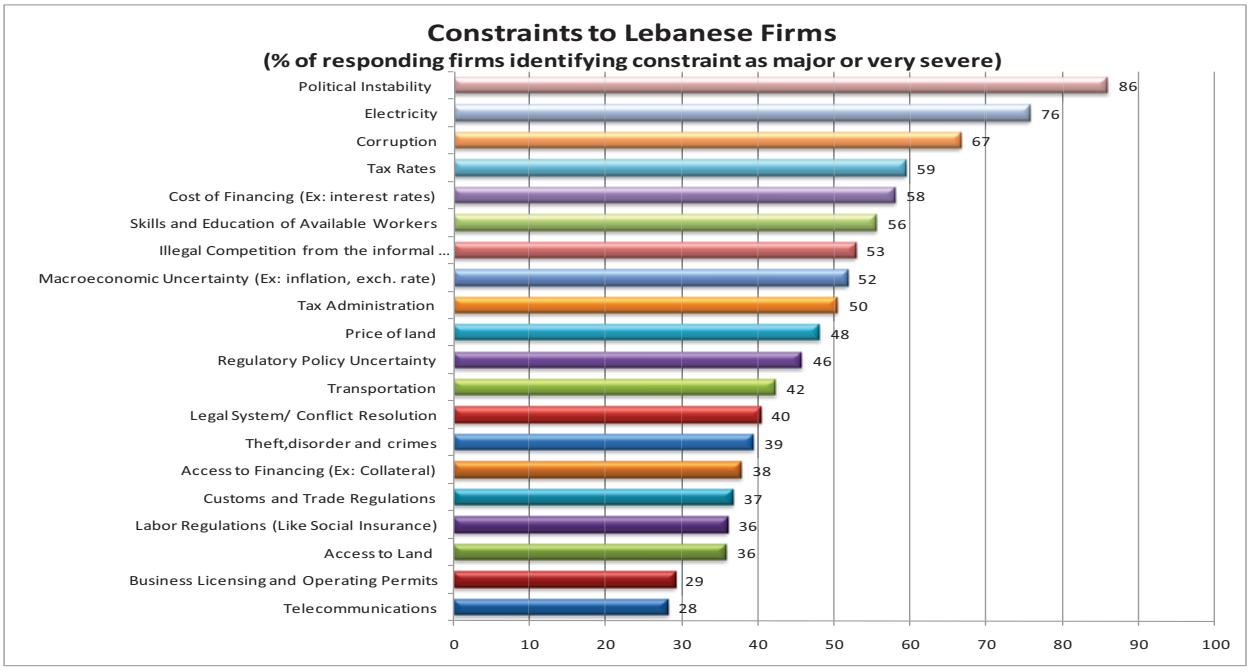
Fourth, lack of access (or poor quality) of some types of infrastructure acts as a significant drag on the ability of firms to engage in Research and Development, bring new goods to markets, and reap the profits that the exploitation of new technologies may generate. For instance, lack of domestic transportation infrastructure and inadequate access to telecommunications may prevent firms from introducing new products and hamper economy-wide dissemination of new and more efficient technologies.

[23] See Agénor (2011*c*) for a detailed review of the recent literature.

53. ***Lebanon's core infrastructure in electricity, roads, and sanitation remains deficient in several respects (see Box 10).*** As a result, access to reliable and cost-effective infrastructure services remains a major constraint on economic activity. According to the 2010 *Business Climate Survey* for Lebanon conducted by the World Bank, 76 percent of firms identify electricity as a constraint to activity and 42 percent identify transportation (see Chart 12). The percentage of sales lost to power outages alone amounted to 8.7 percent (compared to 8 percent in Syria, 3.3 percent in Egypt, 2.1 percent in Jordan, and 1.5 percent in Morocco), whereas the percentage of sales lost to power outages, communication outages, and water outages amounted to 17.4 percent (see Chart 13). Broadband penetration was only 2 percent in 2008 (see Box 11). The average cost for a 40-foot export container from Beirut port is US$500 and there is an average of a week before imported goods are available for use.[24]

54. ***The lack and unreliability of infrastructure services, hinders competitiveness of the Lebanese industry.*** Combined with differences in availability across the country, unreliable infrastructure acts as a severe constraint on economic growth - regardless of the sector of activity. The hostilities in July 2006 exacerbated the situation by causing serious physical losses and significant damage to the economy.[25] According to current estimates, approximately 10 percent of GDP worth of public and private property was destroyed.

Chart 12 Lebanon: Leading Constraints on Enterprises, 2009

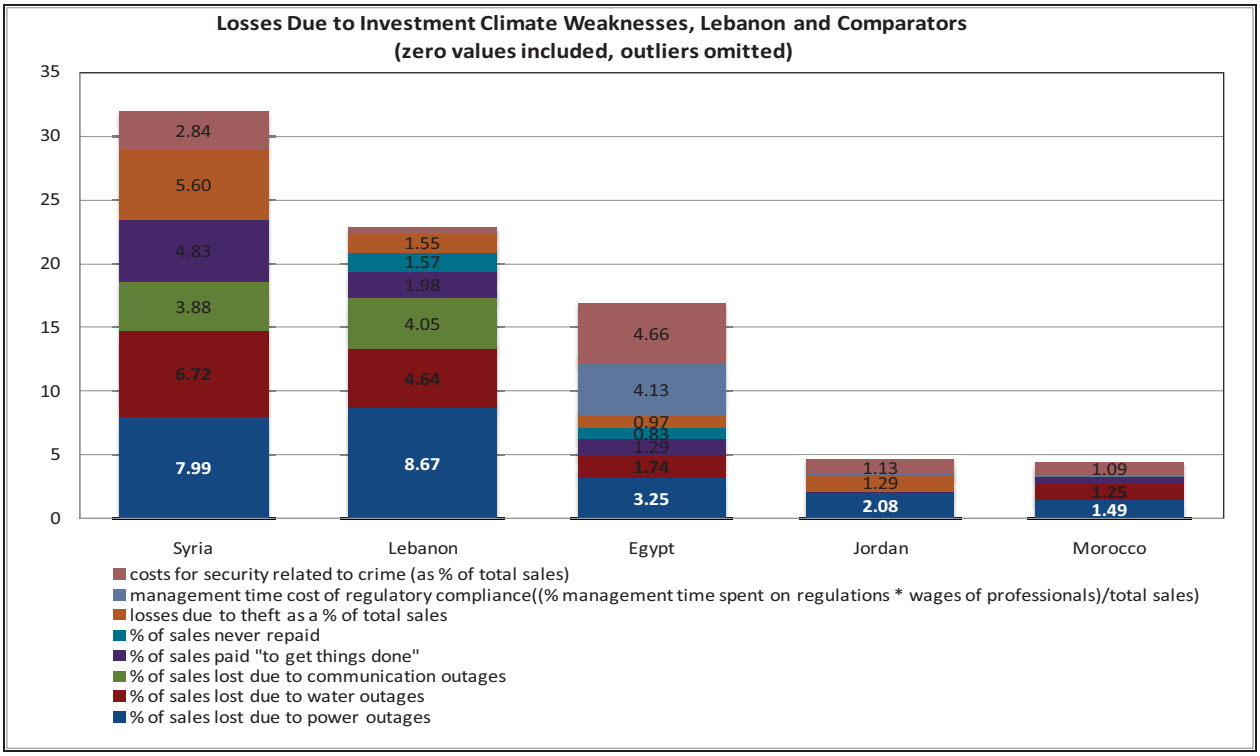


Source: World Bank (2010*c*).

[24] See World Bank, http://info.worldbank.org/etools/tradesurvey/Mode2a.asp. The average cost to bring an import container of the same size from the Beirut port to the city is US$1,000.

[25] The human cost was high as well; over 1,000 people were killed, 5,000 were injured and close to one million (a quarter of the population) were internally displaced. Additionally, the brain drain accelerated, as up to 200,000 people left the country (World Bank, 2010*a*, p. 5).

Chart 13 Losses Related to Investment Climate Weaknesses, Including Unreliable Infrastructure – Lebanon and Comparative Countries



Source: World Bank (2010*c*).

Box 10 Lebanon's Infrastructure Constraints

Lebanon infrastructures and basic services suffer from serious dysfunctions and chronic sector management challenges and constraints. This is applicable to all the infrastructure sectors where the quantity and quality of service delivery is weak and the institutional capacity to develop and implement strategies, let alone manage the sector, has been very limited. In this context, attempts to involve the private sector had mixed results.

Competitiveness, economic growth and fiscal stability in Lebanon are unattainable without major reforms and investments in the country's infrastructure and mainly in the *electric power* sector. Currently the sector cannot supply the electricity needed by households and businesses. Massive subsidies are required (amounting to 4.3 percent of GDP in 2009) to cover insufficient revenues, due to the poor overall performance of the sector: tariffs are set far too low for cost recovery, governance of the sector is inadequate, and Electricité du Liban (EdL) performs poorly, both operationally and financially, with high technical and financial losses. Investments in new generation capacity and renewable energy have lagged far behind growing electricity demand. Reducing the fiscal burden of the sector on public finances, mobilizing resources to meet energy investment needs, reducing the reliance of businesses and households on costly alternatives, and restructuring EdL into a commercially viable utility will be among the most important policy and structural reform challenges any Government will have to undertake.

Despite Lebanon's relatively ample water resources, its *water supply and sanitation* sector has not kept pace with demand and lags far behind the standards associated with the country's level of economic development. The annual cost of inadequate public water supply is estimated at US$470 million (1.6 percent of GDP in 2008), of which household spending on private water supply is estimated at US$308 million. Despite relatively high connection rates, the continuity of water supply is low and reaches as little as three hours a day in the Beirut-

Mount Lebanon region, which houses a large fraction of the Lebanese population. It is estimated that the seasonal imbalance of water resources will lead to chronic water shortages by as early as 2020 if no measures are taken to improve efficiency and to increase storage capacity. Wastewater collection coverage averages 58 percent and wastewater treatment facilities are few and small. Discharge of wastewater has polluted water resources and raw wastewater is increasingly leading to soil pollution and health hazards. Environmental degradation caused by the discharge of untreated wastewater costs Lebanon about one percent of GDP a year. Investments are needed to reconstruct, rehabilitate, and expand water supply and wastewater networks, treatment plants, storage, and transfer facilities.

Transport has become a major constraint on economic and social activities in Greater Beirut and major cities in the country. Institutional capacity to oversee urban transport services is nominal, and regulations to ensure minimum levels of quality and safety are rarely enforced. With almost no formal public urban transport system, the more or less 2 million residents of Beirut rely on cars to meet their transport needs. Estimates indicate that public transport carries about 30 percent of daily passenger movements/trips throughout Lebanon. Services are provided mainly by shared taxis, which are privately owned and operated, primarily by single-vehicle owners providing both intra- and inter-city transport. Private sector operators provide dependable bus and taxi services. Major investments since 2006 have improved the urban transport infrastructure. The key challenges the Government will face in improving urban mobility will be enforcing traffic rules and regulations, promoting private sector investments in urban transport services, planning for and adequately managing road assets, and mobilizing enough funding to carry out regular road maintenance and properly address road safety issues.

In the *telecommunications sector*, the major technical loophole is the absence of high speed internet connections through regular ISP providers. Its impact on costs and investments decision is relatively large, given Lebanon's specialization in services. In this sector though, as well as in the other branches of communication, the lack of competition and the lack of adequate infrastructure are equally responsible of costs inflation. Addressing these issues, and making the required investments in broadband networks and services, could promote innovation activities and generate significant growth and fiscal benefits (see World Bank (2010*a*) and Box 11).

55. ***In the context of the new growth strategy envisaged in this Report, the country will need to invest heavily in core infrastructure.*** There are two interrelated benefits to doing so. First, eliminating infrastructure constraints, such as water shortages, electricity outages and difficult road access, can reduce production and adjustment costs and facilitate the process of shifting private resources to more productive sectors. Moreover, by reducing costs, improved provision of infrastructure services will tend to raise expected rates of return and therefore stimulate private capital formation. By enhancing the ability of the private sector to respond to price signals, lower adjustment costs may also be accompanied by efficiency gains, which may translate into permanent growth effects. Second, to the extent that (as discussed in Box 9) core infrastructure exerts positive effects on health and education outcomes, improved access to infrastructure services can generate significant benefits for innovation activities in terms of a more productive/higher quality labor force. This is likely to be the case for investment in telecommunications, particularly broadband access to the internet (see Box 11). Moreover, if infrastructure capital enhances the degree of complementarity between skilled labor and physical capital, it will also increase private incentives to invest in the accumulation of knowledge. This will further improve the quantity and quality of Lebanon's human capital, reduce incentives for migration abroad, and possibly create new areas of specialization and promote economic growth.

Box 11 Economic and Fiscal Impacts of Introducing Broadband Networks and Services in Lebanon

*Broadband has a positive impact on economic growth***.** Broadband enables economic growth by providing easier access to information and by increasing efficiencies and productivity in the economy. Numerous studies have found a positive impact on economic growth. However, estimates of the actual impact vary. A ten percent increase in broadband penetration has been found to increase economic growth from a range of 0.24 to 1.50 percentage points. Czernich et al. (2009), for instance, in a study of OECD countries during the period 1996-2007, found that a 10 percentage-point increase in broadband penetration raises annual per-capita growth by 0.9 to 1.5 percentage points.

Increasing broadband penetration in Lebanon would substantially increase GDP growth. Applying the average of these estimates (a range of 0.85 to 1.16 percentage points) to the US$34.9 billion Lebanese GDP in 2009 (Lebanese National Accounts - 2009), results in an additional GDP of US$290 to US$400 million for each 10 percent increase in broadband penetration.[26]

Broadband also contributes to job creation. There are three channels for job creation: (i) direct jobs created to deploy the broadband infrastructure; (ii) indirect and induced jobs created from this activity; and (iii) additional jobs created as a result of broadband network externalities and spillovers. Numerous studies have estimated the impact of broadband on each of these job creation categories for specific countries by calculating employment multipliers for each of these categories. While these studies are country specific and cannot be applied directly to Lebanon, they provide an estimate of potential job creation through broadband. A simple average of these estimates applied as indication of potential broadband job creation results in 2.78 indirect and induced jobs per direct broadband construction job created and 1.17 spill-over additional jobs created per direct job. This means that broadband can create between 2.5 and 3 additional jobs per direct broadband employment. Some studies have estimated the impact of broadband on the employment creation rate. For instance, Katz (2009) estimated that an increase of about 8 percentage points of broadband penetration in 12 Latin American countries could result in almost 8 percent increase on average over their employment rate.[27] While the conditions and job markets in these Latin American countries are very different than those of Lebanon, this could also serve as an indication of potential job creation in the country. Applying a similar methodology to Lebanon results in around 10 percent increase in Lebanon employment rate per each 10 percentage points increase in broadband penetration.

Broadband job creation impact both skilled and unskilled population, spreading employment opportunities throughout all segments of the population. Direct jobs relate preeminently to civil works and construction of broadband infrastructure, which mainly employs unskilled workers. Indirect and induced jobs can be both unskilled and skilled. However, network-effects (i.e., spillover) jobs are mainly high skill jobs. Indeed, broadband spillover employment effects are not uniform. Instead, they tend to concentrate in service industries, such as financial services, health care, etc. It can also produce some effects in middle-skills jobs, such as in manufacturing, but usually related to the use of ICT, requiring ICT-skills (see Katz (2009)).

The diversity of Lebanon workforce and the breadth of high-skilled human resources pose a great opportunity for Lebanon to take advantage of broadband job creation potential. Broadband provides employment opportunities for both the skilled and unskilled workers. However, the potential to develop new services on intermediary sectors, such as e-banking or e-health, and complete new industries, such as export-oriented IT-enabled services, opens the door for multiple new job opportunities for the high-skill human resources available in the Lebanese

[26] Range calculated by averaging minimum values and maximum values of the sample of estimates.
[27] Countries include Argentina, Brazil, Chile, Colombia, Ecuador, El Salvador, Mexico, Nicaragua, Panama, Peru, Venezuela and Uruguay.

economy. Moreover, as broadband combines with mobile technologies, new businesses are demanding human resources worldwide. The rise of mobile applications businesses and the fragmentation and delocalization of global employment through crowd-sourcing is opening multiple new job opportunities for those connected through broadband to these new platforms. If the Lebanese employment force is not connected through broadband to these new job opportunities, it will lose the chance to expand its employment opportunities domestically and to create new and innovative business to the benefit of the Lebanese economy.

56. ***To eliminate the infrastructure gaps in electricity, telecommunications, water, and the road network identified earlier and improve the country's long-term growth potential, high public investment levels are needed over the medium-term.*** There may be some scope for doing so; public investment in Lebanon remains relatively low, with capital spending averaged only 2.6 percent of GDP during 2003-08 and 2.1 percent of GDP in 2009. But given the limited scope of private sector involvement, and the need to avoid putting undue pressure on fiscal deficits and public debt, the country will need to finance much of its infrastructure investment by a reallocation of spending and significant improvements in the efficiency of government expenditure.[28] At the same time, many infrastructure sectors also suffer from deficiencies in their regulatory frameworks and poor governance and inefficiencies of public utilities;[29] thus reforms in those areas are also needed to improve performance.

57. ***Despite its overall health and good performance, the financial sector's incentives to intermediate a large share of its liabilities towards productive investments remain weak.*** As noted in the previous chapter, and in the previous sections, this is to a significant extent the consequence of high borrowing needs by the public sector, which induces investors to prefer to allocate much of their resources to highly remunerative short-maturity bonds. As also noted earlier, this explains why capital inflows have been invested in a narrow scope of sectors (the banking and real estate sectors) and contributed very little to improving the productive capacity of the economy.

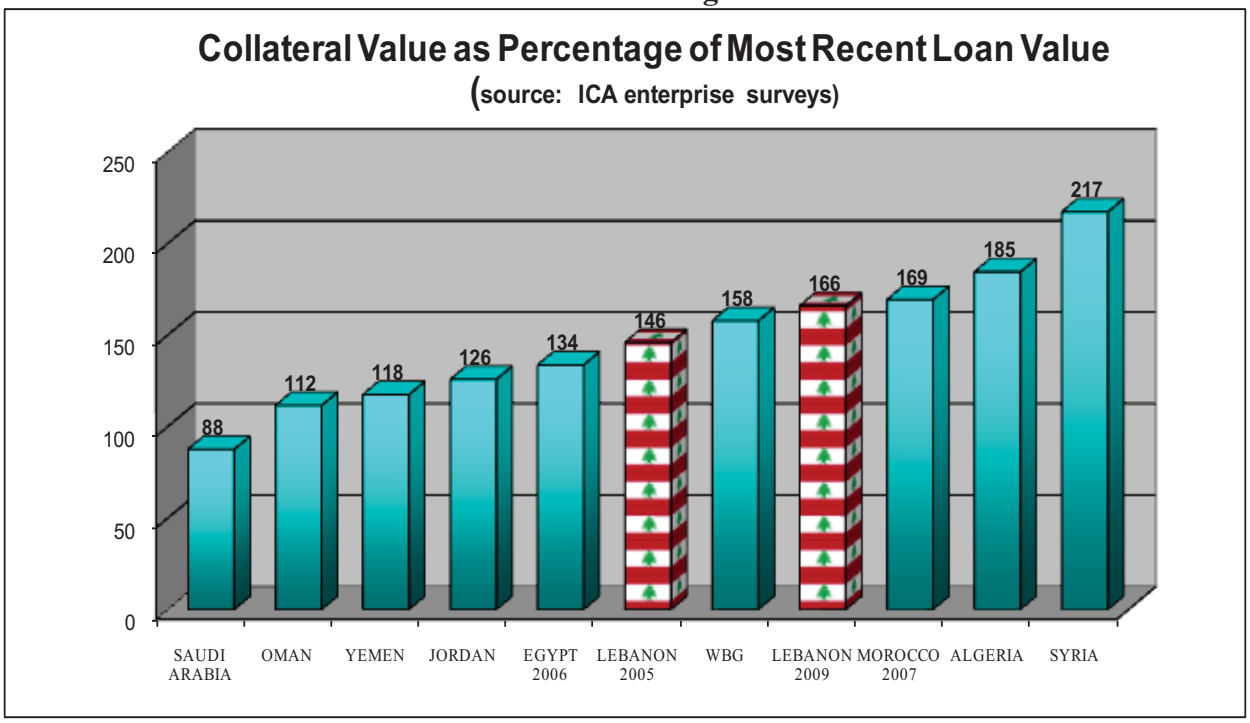
58. ***Further improvements in the financial sector could increase Lebanon's growth prospects in several ways.*** Collateral requirements in proportion of loans remain high (see Chart 14), and this contributes to limiting flows of credit and making it more costly; encouraging banks to use moveable property for collateral would help significantly. Building the capacity of the Beirut Stock Exchange (BSE) and promoting investment banking would increase opportunities

[28] Lebanon also stands to gain from the regional integration of its infrastructure networks, namely in the transportation and electricity sectors. The integration of the transportation network would promote an efficient transfer of merchandise and persons and would be a critical element in facilitating regional trade, especially with the growing markets of Syria and Iraq. In the electricity and gas sectors, by connecting to the regional network, Lebanon would be able to overcome shortage problems caused by an inefficient and ineffective electricity sector once increased supply becomes available.

[29] For instance, the electricity sector requires high budgetary transfers, and Electricité du Liban (EdL) is inefficient in its structure and operations. Partly due to a lack of competition, Lebanon lags behind its neighbors in telecommunications, in quality, range of services offered, and pricing.

for investors and provide new sources of funding for entrepreneurs and the business community in general.

Chart 14 Middle East: Collateral Value as Percentage of Most Recent Loan Value



Source: World Bank (2010*c*).

59. ***In the context of the innovation-based growth strategy described earlier, a particularly important issue is the creation of new opportunities for innovation activities.*** Yet it is not clear that the apparent lack of funding for these activities is a *demand* or a *supply side* problem. It could be that banks are reluctant to offer (partially collateralized) credit to entrepreneurs in activities that are inherently riskier (a supply-side problem), or it could be that constraints on access to infrastructure and stiff regulations limit incentives to engage in innovation-related activities (a demand-side problem). The policy implications are of course radically different; in the latter case, it is not necessarily the capacity of financial markets to channel funds to riskier activities that needs to be improved in priority, but rather other conditions that prevent innovators from engaging in new activities and demanding credit. Put differently, the availability of finance may not be the binding constraint on the growth of innovation-related activities in Lebanon.[30]

[30] A somewhat related point is made by Berthélemy et al. (2007), who have argued that the availability of finance is not the binding constraint on the growth of SMEs in Lebanon. One institution that performs quite well in the country is *Kafalat*, a loan guarantee company established by the Lebanese government in 1999 to support the activity of small and medium sized enterprises (SMEs). *Kafalat* provides financial guarantees for loans granted by commercial banks to SMEs engaged in industry, agriculture, tourism, traditional crafts, and high technologies.

60. ***Product (and, to a lesser extent, labor market) regulations have also tended to bias investment decisions in Lebanon in favor of either liquid instruments or real estate.*** In addition to macroeconomic imbalances, infrastructure bottlenecks, and weaknesses in financial intermediation, these regulations favored liquid instruments and real estate (an asset that also serves as a "safe haven" in a volatile environment), rather than longer-term investments in productive capacity. Legal impediments to competition, in particular, have slowed the pace of firm creation. This is actually a problem not only for Lebanon alone but for the MENA region in general, and one of the central messages of the World Bank's flagship report, *From Privilege to Competition* (see Box 12).

Box 12 From Privilege to Competition: Key Messages

The route to sustained private-led growth and job creation in MENA requires improving the credibility of reforms, the effectiveness of policies, and their equitable enforcement. This is the central message of the 2009 World Bank Flagship Report for MENA, *From Privilege to Competition: Unlocking Private-Led Growth in the Middle East and North Africa*. Barriers to firm entry and to sound competition - some due to government policies, and others to the discriminatory way in which rules are implemented and enforced - have restrained the emergence of a dynamic private sector in the region. While progress with reforming the rules varies between countries, the region as a whole suffers from discretionary and arbitrary implementation of policies, and from lack of government credibility to really change a deeply rooted status-quo of privileges and unequal treatment of investors. For many countries, the problem is not with insufficient or missing reforms, but rather with their quality and the widespread belief that the business environment as it appears "on the books" is not applied equally to all. Consequently, the region enjoys less competition than elsewhere. The response of private investment to past reforms has been weaker than in other regions - a sign that investors do not fully trust that seemingly pro-business policies will be applied to them equally.

Governments' commitment to address key barriers to entry and competition and to level the playing field for all investors will be essential to convince more entrepreneurs to take the risk to enter markets, innovate and create jobs. Credibility with bureaucrats is needed to assure implementation of policy reforms after they are enacted. Credibility with investors, bureaucrats and the broader public will be earned only if political leaders commit to dismantling the rent allocation channels that weaken the regulatory and administrative functions of the State in all areas of the business environment. Engaging in a reform agenda that signals a credible commitment to reduce discretion will require a change in the way policymaking is conducted. It will also require institutional reforms. The private sector reform agenda has increasingly focused on better governance of market institutions, and focused less on mere retrenchment of the State from asset ownership. The flagship report does not offer a standard recipe of reforms, instead focusing on three approaches:

Reduce the opportunities for rent-seeking and foster competition. With the proper regulatory environment, governments can encourage entry in all sectors of the economy by removing formal and informal barriers to competition.

Reform Institutions. Private sector development policies will need to be systematically anchored in elements of public sector and institutional reforms to reduce discretion and opacity, and improve the quality of services provided to firms - hence reducing transaction costs. Build strong rule-bound market institutions to which substantial decision making power over economic outcomes is delegated. Increase transparency and accountability of all public bodies that interact with the private sector and regulate markets. Ensure equity in market governance and therefore reducing de jure and de facto barriers to competition.

Mobilize key stakeholders around a dedicated long-term growth strategy. A new form of partnership is needed between the government and the main stakeholders to underpin stronger reform alliances and broader participation in designing, implementing, and evaluating policies. Capable and inclusive business associations and an institutionalized, transparent and inclusive process for private sector consultation should be engaged in the identification of policy issues, the design of reforms and the monitoring and evaluation of their implementation.

61. ***Regarding labor market regulations, it is not clear that they represent a significant constraint on firm activity and job creation.*** As indicated in Table 17 (based on the 2011 *Doing Business Report* of the World Bank), the overall index of employment rigidity in Lebanon is quite similar to the other countries of the region and OECD countries. Although hiring appears to be significantly more difficult than in other countries of the region, firing costs (measured in terms of weeks of wages upon dismissal) are quite low. In addition, the degree of enforcement of labor regulations is quite limited in practice, implying that there is a great deal of informality in the labor market. This may explain why, as indicated in Table 18, no firms report "restrictive labor regulations" as a key reason for the difficulty of finding workers.

Table 17 Employing Workers

Indicator	Lebanon	Middle East & North Africa	OECD Average
Difficulty of Hiring Index	44	21.3	26.5
Rigidity of Hours Index	0	22.1	30.1
Difficulty of Redundancy index	40	30	22.6
Rigidity of Employment Index	28	24.5	26.4
Redundacy Costs (weeks of Salary)	8.7	53.4	26.6

Source: World Bank (2011).

Table 18 Primary Reason for Difficulty in Finding Workers (in percent of total answers)

Primary reason for difficulty finding workers	Engineers	Computers and CT	Technicians	Construction Workers	Managers	Sales force	Accountants/ financial analysts	Maintenance/ security
High salaries for individuals with those skills	21.28	20.00	18.06	18.18	19.44	21.15	16.67	25.00
Limited availability of individuals with those skill	61.70	48.00	58.33	72.73	58.33	38.46	50.00	68.75
Individuals with relevant education had no experience	17.02	32.00	19.44	0.00	19.44	30.77	33.33	6.25
Restrictive labor regulations	0.00	0.00	0.00	9.09	0.00	0.00	0.00	0.00
Total	100	100	100	100	100	100	100	100

Source: World Bank (2010*c*).

62. ***Lebanon is traditionally recognized for its human capital and the entrepreneurship skills of its citizens;*** with 54 percent gross enrollment rate in tertiary education, the country by far exceeds the 26 and 23 percent rate registered respectively for the Middle East and North Africa (MENA) region and for middle-income countries in general. The United Nations assigned Lebanon an Education Index of 0.87 in 2008.[31]

63. ***However, gross private returns to education are relatively low compared to international standards (9 percent against 21 percent worldwide).***[32] This partly reflects low levels of productive investments in sectors that are intensive in skilled labor. In addition, Lebanon has faced significant migration and brain drain: although the country invests heavily in human capital, many of its best-trained people migrate abroad. Along with political instability, low returns for education is a major factor behind the brain drain.[33] Migration is traditionally a large phenomenon, with the Lebanese Diaspora considered to be one of the largest in the world in terms of proportion to resident population. As noted in the previous chapter, the Lebanese Diaspora has maintained strong linkages to their home country: the country has one of the highest ratio of remittances to GDP in the world; remittances inflows are in fact larger than FDI.

64. ***The quality of education outcomes has also come into question.*** Despite relatively low pupil/teacher ratios (17:1 at the primary level and 8:1 at the secondary level), dropout and repetition rates remain high; and the number of investment years required to produce a 9th grade completer in public schools is very high. There are also large regional imbalances.[34] Much of the teaching force is now under qualified, with only 4 percent of public school teachers holding a specialized degree and more than half possessing less than a university level education. There is little or no in-service training offered to new teachers, and the quality standards for hiring new teachers appears to have declined over time. Thus, the high quality that has characterized the education received by Lebanese workers in previous generations through public schools may now be eroding rapidly. At the same time, however, private schools have increased significantly in number and have, in a sense "picked up the slack," most significantly in higher education.

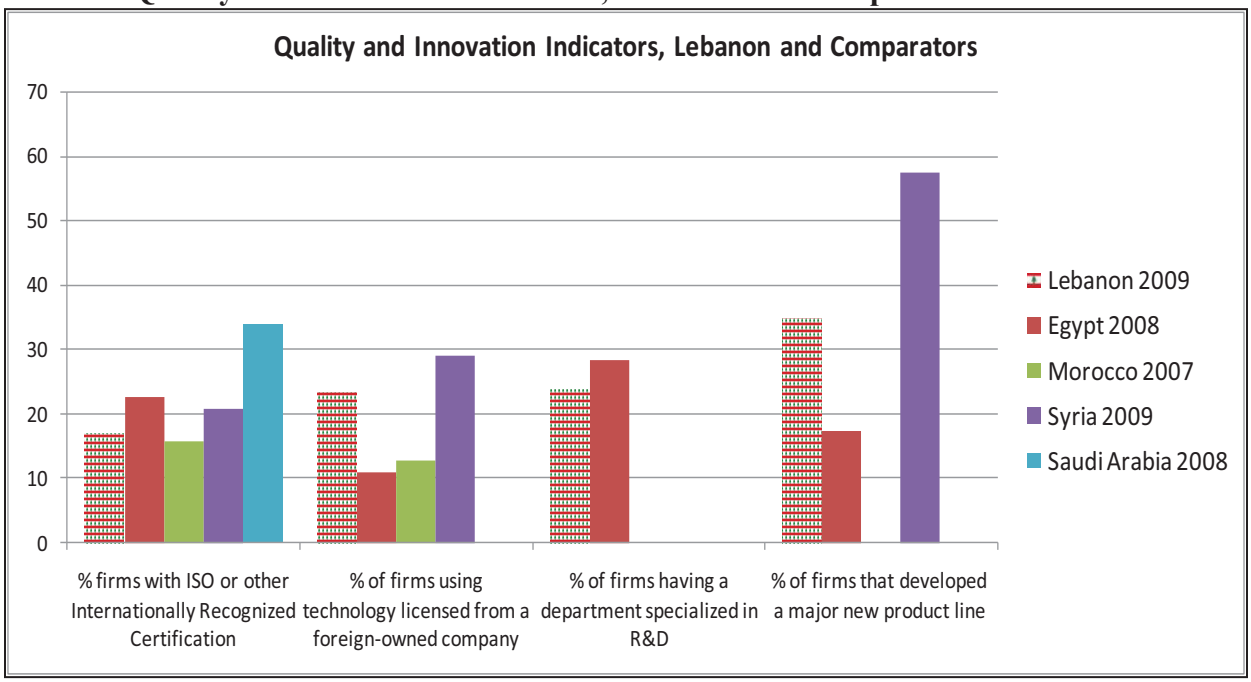
65. ***From the perspective of the innovation-based growth strategy advocated in this report, the quality of higher education is precisely a critical issue.*** Setting up a mechanism for promoting higher education research and other research capacity, both in the public and the private sector, in public and private universities is critical. At this stage, only a relatively small

[31] The index, which is determined by the adult literacy rate and the combined primary, secondary, and tertiary gross enrollment ratio, ranked the country 88th out of the 177 countries participating.
[32] See Berthélemy et al. (2007).
[33] High migration rates of workers with the highest skills may explain why firms list "limited availability" as the key reason for the difficulty of finding workers, as indicated in Table 18.
[34] The distribution of physical facilities has been highly politicized, resulting in over-capacity in some areas and under-capacity in others. The oversupply and misallocation of teaching and administrative staff is acute, causing salaries and wages to represent almost 90 percent of the Ministry of Education and Higher Education's total spending.

proportion of firms have a department specialized in R&D (see Chart 15). It is also important to create international linkages to facilitate the transmission of technology, know-how, skills, organizational and management practices, access to markets, and competitive pressures to stimulate innovation. This can be achieved by boosting content-rich FDI - possibly by attracting leading multinational corporations, and by strengthening linkages with the expatriate community. Such a strategy will help to slow migration of the best-trained people and promote a stronger involvement of the skilled Diaspora.

66. ***Indeed, in the context of an innovation-based growth strategy, it is important to rely more on the country's talent abroad.*** However, the usual policy focus, which aims to encourage the return of talent to the home country, may not prove realistic in the short to medium-term, in an environment where political instability and macroeconomic volatility may remain high. More importantly, it may not be necessary: members of skilled Diasporas can just as effectively engage in joint continuous projects with the home country without physically, and permanently, relocating to it. This phenomenon, which has been called "brain circulation," is an important center piece in the growth strategy that Lebanon should be considering.[35]

Chart 15 Quality and Innovation Indicators, Lebanon and Comparators



Source: World Bank (2010*c*).

[35] See Kuznetsov (2010) for a discussion of the concept of brain circulation. He describes an interesting experiment - a contest, recently pioneered in Mexico and Russia that provided matching funds to organizations in a home country interested in articulating and running a project with Diaspora members that advance their own missions and objectives. Operational details would obviously differ from country to country, but contest funds of this type could support a great variety of institutionalized Diaspora initiatives aimed at promoting innovation.

67. ***At No. 113 out of 183 countries, Lebanon is poorly ranked in the World Bank Doing Business 2011 Indicators - even for the region.*** Whether it is dealing with construction permits, registering properties, enforcing contracts, or closing a business, the country performs poorly by international standards (Tables 19 and 20). Narrowing the scope to incentives to innovate, an important aspect of the business climate relates to the need to respect and enforce intellectual property rights. There are significant problems with patents and the legislation for patent protection in Lebanon. Specific legislative protection for entrepreneurs is important, as it ensures that innovators (both domestic and foreign) are economically rewarded for their innovations. Thus, improvements in the business environment, especially greater enforcement of property rights, are important not only for Lebanese companies and potential innovators in a wide range of sectors (including creative industries, as discussed in British Council, 2008), but it also sends important signals to the international community at large.

Table 19 Doing Business Indicators, 2009 and 2010

Doing Business	Rank 2010 (DB 2011)	Rank 2009 (DB 2010)	Change
Overall	**113**	**104**	**-5**
Starting a Business	103	108	5
Dealing with Construction Permits	142	140	-2
Registering Property	111	110	-1
Getting Credit	89	87	-2
Protecting Investors	93	92	-1
Paying Taxes	36	35	-1
Trading Across Borders	95	95	0
Enforcing Contracts	122	122	0
Closing a Business	122	122	0

Source: World Bank (2011).

Table 20 Indicators for Enforcing Contracts, Lebanon and Comparators

Indicator	Lebanon	Middle East & North Africa	OECD Average
Procedures (number)	37	43.9	31.2
Time (days)	721	664.1	517.5
Cost (percent of claim)	30.8	23.6	19.2

Source: World Bank (2011).

Section 2: An Analytical Framework

68. ***The foregoing discussion has identified a number of potential constraints on long-term growth in Lebanon,*** ranging from excessive macroeconomic volatility, lack of access to infrastructure services, inefficient government spending, distortions in competition, insufficient promotion of higher education research, and insufficient reliance on "brain circulation". It has

also highlighted the fact that financial flows are both a determinant and a consequence of economic growth. This section describes briefly a formal model that captures some of these interactions and other key structural features of the Lebanese economy. A more detailed description is provided in Box 13 and a complete technical presentation in Appendix - B.

69. ***The model is that of an overlapping generations (OLG) economy where individuals live for three periods (childhood, adulthood, and old age).*** In addition to individuals, the economy is populated by firms and a government. There are four sectors in the economy: the first produces a final good, the second intermediate inputs, the third human capital, and the fourth, the R&A sector, engages in research and adaptation of foreign goods and services. Raw labor (measured by the number of workers) is used in the production of the final good and in the R&A sector. In addition to raw labor, firms producing the final good use also human and private physical capital, public infrastructure, and intermediate goods. Labor moves freely across all sectors. The government invests in infrastructure and spends on education and some other items. It finances its expenditure by taxing wages and runs a balanced budget in each period.[36]

70. ***The key source of growth dynamics in the model is activity in the R&A sector***. Firms engaged in research and adaptation (or implementation innovation) create new domestic intermediate inputs, possibly using foreign designs. Research or adaptation is not costless; local firms must invest resources in order to create new designs or absorb the information needed to adapt new products invented abroad. The production of new designs depends on the existing stock of designs, effective labor, as well as access to public infrastructure and the share of "technology-driven" flows in total FDI inflows. Thus, the ability to innovate and adapt foreign technologies depends not only on domestic factors (in particular, the higher stock of human capital or public capital in infrastructure) but also on longer-term foreign capital. A key mechanism through which this may occur is the fact that FDI serves to channel information about new, imported technologies, as discussed in the Section 1. The flow of FDI is assumed to depend on the differential between the rate of return on domestic private capital and the rate of return on world capital markets. Thus, because access to infrastructure affects the rate of return on domestic capital, it also exerts a positive effect on foreign financial flows. This captures the bidirectional link between financial flows and growth that was emphasized in Section 1.

Box 13 Linking Financial Flows, Structural Reforms, and Growth: A Formal Model

The model developed for this study is an overlapping generations (OLG) economy where individuals live for three periods, childhood, adulthood, and old age.[37] It captures some of these interactions and other key structural features of the Lebanese economy. Each individual is endowed with one unit of time in the first two periods of life, and zero units in old age. Children allocate all their time to education. In adulthood, each individual has one child. Total population is thus constant. Adults supply labor inelastically and wages in adulthood are the only

[36]Implicit in the analysis is the assumption that the fiscal adjustment that Lebanon has started in recent years will continue in the years ahead.

[37] The model is described in detail in Appendix - B.

source of income. Households choose consumption in adulthood and old age, and receive transfers from abroad (remittances), which are assumed to be proportional to wages.

In addition to individuals, the economy is populated by firms and a government. There are four sectors in the economy: the first produces a final good, the second intermediate inputs (which depreciate fully after use), the third human capital, and the fourth, the R&A sector, engages in research and adaptation of foreign goods and services. Human capital is nonrival, in the sense that use of it in one sector does not preclude its use in another. Raw labor (measured by the number of workers) is used in the production of the final good and in the R&A sector. In addition to raw labor, firms producing the final good use also human and private physical capital, public infrastructure, and intermediate goods. The good can be either consumed in the period it is produced, or stored to yield physical capital at the beginning of the following period. Labor moves freely across all sectors. The government invests in infrastructure and spends on education and some other items. It finances its expenditure by taxing wages. It runs a balanced budget in each period. Finally, all markets clear and there are no debts or bequests between generations.

Final good production requires the use of effective labor (given by the product of average human capital and employment), private capital, public infrastructure, and a combination of intermediate inputs. Although public capital is non-excludable, it is partially rival because of congestion effects; for simplicity, congestion is taken to be proportional to the aggregate private capital stock. Each R&A activity involves the production of a new intermediate good, and the elasticity of substitution between different intermediate goods is equal to unity. Profit maximization yields demand for all inputs. Because the ratios of private capital to the stock of intermediate goods, of human capital to the stock of intermediate goods, and of public to private capital are all constant in the long run, the growth rate of the economy is driven by the speed of industrial diversification, which is itself related to the growth rate of the R&A sector.

Firms in the intermediate sector are monopolistically competitive. There is only one producer of each input s and each of them must pay a fee to use the design of that input to inventors and innovators in the R&A sector. Production of each unit of an intermediate input s requires θ units of the final good; θ is a cost that encompasses not only technological requirements but also regulatory restrictions on firm entry. Once the fee involved in purchasing a design has been paid, each intermediate-good producer sets its price to maximize profits. Assuming that the market for new designs is competitive, standard arbitrage implies that the price of a design is equal to the present discounted stream of profits that the producer of intermediate inputs could make by producing the intermediate input.

Human capital is produced using a combination of government spending on education per worker as well as the average human capital and public capital.

Firms engaged in research and adaptation (or implementation innovation) create new domestic intermediate inputs, possibly using foreign designs. Research or adaptation is not costless; local firms must invest resources in order to create new designs or absorb the information needed to adapt new products invented abroad. The production of new designs depends on the existing stock of designs, effective labor, as well as access to public infrastructure and the share of "technology-driven" flows in total FDI inflows. Thus, the ability to innovate and adapt foreign technologies depends not only on domestic factors (in particular, the higher stock of human capital or of public capital in infrastructure) but also on longer-term foreign capital. A key mechanism through which this may occur is the fact that FDI serves to channel information about new, imported technologies, as discussed in the previous section. The flow of FDI is assumed to depend on the differential between the rate of return on domestic private capital and the rate of return on world capital markets. Thus, because access to infrastructure affects the rate of return on domestic capital, it also exerts a positive effect on foreign financial flows. This captures the bidirectional link between financial flows and growth that was emphasized in the previous section.

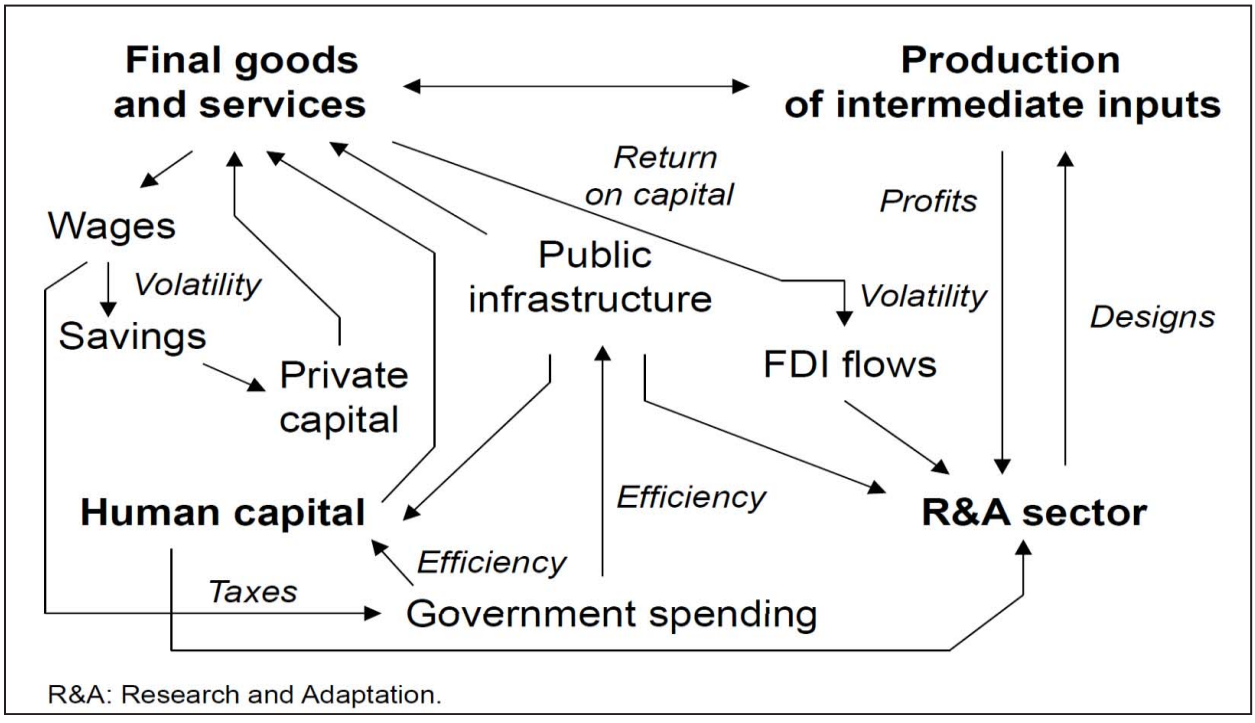
In addition, a poorly functioning system to enforce property rights (administration of patents, etc.) creates a "deadweight loss", to the extent that these inefficiencies in enforcing property rights translate into a lower ability of firms in the R&A sector to appropriate the rent created by their activity - that is, the profits of intermediate goods producers. Consequently, improved enforcement of property rights translates into higher wages in the R&A sector, which tends to draw more labor into that sector - and thus promote activity.

Assuming full depreciation for simplicity, public capital in any period is given by a fraction $\chi^I \in (0,1)$ of public investment in infrastructure, where χ^I is an efficiency parameter that measures the extent to which investment flows translate into actual accumulation of public capital; thus, χ^I can be thought of as an indicator of the quality of management of public sector investment projects, or governance. This specification captures the view that Lebanon's complex political economy affects the quality of its public institutions of policymaking as well as its public institutions of services delivery, with an adverse effect eventually on the quality of services provided by the public sector.

The asset-market clearing condition requires equality between savings and investment, or equivalently, that tomorrow's private capital stock will be equal to today's savings by adult workers. With perfect labor mobility and with full employment, labor market equilibrium yields a constant allocation of labor between the final good sector and the R&A sector.

71. ***The main interactions in the production component of the model are summarized in Chart 16.*** There are several features of the model that are worth highlighting: (i) infrastructure affects directly both the production of final goods and R&A activities; (ii) through its effect on the marginal product of labor, it also affects incentives to migrate; (iii) FDI flows contain both an exogenous component and an endogenous component; to the extent that improved access to infrastructure affects positively the rate of return of private physical capital, it will induce higher external flows; (iv) in addition to the *level* effect of domestic factors on capital flows, there is also a *composition* effect, which operates through changes in a parameter of "technology-driven" FDI flows in total flows itself; possibly a function of various domestic factors and policies; and (v) the quality of governance affects growth both through the efficiency of spending on education and investment in infrastructure, and through the protection of property rights.

Chart 16 OLG Framework - Production Structure



R&A: Research and Adaptation.

72. ***To analyze the impact of policies on long-run growth in Lebanon, the model is calibrated.*** The calibration procedure is described in Appendix – B. As much as possible, national data for the period 1997-2009 are used, but numbers for the period 2005-09 are also given, for comparative purposes. However, given that in many instances reliable parameter estimates are not available for Lebanon, the international evidence was used for guidance. Based on the calibrated parameters and initial values, the model is solved to yield an annual growth rate of final output equal to 4 percent as a benchmark case.

Section 3: Policy Experiments

73. ***The analytical framework presented in the previous section can be used to perform a variety of policy experiments,*** namely, structural reforms that may help Lebanon to alleviate the constraints identified earlier and achieve its long-term growth and employment objectives. Specifically, the following policies are considered: a budget-neutral increase in public investment in infrastructure; an across-the board increase in the efficiency of government spending; a reduction in perceived macroeconomic instability, which takes the form of an increase in (i) the autonomous component of FDI flows, and (ii) the sensitivity of R&A activity to capital flows; improved competition, as measured by the reduction in the cost parameter in intermediate goods production; and better enforcement of property rights in the R&A sector. In all cases, the calibration corresponding to the period 1997-2009 is used. In line with the report's focus on long-term growth in Lebanon; for each experiment, absolute deviations in the steady-state growth rate from its benchmark value are calculated and reported.

Higher Investment in Infrastructure

74. ***Consider a budget-neutral increase of 0.05 percentage points in the share of public spending allocated to investment in infrastructure,*** financed by a cut in other (not directly productive) spending, or equivalently, based on our calibration, an increase in that share from 0.09 to 0.14. This experiment is in line with the announced plans by the Government to increase public investments in key service sectors (in particular, electricity, telecom, water and roads maintenance) over the medium-term, financed by a reduction in other components of public expenditures, or through the mobilization of unused donors' lines of credits to avoid putting undue pressure on the budget.[38]

[38]The authorities' 2010 draft budget incorporated a 3.8 percentage points of GDP (280 percent nominal) increase in capital spending, including substantial investments in electricity generation, which has fallen significantly behind demand. Higher public investment is aimed to address, in particular, supply deficiencies in the electricity and water sectors, and to upgrade telecom services and roads.

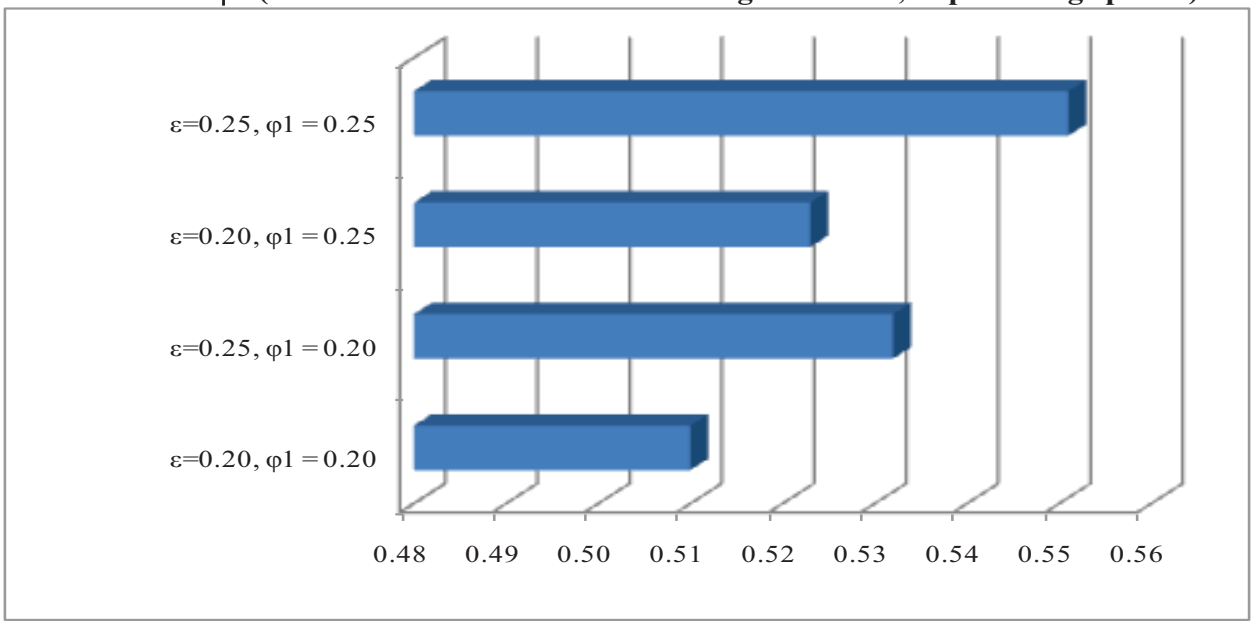
Box 14 Budget Neutrality, Public Spending and Private-Public Partnerships: A Dilemma?

Some counterparts questioned the choice of a budget neutral financing of public infrastructure arguing that borrowing for investing in capacity cannot be looked at the same way as borrowing to cover operating losses and current spending. On the other side of the spectrum, other counterparts underscored the benefits of resorting to Public-Private Partnerships (PPPs) in an environment of high public debt and deficit. The team acknowledges the validity of these observations and considers that they are of both technical and political nature. Indeed, the team separates the identification of crucial investments in infrastructure needed to enhance the provision of quality services and public goods, from the choice of the financing modalities of these investments. The team relates the arbitrage between these financing techniques to domestic choices about the role of the public sector in the economy, including the assessment of the ability of the public sector to provide services efficiently against its ability to play the role of regulator for service provision by the private sector. Since providing answers to this specific debate remains out of the scope of the present work and, acknowledging the high levels of debt, the team has opted for the budget neutral public spending on infrastructure. The budget neutral spending we retain here means that additional expenditures on infrastructure would be matched by a mixture of resources reallocation, further revenue mobilization, and the use of available long-term foreign financing. On a final note, it is useful to remind that PPPs represent potential contingent liabilities and, therefore, do not exempt the authorities in anyways from pursuing efforts of fiscal consolidation through a mixture of spending control and revenue mobilization.

75. ***The impact of this policy on long-run growth are displayed in Chart 17, for different values of two important parameters in the context of this exercise.*** We simulate the increase in the share of public spending allocated to infrastructure υ_I, for different values of the elasticity of output of final goods with respect to the public-private capital stock, ε, and for different values of the elasticity of output of the R&A sector to that same variable, $\varphi 1$. Both ε and $\varphi 1$ take the initial value 0.2 and then 0.25. As shown in the Chart, the growth rate increases in all cases, by about 0.5 percentage points with both ε and $\varphi 1$ at their original values and when only ε or $\varphi 1$ increases, and by 0.55 percentage points when both ε and $\varphi 1$ are higher.

76. ***In the model there are a number of channels through which the increase in υ_I raises the growth rate of the economy*** - even though the quality of public investment, as measured by χ^I, mitigates the magnitude of the net effect. First, there are *direct* effects. Higher investment raises the public-private capital ratio. In turn, this promotes (i) the production of final goods; (ii) the accumulation of human capital; and (iii) R&A activities, given the assumption that public infrastructure is an essential input in all three sectors. Second, there are *indirect* effects, related to the fact that the increase in human capital helps to promote activity further in both the final goods and R&A sectors. The direct effects are, of course, magnified with the higher values of ε = 0.25 and $\varphi 1$ = 0.25, and the effect is slightly larger in the former case. Note also that the increase in access to public capital tends to increase the productivity of labor, and thus wages, in both the final goods sector and the R&A sector. As a result, the net effect on the distribution of the labor force between these two sectors is relatively small. In the case where ε = 0.2 and $\varphi 1$ = 0.25, the effect of the higher public-private capital stock on the marginal productivity of labor is higher in the R&A sector, and the policy leads to a slight increase in the number of workers in R&A.

Chart 17 Increase in Share of Spending on Infrastructure Investment υ_I for Different Values of ε and φ1 (Absolute deviations from baseline growth rate, in percentage points)



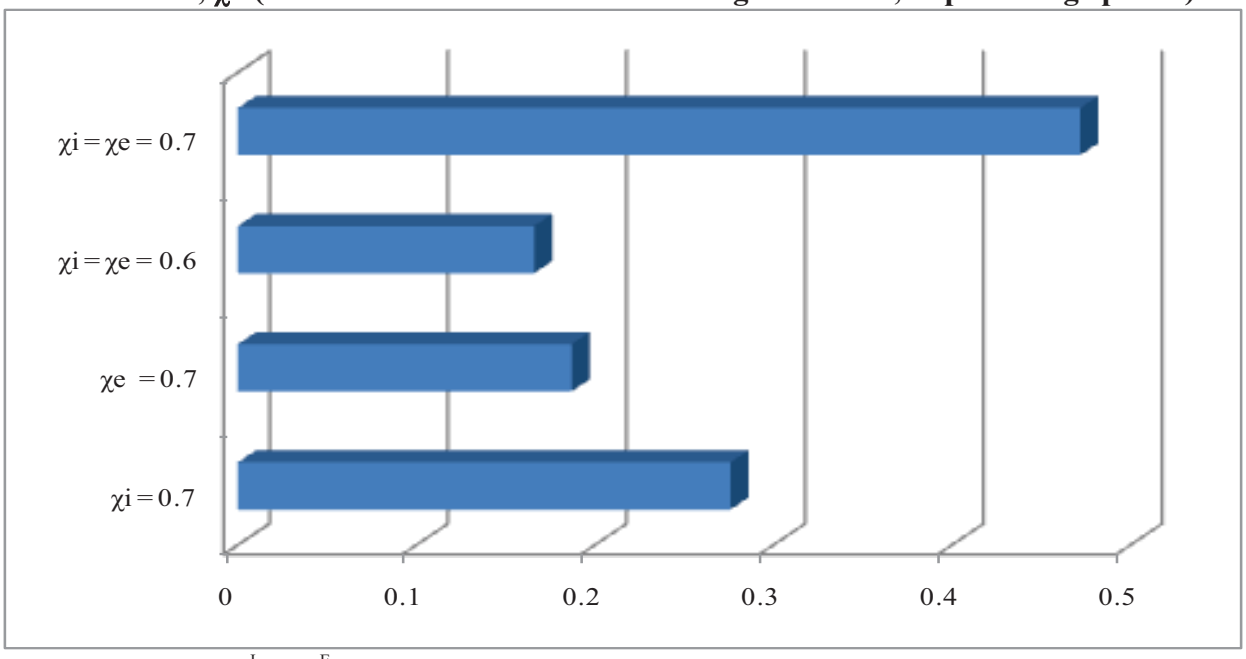
Note: Initial values for υ_I, ε and φ1 are respectively 0.09, 0.2, and 0.2

Improved Efficiency of Public Expenditure

77. ***Consider an across-the board increase in the efficiency of government spending***. This increase corresponds to a rise in the efficiency parameter of public spending on infrastructure, χ^I, and in the efficiency parameter of public spending on education χ^E from a common initial value of 0.55 to 0.7. This is in line with the emphasis in various official reports on the need to improve the institutional underpinnings of the reform process in Lebanon, particularly with respect to its public sector governance aspects, and to continue the process of rationalization of public spending (see e.g., World Bank, 2009). The magnitude of the increase (by almost a third) assumes that the outcome of governance reforms is quite significant in improving efficiency.

78. ***The growth effects are displayed in Chart 18, first for the two increases in efficiency parameters separately, and then for the joint increase.*** When taken in isolation, these policies have a moderate effect on growth; of the order of 0.3 percentage points when the efficiency of investment spending χ^I is increased and of the order of 0.2 percentage points when the efficiency of education spending χ^E goes up. When the policies are combined, the increase in growth is close to the sum of the individual effects. However, what the chart also reveals is that while an across-the-board improvement in efficiency to 0.6 raises the long-run growth by only 0.17 percentage points, a similar improvement to 0.7 raises growth by 0.5 percentage points - a much higher proportional impact. Overall, the results show than an improvement in efficiency of public expenditure may have a sizable impact on long-term growth in Lebanon; this is an important policy message.

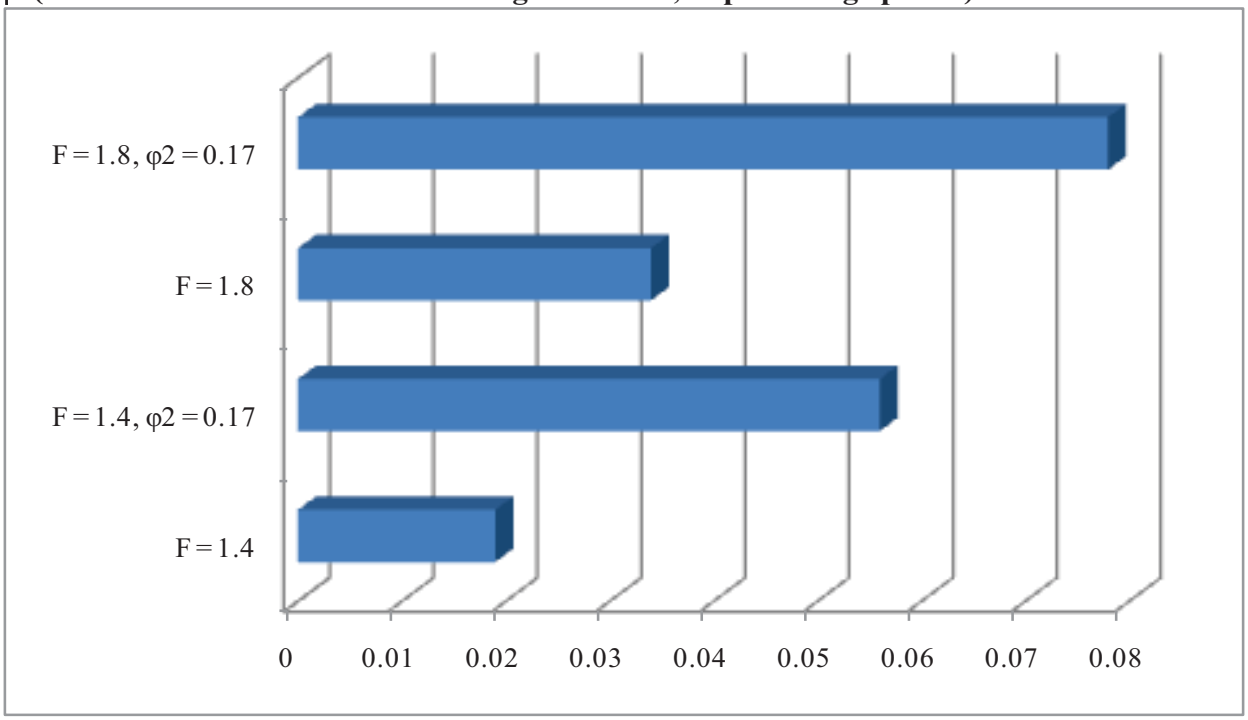
Chart 18 Increase in Efficiency Parameters of Government Spending on Infrastructure, χ^I and Education, χ^E (Absolute deviations from baseline growth rate, in percentage points)



Note: Initial value for χ^I and χ^E is 0.55.

Reduction in Perceived Macroeconomic Volatility

Chart 19 Reduction in Perceived Macroeconomic Volatility, F, for Different Values of φ2(Absolute deviations from baseline growth rate, in percentage points)



Note: Initial values for F and φ2 are respectively 1.0 and 0.12

79. ***Consider a reduction in perceived macroeconomic volatility, which is captured by considering both an increase in the autonomous component of FDI flows, $\underline{F}$,*** from a (normalized) value of 1 to 1.4 and 1.8, coupled with an increase in the sensitivity of R&A activity to capital flows, from $\varphi 2 = 0.12$ to $\varphi 2 = 0.17$.[39] The premise then is that improved stability induces investors to take a longer-run view at the economy (a key characteristic of longer-term capital flows) and to react more positively to changes in the rate of return of domestic capital, relative to the rate of return on foreign investments.

80. ***The results are reported in Chart 19, for both effects taken separately, and for the joint effect.*** In general, the net effects on growth, while positive, are relatively small, given that only changes in the (absolute) level of capital flows are considered; in the best case scenario, growth increases by about 0.1 percentage points. Of course, these effects could be magnified by considering larger shifts. Nevertheless they illustrate well the potential dividends that greater stability could bring to Lebanon, in the form of higher and "better" foreign investments, capable of promoting research and adaptation activities and growth in general. Indeed, the increase in the autonomous component of FDI flows stimulates directly activity in the R&A sector. In turn, this improves the degree of industrial diversification (the number of varieties of intermediate goods produced domestically), which promotes production in the final goods sector.

Improved Competition

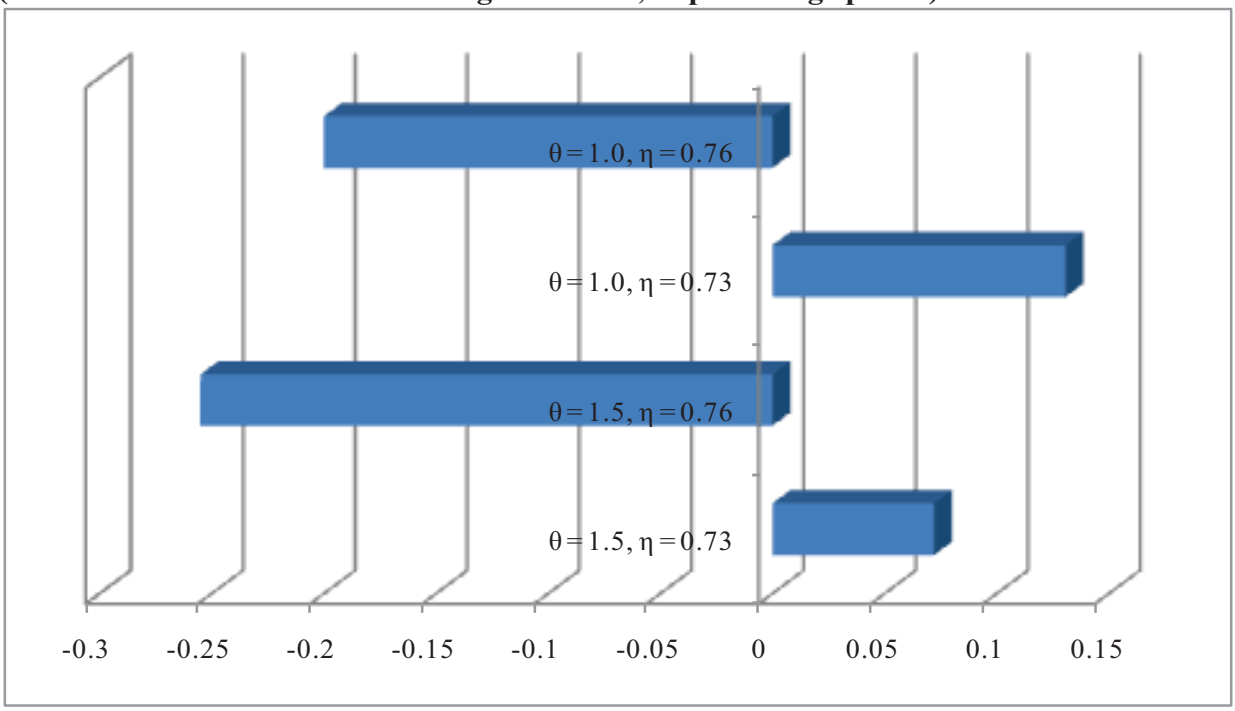
81. ***A policy aimed at improving competition can be captured by considering a drop in θ, the number of units of the final good required to produce each unit of an intermediate input.*** As noted earlier, θ is a cost that accounts not only for technological requirements but also for regulatory restrictions on firm entry. Specifically, we consider a drop in θ from an initial value of 2.5 to 1.5 and to 1, for two different values of parameter η, whose inverse measures the net price markup over marginal cost: a value of 0.73 (the benchmark case, which implies that the markup is about 37 percent, in line with some evidence for Lebanon) and 0.76 (which implies a markup rate of 31 percent). Thus, the alternative corresponds to the case of a moderate accompanying pricing reform, whereas the second is more pronounced, leading to a halving of the markup rate.

82. ***The results are illustrated in Chart 20. Consider first the drop in θ with η remaining at the benchmark value of 0.73.*** As can be expected, the larger the drop in θ the greater the effect on long-run growth, even though the magnitude of this effect is relatively small; growth increases by about 0.1 percentage points when θ drops to 1. There are two effects at play here. The first is that a lower θ stimulates the demand for intermediate goods in the final goods sector,

[39] Another way to look at the impact of a reduction in perceived volatility in the context of the present framework would be to assume that it leads to a change in the private savings rate. However, conceptually the effect could go both ways. If volatility, to begin with, induces a precautionary savings behavior, reduced volatility will tend to *reduce* savings. By contrast, if volatility leads initially to a myopic horizon (or equivalently, a high discount rate), reduced volatility will tend to *increase* savings. The net effect on growth (which also depends on the strength of congestion effects associated with private capital accumulation) is thus, in general, ambiguous.

and this promotes activity there. The second is that a lower θ reduces the price of designs, and thus the profits that producers in the R&A sector can monopolize as a reward to their activity. This has a deterring effect on output in that sector, which in turn tends to hamper production in the final goods sector. These conflicting effects explain why even a large change in θ has a relatively small effect on long-run growth - even though, given the calibration of the model, the net effect remains positive.

Chart 20 Improved Competition Measured by the Drop in θ and for Different values of η (Absolute deviations from baseline growth rate, in percentage points)



Note: Initial values for θ, and η are respectively 2.5 and 0.73

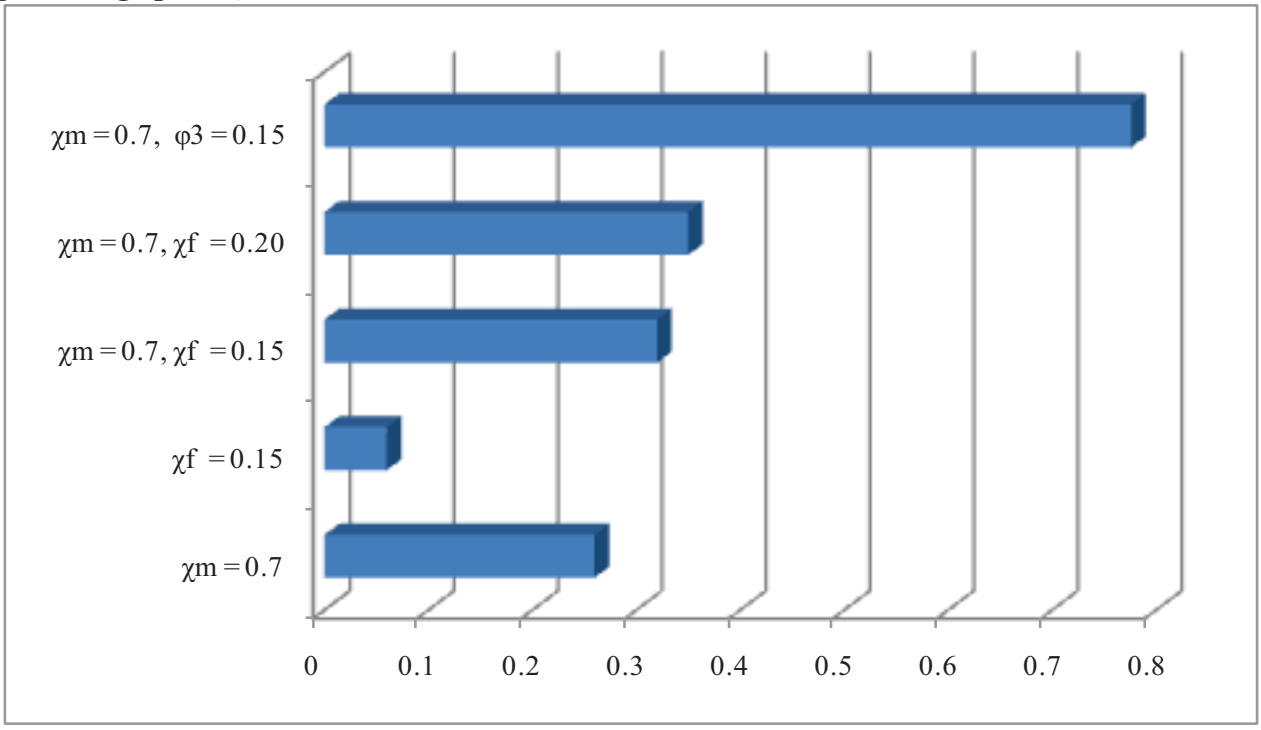
83. ***As shown also in Chart 20, when η falls concomitantly, even slightly, the net effect on growth is now negative.*** The reason now is that the lower η not only puts further downward pressure on the price of innovation and designs but it also mitigates the increase in the demand for intermediate goods, because a lower η means also a lower elasticity of demand for each of these goods (given by 1/(1-η)). Thus "improved competition", as defined by lower values of θ and η has mixed effects on growth in the present framework, where monopoly profits, and their implications for the price of designs and activity in the R&A sector, play a critical role.

Enforcement of Property Rights

84. ***Finally, consider a reform of property rights that is specifically designed to promote R&A activities,*** such as improved functioning of the bureau of patents, for instance - a relatively weak institution in Lebanon. This is captured by considering an increase in the coefficient χ^M that captures the efficiency of property rights enforcement, from an initial value of 0.5 to 0.7. In

addition, we assume that improved enforcement of property rights will also promote entry of foreign investors in the R&A sector and make them more responsive to changes in the rate of return on domestic capital (a proxy for the rate of return in the economy in general); we therefore consider also the case where the increase in χ^M is coupled with (i) an increase in the share of "technology-driven" FDI, χ^F, from an initial value of 0.05 to 0.15 and 0.2, and (ii) an increase in the elasticity of FDI flows with respect to the rental rate of domestic capital, φ3, from an initial value of 0.05 to 0.15.

Chart 21 Improved Enforcement of Property Rights Measured by an Increase in χ^M, for Different Values of χ^F, and φ3 (Absolute deviations from baseline growth rate, in percentage points)



Note: Initial values for χ^M, χ^F , and φ3 are respectively 0.5, 0.05, and 0.05.

85. ***The results are reported in Chart 21 where, for the sake of comparison, an independent increase in χ^F from 0.05 to 0.15 is also reported.*** They illustrate again the important growth dividends that Lebanon is likely to reap from institutional reforms - in this case specifically those aimed at securing property rights. Growth increases by about 0.3 percentage points when the increase in χ^M is coupled with an increase in the share of technology-driven FDI, and by about 0.8 percentage points when it is associated with a rise in the elasticity of FDI flows to changes in relative rates of return. The key point is that reforms aimed at better enforcing property rights have not only direct effects, stemming from the fact that they provide greater incentives to engage in research and adaptation activities; they may also generate large positive externalities as well, in the form of increased incentives to foreign investors to allocate more resources to technology-driven sectors in Lebanon, and increased sensitivity to changes in rates of return on

domestic productive assets. They also show once again the importance of accounting for the *endogenous nature of medium- and long-term capital flows* in the context of Lebanon's growth strategy in the coming years - a key theme of this report.

CHAPTER 3: PROMOTING STRUCTURAL REFORMS - POLICY ADVICE AND OPERATIONAL FRAMEWORK

102. ***The first chapter of this report has provided the historical, empirical and conceptual backgrounds to the relation between foreign inflows, economic activity and aggregate demand in Lebanon.*** The second chapter has stressed the role of supply-side structural policies, the endogenous response of capital flows to these policies, and how both structural policies and capital flows affect economic growth in a medium to long-run perspective. Specifically, that chapter has specified and quantified a formal inter-generational model that captures some of the key determinants of, and constraints on, economic growth in Lebanon. The calibration of such model to Lebanese data has allowed determining the growth payoff of various structural policy reforms in function of the value of key behavioral parameters. For instance, the impact of critical policies such as investment in infrastructure, improvement in public spending efficiency, greater competition and protection of property rights on growth have been shown to be significant.

103. ***This chapter translates the policy experiments simulated in Chapter 2 into concrete actions as envisaged by the government and discussed in the World Bank country partnership strategy with Lebanon.*** For instance, it clarifies what investing in infrastructure, improving spending efficiency or improving competition, which have high growth payoff, mean for Lebanon in this particular juncture. The chapter also undertakes to examine the impact of various pairs of reforms (in contrast with individual reforms) and of a composite reform package that involves all the reforms examined in this report. It shows how implementing a comprehensive structural reform package is superior to partial reforms as it propels growth at a level that is more likely to generate additional capital inflows endogenously. Such scenario is desirable for Lebanon since it promotes a better control and use of foreign inflows to foster long-term growth.

Section 1: Investment in Infrastructure

104. ***Infrastructure gaps are a major constraint to Lebanon's economic and social development. As seen in Chapter 2, investing in those gaps could add up to 0.55 percentage point on Lebanon's growth prospects.*** It has long been argued that lack of public investment in the last decade had detrimental effects on the welfare of the overall population as basic services such electricity, water, transportation, and telecom services worsened. Serious deficiencies in the infrastructure sectors deepened the impediments to Lebanon's competitiveness, fiscal stability, and economic growth. Moreover, in the absence of major reforms and public investments in the country's infrastructure, private sector operations are hindered as the cost of producing inputs increases. This entails serious implications on employment creation. Even the public private partnership agenda is highly dependent on the government addressing infrastructure deficiencies, especially in public goods and basic services where projects are not considered commercially viable by the private sector. In line with the government's announced plan to increase capital

spending, the report has simulated the contribution of higher public investment on long-term growth prospects in Lebanon. This impact was estimated to add between 0.5 and 0.55 percentage points on the country's growth prospects, depending on the magnitudes of the elasticity of final goods output with respect to public-private capital stock, and of the elasticity of the R&A sector output with respect also to public-private capital stock.

105. ***Investments are mostly needed in the infrastructure of four sectors: electricity, water, transport and telecommunications.*** The linkages between those sectors and employment creation, competitiveness, and growth have been well documented. Alongside increases in investments, reforms should also tackle the institutional set-ups, management framework, and legislative infrastructure of these sectors. The policy objectives behind reforms in each sector are different and can be summarized by the following:

Electricity sector: (i) improving service delivery through tackling increase in generation capacities, (ii) reducing fiscal burden and, (iii) improve institutional and legislative set-up for further private sector participation.

Water sector: improving service delivery and fiscal situation of sector, increasing investment in water storage and revisiting the wastewater sector strategy.

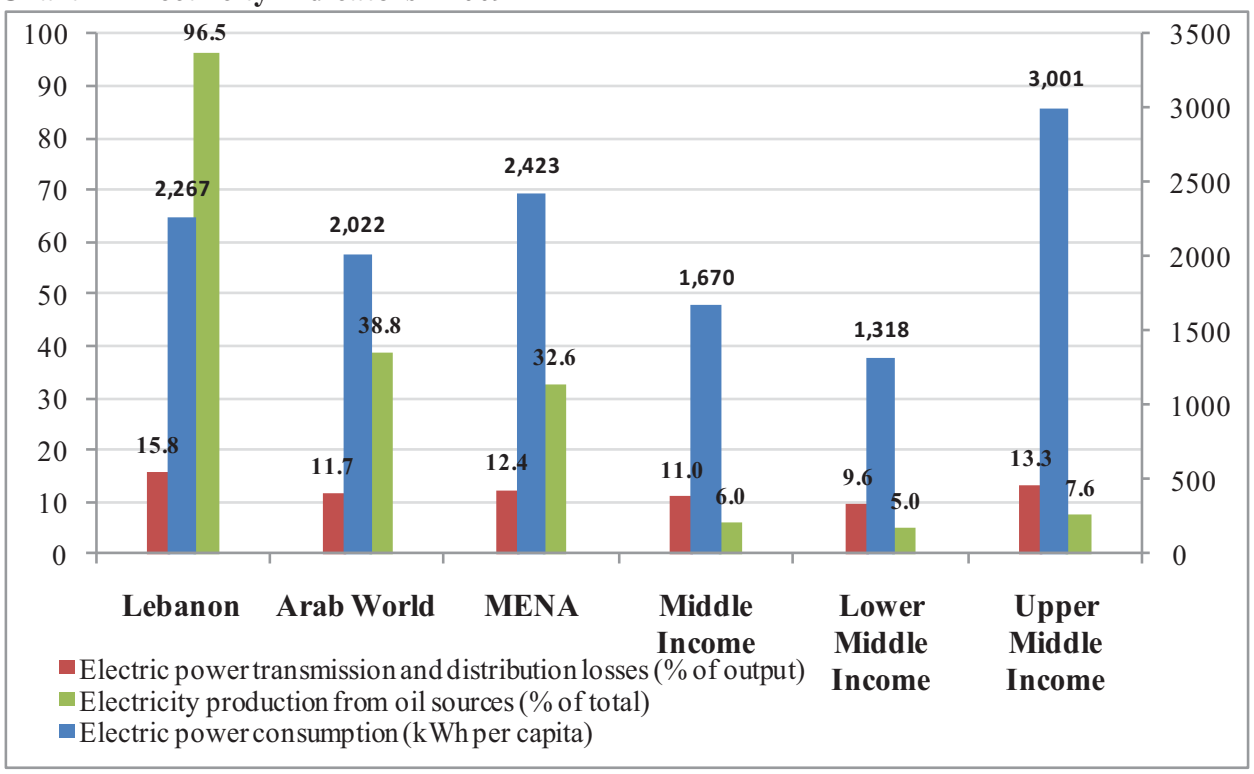
Transport sector: unlocking access to regional centers across the Lebanese territory and reducing transportation costs for individuals, firms, and the economy.

Telecom sector: moving away from the para-fiscal trap, improving competitiveness between sector stakeholders, and enhancing the quality, quantity, and diversity of services as to keep up with rapid changes in technological advancements around the world.

The paragraphs below describe briefly the current setting in each sector and propose some guidelines for reforms.

106. ***Economic growth and fiscal stability in Lebanon are unattainable without major reform and investment in the electricity sector.*** As the World Bank's Lebanon Country Partnership Strategy 2011-2014 frames the constraints of the electricity sector, all services needed cannot be currently supplied to households and businesses. Massive subsidies are required (amounting to US$1.5 billion and 4.3 percent of GDP in 2009) to cover insufficient revenues, because the overall performance of the sector is very poor: tariffs are set far too low for cost recovery, governance of the sector is inadequate, and Electricité du Liban (EdL) performs poorly, both operationally and financially, with high technical and financial losses. Investments in new generation capacity have lagged far behind growing electricity demand. Reducing the fiscal burden of the sector on public finances, mobilizing resources to meet energy investment needs, and restructuring EdL into a commercially viable utility will be among the most important policy and structural reform challenges the Government will have to undertake. Also, of importance in the GoL's strategy in addressing the above challenges is the role of energy conservation and of securing supplies of alternatives to expensive fuel oil. Specific recommendations for reforming the power sector have been extensively discussed at various levels of government, but in the past, lack of political decision and consensus over sequencing of

Chart 22 Electricity Indicators - 2009



Source: World Development Indicators 2011.

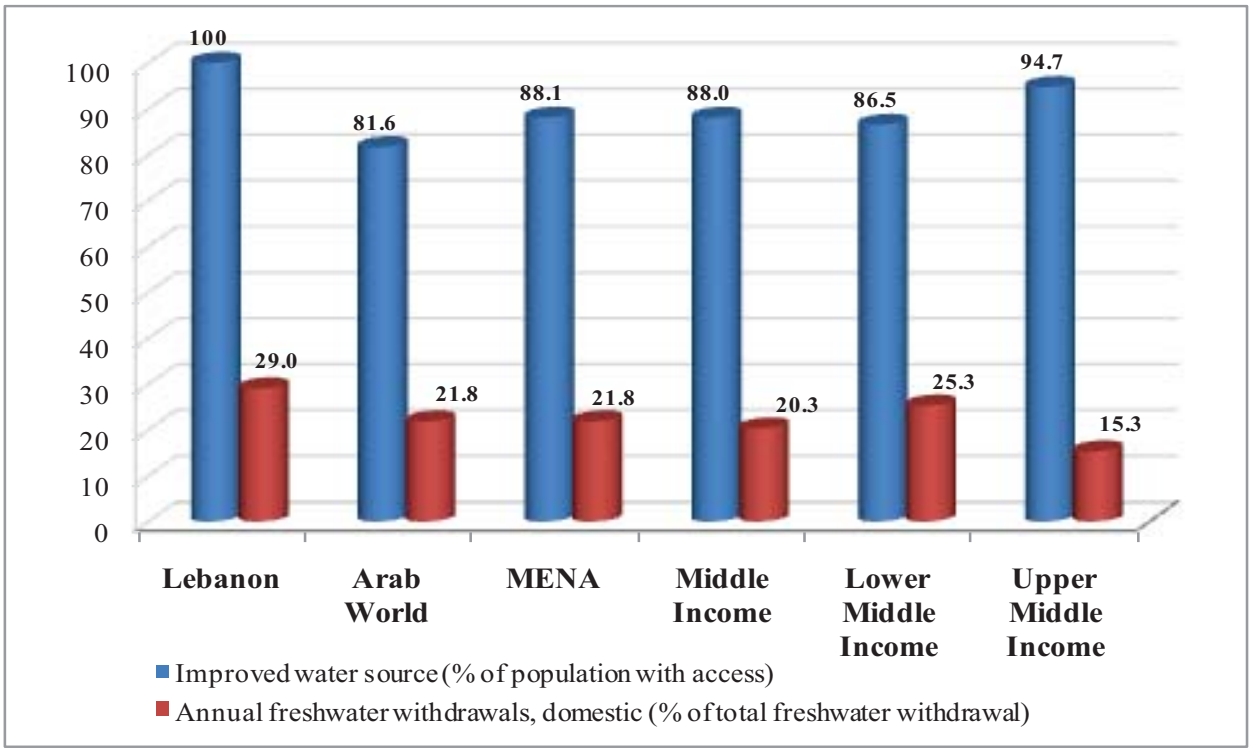
priorities has meant that little implementation has taken place. Meanwhile, as Chart 22 indicates, Lebanon continues to perform poorly in terms of electricity services efficiency as compared to the region and countries of the same income level.

107. ***The recent electricity sector plan constitutes a good platform to start these reforms and which the World Bank is ready to support.*** The GoL, building on previous studies, has adopted in June 2010, an electricity sector policy note, including a reform action plan aimed at improving the performance of the sector and laying the foundation for a financially self-sustained sector in the medium- to long-term. This plan includes a set of well articulated short, medium, and long-term measures aimed at: (i) improving sector governance by effectively corporatizing EdL's management of the sector according to commercial principles and building its managerial capacity to improve the technical and financial performance of the sector; (ii) reducing the fiscal burden by revising the electricity tariff structure and setting rates that will over time put the sector on a sustainable path; (iii) increasing the supply of electricity by additional 700 MW in the medium-term and 800 MW in the long-term; (iv) reducing the cost of generation through investments in low fuel cost generation, rehabilitation of transmission and distribution networks, and contracting distribution, billing, and collection to private sector; (v) promoting renewables and increasing demand efficiency and energy savings; and (vi) promoting all forms of Public-Private Partnerships to facilitate the modernization of the sector. Under the program of the 2010-2014 CPS, the World Bank plans to support the GoL's efforts to increase the efficiency and

better manage the sector while helping leverage other donor's investments in generation and transmission capacity. The Bank will use all available tools from technical assistance, advisory services, concessional financing, and guarantee options in support of the program.

108. ***Despite Lebanon's relatively ample water resources, its water supply and sanitation sector has not kept pace with demand and lags far behind the standards associated with the country's level of economic development.*** The annual cost of inadequate public water supply is estimated at US$470 million (2 percent of GDP in 2008), of which household spending on private water supply is estimated at US$308 million.[40] Despite relatively high connection rates, the continuity of water supply is low and reaches as little as three hours a day in the Beirut-Mount Lebanon region which houses about 40 percent of the Lebanese population. Excessive usage of freshwater resources rather than access seems to be the immediate constraint for Lebanon (refer to Chart 23). It is estimated that the seasonal imbalance of water resources will lead to chronic water shortages by as early as 2020 if no measures are taken to improve efficiency and to increase storage capacity; hence the immediate need to increase public investments in the sector. Wastewater collection coverage averages 58 percent and wastewater treatment facilities are few and small. Discharge of wastewater has polluted water resources and

Chart 23 Water Indicators - 2008



Source: World Development Indicators, 2011

[40] See World Bank, Lebanon Social Impact Analysis – Electricity and Water Sectors (2009).

wastewater is increasingly leading to soil pollution and health hazards. Environmental degradation caused by the discharge of untreated wastewater costs Lebanon about one percent of GDP a year.

109. ***Public Investments are needed to address the irregularity of water supply and the environmental threat posed by untreated waste.*** Public investments in the water and wastewater sectors are needed to reconstruct, rehabilitate, and expand water supply and wastewater networks, treatment plants, storage, and transfer facilities. To increase efficiency and reduce waste, investments ought to be conducted on two levels: Central Government and Regional Water Authorities (RWAs). Central Government should focus public investment on national scale projects, with no commercial returns, especially in the area of storage and transfer facilities. Prior to that, government needs to build consensus around an integrated water and wastewater sector policy and strategy that will help identify and prioritize programs and activities in the sectors. Lebanon's RWAs have a significant role in undertaking investments at a regional level to ensure better service delivery. To do so, RWAs need technical, financial, and managerial autonomy so they can improve operations and maintenance, raise cost-recovery levels, and build internal capacity. Moreover, wastewater services, which fall legally under the jurisdiction of the RWAs, are de facto provided and financed by the Ministry of Water and Energy, Municipalities, NGOs, donors, and small private sector operators. RWAs have yet to take full responsibility for wastewater collection and treatment, and the unfinished reform agenda has contributed to institutional uncertainty and fragmentation of functions. The discharge of wastewater and the use of raw wastewater though need to be more strongly monitored and controlled by the government.

110. ***Investments in the transport sector are narrowly concentrated and are not withheld by an efficient institutional set-up.*** Despite increasing investments made since 2006 that improved urban transport infrastructure, transport remains one of the constraints for economic and social activity in the country. The main bottlenecks in the sector can be summarized in: (i) the concentration of investments in roads and overlooking public transport and commercial transport; (ii) the concentration of investments in greater Beirut and weak linkages to other urban and rural centers which could relieve the capital from demographic pressure; (iii) lack of adequate spending on maintenance of existing stock of roads, bridges and tunnels; (iv) the small institutional capacity to oversee urban transport services; and (v) the weak enforcement of regulations to ensure minimum levels of quality and safety in the sector. These are issues to be tackled through increases in investment, enhancing the institutional set-up of the sector and engaging the private sector.

111. ***To address these bottlenecks the GoL needs to re-prioritize and increase spending in the areas of public transport, transportation of goods, and maintenance.*** Public transport is

estimated to carry about 30 percent of daily passenger movements throughout Lebanon.[41] Despite the large market share, the sector remains largely informal and the shared taxi system and private operators do not necessarily provide a reliable service that covers all the Lebanese territory. Therefore the government needs to mobilize resources to create a reliable service that is able to link efficiently cities and villages in Lebanon and, most importantly, identify a mechanism for the financial sustainability of a public transport system while keeping users' costs at affordable prices. On commercial transport, the government has a role to invest in logistics such as border crossings and customs to facilitate trade. It was calculated that the average cost of bringing an import container from Beirut port to the city was around US$1000 and that there is an average of 1 week before imported goods are available for use. From this perspective, government spending should focus on minimizing costs and enhance efficiency at port clearances or borders crossing. All will help reduce costs, including input costs for firms. Finally, mobilizing sufficient resources to conduct regular road maintenance, as opposed to aimlessly increasing the stock of roads, and properly addressing road safety issues remain fundamental to the development of the transport system in Lebanon.

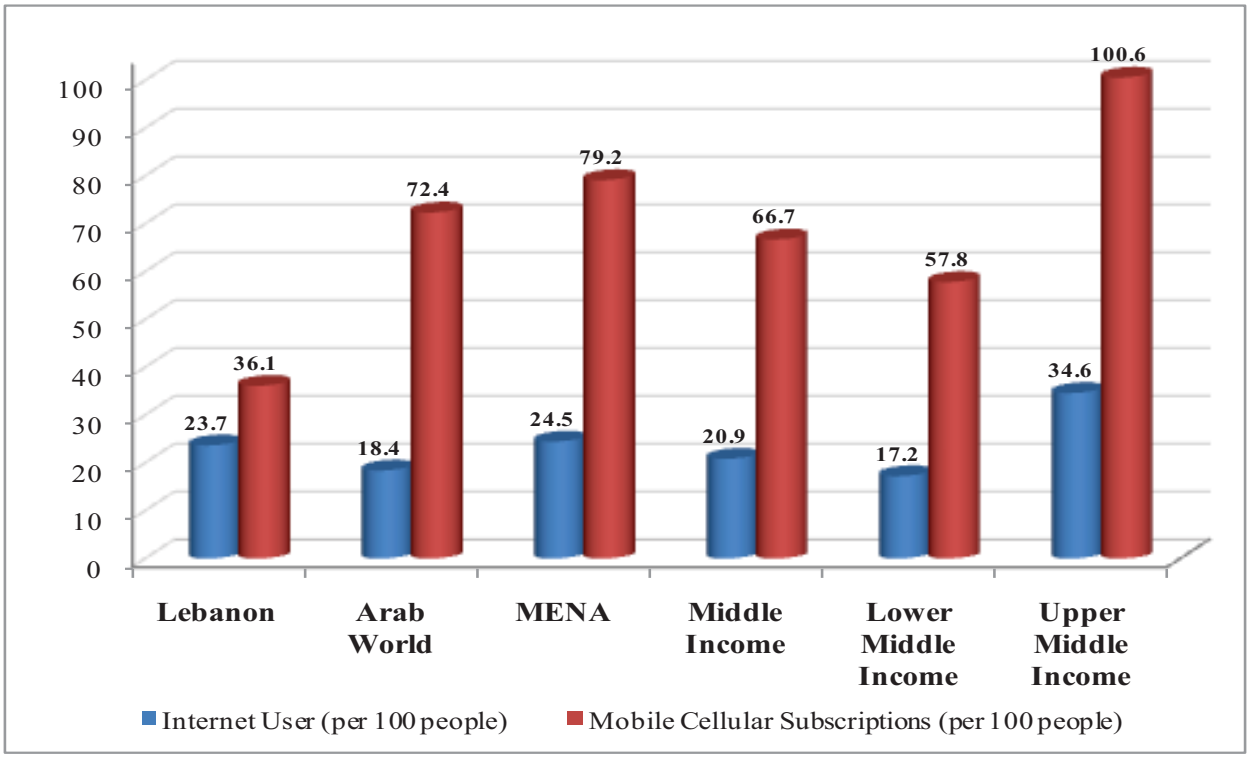
112. ***The telecommunications sector in Lebanon is highly inefficient and lags behind its potential and its regional peers***. Mobile telephony prices were very high (more than twice the tariff in peer countries)[42]; little investment among operators occurred; network investment were limited; and advanced services such as 3G mobile services which are common ground among the region and countries with similar GDP than Lebanon were lacking. As a consequence, the combination of price, quality, and services was becoming a burden to the whole economy. Indeed, outcomes such as internet usage and mobile phone subscriptions were falling behind countries in the region and even lower middle income countries (refer to Chart 24). It was clear that if Lebanon wanted to catch up with peer countries, it required a framework that incentivizes the large investments that the sector needed and, more importantly, that allows the sector to develop the commercial orientation that enables the sector to grow.

113. ***Starting end-2008, the Government had gradually implemented an investment program***. This program aims to (i) upgrade mobile phone network, (ii) reduce mobile phone tariffs, (iii) enhance internet services, (iv) introduce 3G services, and (v) connect the whole country through a fiber-optic network. The program has already improved the penetration of the mobile network to more than 80 percent. Also, 3G services are now operating and the speed of the internet service is increasing. Nevertheless, the development of the sector requires the involvement of the private sector on principles that increase competition and avoid monopolies and cartels. Therefore, the telecommunications sector in Lebanon requires the continuation of structural reforms that would unleash further potential and provide additional improvements in

[41] See, World Bank, Lebanon Country Partnership Strategy, (2010).
[42] In 2008 Lebanon monthly cellular prepaid tariff was above US$ 20, whereas the upper-middle income countries average was around US$ 10 (World Bank, World Development Indicators, last data available). Prepaid mobile services account for 83 percent of mobile users in the country (Arab Advisors, 2010).

the prices, quality and services that the economy requires. An efficient and modern telecommunications market in Lebanon would result in spillovers all across the economy, and lead to wider employment and larger economic growth. With service delivery in this vital sector improved, production and services in Lebanon will be able to move up the value chain and become competitive on regional and global levels.

Chart 24 Telecom Access Indicators - 2009



Source: World Bank Development Indicators 2011.

114. ***Investments in telecom should support improvements in quality and quantity of service delivery, and create competition in the sector.*** The Government has already increased the penetration rate of mobile phone from 1.2 million to 3.0 million, through a mix of tariff reductions (20 to 40 percent according to the type of subscribers) and increased investment to improve the quality of communications. Further investments and measures are planned and are being implemented to expand penetration rate and tackle gaps in the quality and range of services through the extension of broadband services and private sector participation in the provision of telecommunication services and related business. The government is expected to continue implementing the telecom reform that seeks to modernize the infrastructure and regulatory framework so the sector can provide modern and cost effective information and Communication Technology (ICT) services with the aim of stimulating private sector led economic growth. The existing regulatory framework needs to be revisited in order to define effectively the regulatory oversight needed for the advancement of the sector. Most importantly, it will be fundamental for reforms to break the para-fiscal trap that the sector is locked into; and

move away from the idea of telecom as an important source of fiscal revenues towards the concept of telecom as a pillar of economic growth.

Section 2: Improved Efficiency of Public Expenditure

115. ***Improvements in the efficiency of government spending increase long-run GDP growth outlook between 0.3 and 0.5 percentage points***. According to the model in Chapter 2, tackling a comprehensive reform agenda for public expenditure could lead to a sizeable improvement in long-run growth up to 0.5 percentage point. The triggers identified for such reforms are the parameters related to efficiency in spending on infrastructure and on the education sector. However, Lebanon needs to engage in a broader set of reforms that tackle issues of public finance management with the objective of introducing a more rigorous fiscal discipline that reallocates constrained fiscal resources to ensure the highest social and economic returns to public spending. Lebanon's huge public debt is a key binding economic constraint to future growth and social progress; and needs to be contained and reversed by deep-seated fiscal adjustment. Going beyond education and infrastructure, efficiency gains for all public spending with inter-sectoral linkages and influence over growth should be addressed. Consequently this section also proposes to tackle reforms in (i) expenditure programming and budgeting and, (ii) budget execution, monitoring and audit[43]. Such operational type of reforms will have implications on ensuring the sustainability of the needed fiscal adjustment while maintaining public services at levels where they no longer remain impediments to growth.

116. ***Despite increased public expenditure in education, quality and efficiency issues still need to be addressed.*** Total education spending in Lebanon currently exceeds 11 percent of GDP with the public share of such spending amounting to around 30 percent equivalent to 3 percent of GDP and 6 percent of total government expenditure[44]. The overall structure of the education sector public finances is complex and characterized by (i) direct support to public schools; (ii) subsidies to certain types of private schools (11 percent of recurrent budget); and (iii) education grants and other payments to public sector employees with school-age children. At the public school level, non-salary recurrent spending is financed by school funds from parental or community contributions. This makes the amount of resources available at the school level highly unpredictable and entirely dependent upon the level of income of the community, thus contributing to disparities among schools. In the absence of mechanisms and policies to directly subsidize poor households or schools in poor communities, the current funding system can be highly inequitable. The oversupply and misallocation of teaching and administrative staff in the public education sector is becoming acute. Salaries and wages constitute 87 percent of MEHE's total spending and the average human resource expenditure per student is estimated to be US$1000. The significant public spending on the education sector did not translate into desired

[43] See World Bank, Emergency Fiscal management Reform Implementation Support Project, (2009).
[44] See World Bank, Second Education Development Project for Lebanon, (2010)

improvement in quality outcomes. Despite some progress made since 2003, Lebanon still ranks below the TIMSS international benchmark, which raises questions about the performance of the whole education system, public and private taken together.

117. ***Reforms adopted by the Education Sector Development Plan (ESDP) and MEHE's implementation strategy should be accelerated and implemented within the original time frame specified (2010-2015).*** Using the political and social consensus that was built around the ESDP as a result of an elaborate consultation process with different parties, the reforms momentum in the sector could be accelerated. The strategy focuses on tackling the long-standing challenges in the education sector mainly those related to the teaching workforce and its quality, achieving compulsory basic education for all, enhancing the physical and educational environment for all public schools, reforming the Lebanese University and ensuring quality assurance for higher education institutions. Through the Education Development Project (EDP), the World Bank remains committed in supporting the government to achieve those objectives through working on three areas (i) early childhood education; (ii) improvements in quality of education; and (iii) education sector policy development management.

118. ***Efficiency gains in public capital spending are key in bridging Lebanon's infrastructure gap amidst the tight fiscal constraints.*** The link between public capital expenditure and capital stock accumulation, and consequently growth, is not straightforward and is strongly dependant on the productivity of public investment. From this perspective the question of efficiency of infrastructure spending and its implication on long-term growth, which was quantified in Chapter 2, becomes relevant for policymakers. Moreover, given the limited scope of private sector involvement and the need to avoid putting undue pressure on fiscal deficits and public debt, Lebanon needs to finance much of its infrastructure investment by reallocation of spending and significant improvements in the efficiency of government expenditure.

119. ***Public investment efficiency could be addressed through examining the different phases of project cycle.*** The framework proposed in Dabla-Norris et al (2010) to tackle public investment efficiency is a good tool to examine the bottlenecks at the different phases of the public investment management system in Lebanon. Four phases are identified:

Strategic guidance and project appraisal: strategic guidance implies that investment decisions are made under the umbrella of a national development plan over the medium to long run. Rigorous appraisal standards are applied with projects evaluated and prioritized according to their financial and economic return. A system of checks and balances is also introduced to account for any safeguards and validate the soundness of the evaluations.

Project selection and budgeting: investment project selection and appraisal phase needs to be linked to the budget cycle of the country. Due to multi-year nature of capital spending and its future implications on recurrent expenditure (through maintenance mainly), Medium-term Budgeting Frameworks play a key role in integrating macro-fiscal targets, development

objectives and investment programs into an implementable plan that goes beyond wishful thinking and links sector strategies to the overall resources of the country.

Project implementation: execution of the capital budget is a fundamental phase in tackling investment spending efficiency. Competitive practices for contract awards, sound procurement systems, firm internal controls in various implementing agencies and credible internal audits functions are all important factors that contribute to maximizing economic returns from public capital projects.

Project evaluation and audit: ex-post evaluation of completed projects is often a phase that is neglected in developing countries, but has proven to comprise significant benefits. Comparing the projects actual to design costs enables government to improve its costing abilities and therefore reduce fiscal waste (as a result of under or over valuations). The assessment is complemented by an asset recording system and external audit that inform on future project design and implementation.

120. ***Addressing bottlenecks at each phase of the project cycle will enhance the efficiency in public capital spending in Lebanon and will generate much needed savings to maintain fiscal discipline.*** In line with the absence of efficient national planning functions, Lebanon has many scattered sector specific investment plans that need to be consolidated into a single national program; a program that broadly defines the development objectives of the country over the upcoming decade. Two prior conditions are needed for the success of such plan in Lebanon: (i) a vast consultation process between the different stakeholders in the country (political parties, civil society, and private sector) and which enables consensus building over priorities beyond short-term confessional interests and gains; (ii) linking the plan to the budget cycle and more precisely to a well thought medium-term budget framework that rolls-over allocation of funds efficiently and, consequently, ensures realization of projects. Indeed, lack of realism in the number of targeted projects in light of the fiscal constraints of the country was always the prime cause behind the failure of all investment programs in Lebanon. Moreover, continued reforms on the project implementation side are deeply needed as to achieve efficiency gains. Most urgently, reforms in the areas of procurement and internal controls should be accelerated to enhance transparency. These reforms should be of structural nature, tackling legislative and procedural changes in the current outdated system. On the other hand, building on the past experiences of central agencies like CDR in formulating national infrastructure investment programs,[45] a thorough evaluation of all capital projects in the past decade can be undertaken. To succeed, the assessment should be conducted in close collaboration with line ministries and other relevant public agencies (including EdL, RWAs, Displaced and South funds); and findings should be brought forward for public discussion.

[45] CDR, the Council for Development and Reconstruction, has an important experience in designing investment programs and national strategies such as the National Emergency and Reconstruction Program, Horizon 2000, the National Strategy for Social Development, the National Physical Master Plan, and the Program of Public Investments for 2006-2015. The unsuccessful implementation of these programs however was mostly related to lack of political consensus and to weak public finance management which often led to shortages in required funding.

121. ***Going beyond education and infrastructure, improvements in efficiency of public expenditure can be largely achieved through revisiting the broader public financial management (PFM) agenda in Lebanon.*** Amidst stringent fiscal constraints and limited fiscal space, reforms objectives become focused towards reducing waste and increasing returns on public spending. Priorities in the PFM area are twofold (i) strengthening the linkages between public resource management and the government's macroeconomic objectives, and (ii) enhancing transparency and improving monitoring of the budget cycle. The absence of an approved budget since 2005 has weighted negatively on budget preparation and execution, despite the Ministry of Finance important efforts to improve processes and procedures in this respect. Likewise, the absence of a modern budget law (the current one dating from 1963) has stalled significant reforms, and the operational quick wins, which do not need a legislative change, are almost exhausted. Improving transparency in the budgeting process would require consolidating currently off-budget items by reforming the method of budget preparation and reporting. Similarly, to ensure that budget ceilings are respected, the Government needs to consolidate recent successes in limiting the budget carry-overs through investments, which extend over several years. The World Bank and the Government have developed in 2009 a Fiscal Management Reform Implementation Support Project that aims at improving the control, allocation, and use of public financial resources. Many of the envisaged reforms on spending efficiency are supported through this project over the medium-term especially in the areas of budget preparation and budget execution.

122. ***Closer integration of capital and current expenditure combined with a gradual deepening of the MTEF process towards a programmatic approach should be the main focus of reforms on expenditure programming and budget preparation.*** To increase the credibility of the budget preparation process and realign public spending to macroeconomic and development priorities, the GoL would build on the existing reforms efforts that have started in 2007 in the area of budget management. Going forward, key areas of reforms include (i) improving the process of setting the expenditure ceilings for line ministries in the budget circular and enforcing its adoption; (ii) preparing fully-costed expenditure programs over the medium-run and extending this process gradually to cover line ministries; (iii) consolidating extra-budgetary spending into the budget and improving the transparency of the remainder of these operations; (iv) moving towards the integration of capital and current budgeting by introducing monthly reporting on investment expenditure and better assessment of implication of capital projects on recurrent spending over the medium-term; and (v) reviewing the consistency of the budget reform measures with the existing legislation, and moving towards drafting necessary legislative changes leading towards the formulation of a comprehensive new Budget System Law as called for in the Paris 3 program. The Public Accounting Law is amongst the first to be reviewed and is viewed as a key structural reform.

123. ***Reforms in budget execution, monitoring, and audit are essential to improve public financial governance and tighten fiscal consolidation.*** Weaknesses in the budget preparation process and the absence of a budget ratified by Parliament have made it difficult to achieve further improvements in budget execution, monitoring and control. This has had significant implication on public finances in terms of the consolidation efforts, increased transaction costs, and diminished transparency. Continuing budget execution reforms is crucial particularly in the areas of cash management and treasury functions, reactivating the Treasury Single Account (TSA), and enhancing both internal controls and strengthening audit functions. Some measures could be identified in this respect: (i) integrating databases of MoF, CDR and other institutions and taking stock of bank accounts for all public entities. This is a first phase in a gradual approach towards consolidating these accounts, leading to a fully functioning TSA that improves the efficiency of the cash cycle and reduces unnecessary borrowing; (ii) linking the business processes and information systems for debt management and cash forecasting; (iii) introducing an internal audit function at MoF and gradually replicate over line ministries and; (iv) revisiting the existing institutional and organizational set-ups for external audit in line with best practice. The aim would be to eliminate gradually the current system and replace with an independent auditor-general office responsible to parliament for ex-post financial, compliance, and value-for money audit; and without any role in ex-ante controls.

Section 3: Enforcement of Property Rights

124. ***Enforcing property rights increase long-run GDP growth in Lebanon between 0.3 and 0.8 percentage points***. Enforcing property rights in Lebanon could add up to 0.8 percentage points on long-term GDP growth when coupled with an increase in technology driven FDI and as a result of an increase in the elasticity of FDI flows to changes in relative rates of return. Enforcing property rights stimulates innovation and therefore creates direct implications on expanding the engagement in research and adaptation activities and consequently enhancing overall economic activity. Additionally, it generates further positive externalities especially in terms of capital accumulation, enhanced technology endowments of a country, and enhanced productivity of the economy. These indirect effects come in the form of increased incentives to foreign investors to allocate additional resources into technology-driven sectors and therefore changing the nature of the capital inflows, alongside the increases that enforcement of property rights brings to the rate of returns on domestic productive assets. One of the most influential tools for enforcing property rights is a well functioning bureau of patents, a tool that Lebanon - ranked 100th out of 129th globally and 14th out of 17th regionally on the international property right index in 2011 - needs to develop further.

125. ***The patency legislation in Lebanon includes best practice elements but lacks proper implementation.*** The patency law in Lebanon was adopted by parliament in 2000 bringing along a new operational function for the Intellectual Protection Authority (IPA), the entity in charge of

the broad IP agenda in Lebanon[46]. The new law defines and describes thoroughly the concepts of inventions and creativity, the procedures for patents registration, the rights and obligations of the patent holder, and the penalty for violating property rights. In a summary overview, Abu-Ghazaleh Intellectual Property Group[47] specifies that the Lebanese registration system for patents is a deposit system where no examination for patent applications is undertaken. Moreover, any person who has duly filed an application for the registration of a patent in one country of the Paris Union Convention shall enjoy, for the purpose of filing in Lebanon, a right of priority during a period of 12 months. Patents are protected for 20 years and every person is entitled after 3 years from the date of the patent grant to present an official request for a compulsory license to exploit the invention in Lebanon if the patent owner or his successors did not exploit the patent. Despite elements in the law considered as best practice, such as its adherence to the Paris Union Convention, the problem remains with the execution of the law especially when it comes to enforcing penalties. In the institutional set-up, staff shortages and weak capacity; alongside distorted incentives to break the law as a result of weak implementation of penalties system; are two of the major impediments to the enforcement of property rights.

126. ***Lack of familiarity with laws and regulations, general performance of the IPA, and shortages in specialized legal and technical staff are the main impediments facing the enforcement of property rights.*** In 2009, ACRLI[48] conducted a survey on business regulations and intellectual property rights in Lebanon. The survey covered a sample from the private and public sectors along with legal practitioners, and found three areas of major dissatisfaction among the stakeholders: (i) lack of familiarity with the intellectual property right laws and regulations; (ii) dissatisfaction with the functioning and general performance of the IPA office especially in the areas of independence from political interventions, technical competence, enforcement authority, human and financial resources, speed of reaching decisions, and clarity and transparency of procedures; and (iii) lack of specialized intellectual property rights court staff and judges. All these issues are areas of potential improvements where some quick-win type of reforms can be implemented to start enforcing property rights in Lebanon and reap the long-term growth benefits.

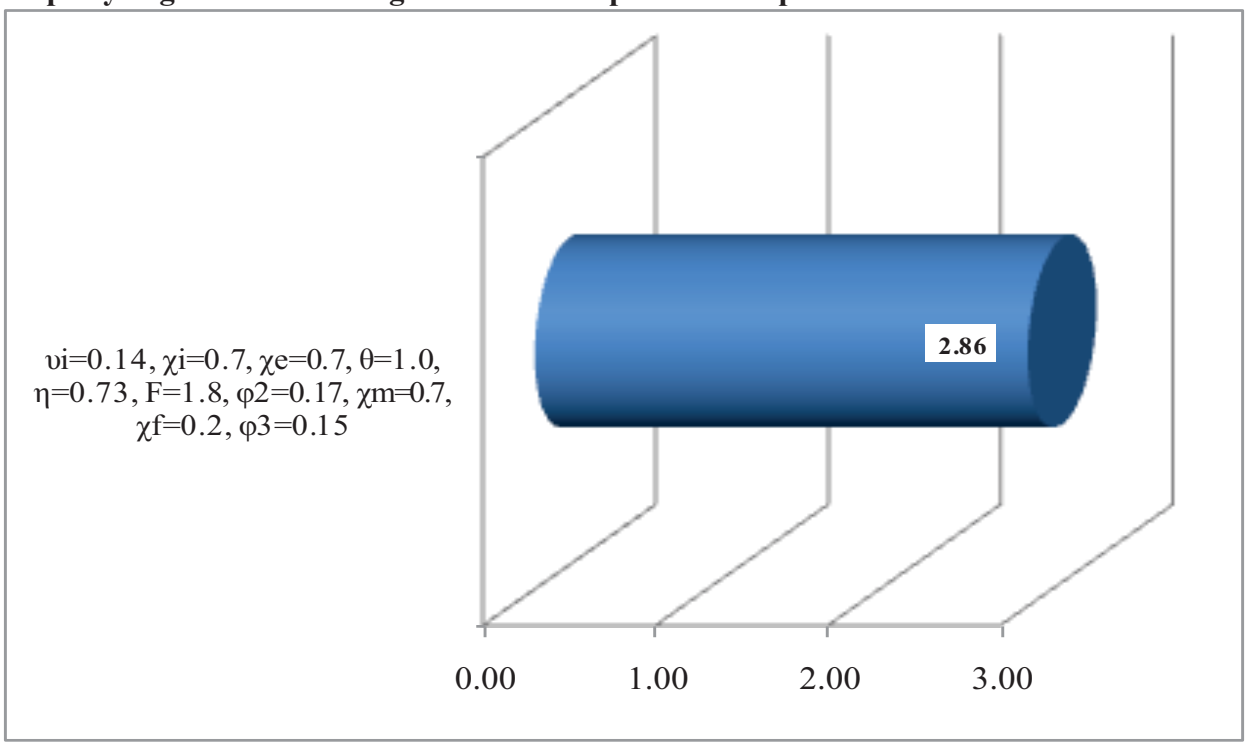
Section 4: The Growth Payoff of Different Reform Packages

127. ***The previous section has highlighted the growth payoff of individual structural reforms, such as increasing public investment in infrastructure, enhancing the efficiency of spending and so on. This section discusses the benefits of combining various structural reforms, using the unified conceptual framework of Chapter 2.*** This discussion is important

[46] The Intellectual Protection Authority is part of the Ministry of Economy and Trade.
[47] Abu-Ghazaleh Intellectual Property Group is a leading legal regional firm for patents and trademark. The summary from which this paragraph is derived can be viewed at www.agip.com/country_service.aspx?country_key=20&service_key=P&SubService_Order=1&lang=en.
[48] Arab Center for Development of the Rule of Law and Integrity.

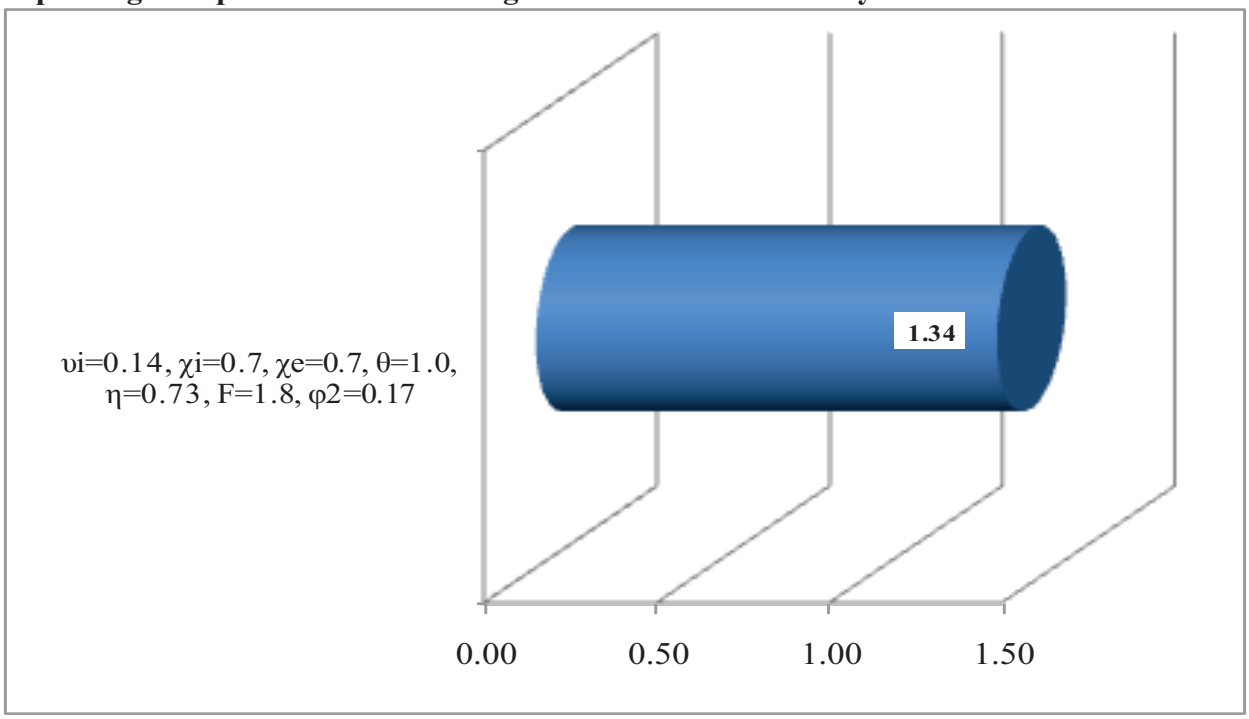
because the whole is often not simply the sum of the parts and setting policy priorities requires taking into account the various trade-offs and synergies of individual reforms. If Lebanon implements a package of reform including an increase in public investment (budget-neutral), an improvement in spending efficiency, greater enforcement of property rights, improved competition and reduced macroeconomic volatility, long-term GDP would increase up to 2.9 percentage points (Chart 25). Such an increase in long-term growth would, in 10 years, quasi double real GDP since the latter would be 95 percent higher than today.

Chart 25 The Growth Payoff of Investing in Infrastructure, Improving Spending Efficiency, Improving Competition, Reducing Macroeconomic Volatility, and Enforcing Property Rights & Promoting Innovation Improved Competition



128. ***If the government adopts a comprehensive approach but slightly less ambitious than above, the growth pay off would still remain high.*** As Chart 26 shows, investing in infrastructure, improving spending efficiency, improving competition and reducing macroeconomic volatility would increase the long-term component of growth by 1.3 percentage points. It is notable that the whole of a comprehensive package envisaged here is smaller than the sum of its individual parts in the context of Lebanon. This is in part due to the inclusion of competition in the package. As seen in Chapter 2, greater competition has two contradictory effects on growth: On the one hand, it stimulates the demand for intermediate goods in the final goods sector and this promotes activity there. On the other hand, it reduces the net price markup over marginal cost in the R&A sector, thereby reducing investments in that sector.

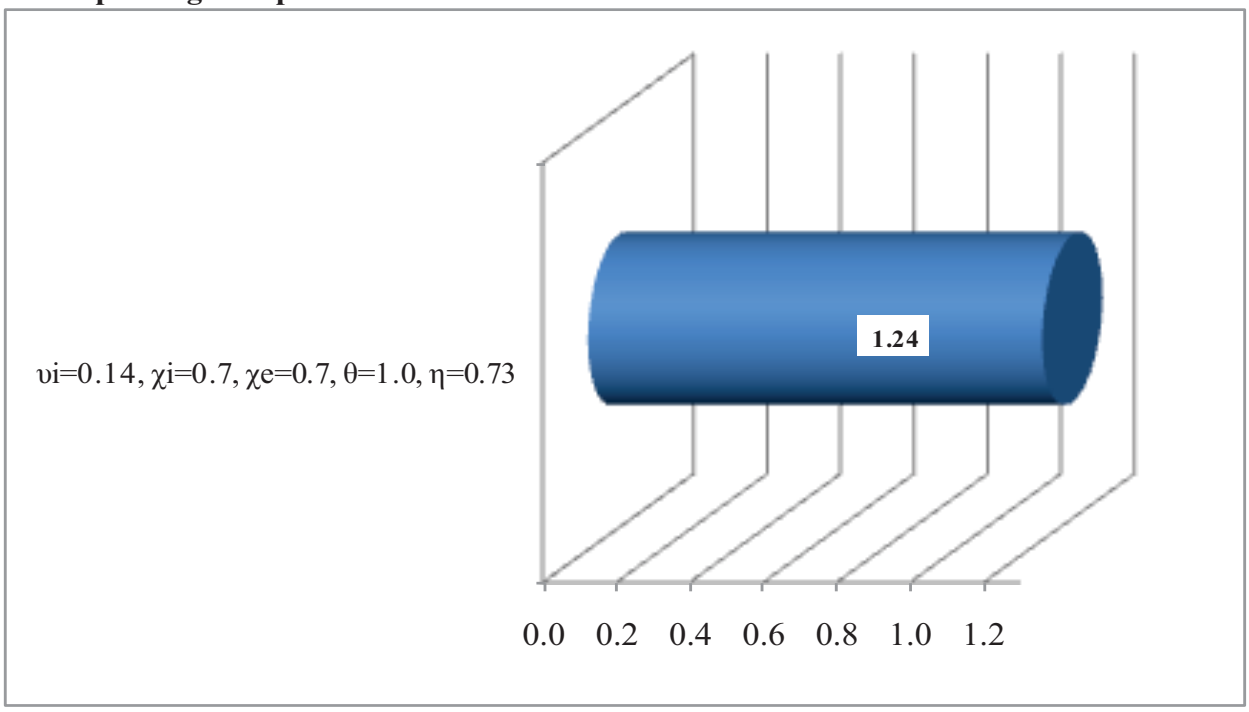
Chart 26 The growth Payoff of Investing in Infrastructure, Improving Spending Efficiency, Improving Competition and Reducing Macroeconomic volatility



129. ***Interestingly, absent a reduction of macroeconomic stability, long-term growth can still be increased by simultaneously reducing public infrastructure deficiencies and inefficiency and enhancing competition.*** As discussed above, tackling public infrastructure deficiencies (especially in the transport, energy and water/sanitation sectors) and enhancing government spending efficiency (in particular in infrastructure and education sectors) are important and the scope for improvement is large. Chart 27 shows that when these reforms are combined with greater competition in the intermediary and final goods markets, long-term growth can be jacked up by 1.2 percentage points.[49] This result is in line with the emphasis in various official reports on the need to enhance investment in infrastructure and improve the institutional underpinnings of the reform process in Lebanon, particularly with respect to its public sector governance aspects, and to continue the process of rationalization of public spending (see e.g, World Bank, 2009). The magnitude of the increase (by almost a third) assumes that the outcome of these governance reforms is quite significant in improving efficiency.

[49] The key parameters that intermediate the impact of these reforms on growth are the elasticity of final goods output with respect to public-private capital stock, the elasticity of the R&A sector output with respect also to public-private capital stock, and the spending efficiency parameters in education and infrastructure sectors.

Chart 27 The Growth Payoff of Investing in Infrastructure, Improving Spending Efficiency and Improving Competition



130. ***Absent enough political consensus to increase the breadth of structural reforms in the short-term, the policy experiments point to the superiority (in terms of growth payoff) of simultaneously tackling public infrastructure and spending efficiency as a priority.*** These two reforms combined would add 1.1 percentage points to long-term growth (See Annex). Indeed, this reform package yield more growth benefit than, for instance, a package "infrastructure + competition" or "spending efficiency + competition" (see Annex). However as discussed above, the impact of enhancing competition is not negligible and Lebanon stands to gain from implementing bold reforms in this area as well.

Section 5: Conclusion

131. ***Structural reforms can have a strong effect on potential growth in Lebanon. Although it is difficult to quantify the precise effects of reform on economic outcomes, the results of policy simulations carried out in this report illustrate the potential for structural reform to improve growth outcomes.*** In particular, reducing the deficiencies in public infrastructure by increasing investments and enhancing the efficiency of spending are shown to be crucial. However, Lebanon stands to gain from a wide range of structural reforms beyond infrastructure; including enhancing competition and protection of property rights. The growth payoff is all the stronger is macroeconomic volatility reduced. Indeed, implementing the structural reforms discussed in this report while reducing macro volatility would propel long-term growth to a level

that can contribute to generating capital inflows endogenously. Such scenario is desirable for Lebanon since it leads to a better use of foreign inflows to promote long-term growth.

132. ***The size of the growth payoff depends not only on the magnitude of the actual reform effort in infrastructures, public finance management (to increase spending efficiency), competition, and property rights***. Long-term growth in Lebanon would be affected by variables other than those influenced by the reforms examined in this report. For instance, complementary reforms to promote SME's access to finance would be essential if firms are to exploit the opportunities offered by better and cheaper infrastructure services and enhance their competitiveness. Putting the right institutions to strengthen the capital market and improve the management of capital inflows and resource allocation would also be important. The whole question of banking intermediation and financial resources intermediation deserves a particular attention. There is a need for a deep investigation about regulations, institutions, and mechanisms needed to channel these resources towards long-term productive activities and, when needed, to compensate for a drop in aggregate demand.

133. ***Implementing most of the above reforms requires maintaining and enlarging the fiscal space needed to invest in infrastructure and other priorities***. In the absence of fiscal reforms, the budget deficit can rapidly return to an upward trend thereby inflating a debt stock that remains sizeable. In this case, increased macroeconomic volatility would hamper private investment and lead to a preponderant allocation of funds managed by commercial banks to the government and non-productive assets acquisition. Macroeconomic and structural reforms should go hand in hand in the particular context of Lebanon. The macroeconomic impact of structural reforms can be very important. Also, the structural impact of macro-fiscal reforms, especially tax reforms, can be substantial in terms of leveling the playing field for players and with regard to the distributional impact and the configuration of incentives that comes with it.

134. ***The Matrix in the below shows all five sets of reforms, the objectives behind them and the actions to be taken.*** The Matrix lays down a policy framework that accounts for policy objectives and goes further in determining policy actions that are sequenced under different time horizons. The proposed reforms are not mutually exclusive and can be performed simultaneously or under different combinations as to benefit from the positive linkages and externalities. The actions presented in this Matrix are all but new and are taken from existing reports of the Government, the World Bank, and other donors. And some of them are being implemented or have started to be implemented. One value added of this report is to link these reforms to policy objectives and to a broader and long-term growth strategy. Another and more important value added is that, by quantifying the growth impact of individual reforms and of different combinations of reforms, this report gives indications on the growth and welfare impact of reforms and on the opportunity cost of not reforming.

135. ***The beneficiaries from reforms in the long-term would be the most dynamic and skilled sections of Lebanese youth that are migrating.*** Although this group is important, it cannot be looked at as a cohesive group able to socially and politically support a sustained reform dynamic. Opposing this large category of potential beneficiaries, it is likely to have smaller but cohesive groups well aware of the potential detrimental impact of the reforms and actions presented in this matrix on their immediate interests. Policy makers can identify the winners and losers of reforms and policy actions and put in place compensations schemes and awareness campaigns in order to alleviate opposition to reform and motivate the support of potential winners. More important would be the ability of policy makers to convey the message that reform is not a "zero-sum" gain. Indeed, by promoting growth and employment, reforms will be increasing the size of the economy to the benefit of all sections of the population, including those who may fear immediate and direct losses from reform.

Table 21 Matrix of Policy Objectives and Actions

Short-Term (ST) = up to one year, Medium-Term (MT) = up to three years, Long-Term (LT) = up to five years and beyond

Reforms	Policy Objective	Action	Time Horizon
I) Macroeconomic Stability	Reducing macroeconomic imbalances and perceived volatility in order to promote an environment conducive to long-term investments.	1- Pursuing the monetary stabilization followed by the Central Bank, 2- Reinforcing fiscal measures in favor of increasing the fiscal space: (i) Examining new sources of revenues and taxation, (ii) Maintaining the discipline in current spending.	ST ST MT
II) Reduce Infrastructure Bottlenecks	**Overall Objective: Create the Conditions for an Increase in Return on Private Investment**		
a. Electricity	Improving the availability, quality and reliability of service delivery.	1- Improving the operational capacities of EdL: (i) Corporatize EdL's management of the Sector according to commercial principles, (ii) Tackle staffing and management issues including recruitment and capacity building. 2- Increasing the availability and the quality of service: (i) Invest in low fuel cost generation and rehabilitation of transmission and distribution networks to reduce network loss. (ii) Increase generation capacity by additional 700 MW as a first step and 800 MW as a second step, 3- Improving the financial balance of the sector: (i) Promote renewable energy and programs for increasing electricity demand efficiency and energy savings, (ii) Promote all forms of Public-Private Partnerships to accelerate the modernization of the sector, (iii) Revise the electricity tariff structure towards financial sustainability.	 ST MT ST-MT MT-LT ST-MT ST-MT MT-LT
b. Telecom	Enhancing quality, quantity and diversity of services provided to households and the economy and transform the sector into a pillar of economic growth.	1- Enhance capacity of the Telecom Regulatory Authority and revise the regulatory framework to define effectively the regulatory oversight needed for the advancement of the sector. 2- Increase investment in telecom networks to modernize the infrastructure and sustain advanced technologies.	ST ST-MT

		3- Increase private sector participation in modernizing and developing services and service delivery.	MT
c. Transport	Reducing transportation costs for individuals, firms and the economy and unlocking access to regional centers across the Lebanese territory.	1- Increase efficiency in urban transport infrastructure and traffic management especially in Beirut and Greater Beirut areas. 2- Mobilize resources to create a reliable public transport system, and deal with the informalities in the sector. 3- Invest further in transport logistics at border crossings.	ST to MT MT MT
d. Water and Wastewater	Improving service delivery and the sustainability of the resource.	1- Update the water resource management strategy: (i) Devise a comprehensive wastewater sector strategy and revise regulations addressing wastewater management and clarifying roles of different stakeholders, (ii) Address staffing issues and Strengthen management capacity of the Regional Water Authorities (RWA). 2- Increase investment in storage capacities in the water network and in wastewater collection and treatment facilities. 3- Revise the tariff structure of the Regional Water Authorities with the objective of achieving technical, managerial, and financial autonomy.	 ST ST-MT MT MT-LT
III) Improve Efficiency of Public Expenditure	**Overall Objective: Increasing the Efficiency and Effectiveness of Public Spending taking into Account Fiscal Constraints**		
a. Education Sector Spending	Enhancing the impact of public spending on education through the improvement of the quality, efficiency, and social returns of the education sector as a whole.	Implementing the Education Sector Development Plan and Promoting Research: 1- Quality assurance measures for higher education institutions, 2- Improving the physical and educational environment in favor of Research, Development and Adaptation, 3- Enhancing the credentials of the teaching work force.	 ST M T LT
b. Public Capital Spending	Increasing the efficiency of public spending on infrastructure at both the investment and the	1- Consolidate the scattered sector specific investment plans into a single public investment program:	

	operational / maintenance levels.	(i) Undertake vast consultation process with different stakeholders to reach national consensus on priority projects, (ii) Link the program to a medium-term budget framework that aligns required fiscal consolidation with Lebanon's development objectives. 2- Continue reforms on project implementation cycle, including: contract awards, procurement systems, internal controls, Internal audits, and project evaluation frameworks.	ST ST MT
c. Public Financial Management (PFM)	Revisiting the broader PFM agenda with the objective of reducing waste and increasing returns on public spending; taking into account fiscal constraints.	1- Improving the conditions for managing fiscal balance through: (i) Implementing a medium-term debt strategy and establishing formal coordination mechanisms between MoF and BdL, (ii) Reinforcing macro programming and policy analysis to guide revenue and expenditure choices. 2- Aligning budget preparation process and resource allocation with government policies: (i) Introducing a multi-year budget planning process (MTEF), (ii) Regularizing preparation of the public investment program and synchronizing it with that of the budget cycle.	 MT ST- MT MT MT
IV) Enforcement of Property Rights and Promoting Innovation	Protecting the return on investment of innovators and researchers and stimulate investments and employment in Research and Adaptation.	1- Enhance the institutional set-up of the Intellectual Protection Authority (IPA) and complete the legislative framework. 2- Enforce the implementation of the penalties system. 3- Increase the competence of the IPA through: (i) Simplifying and increasing the transparency of operational procedures, (ii) Address staffing issues through hiring Specialized IP legislation staff, (iii) Provide IPA with staff having the competencies to provide both technical and business planning advice to innovators.	ST ST ST MT MT
V) Improving Competition in the Markets for Final Goods and Inputs	Reducing the costs for consumers of final goods and for producers using intermediary goods. This corresponds to a reduction of barriers to entry.	1- Adopting the Competition Law. 2- Removing de facto and de jure monopolies on production, imports and distribution.	ST MT

APPENDIX - A

Chart A.1: Growth Payoff of an Increase in the Share of Spending on Infrastructure Investment and Public Spending Efficiency (Deviation from baseline, in percentage points)

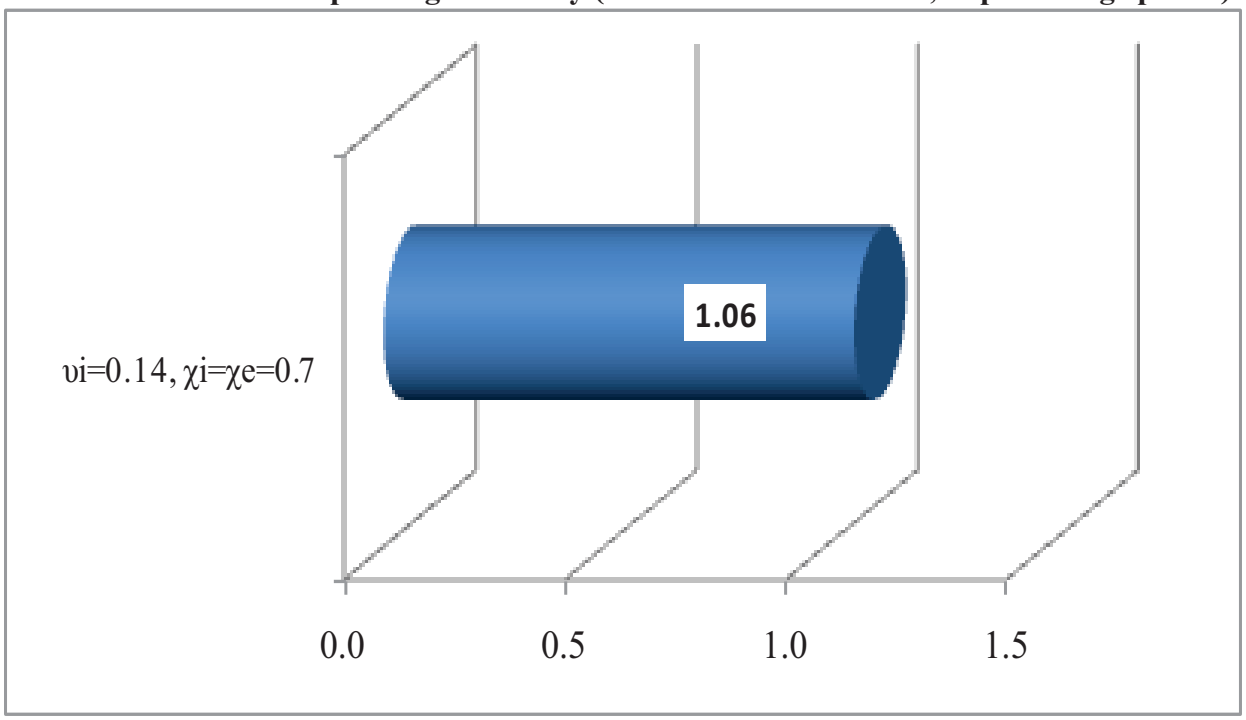


Figure A.2: Growth Payoff of an Increase in Share of Spending on Infrastructure Investment and Improved Competition (Deviation from baseline, in percentage points)

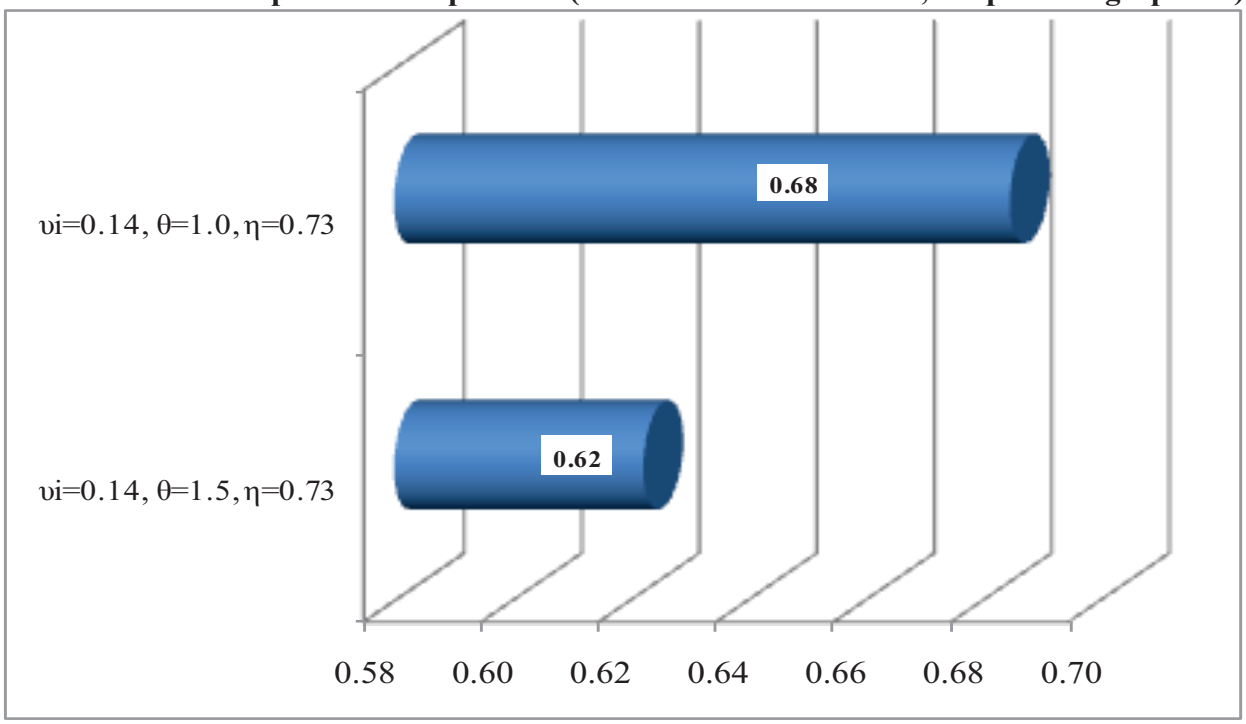


Chart A.3: Growth Payoff of an Increase in Efficiency in Public Spending and Improved Competition (Deviation from baseline, in percentage points)

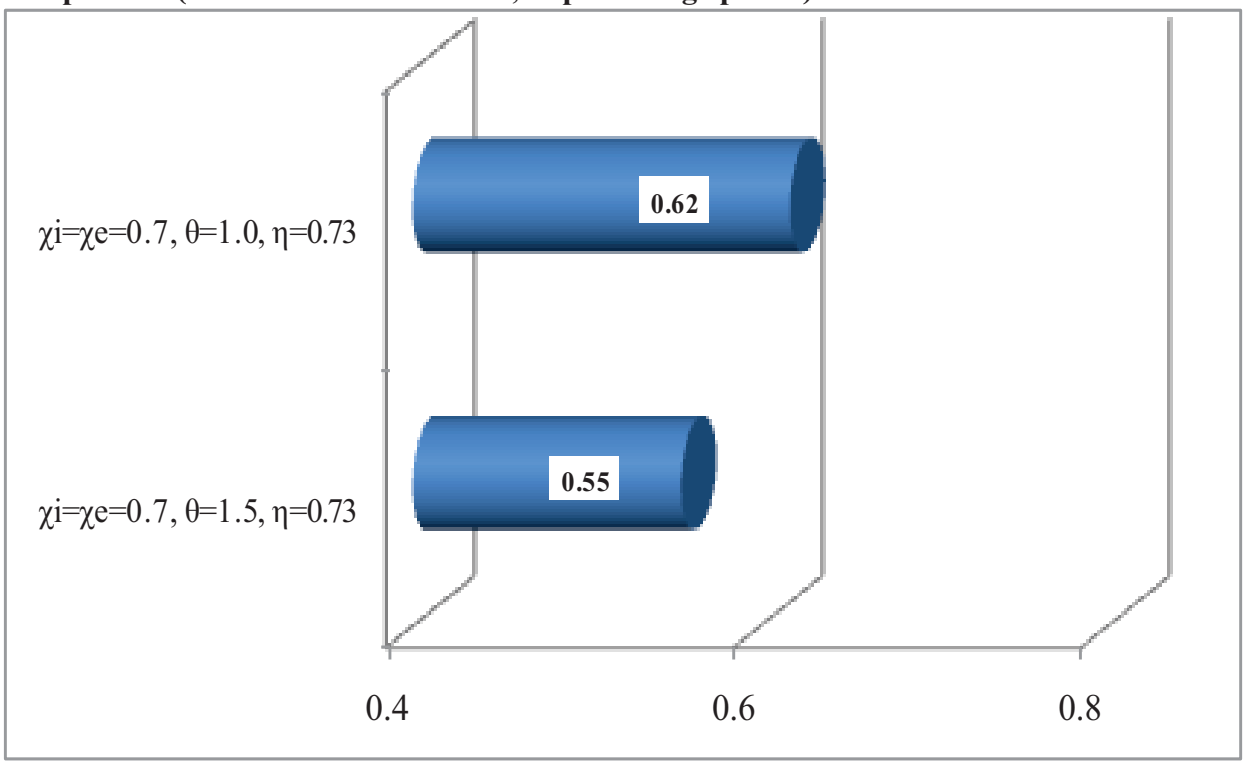
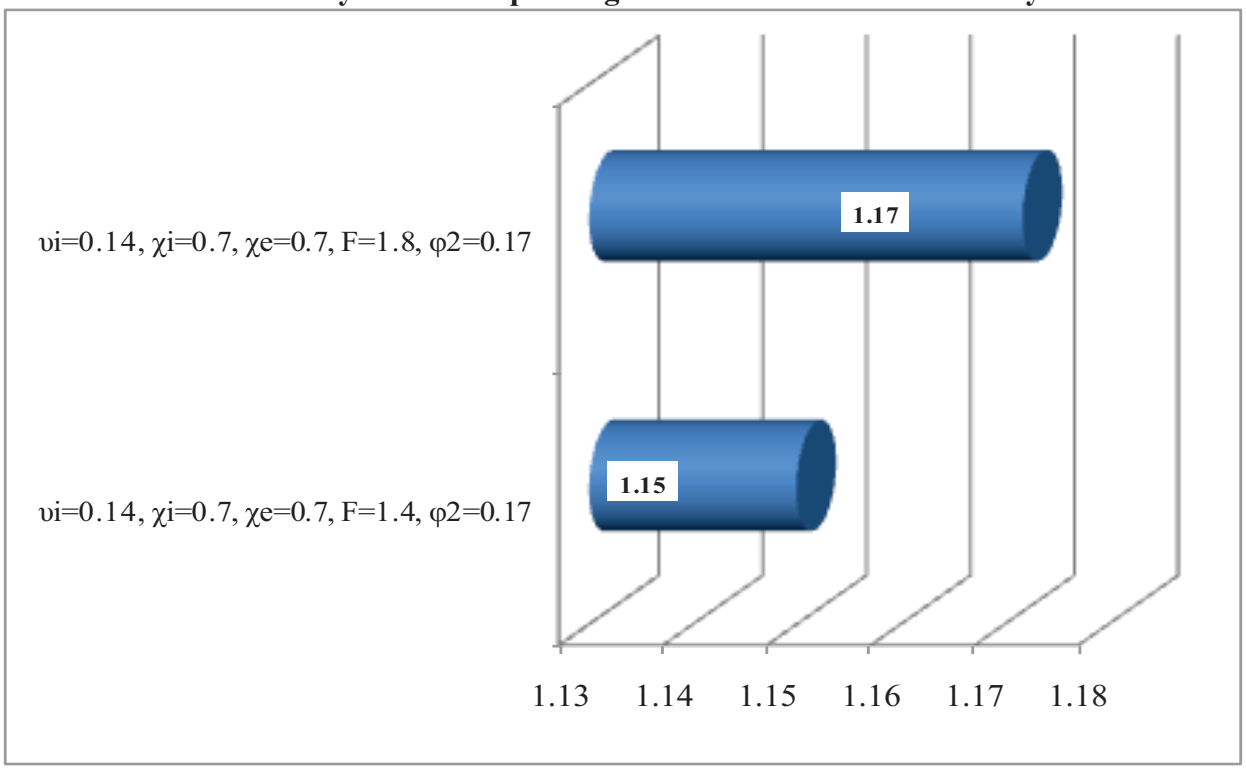


Chart A.4: Growth Payoff of an Increase in Share of Spending on Infrastructure Investment and Efficiency in Public Spending and Reduced Macro Volatility



APPENDIX - B

LINKING FINANCIAL FLOWS, STRUCTURAL REFORMS AND GROWTH IN LEBANON: MODEL DESCRIPTION AND CALIBRATION[50]

This Appendix provides a complete description of the overlapping generations (OLG) model built to analyze interactions between financial flows, long-term growth, and structural reforms in Lebanon. The first part describes the structure of the model itself and the second its calibration. The values and descriptions of parameters are available in Table 22 at the end of this Appendix.

I. ANALYTICAL FRAMEWORK

Consider an overlapping generations (OLG) economy where individuals live for three periods, childhood, adulthood, and old age. Each individual is endowed with one unit of time in the first two periods of life, and zero units in old age. Children allocate all their time to education. In adulthood, each individual has one child. Total population is thus constant and the size of each cohort is set to $\underline{N}$.[51] Adults supply labor inelastically and wages in adulthood are the only source of income.

In addition to individuals, the economy is populated by firms and a government. There are four sectors in the economy: the first produces a final good, the second intermediate inputs (which depreciate fully after use), the third human capital, and the fourth, the R&A sector, engages in research and adaptation of foreign goods and services. Human capital is nonrival, in the sense that use of it in one sector does not preclude its use in another. Raw labor (measured by the number of workers) is used in the production of the final good and in the R&A sector. In addition to raw labor, firms producing the final good use also human and private physical capital, public infrastructure, and intermediate goods. The good can be either consumed in the period it is produced, or stored to yield physical capital at the beginning of the following period. Labor moves freely across all sectors.

The government invests in infrastructure and spends on education and some other items. It finances its expenditure by taxing wages. It runs a balanced budget in each period. Finally, all markets clear and there are no debts or bequests between generations.

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[50] This Appendix was prepared by Pierre-Richard Agénor, Hallsworth Professor of International Macroeconomics and Development Economics, School of Social Sciences, University of Manchester, United Kingdom, and co-Director, Centre for Growth and Business Cycle Research.

[51] The assumption of a constant population is quite reasonable for Lebanon, given that the fertility rate is relatively low, at 2.2 births per woman (World Bank, 2010*a*, p. 3), and relatively large emigration flows.

1. Households

Let $c^t(t+j)$ denote consumption at period t+j of a person born at the beginning of period t, with j = 1,2. Assuming that consumption of children is subsumed in their parents' consumption, the discounted utility of an individual born at t is given by

$$U = \eta_C \ln[c^t(t+1)] + (1+\rho)^{-1} \ln[c^t(t+2)] \quad \text{(A1)}$$

where $\eta_C > 0$ is a preference parameter and $\rho > 0$ is the subjective discount rate.

Because taxes are levied only on middle-aged workers, and the price of the final good is normalized to unity, the period-specific budget constraints of an adult born in period t, and retiring in period t+2, are given by

$$c^t(t+1) + s(t+1) = (1 - \tau)[e(t+1)w(t+1) + z(t+1)] \quad \text{(A2}a\text{)}$$

$$c^t(t+2) = [1 + r(t+2)]s(t) \quad \text{(A2}b\text{)}$$

where $\tau \in (0,1)$ a constant tax rate, e(t+1) individual human capital, w(t+1) the economy-wide effective wage rate, s(t+1) savings, r(t+2) the rate of return on holding (physical) assets between periods t+1 and t+2, and z(t+1) transfers from abroad (remittances), which are assumed to be proportional to the effective wage:

$$z(t+1) = q \cdot e(t+1)w(t+1) \quad \text{(A2}c\text{)}$$

where $q \in (0,1)$ is a constant parameter. Because, as shown later, household consumption is linear in the effective wage, this specification is consistent with the evidence for Lebanon, which suggests that remittances are a relatively stable proportion of private expenditure.

2. Production of Final Goods and Services

The (composite) final good is produced by identical competitive firms, the number of which is normalized to unity, and indexed by *i*. Production requires the use of (i) effective labor, given by the product of average human capital of individuals born in t-1, E(t), and employment, $N^Y(i,t)$; (ii) private capital, $K^P(i,t)$; (iii) public infrastructure, $K^I(i,t)$ and; (iv) a combination of intermediate inputs, x(i,s,t), s=1,...M(t), where M(t) denotes the existing number of intermediate goods. Although public capital is nonexcludable, it is partially rival because of congestion effects; for simplicity, congestion is taken to be proportional to the aggregate private capital stock, $K^P(t) = \int_0^1 K^P(i,t)di$[52]

[52] Congestion means that the productivity effects of public capital in infrastructure are diminished by excessive use, as measured by the size of the aggregate private capital stock. For instance, the greater the number of trucks operated by the private sector, the greater the likelihood of traffic jams and lost time for workers driving to their work location.

The production function of individual firm *i* takes the form

$$Y(i,t) = [K^I(t)/K^P(t)]^{\varepsilon}[K^P(i,t)]^{\alpha}\,[E(t)N^Y(i,t)]^{\beta}\,[\int_0^{M(t)} x(i,s,t)^{\eta}ds]^{\gamma} \qquad (A3)$$

where $\alpha,\beta,\gamma \in (0,1)$, $\eta \in (0,1)$, $\varepsilon > 0$, and $1/(1-\eta) > 1$ is the elasticity of demand for each intermediate good. This specific form implies that each R&A activity involves the production of a new intermediate good, and that the elasticity of substitution between different intermediate goods is equal to unity. In addition, the production function distinguishes between the returns to specialization, as measured by γ, and the parameter that determines the demand elasticity, η. Constant returns in private inputs are imposed, so that $\alpha+\beta+\gamma = 1$.[53]

With the price of the final good normalized to unity, profits of firm i in the final sector, are given by

$$\Pi^Y(i,t) = Y(i,t) - \int_0^{M(t)} p(s,t)x(i,s,t)ds - w^Y(t)E(t)N^Y(i,t) - r(t)K^P(i,t) \qquad (A4)$$

where $p(s,t)$ is the price of input s, $w^Y(t)$ the wage rate in the final good production sector, and $r(t)$ the rental rate of private capital.

Each producer maximizes profits (A4) subject to (A3) with respect to private inputs, labor and capital, and demand for all intermediate goods $x(i,s,t)$, $\forall s$, taking factor prices and $M(t)$ as given. The first-order conditions yield

$$r(t) = \alpha Y(i,t)/K^P(i,t) \qquad w^Y(t) = \beta Y(i,t)/E(t)N^Y(i,t) \qquad (A5)$$

$$x(i,s,t) = [\gamma\eta Z(i,t)/p(s,t)]^{1/(1-\eta)} \qquad (A6)$$

where

$$Z(i,t) = Y(i,t)/\,[\int_0^{M(t)} x(i,s,t)^{\eta}ds] \qquad (A7)$$

Because each firm demands the same amount of each intermediate good, equation (A6) implies that the aggregate demand for intermediate input s is

$$x(s,t) = \int_0^1 x(i,s,t)di = \int_0^1 [\gamma\eta Z(i,t)/p(s,t)]^{1/(1-\eta)}di \qquad (A8)$$

Because all firms producing the final good are identical and their number is normalized to unity, $K^P(t) = K^P(i,t)$, and $Z(t) = Z(i,t) = \forall i$, and the total demand for intermediate goods is the same across firms, $x(i,t) = x(t)$, $\forall i$. Moreover, in a symmetric equilibrium, $x(i,s,t) = x(i,t)$, $\forall s$. Thus,

[53] Note that we impose a Cobb-Douglas production function for tractability. This may not be too far off the mark for Lebanon; Bou Habib (2011) found an elasticity of substitution between labor and capital close to 0.8 for Lebanon.

$$\int_0^1 [\int_0^{M(t)} x(i,s,t)^{\eta} ds]^{\gamma} di = M(t)^{\gamma} x(t)^{\gamma\eta}$$

Let $N^Y(t) = \int_0^1 N^Y(i,t)$ denote total labor employed in the production of the final good. Using these results, and expressing the public-private capital ratio as $k^I(t)=K^I(t)/K^P(t)$, equation (A3) and the constant returns to scale assumption imply that aggregate final output is

$$Y(t) = \{k^I(t)^{\varepsilon}[K^P(t)/M(t)]^{\alpha}[E(t)N^Y(t)/M(t)]^{\beta} x(t)^{\eta\gamma}\}M(t) \quad (A9)$$

Thus, if the term in curly brackets is constant in the steady state, the growth rate of output is equal in the long run to the speed of industrial diversification, which is itself related to the growth rate of the R&A sector, as measured by the growth rate of M(t).

3. Production of Intermediate Inputs

Firms in the intermediate sector are monopolistically competitive. There is only one producer of each input s - implying that their total number is M(t) - and each of them must pay a fee to use the design of that input to inventors in the R&A sector. Production of each unit of an intermediate input s requires θ units of the final good. Importantly, θ is a cost that encompasses not only technological requirements but also regulatory restrictions on firm entry.

Once the fee involved in purchasing a design has been paid, each intermediate-good producer sets its price to maximize profits, $\Pi^I(s,t)$, given the perceived total demand function for its good (which determines marginal revenue), x(s,t):[54]

$$\Pi^I(s,t) = [p(s,t) - \theta]x(i,s,t) \quad (A10)$$

Substituting (A8) in this expression and imposing Z(i,t) = Z(t), ∀i yields

$$\Pi^I(s,t) = [p(s,t) - \theta][\gamma\eta Z(i,t)/p(s,t)]^{1/(1-\eta)} \quad (A11)$$

Maximizing this expression with respect to p(s,t) yields the optimal price as

$$p(s,t) = p(t) = \theta/\eta \quad \forall s \quad (A12)$$

which implies, using (A8), that the optimal quantity of each intermediate good demanded by producers of the final good is

$$x(t) = [\gamma\eta^2 Z(t)/\theta]^{1/(1-\eta)} \quad \forall s \quad (A13)$$

[54] A term $\Lambda^I > 0$ could be added to make the marginal cost equal to $\Lambda^I + \theta$, to capture an entry fee that reflects product market regulations. To economize on notation, this term is not explicitly included, but its impact could be analyzed by considering directly a change in θ.

From the definition of Z(t) in (A7), in equilibrium $Z(t) = Y(t)/M(t)x(t)^{\eta}$. Substituting this expression in (A13) yields

$$x(t) = (\gamma\eta^2/\theta)[Y(t)/M(t)] \quad (A14)$$

Thus, in the steady state, if the ratio Y(t)/M(t) is constant, the equilibrium quantity of each intermediate input is also constant at x^{SS} as well.

Substituting (A12) in (A10) yields the maximum profit for an intermediate-input producer:

$$\Pi^I(t) = (1/\eta - 1)x(t) \quad (A15)$$

which is constant in equilibrium if x(t) is constant.

Assuming that the market for new designs is competitive, standard arbitrage implies that the price of a design must be equal to the present discounted stream of profits that the producer of intermediate inputs could make by producing the intermediate input s. For simplicity, assume that each new intermediate-input producer is accorded a patent for the period during which it is bought. The arbitrage condition requires therefore that the price of the patent is

$$p^M(t) = \Pi^I(t) \quad (A16)$$

4. Human Capital Accumulation

Schooling is mandatory and agents allocate all of their time to education in the first period of their lives. Human capital of a child is produced using a combination of government spending on education per worker, $G^E(t)/N(t)$, as well as the parent's human capital, and public capital, in the latter case taking into account a congestion effect measured again in terms of public-private capital ratio:[55]

$$e(t+1) = [\chi^E G^E(t)/\underline{N}]^{\nu 1}[E(t)]^{1-\nu 1}k^I(t)^{\nu 2} \quad (A17)$$

where $\nu 1 \in (0,1)$, $\nu 2 > 0$, and $\chi^E \in (0,1)$ is a parameter that measures the efficiency of public spending on education. Because individuals are identical within a generation, a parent's human capital at t is equal to the average human capital of the previous generation, that is, the human capital of the parent, E(t). In a symmetric equilibrium, the condition e(t) = E(t) also holds.

5. Research and Adaptation (R&A) Sector

Firms engaged in research and adaptation (or *implementation innovation*) create new domestic intermediate inputs (possibly using foreign designs), using the same technology. Research or adaptation is not costless; local firms must invest resources in order to create new designs or absorb the information needed to adapt new products invented abroad.

[55] See Agénor (2011*a*, 2011*c*) for a review of the evidence on the impact of infrastructure on education outcomes.

Specifically, the production of new designs depends on the existing stock of designs, M(t), effective labor $E(t)N^M(t)$, as well as access to (congested) public infrastructure and FDI inflows, F(t):

$$M(t+1) - M(t) = m \cdot k^I(t)^{\varphi 1}[\chi^F \cdot F(t)]^{\varphi 2} E(t) N^M(t) \quad \text{(A18)}$$

where $m > 0$ is a scale variable measuring the maximum number of "adaptable" goods and services from abroad (given the country's resource endowments), $\chi^F \in (0,1)$ the share of "technology-driven" FDI flows in total flows, $\varphi 1 > 0$, and $\varphi 2 \in (0,1)$. The assumption that m is fixed captures the idea that the number of goods that can be adapted at any point in time is limited to (a fraction of) the finite number of goods that have been discovered elsewhere.[56] The ability to innovate and adapt foreign technologies depends on domestic factors; in particular, the higher the stock of human capital or public capital in infrastructure, the stronger the ability to absorb foreign technologies.[57]

The term F(t) accounts for the view that foreign capital is important for R&A activity. A key mechanism through which this may occur is the fact that FDI serves to channel information about new, imported technologies. However, there are diminishing returns to foreign capital, as $\varphi 2 \in (0,1)$.

Firms choose raw labor $N^M(t)$ so as to maximize profits, $\Pi^M(t)$, given the dynamics captured by (A17):

$$\Pi^M(t) = \chi^M \cdot p^M(t)[M(t+1) - M(t)] - w^M(t) E(t) N^M(t) \quad \text{(A19)}$$

In this expression, the coefficient $\chi^M \in (0,1)$, or more precisely $1 - \chi^M$, measures the "deadweight loss" associated with a poorly functioning system to enforce property rights (administration of patents, etc.); the view is that these inefficiencies translate into a lower ability of firms in the R&A sector to appropriate the rent created by their activity - that is, the profits of the intermediate good producer. Put differently, even though the price of the patent paid by each intermediate good producer is $p^M(t)$, due to inefficiencies in enforcing property rights the R&A producer receives only a fraction $\chi^M < 1$ of that price.

The first-order condition is[58]

$$w^M(t) = m \cdot k^I(t)^{\varphi 1}[\chi^F \cdot F(t)]^{\varphi 2} \chi^M p^M(t) \quad \text{(A20)}$$

Thus, improved enforcement of property rights translates into higher wages in the R&A sector, which tends to draw more labor into that sector - and thus promote activity.

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[56] Of course, m could be related to the rate of innovation in more advanced countries. But as long as that rate is constant, this would have no effect on the analysis.

[57] It could be assumed that it is the stock, rather than the flow, of FDI that affects the capacity to innovate and adapt foreign goods. However, given that the simulation experiments focus on the steady-state effects, this distinction is of little consequence.

[58] Equation (A20) is also the zero-profit condition implied by free entry in the R&A sector.

The flow of FDI is assumed to depend on the differential between the rate of return on domestic private capital, r(t), and the rate of return on the world capital market, r^W, assumed constant:

$$F(t) = \underline{F}[r(t)/r^W]^{\varphi 3} \quad \text{(A21)}$$

where $\underline{F}$ is the autonomous component of FDI flows and $\varphi 3 \in (0,1)$. Thus, because access to infrastructure affects the rate of return on domestic capital, it also exerts a positive effect on foreign financial flows.[59] This captures the bidirectional link between financial flows and growth that is emphasized in Chapter 2.

6. Government

As noted earlier, the government taxes only adult wages. It spends a total of $G^I(t)$ on infrastructure investment, $G^E(t)$ on education, and $G^O(t)$ on other items. All its services are provided free of charge. It runs a balanced budget:

$$G^I(t) + G^E(t) + G^O(t) = \tau \cdot e(t)w(t)N(t) \quad \text{(A22)}$$

The assumption that the government budget is balanced is a natural one to make in a long-run growth model of this sort; by definition, it rules out any Ponzi game. Thus, implicit in the analysis is the assumption that the fiscal adjustment that Lebanon has started in recent years will continue in the years ahead.

Shares of public spending are all assumed to be constant fractions of government revenues:

$$G^h = \upsilon_h \tau \cdot e(t)w(t)N(t) \qquad h = I, E, O \quad \text{(A23)}$$

where $\upsilon_h \in (0,1)$ for all h. Combining these equations therefore yields

$$\Sigma \upsilon_h = 1 \quad \text{(A24)}$$

Assuming full depreciation[60] for simplicity, public capital in infrastructure evolves according to

$$K^I(t+1) = \chi^I G^I(t) \quad \text{(A25)}$$

where $\chi^I \in (0,1)$ is an efficiency parameter that measures the extent to which investment flows translate into actual accumulation of public capital; thus, χ^I can be thought of as an indicator of the quality of management of public sector investment projects, or governance.[61] This specification captures the view that Lebanon's complex political economy affects the quality of its

[59] To capture the idea that FDI starts flowing in (endogenously) only when there is sufficient access to domestic infrastructure for instance, it could be assumed that $\varphi 3 = 0$ for $k^I(t) < \underline{k}^I$, where $\underline{k}^I$ is a threshold level, and $\varphi 3 > 0$ for $k^I(t) \geq \underline{k}^I$

[60] Adding depreciation would involve adding the term $\delta K^I(t)$ on the left-hand side of (A25), with $\delta \in (0,1)$ denoting the depreciation rate. However, this is an unnecessary complication here, given that the numerical experiments focus on the steady state.

[61] See Agénor (2010*a*) for a more detailed discussion.

public institutions of policymaking as well as its public institutions of services delivery, with an adverse effect eventually on the quality of services provided by the public sector.

7. Market-Clearing Conditions

The asset-market clearing condition requires equality between savings and investment, or equivalently, that tomorrow's private capital stock will be equal to today's savings by adult workers. With the adult population constant at $\underline{N}$, this yields

$$K^P(t+1) = \underline{N}s(t) \qquad \text{(A26)}$$

where physical capital is also assumed to depreciate fully in one period.

With perfect labor mobility, $w^Y(t) = w^M(t) = w(t)$; and with full employment, labor market equilibrium requires

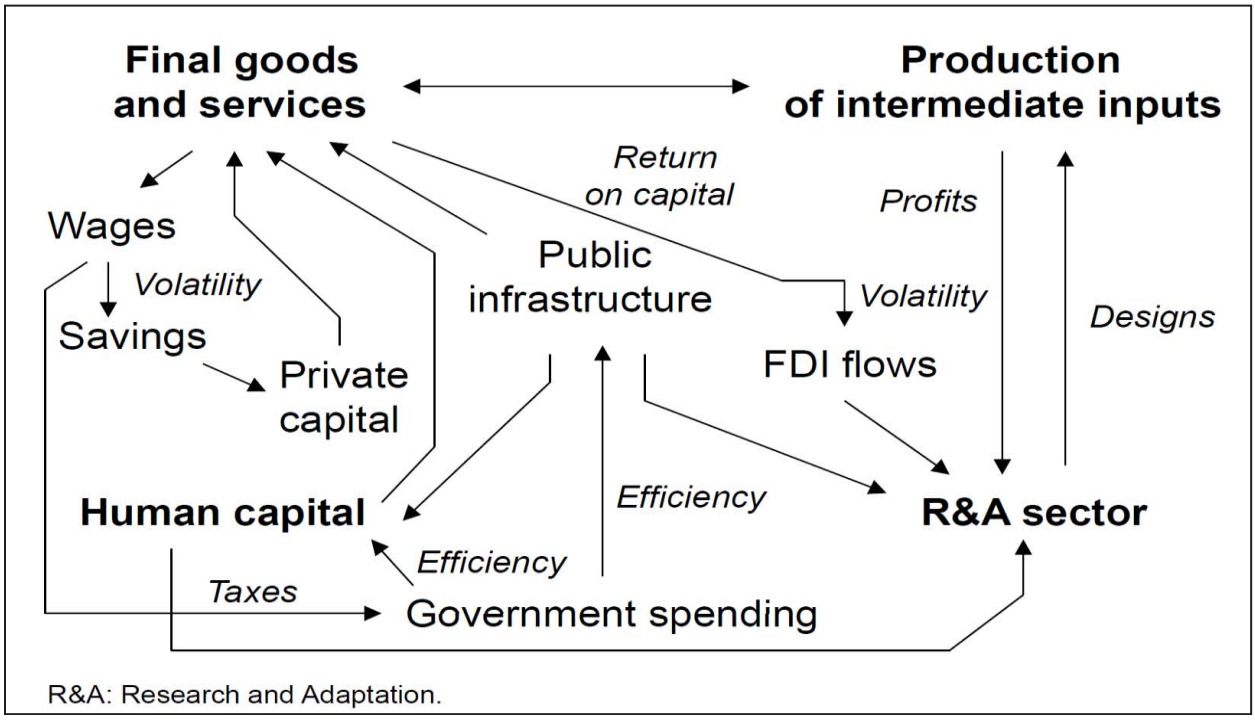
$$N^Y(t) + N^M(t) = \underline{N}$$

Using equation (A5) to substitute out for $N^Y(t)$, this equation can be used to determine equilibrium employment in the R&A sector:

$$N^M(t) = \underline{N} - \beta Y(t)/E(t)w(t) \qquad \text{(A27)}$$

which is constant if $Y(t)/E(t)$ and $w(t)$ are constant - which turns out to be the case in the steady state. In such conditions, the allocation of labor across sectors is also constant.

Chart 28 - OLG Framework: Production Structure



R&A: Research and Adaptation.

The main interactions in the production component of the model are displayed in Chart 28. There are several features of the model that are worth summarizing: (i) infrastructure affects directly both the production of final goods and R&A activities; (ii) through its effect on the marginal product of labor, it also affects incentives to migrate; (iii) FDI flows contain both an exogenous component and an endogenous component; to the extent that improved access to infrastructure affects positively the rate of return of private physical capital, it will induce higher external flows; (iv) in addition to the *level* effect of domestic factors on capital flows, there is also a *composition* effect, which operates through changes in the parameter χ^F itself; possibly a function of various domestic factors and policies; and (v) the quality of governance affects growth both through the efficiency of spending on education and investment in infrastructure, and through the protection of property rights.

8. The Economy's Long-Run Growth Rate

The balanced growth rate of the economy is derived in the Technical Supplement (available upon request). A key feature of the derivations is that the public-private capital ratio is constant over time:

$$k^I = J = \chi^I \upsilon_I \tau/\sigma(1-\tau) \qquad \text{(A28)}$$

where σ is the marginal propensity to save, given by

$$\sigma = 1/[1 + \eta_C(1+\rho)] \qquad \text{(A29)}$$

The dynamics of the economy can be condensed into a system of two nonlinear equations in $k^P(t) = K^P(t)/E(t)$, the private capital-human capital ratio, and $z(t) = E(t)/M(t)$, the ratio of human capital to the stock of intermediate goods. The steady-state growth rate of output, **g**, is given by

$$\mathbf{g} = \Lambda(k^P_{SS} \cdot z_{SS})^{\nu 1 \Omega} - 1 \qquad \text{(A30)}$$

where k^P_{SS} and z_{SS} denote the steady-state values of k^P and z, and Λ and Ω are expressions provided in the Technical Supplement.

II. CALIBRATION

To analyze the impact of policies on long-run growth in Lebanon, the model is calibrated as follows. As much as possible, national data for the period 1997-2009 are used, but numbers for the period 2005-09 are also given, for comparative purposes. However, given that in many instances reliable parameter estimates are not available for Lebanon, the international evidence is used for guidance.

On the household side, the annual discount rate is set at 0.08. This is twice the conventional value of 0.04 and is done to capture the idea that a volatile environment tends to bias decisions

toward the present. Interpreting a period in the model as 25 years yields a discount factor on future consumption of $[1/(1+0.08)]^{25} = 0.146$. From the National Accounts of Lebanon, the private savings rate, σ, is estimated at 6.5% for the period 1997-2009 and at 8.1% for the period 2005-09. As shown in equation (A29), the savings rate is formally equal to $1/[1+\eta_C(1+\rho)]$; the parameter η_C is thus calibrated to obtain that value, so that $\eta_C = (\sigma^{-1} - 1)/(1+\rho)$. With the discount factor actually equal to 0.146, this yields $\eta_C = 2.11$ for $\sigma = 0.065$ and $\eta_C = 1.65$ for $\sigma = 0.081$. The ratio of remittances to wages, q, is measured by the ratio of remittances in gross national domestic income; the values are q = 5.7% for the period 1997-2009 and at 6.4% for the period 2005-09.

In the final output sector, the elasticity of production of final goods with respect to public capital ε is set at 0.2, a relatively high value. Thus, we assume that the elasticity of output with respect to infrastructure is quite high, which is quite sensible for a country like Lebanon where infrastructure needs remain large.[62]

The elasticity of production of final goods with respect to private capital and labor, α and β, are set at 0.3 and 0.55, fairly standard choices. These estimates for α and β imply an elasticity with respect to intermediate inputs equal to $\gamma = 1 - \alpha - \beta = 0.15$.

In the intermediate goods sector, we set the cost parameter θ (which, again, reflects not only technological requirements but also regulatory restrictions on firm entry) at 2.5, as in Garcia-Castrillo and Sanso (2002), and the parameter η (which measures both the elasticity of substitution between intermediate goods, and the price elasticity of the demand for these goods) is set to 0.73. From (A12), this choice implies that the net price markup over marginal cost is given by $\eta^{-1} = 36.9$ percent. This is consistent with the evidence for Lebanon (see Berthélemy et al. 2007). It also implies that the elasticity of substitution between intermediate goods is given by $1/(1-\eta) = 3.7$; by way of comparison, Acemoglu and Ventura (2002) found a value for that elasticity of $2.6 = 1/(1-\eta)$. Because there is significant uncertainty about these values for Lebanon, sensitivity analysis is performed where relevant.

In the human capital sector, the elasticity of flow output with respect to government spending on education services, $\nu 1$, is set equal to 0.2. This estimate is not very high but is meant to capture the relatively inefficiency of public spending on education in Lebanon. This implies that the elasticity with respect to the current stock of human capital is equal to 1- 0.2 = 0.8. The elasticity with respect to the public-private capital ratio, $\nu 2$, is set equal to 0.2, which reflects the view that improved access to infrastructure (particularly in the area of telecommunications) could have a potentially large effect on the accumulation of human capital in Lebanon.

[62] Agénor (2011*a*) reviews several studies that provide empirical estimates for developing countries; values typically range between 0.1 and 0.17.

In the R&A sector, the number of "imitable" goods from abroad, m, is normalized to unity. The elasticity of flow output with respect to the public-private capital ratio is set at $\varphi 1 = 0.2$, to reflect the potentially large effects that improvements in core infrastructure (particularly in telecommunications, as discussed in Chapter 2) can play on activity in that sector. The elasticity with respect to FDI flows is set at $\varphi 2 = 0.12$, to reflect the fact that the impact of these flows is constrained by the environment. The elasticity of FDI flows with respect to the rental rate of domestic private capital is set also at a relatively low value to begin with, $\varphi 3 = 0.05$, to capture the fact that domestic factors in the current environment have a relatively small "pulling" effect on foreign capital flows. The share of "technology-driven" FDI flows in total FDI flows, χ^F, is set at 0.05, in line with the recent evidence (see Chapter 1). The degree of efficiency associated with the enforcement of property rights relevant for R&A activities (administration of patents, etc.) χ^M is set equal to 0.5.

Regarding the government, the tax rate on final output, τ, is set equal to the average, effective tax rate which (according to Ministry of Finance data and World Bank calculations) is equal to 19.3% for the period 1997-2009 and 20.3% for the period 2005-09. By definition, because the model does not consider deficit spending, this is also the (actual) level of government spending. The share of government investment in infrastructure, υ_I, according to the same data sources, is equal to 9% for the period 1997-2009 and 6.4% for the period 2005-09. Similarly, the share of government spending on education, υ_E, is equal to 7.4% for the period 1997-2009 and 7.5% for the period 2005-09.

To calibrate the parameter χ^I, we use the index of investment efficiency calculated by Dabla-Norris et al. (2010). There is no direct estimate for Lebanon, so we took the average for the neighboring countries in their sample, Egypt, Jordan and Tunisia, and divide by 4 (given that the index varies between 1 and 4) in order to arrive at $\chi^I = 0.55$. Because we do not have direct estimate for χ^E, we also set it at 0.55 initially. From equation (A28), and given the calibrated values of $\upsilon_I = 0.09$, $\tau = 0.193$, $\chi^I = 0.55$, and $\sigma = 0.065$, the equilibrium public-private capital ratio is $J = 0.23$. Thus, the low degree of efficiency of public investment translates into a relatively low calibrated public-private capital ratio.

Parameter values (with estimates for the period 1997-2009 where relevant) are summarized in Table 22 Based on these parameter and initial values, the model is solved for the steady-state solutions k^P_{SS} and z_{SS}; these solutions are then inserted in (A30), together with a multiplicative constant, in order to yield an annual growth rate of final output equal to 4 percent as a benchmark case.

Table 21 Calibrated Parameter Values – Benchmark Case

Parameter	Value	Description
Households		
ρ	0.08	Annual discount rate
σ	0.065	Individual savings rate
η_C	2.11	Preference parameter, current consumption
q	0.057	Ratio of remittances to wages
Final good		
ε	0.2	Elasticity wrt to public-private capital ratio
α	0.30	Elasticity with respect to private capital
β	0.55	Elasticity with respect to effective labor
Intermediate goods		
θ	2.5	Units of manufacturing good
η	0.73	Parameter determining elasticity of substitution
Human capital		
ν_1	0.2	Elasticity wrt public spending in education
ν_2	0.2	Elasticity wrt public-private capital ratio
R&A sector		
m	1.0	Number of "imitable" goods from abroad
ϕ_1	0.2	Elasticity with respect to public capital
ϕ_2	0.12	Elasticity with respect to FDI flows
ϕ_3	0.05	Elasticity of FDI flows wrt rental rate of capital
χ^M	0.5	Efficiency of property rights enforcement
χ^F	0.05	Share of "technology-driven" flows in FDI flows
Government		
τ	0.193	Tax rate on output of final good
υ_I	0.09	Share of spending on infrastructure
υ_E	0.074	Share of spending on education
χ^E	0.55	Efficiency parameter of spending on education
χ^I	0.55	Efficiency parameter of spending on infrastructure

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