



LEBANON

SELECTED ISSUES

January 2017

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LEBANON

SELECTED ISSUES

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MOTIVATION AND SUMMARY

1. The Selected Issues for this year's Article IV consultation stem from a common theme: Lebanon's pressing need for stronger, high-quality, and inclusive growth. Output growth has fallen sharply since the onset of the Syrian crisis and is too low to accommodate new job seekers, or to address the needs of Lebanon's more vulnerable population. Moreover, low growth is taking a toll on public debt dynamics, raising the prospect of higher borrowing costs and constrained social and investment spending—both much needed to improve the quality of public spending and direct it toward more useful and productive uses.
2. In this context, growth is particularly urgent in light of recent refugee inflows. The first paper (*In the Eye of the Storm: Lebanon and the Syrian Refugee Crisis*) takes stock of the recent influx, outlining the cost of hosting the refugees both to the budget and to the economy more broadly. As a central part of their strategy to address this issue, the authorities have presented an ambitious proposal to the international community, which centers on a multi-year effort to stimulate growth and employment through a targeted series of investment initiatives. It should be stressed in this regard that Lebanon is providing a key public good, and cannot be expected to shoulder this burden alone. International support is both needed and warranted. On a similar theme, the second paper (*Conflicts and Lebanon's Capital Stock*) takes a broader view, and notes that the impact of the crisis is not just through a sudden inflow of unskilled workers (which tends to depress the capital-labor ratio and average living standards). There has also been an additional impact through reduced investment, which has lowered the ratio even further. Restoring Lebanon's living standards will require additional capital—highlighting the need for an improved investment climate, and underscoring the gains from addressing Lebanon's public investment gap.
3. Moving beyond the immediate challenges associated with the Syrian crisis, the third paper (*The Potential of Human Capital in Lebanon*) notes that Lebanon enjoys an enviable pool of high-quality human talent. Recent initiatives by the Banque du Liban have sought to leverage this resource, but unlocking the full growth potential of the country's talent will require a broader effort across numerous stakeholders, including through efforts to boost Lebanon's business climate and infrastructure.
4. Still, addressing Lebanon's infrastructure gap and boosting social spending will require fiscal space, currently limited. The next paper (*Revenue Mobilization Options for Lebanon*) notes that Lebanon has ample scope to increase tax revenue, and argues that reform of the Value Added Tax (VAT)—without necessarily increasing the VAT rate—is one of the most promising avenues going forward.
5. Finally, the last paper (*Oil Price Spillovers in Lebanon: The Role of Remittances*) casts the short-term benefits of the recent drop in oil prices for Lebanon (an oil importer) against its impact on remittance inflows, which are a sizable source of funds and a critical pillar of the social safety net. A large portion of remittances originate in oil-producing countries, and estimates from a general equilibrium model suggest that recent oil-price movements could reduce inflows by at least 19 percent (about 3 percent of GDP), muting their beneficial impact on incomes and activity.

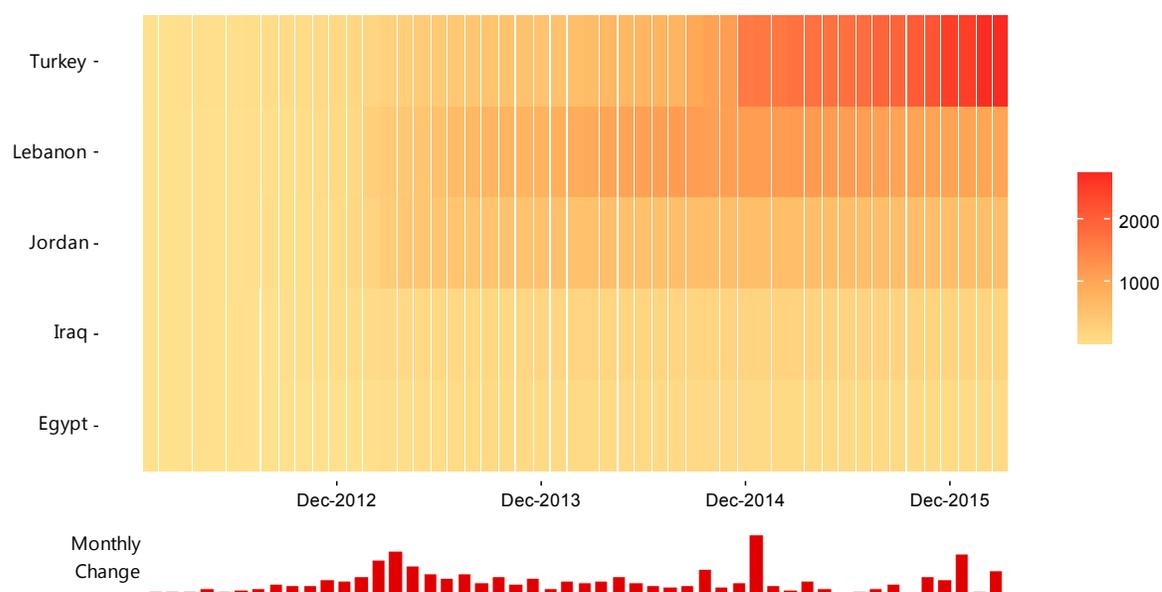
IN THE EYE OF THE STORM: LEBANON AND THE SYRIAN REFUGEE CRISIS¹

A. A Global Problem

1. The Syrian crisis is now in its sixth year. Out of a population of 26 million, over one quarter million Syrians have been killed since the start of the civil war, and another million injured. In addition, about 13 million—almost half the population—have had to leave their homes, and around 5 million have been forced to leave the country altogether (Dionigi, 2016). This makes Syria one of the largest displacement crises in the past 40 years, and one of the most daunting humanitarian crises since the Second World War.

2. Most Syrian refugees remain in the region; principally in the neighboring countries of Turkey, Jordan, and Lebanon. Inflows into these countries accelerated in late 2013, although officially registered refugee numbers in Jordan and Lebanon stabilized toward the end of 2014—at around 600 thousand and 1.1 million, respectively. In the case of Turkey, however, the number of refugees continues to increase, reaching around 2½ million by end 2015.²

Regional Refugee Presence (Thousands of registered Syrian refugees)



Source: UNHCR and IMF staf calculations.

3. The scale of the crisis is straining the global refugee regime. This regime comprises a set of norms—entrenched in the 1951 Convention relating to the Status of Refugees—that are

¹ Prepared by Andrew Tiffin (MCD).

² Refugee figures in this note are based on official registration data from the United Nations High Commissioner for Refugees (UNHCR). There are no agreed estimates of unregistered refugees in Lebanon, although government statements suggest that these could be as high as 300 thousand.

premised on international cooperation and reciprocity. Specifically, it centers around two sets of obligations: **asylum**, which outlines states' obligations toward refugees who reach their territory; and **burden sharing**, which covers their obligations toward refugees in the territory of *other* states, including whether to support them financially or to resettle some of them in their own territory. The first set of obligations are relatively well developed, and include a general expectation that countries will keep their borders open to those in need of protection. The second set of obligations, however, are less well developed, and are largely discretionary. This leaves countries like Lebanon in a difficult position: faced with the sizable costs of hosting Syrian refugees, but without being able to rely on the global support needed to manage this burden successfully.

4. In this context, Lebanon is providing a global public good. In an uncertain world, with fragile and failed states, people are sometimes forced to leave their countries of origin, whether temporarily or permanently. And in these circumstances, it is in the general interest of the international community that they have somewhere safe to go without fueling or spreading the instability they are fleeing from. The widespread availability of refugee protection, then, is a global public good that benefits all states, regardless of their individual circumstances. As with all public goods, however, adequate provision must overcome an immediate coordination problem—given the incentives for each country to shift the burden onto others. Typically, the costs of maintaining the refugee regime are borne, by necessity, by those countries adjacent to the conflict in question. But this is widely acknowledged as an unfair and fragile outcome; not least because these economies often have limited resources, and so are perhaps the least well-suited to bear this burden.

B. The Lebanese Response

5. In the early stages of the Syrian crisis, Lebanon maintained an open door policy toward the refugees. Motivated by humanitarian concerns, but reflecting also an expectation that the conflict would be short-lived, the refugees were allowed to enter Lebanon unhindered, and were subject to the same provisions in domestic law that apply to other foreigners. Helpful in this regard was a 1993 bilateral agreement between Lebanon and Syria on *Economic and Social Cooperation and Coordination*, which allowed for the free movement of people and goods, and which granted freedom of work, residence and economic activity for nationals of both countries. Syrian refugees who entered Lebanon would therefore simply receive an entry stamp that granted legal residency for six months, which could then be renewed free of charge for another six months. In this context, it should be noted that Lebanon is not a signatory to the 1951 Convention or to its 1967 protocol, and the government has repeatedly reaffirmed that Lebanon is not a country of asylum or a final destination for refugees.³ Consequently, Lebanon's social protection programs do not automatically

³ Lebanon is not a party to the 1951 Convention, but the official description of the Syrian inflow has nonetheless avoided the internationally acknowledged notion of "refugee," rather than accept the obligations that such a status might imply. Instead, the terms "displaced" and "*de facto* refugee" have been used, whose legal implications are less well defined. In contrast, from an international standpoint, Syrians enjoy formal refugee status and are entitled to all the services and protection typically offered by the UNHCR, in collaboration with its subsidiary agencies. For clarity, this paper will use the term "refugee" rather than displaced.

extend to Syrian refugees, and these were largely left to operate on their own resources or from the resources offered by relevant UN agencies.

6. But faced with mounting refugee inflows, the authorities have taken steps to limit new arrivals. From less than six thousand at end-2011, the number of refugees increased to around 100 thousand by mid-2012, and then accelerated further to reach half a million by mid-2013. In response, the General Security Office (GSO) in July 2013 began implementing stricter document checks at the border, but these had little immediate impact.

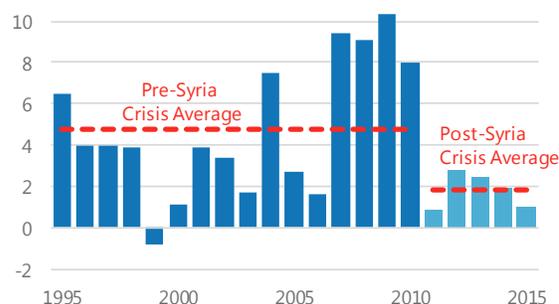
- By May 2014, refugee numbers had doubled again to reach one million—and in June 2014 the authorities announced that only Syrians from bordering areas where there was fighting would be allowed to enter the country.
- Subsequently, in October 2014 the government unanimously approved a *Policy Paper on Syrian Displacement*, where it laid down a new approach for 2015. The key thrust of the Paper was that: (i) Lebanon had done more than its share in accepting so many refugees; and (ii) steps would be taken to reduce the number of refugees, by further restricting entry and encouraging the refugees to return to Syria (Dionigi, 2016).
- Implementing this policy, the GSO announced in December 2014 a new set of entry requirements that are still in place today. Entry is now available only to those that can prove their stay fits into one of a few approved categories. There are no categories for those fleeing armed conflict, other than a limited “humanitarian exemptions criteria,” which apply to unaccompanied children, disabled persons with relatives in Lebanon, those with urgent medical needs, or persons who will be resettled in a third country (Janmyr, 2016).
- Moreover, in May 2015, the authorities instructed UNHCR to halt any further registration and to deregister refugees who had entered the country since January 2015. This means that new refugees not already registered with UNHCR are now ineligible to receive food or assistance through UN mechanisms.

The new restrictions seem to have succeeded, in that officially registered refugee numbers have since stabilized at around 1.1 million. But this number still represents an unparalleled burden for a country with Lebanon’s limited size and resources.

C. The Economic Impact of the Syrian Crisis

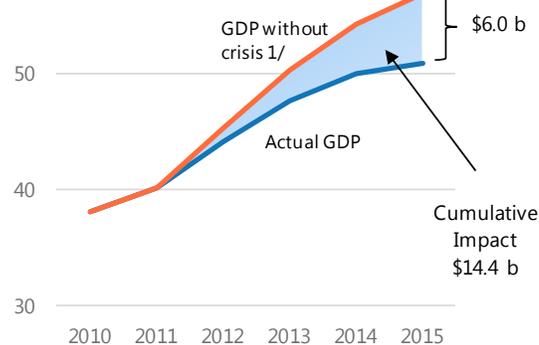
7. Given longstanding social and economic ties between Lebanon and Syria, the crisis has had a direct and significant impact on the Lebanese economy. Most obviously, GDP growth in Lebanon has fallen sharply, from 8–10 percent prior to the crisis to an estimated rate of around 1–2 percent currently.⁴ The key channel in this instance has been a deterioration of consumer and business confidence, owing to the protracted and uncertain nature of the conflict in neighboring Syria, along with potential security spillovers. It should be noted in this regard that many other events have also shaped Lebanon’s growth prospects over the past six years—including, *inter alia*, an extended political deadlock, global financial volatility, and a substantial terms-of-trade shock for some of Lebanon’s key oil-exporting trade partners. So distinguishing the exact contribution of the crisis is a challenge. To date, the most authoritative assessment stems from an early *Economic and Social Impact Analysis* (ESIA) conducted by the World Bank (2013), which estimated that the conflict in Syria had lowered Lebanon’s annual GDP growth rate by an average of 2.9 percentage points. Taking this as a basis, the conflict has thus cost Lebanon almost \$14½ billion dollars so far, equivalent to a cumulative loss of almost 30 percent of GDP.

Real GDP, 1995-2015. (Percent Growth)



Source: National authorities and IMF staff calculations.

Impact of Syria Crisis, 2010-15
(USD Billions)



1/ Based on World Bank (2013) and IMF deflator estimates.

Sources: World Bank, and IMF staff calculations.

⁴ Data shortcomings in Lebanon make it difficult to assess the economic impact of the crisis with any precision, not least because the most recent finalized GDP figures are from 2012. Much of the analysis of Lebanon’s post-crisis economy, therefore, relies on detailed investigation of high-frequency indicators (see Tiffin, 2016).

D. The Economic Impact of Syrian Refugees

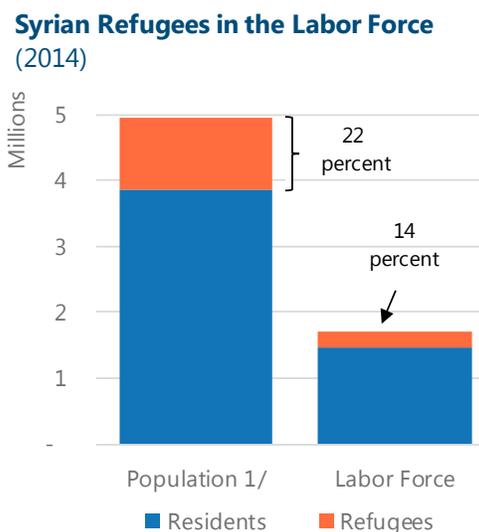
8. There is a distinction between the broader costs of the regional conflict, versus the more specific cost of hosting the Syrian refugees. Separating the two empirically can be challenging, and sometimes the cost of hosting the refugees has been confused with Lebanon's conflict-related economic downturn. The two are linked, but conceptually, Lebanon would have faced lower confidence and activity, even if all refugees had been hosted elsewhere.

9. The fiscal impact of the crisis reflects both a downturn in overall growth as well as an increase in specific refugee-related costs. The World Bank ESIA study estimated the direct fiscal cost of the crisis over 2012–14, finding that the added burden on the budget was approximately \$2.6 billion. This corresponds to about \$0.9 billion each year, split between a fall in revenues (\$0.5 billion) from lower economic activity, and higher operating costs (\$0.4 billion) owing to increased demand for government services. The latter figure is broadly consistent with a more recent estimate by the authorities, which identified total Syria-related operating costs over 2011–15 of around \$2 billion (\$400 million each year).

10. Focusing on operating costs may understate the scale of the fiscal challenge. As mentioned, Syrian refugees in most cases are not eligible for official social support, and must rely on their own resources or aid from UN agencies. In many cases, such as for education and health, the latter comes in the form of international assistance in which a large portion of the financial cost of access to government services is borne by the donor community. So, the direct refugee impact on the budget may be limited. But there is nonetheless an added strain on Lebanon's already-stretched public infrastructure, resulting in a drop in service quality for existing Lebanese users. The World Bank ESIA study estimated that it would take an additional \$2.5 billion (5 percent of GDP) to bring service quality back to pre-crisis levels.

11. The picture is further complicated by the fact that the refugee impact on the economy has likely been mixed. Firstly, and most obviously, *Syrian refugees are also consumers*. Many have extremely limited incomes, but they have nonetheless been able to contribute to consumer demand in Lebanon by drawing on their own savings, borrowing from their extended social networks, or by channeling international assistance. Once again, data limitations prevent an accurate assessment of this particular effect. But a UNDP study (2014) suggests that, for refugees receiving international aid, the multiplier of humanitarian assistance is 1.6. Without this assistance, growth in Lebanon could have been significantly lower (e.g., around 1.3 percent of GDP lower in 2014).

12. One of the most actively debated questions, however, concerns the impact of the Syrian refugees on Lebanon’s labor market. This discussion has parallels in other host countries around the world, and can be illustrated perhaps by standard economic theory (Box 1). Under a basic Solow model, the impact of a large one-time influx of migrants is straightforward. New migrants will tend to lower the wage of incumbents in the short run, reflecting a lower economy-wide capital-labor ratio. The influx will also reduce the number of employed incumbents, as some will be induced to exit the labor market. But not all residents are worse off. Returns to capital (or other complementary factors, such as high-skilled labor) actually increase, as the extra labor makes capital more productive. Over the long run, however, these effects are unwound, as investment responds to higher returns and the capital stock expands. Indeed, with constant returns to scale, the capital-labor ratio will ultimately revert to the initial steady state, leaving wages at their original level.



1/ UN Department of Economic and Social Affairs (UNDESA)
Source: ILO and IMF staff calculations

13. The key message from theory is that a modern economy does not simply produce a fixed number of jobs. Instead, the economy will eventually respond to an influx of migrants by scaling up production in line with the larger labor force. Market rigidities may influence the pace of adjustment, and flexible economies with a conducive investment climate will adjust more rapidly than economies with less flexible markets. But ultimately, economies are generally able to accommodate an addition of new workers.

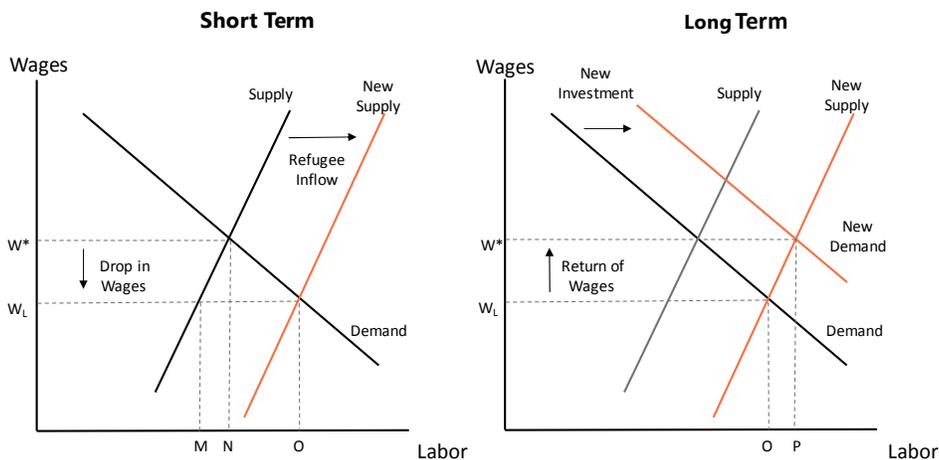
14. Although theory may suggest that the impact of refugee inflows is (ultimately) benign, the nature of Lebanon’s economy presents additional challenges.

- **Firstly, the length of adjustment depends on the investment climate.** The easier it is to scale up the capital stock, the more quickly the economy will move to the new steady state. Indeed, in advanced economies with predictable migrant inflows, this scaling up generally takes place in a few years (Dadush, 2014). But Lebanon's investment climate has serious shortcomings. Access to finance is generally not a problem, but poor infrastructure, bureaucratic red tape, and political uncertainty have long hampered the ability of Lebanese firms to invest in new projects. And as mentioned, the war in neighboring Syria and growing regional tensions have undermined local confidence and weakened the growth outlook, reducing investment incentives even further.

Box 1. The Labor-Market Impact of Refugee Inflows: Theory and Findings

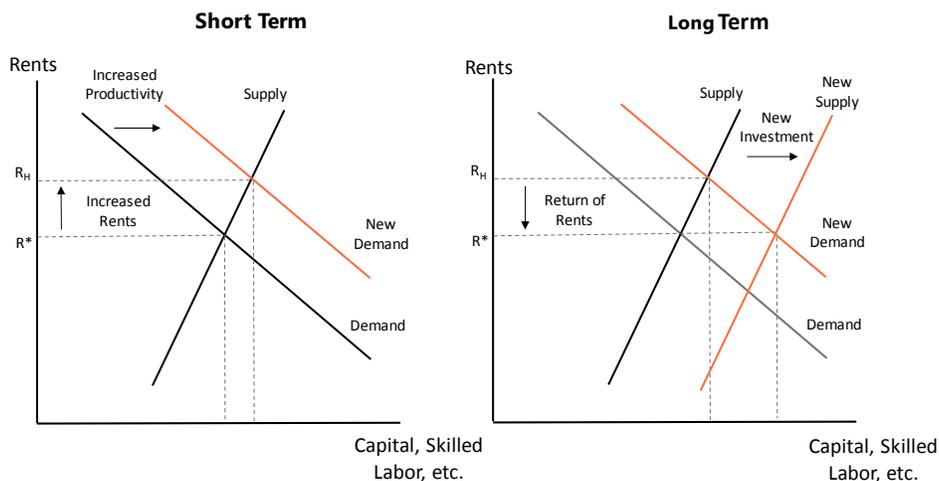
Under standard theory, the impact of a large one-time influx of migrants is well understood. In the short run, an inflow of refugees represents an increase in the supply of (largely unskilled) labor (see diagram below). The new migrants will thus tend to lower the wage of incumbents (moving wages from W^* to W_L), reflecting a lower economy-wide capital-labor ratio, and an associated drop in the marginal productivity of (unskilled) workers. The influx may also reduce the number of employed incumbents, as some will be induced by lower wages to exit the labor market (N to M).

Impact of Refugee Inflow on Domestic Labor Market



The short run impact has both winners and losers. While incumbent (unskilled) workers may face reduced incomes over the short run, the owners of other factors may actually benefit. Capital owners, for example, will typically enjoy higher returns, as the increased availability of new, less-expensive workers will tend to make their capital more productive. Similarly, owners of other factors, such as human capital (skilled labor), land—or any other input that complements labor in the process of production—will also enjoy higher incomes.

Impact of Refugee Inflow on Other (Complementary) Factors



Box 1. The Labor-Market Impact of Refugee Inflows: Theory and Findings (concluded)

Over the long run, however, these effects are unwound. Higher capital returns prompt higher investment, which expands the capital stock, adds to labor productivity, increases the demand for labor and so boosts wages. Indeed, with constant returns to scale, the capital-labor ratio will ultimately revert to the initial steady state, bringing back wages to their original level. (Similarly, those incumbents who left the workforce owing to the short-term drop in wages, will be enticed back in again).

A key message from theory is that a modern economy is not a zero-sum game, in which workers compete for a fixed number of jobs. Instead, faced with an inflow of new workers, an economy will eventually respond by scaling up production in line with the augmented labor force. Market rigidities may shape the pace of adjustment, and flexible, investment-friendly economies will adjust more rapidly than economies with less flexible markets. But ultimately, economies should be able to accommodate any addition of new workers.

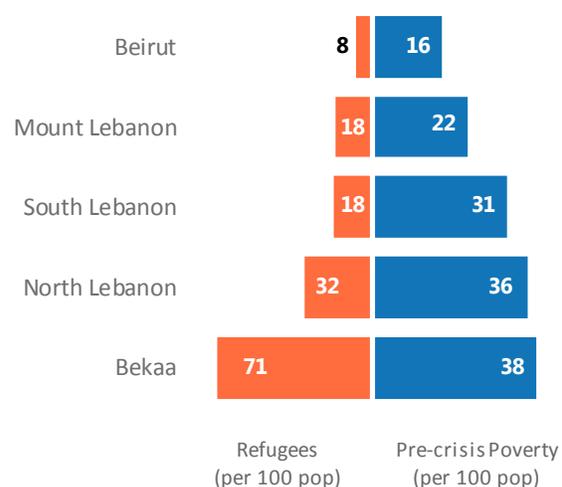
The costs of transition will vary from country to country. Indeed, for a country facing a sudden inflow of new workers, two key questions are critical: the extent to which (unskilled) refugee labor can substitute for (unskilled) local labor; and the extent to which unskilled local labor can substitute for *skilled* local labor. If refugee workers are poor substitutes for local workers, the impact on incumbent wages will be relatively modest, as refugees and locals will not compete for the same jobs. Similarly, if local skilled and unskilled labor are perfect substitutes, then pressure from refugees on unskilled wages will tend to push local workers into (higher paying) skilled positions, muting any potential impact on local incomes. In contrast, in a worst case scenario where local unskilled workers compete directly with refugees, and where they are also poor substitutes for local skilled labor, the impact on incumbent incomes can be significant. Overall, then, the short-run impact of refugees on local incomes will depend on the degree of substitutability between different types of workers, which in turn depends on the degree of integration of each country's labor market.

The length of transition will also vary. Given these short-run costs, the next obvious question is "How short is the short run?" Again, this will vary from country to country, and will depend on the economy's ability to match the new refugees with added investment and capital. Countries with flexible capital markets and an investment-friendly institutional environment may be able to manage this transition smoothly and swiftly. Other countries, however, may face a more protracted and costly process.

Empirical studies have generally found little adverse impact of refugee inflows. These studies have typically not distinguished between voluntary and involuntary immigration, and have mostly focused on advanced economies. Overall, their findings tend to downplay the impact of unskilled immigration, noting that local wages generally remain unchanged, and suggesting that many incumbents often move to occupations where local knowledge and linguistic ability offer a comparative advantage (and higher wages). Moreover, most economies under study have been able to scale up investment relatively smoothly. (see Dadush, 2014, and Roodman, 2014 for a survey of the literature). Nonetheless, there are perhaps reasons to believe that Lebanon's experience may not be as straightforward as these studies suggest (see main text).

- Secondly, the nature of Lebanon's labor market may exacerbate the impact of Syrian refugees.** Studies from advanced economies tend to minimize the impact of unskilled immigration, noting that native wages have generally remained largely unchanged, and stressing also that many incumbents often move to occupations where local knowledge and linguistic ability offer a comparative advantage (and higher wages) (IMF, 2016). The Lebanese market is perhaps less accommodating. Data are scarce, but estimates suggest that almost half of the workforce is employed in the informal sector (ILO, 2015) and so is likely to compete directly with new refugees. Moreover, many of these workers are not covered by Lebanon's social safety net, making them particularly vulnerable.
- Thirdly, current studies of the economic impact of refugees may not be applicable to Lebanon, given the scale of inflows.** Most empirical studies investigate relatively moderate increases in the labor force. Given the scale of the Syrian refugee presence, however, the size of the shock may have outstripped the Lebanese economy's ability to respond smoothly, or even to mitigate some of its short-term costs. This is particularly salient given the fact that the refugee shock has not been spread equally across Lebanese territory. Indeed, refugees have mostly settled in those regions of Lebanon where poverty and social vulnerability are already daunting, and where competition for unskilled jobs may be most acute.
- Finally, standard models are silent on the role of unpriced factors, such as public goods and infrastructure.** Implicitly, these are scaled up in line with the capital stock by the local authorities. But in light of Lebanon's difficult political situation, and its limited fiscal space, this cannot be taken for granted.

Distribution of Refugees (2016)



Sources: UNHCR, World Bank, CAS, and IMF staff calculations.

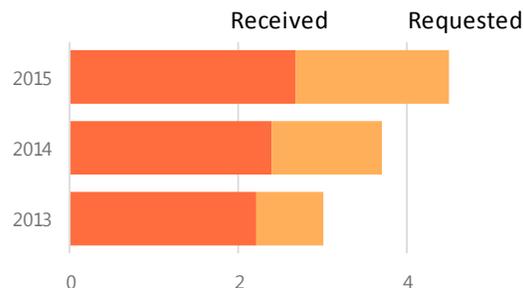
15. In light of these reservations, Lebanon's ability to accommodate a large refugee inflow by scaling up production is arguably more limited than in many other countries, and may require foreign support. Funding for infrastructure, for example, would not only provide immediate job opportunities for both Lebanese and Syrians, but it would also lay the groundwork for a more general improvement in productivity, growth and employment. Similarly, stabilization support for host communities would help Lebanon mitigate some of the short-term costs of the refugee presence, including by matching the authorities' capacity to offer government services with increased demand. And funding for active labor market policies would help ensure the widest possible employment benefit from economic expansion.

E. The Role of International Assistance

16. In line with the multi-faceted impact of the refugee presence, the authorities outlined a comprehensive proposal at the recent London Conference (Box 2). This conference, held in February 2016, reflects an ongoing effort on the part of the donor community to address the economic and humanitarian consequences of the Syrian conflict. Indeed, similar donor conferences over the past three years, hosted by Kuwait, have resulted in sizable pledges for the Syrian Regional Response Plan (RRP)—which includes the Lebanon Crisis Response Plan (LCRP). But these have nonetheless generally fallen short of the amounts needed.⁵ At the London conference, the Lebanese authorities presented an ambitious, wide-ranging, medium-term plan covering the country's extended refugee-related needs over 2016–20. The plan requires over \$11 billion in support from donor countries, ranging from grants dedicated to support refugee needs, to loans for development projects. These include:

- \$2½ billion for the 2016 Lebanese Crisis Response Plan.
- Almost \$1½ billion for the education sector.
- Around \$¾ billion allocated to municipalities.
- Over \$¼ billion for an employment program to stimulate the economy.
- \$2 billion in direct budget support, to be used to subsidize future Eurobond issues.
- Around \$4¼ billion in concessional financing for over 130 priority infrastructure investments.

Regional Assistance: Appeals vs. Receipts, 2013-15
(USD billions) 1/



1/ Excl. funds for displaced within Syria
Note: 2013-14, Regional Response Plan (RRP). 2015, Regional Response and Resilience Plan (3RP).
Source: Ferris & Kirişçi (2016).

17. The key thrust of the authorities' proposal is a multi-year effort to stimulate growth and employment through a targeted series of investment initiatives. These focus not only on high-priority infrastructure needs, but also on the maintenance of key public services (education, municipal services, etc.). In essence, the plan targets some of Lebanon's investment bottlenecks directly, helping the economy scale up to meet its new employment needs. Also, the authorities would encourage job creation in labor-intensive sectors through the Subsidized Temporary Employment Program (STEP), which provides financial and non-financial incentives for small- and medium-sized enterprises to invest and expand their workforce. The authorities project that these interventions could create 300–350 thousand jobs, of which 60 percent would be for Syrian refugees.

⁵ Introduced in 2015, the Lebanon Crisis Response Plan (LCRP) is a joint effort by the Lebanese authorities and the international community aimed at addressing the needs of both Syrian refugees in Lebanon, as well as vulnerable members of Lebanese host communities. It has three strategic priorities: (i) ensuring adequate humanitarian assistance; (ii) strengthening the capacity of national and local delivery systems; and (iii) reinforcing economic and social stability. It covers 2015–16, and serves as a transitional phase into a longer-term strategic framework for 2017–20. In 2015 \$2.1 billion was requested under the plan, two-thirds for humanitarian assistance, and one-third for local stabilization needs. Only \$1.4 billion was actually received. For 2016, \$2.5 billion has been requested, of which \$1 billion has been received as of end-August.

Box 2. The London Conference on “Supporting Syria and the Region”

Hosted by the United Kingdom, Germany, Kuwait, Norway, and the United Nations, the conference brought together over 60 supporting countries and international organizations. It raised over \$11 billion in pledges for the region, as well as announcements from multilateral development banks and donors of up to \$41 billion in new loans over the coming years. In their statements, supporting countries broadly acknowledged that, by itself, emergency relief for Syria’s neighbors was insufficient; that relief needed to move in parallel with long-term development assistance, and that this funding needed to support host communities. On behalf of the Lebanese authorities, the Prime Minister stressed that Lebanon had reached capacity, and was “in desperate need of more jobs for refugees and civilians.”

At the conference, the authorities presented a consolidated plan consisting of a five-year program for education, development, and jobs (Table). The plan is ambitious and wide-ranging, and asks for stepped-up grant funding for key sectoral projects (beyond the LCRP), along with additional budget support, and concessional financing for priority infrastructure needs. On the sector projects, three key initiatives were highlighted:

- The *Subsidized Temporary Employment Program* (STEP), which aims at creating new jobs in small and medium-sized enterprises through financial and non-financial incentives. The program is expected to create around 100,000 jobs and cost \$280 million over three years.
- The *Reach All Children with Education* (RACE II) program, which aims at building on the authorities’ past success in integrating Syrian children in formal schools. Under RACE I (2015–16), which fell within the LCRP framework, over 120 thousand children were helped into formal education. But this still leaves around 60 percent of Syrian refugees between the ages of 5–17 out of the school system. The second phase of the program aims at scaling up access to education to cover all children aged 3–18, both Syrian and Lebanese; and includes the construction and rehabilitation of additional capacity, and strengthening the management of Lebanon’s education system. The program is expected to cost \$350 million per year over four years.
- *Municipal support*, which aims at boosting the administrative, governance and financial resources of local municipalities to help them cope with refugee-related pressures on public services. The program encompasses direct financial support to municipal centers to encourage local economic development, create jobs and improve service delivery. In addition, the program includes the financing of projects for waste management, renewable energy and transport. The expected cost is \$200 million per year over four years.

In addition to the above project grants, the plan calls for direct budget support for the government. Amounting to \$400 million per year over five years, this assistance is to take the form of a subsidy on Lebanon’s future Eurobond issues, and is based on an estimate of the direct costs of Syrian refugees to the budget—including additional spending needs in the military, health, power, education, environment, water management, and social-support sectors.

Finally, the plan calls for concessional financing of priority infrastructure investment. With the largest identified needs in electricity generation and transmission, roads and transport, environment, and water management, estimated investment requirements total \$860 million per year over five years

Box 2. The London Conference on “Supporting Syria and the Region” (concluded)

At over \$11 billion, the scale of the proposal is ambitious, but it is hoped that the overall impact will boost growth and provide added livelihood opportunities for Syrian refugees. The authorities estimate that the combination of the proposed interventions will promote sustainable growth, and create 300–350 thousand jobs, of which 60 percent could be for Syrians.

Lebanese Authorities: Requested Funding, 2016-20

(USD million)

	2016	2017	2018	2019	2020	Total
Sectoral Grants	2,480	610	650	670	550	4,960
LCRP	2,480	-	-	-	-	2,480
STEP	-	60	100	120	-	280
RACE	-	350	350	350	350	1,400
Municipalities	-	200	200	200	200	800
Budget Support						
Interest Subsidy	400	400	400	400	400	2,000
Concessional Financing						
Infrastructure Projects	860	860	860	860	860	4,300
Total	3,740	1,870	1,910	1,930	1,810	11,260

Source: Documents presented to the London Conference.

F. Livelihoods for Syrian Refugees

18. The regularization of Syrian access to the labor market has long been controversial. As a matter of policy, Lebanon has long maintained that it is not a country of asylum, a final destination for refugees, or a country of resettlement. The permanent integration of Syrian refugees, therefore, is not viewed as a viable solution; and any measure that raises the prospect of a prolonged presence, or that fails to encourage the refugees’ ultimate repatriation, is arguably problematic. In this context, proposals to give refugees the right to work, or to become more self-reliant, have sometimes been seen as opening the door to an indefinite stay, and have been the focus of ongoing policy discussions.

19. Nonetheless, to ensure the broadest benefit from an expanding economy, the authorities at the London Conference committed to streamline regulations concerning labor-market access for Syrian refugees. Specifically, the authorities confirmed that they are:

“...seeking, in conformity with Lebanese Laws, ways to facilitate the streamlining of such regulations, including periodical waiver of residency fees and simplifying documentary requirements such as waiving the ‘pledge not to work’ requirement for Syrians, and, by so doing, ease the access of Syrians to the job market in certain sectors where they are not in direct competition with Lebanese.”

20. Current regulations restrict the ability of refugees to legally enter the labor market, and so may hamper their ability to establish a secure livelihood. Notwithstanding the 1993 bilateral agreement between Syria and Lebanon, in December 2014 the Ministry of Labor issued Decree 197, limiting Syrian participation in the formal labor market to three sectors (agriculture, construction, and cleaning services). For the most part, these are sectors where competition with local Lebanese is less intense, and where Syrian migrants have traditionally played a substantial role. In addition, however, in January 2015 the GSO introduced a new set of regulations regarding residency requirements for Syrians. These required a renewal of residency every six months for a fee of \$200.⁶ The requirements also divided applicants into two categories: (i) those who are registered with UNHCR as refugees; and (ii) those who are not. Both categories are required to pay the fee, and must also provide a certified copy of a lease agreement or real-estate deed; along with a certified declaration from a village leader that the landlord owns the property. Migrants not registered with UNHCR must provide a Lebanese sponsor for a work permit, while refugees registered by UNHCR must provide a notarized pledge to abide by Lebanese law when seeking employment.

21. Many Syrians enter the labor market informally. And while widespread Syrian participation in the informal labor market predates the current crisis, surveys suggest that the new requirements represent a sizable burden. The \$200 fee, in particular, can be prohibitive for refugee households, where the average monthly income (without assistance) is \$177 (UNHCR, 2016). And the added administrative requirements can lead to a further layer of costs. The net result has been a dramatic increase in the number of Syrian refugees without a valid residency permit, from 9 percent in January 2015 to 61 percent by July 2015 (Janmyr, 2016). And refugees without a valid permit are considered in breach of Lebanese law, raising the prospect of their detention by security and their possible return to Syria.

22. The authorities are exploring measures that might ease the humanitarian burden of current regulations. In surveys, refugees have cited a lack of valid residency as a key concern: not only do the new regulations force refugees to work illegally, worsening their bargaining position and increasing the risk of abuse, their inability to secure valid residency raises the ongoing possibility of arrest, restricting the mobility of refugees seeking (informal) income opportunities, and encouraging the use of child labor, as children are less likely to be held up at domestic checkpoints (Human Rights Watch, 2016). In line with their commitments at the London Conference, the authorities are considering options that would address some of these issues without compromising their underlying policy stance—that ultimately, the Syrian refugees cannot expect to remain in Lebanon indefinitely.

23. These measures must strike a delicate balance. Any regularization of labor-market access will imply some added integration of Syrian refugees into Lebanese society, perhaps shaping their incentives to return to Syria (or to seek resettlement elsewhere). But Syrian refugees are not in Lebanon by choice, and surveys confirm that most want to return home at the earliest opportunity. Humanitarian considerations aside, if these refugees are to remain in Lebanon for at least some

⁶ The \$200 fee existed prior to the 2015 regulations, but Syrian migrants could routinely avoid the fee by temporarily leaving the country and then receiving a new entry stamp at no charge. This option is no longer available as a result of the entry requirements introduced in 2015.

time, their ability to secure a stable livelihood would reduce their drain on Lebanon's budget, and would ease their claim on the humanitarian resources of the donor community. The latter would then allow greater scope for the stabilization of Lebanese host communities. Moreover, the potential impact on repatriation incentives is unclear. International experience suggests that self-reliant refugees, who have been able to enhance their skills while in exile, are often able to return to their origin country more rapidly (World Bank, 2015).

G. Conclusions

24. The Syrian refugee crisis is a profound challenge, both for Lebanon and for the international community. The scale of the inflow into Lebanon has few, if any, international parallels, and Lebanon's response so far is a testament to both its generosity and resilience. But the country cannot be expected to bear this burden on its own. The authorities have outlined an ambitious plan that centers critically on attracting sufficient support to boost employment and growth—meeting the livelihood requirements of refugees while simultaneously addressing the increasingly critical needs of Lebanon's host communities. The donor response is as yet uncertain, but the recent London Conference and New York Summit suggest that the international community clearly appreciates Lebanon's role in providing a universal public good in difficult circumstances, and that they stand committed to a joint effort in their common interest.

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CONFLICTS AND LEBANON'S CAPITAL STOCK¹

In recent decades, Lebanon's capital ratios have been affected by two types of conflict—those directly affecting its territory and those that, while outside its territory, have had important spillovers. Lebanon's civil war (1975–1990) as well as the July 2006 conflict occurred inside its territory, resulting in the destruction of physical capital and overall reduction of its capital stock. The most recent conflict, the Syrian civil war, is largely occurring outside Lebanon's borders. Still, it has had just as profound of an effect on Lebanon's capital ratios, through a marked drop in investment and a multi-year influx of refugees. These developments have decreased the capital-labor ratio, and so have helped prompt a fall in economy-wide output per worker. Restoring Lebanon's production capability and living standards in these circumstances will require additional capital—highlighting the need for an improved investment climate, but also underscoring the potential gains from addressing Lebanon's public investment gap.

A. Motivation

1. This paper seeks to assess the impact of conflicts in (and around) Lebanon on its capital stock. An examination of capital-output and capital-labor ratios shows the profound impact of both the long civil war, the 2006 war with Israel, and more recently and still ongoing, the Syrian crisis, on Lebanon's capital endowment. These conflicts have had an impact on both the level of capital stock through depreciation and lost capital growth, as well as the overall and per-capita output level (GDP). While the quantitative effects on GDP (embedded in the data) and the qualitative effects on capital have been studied in the past,² the effects on the overall physical capital stock and its long-run implications have received less attention.

2. There is no doubt that conflicts—though their direct physical destruction—have a profound effect on capital, and therefore, production. During the month-long 2006 conflict, Lebanon suffered extensive destruction, valued at \$9.4 billion, of which \$3.5 billion specifically to infrastructure.³ Damage assessments during the 15-year civil war are harder to come by, and rely mostly on anecdotal evidence. However, the fact that the war was fought almost entirely in Lebanon, and with the heavy use of land mines and car bombs, implies a large degree of human and physical capital destruction.

¹ Prepared by Gregory Basile (MCD).

² See Eken and others (1995).

³ The destruction included 15,000 homes and over 900 commercial structures, while infrastructure damage affected 400 miles of roads, 80 bridges, and the international airport ("Mideast War, by the Numbers" *The Washington Post*, August 17, 2006).

3. Perhaps less documented are the spillovers on capital ratios associated with the Syrian crisis. In this connection, two distinct—though equally relevant—impacts have directly affected growth. In the short term, the inflows of refugee have increased the labor supply, lowering the capital-labor trajectory (by increasing the ratio’s denominator). Over the medium term, however, the most significant drivers stem from lower investment and GDP (thus directly lowering the ratio’s numerator).

4. More specifically, three main channels come into play:⁴

- **A large number of displaced people** fleeing violence to neighboring countries, noticeably increasing the labor force seeking low-skilled employment. In total, as of February 2016 4.7 million people had fled Syria to its neighboring countries of Iraq, Jordan, Turkey, and Lebanon.⁵
- **Weakened economic confidence** by the presence of a large conflict on Lebanon’s borders, which has increased security concerns. Two economic sectors, tourism and trade, are particularly vulnerable to security risks.
- **Worsened social cohesion** reflecting further fractionalizing of the policy-making framework. One highly visible example was Lebanon’s inability to elect a president for over two years.

B. Methodology

5. As a key step in estimating Lebanon’s factors of production, the Perpetual Inventory Method (PIM) is used to determine the capital stock over time. Our starting point is a law of motion for capital, where the real capital stock this period is the real capital stock from last period, *less* depreciation *plus* real investment in this period (see Annex). Investment (or gross capital formation) data can be obtained readily from national accounts,⁶ though a key challenge is obtaining reliable estimates for both the initial level of the capital stock and a time series for depreciation. The latter is especially challenging for a country like Lebanon that has faced large conflicts in recent history.

Four Capital Stock (K_t) Series	
Variable	Baseline
Unadjusted Scenario ($K_0=1970$)	Using Penn World Table’s (PWT) original depreciation rates
Alternative Scenario ($K_0=1970$)	Using PWT’s depreciation rates, modified for average structural share in capital mix and using baseline conflict coefficients from 1975-1990 and 2006
Unadjusted Scenario ($K_0=1990$)	Using Penn World Table’s original depreciation rates. Starts with a K/Y ratio of 2.6 in 1990 to avoid data issues during Civil War
Alternative Scenario ($K_0=1990$)	Using PWT’s depreciation rates, modified for average structural share in capital mix and using baseline conflict coefficients for 2006. Starts with K/Y ratio of 2.6 in 1990 to avoid data issues during Civil War

⁴ See Rother and others (2016).

⁵ See Gobat and Kostial (2016).

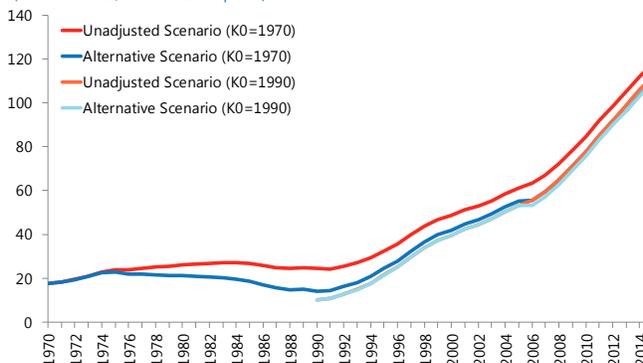
⁶ For our calculations, the real investment data comes from the IMF World Economic Outlook database (gross capital formation in 2005 U.S. dollars).

Therefore, to estimate the capital stock we need to take into account the physical destruction associated with episodes of conflict.

6. Two different measures for the capital stock, taking into account Lebanon's recent conflicts, point to similar results.

The first is an unadjusted capital stock using the Penn World Table's (PWT) depreciation rates and the Fund's real GDP and gross capital formation (for investment) data. The second measure is based on an alternative scenario with depreciation rates adjusted for conflict years 1975–90 and 2006. This exercise is repeated for different initial starting points (1970 and 1990), primarily as a check for robustness, but also to avoid potential data issues prior to 1990 (see *Table 1 above*).⁷ Under these assumptions, the estimates of Lebanon's final capital stock in 2015 has a relatively narrow range between \$110 and \$118 billion 2005 dollars (\$112 to \$109 billion with a 1990 starting point, see figure).

Lebanon's Capital Stock (K_t), with Alternate Series
(In billions USD, constant 2005 prices)



Sources: Penn World Table (PWT), IMF World Economic Outlook (WEO), International Financial Statistics (IFS), U.S. Bureau of Economic Analysis (BEA), Lebanon's Central Administration of Statistics (CAS), and IMF staff calculations.

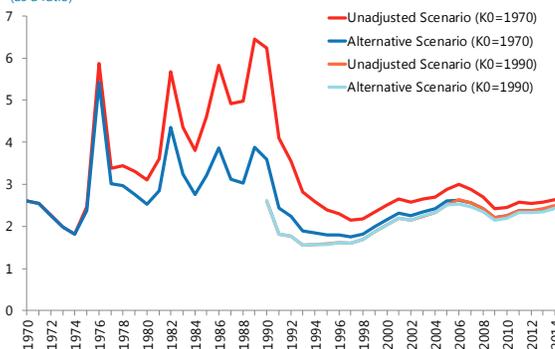
C. Conflict and Lebanon's Capital Ratios: Key Findings

Capital-Output Ratio (K/Y)

7. The greatest variability in Lebanon's capital-output ratio occurred during the civil war years (1975–90). This is particularly evident in the adjusted capital series as the unadjusted series accounts for the large variability in output, but not the sizable physical destruction of capital during the war. However, the variability declines over time (even accounting for the 2006 Israeli conflict, see figure).

8. After the civil war, Lebanon trended upward toward a capital-output ratio of about 3. However, this trend was halted in 2006 by the conflict, which saw capital stocks decline through both decreased investment, as well as an increasing depreciation rate in our alternative series. Once the effects of the conflict wear off, the trend appears to continue back upward with confidence increasing, particularly relative to the outside (global) economy which would later experience the Global Financial Crisis.

Lebanon's Capital-Output Ratio (K_t/Y_t), with Alternate Series
(as a ratio)



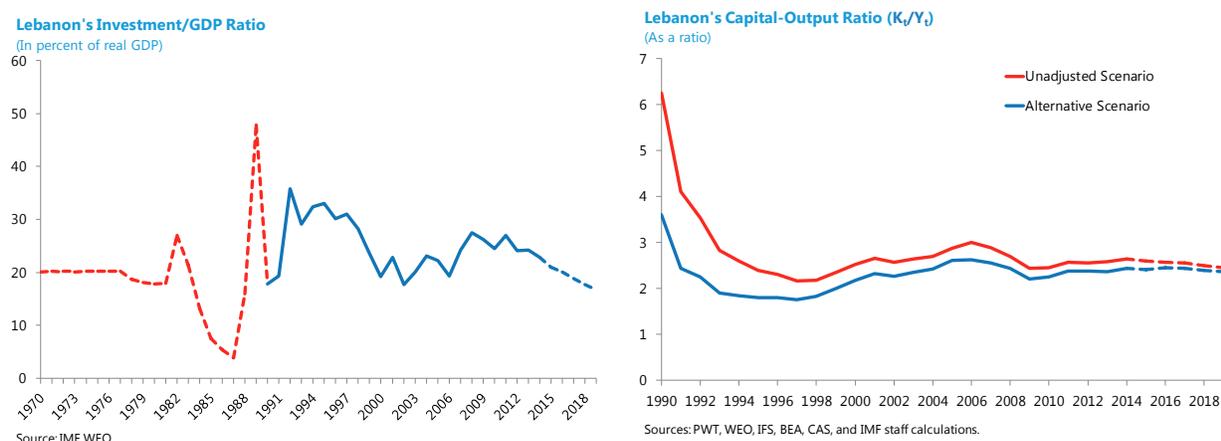
Sources: PWT, WEO, IFS, BEA, CAS, and IMF staff calculations.

⁷ WEO investment data appears potentially problematic in the pre-Civil war data, with the investment-GDP ratio set at a constant level of 20 percent for 1970–78.

9. With the Syria conflict, staff projections suggest that Lebanon’s capital-output ratio is entering a new phase, with levels that are stable or gently declining (see figure). The implications are that Lebanon’s economy has entered a challenging period, where productivity will see little to no gains. The shift is brought about by a projected slowdown in the investment to GDP ratio (see figure), where the growth in investment is slower than output growth overall.⁸

10. The Syrian crisis is contributing to the decline in investment because of increased security concerns. These have affected Lebanon’s output directly through tourism and trade, as shown by travel warnings issued by several GCC countries⁹ and by analysis done by the World Bank.¹⁰ However, the largest impact has been on confidence in the Lebanese economy. This is particularly evident as the size of investment in the economy has declined, regardless of the growth of the overall economy.

11. Increased political uncertainty has also contributed to declining investment. In particular, the continued inability to pass a budget has further contributed to the protracted underfunding of infrastructure and other public investments (see below).



⁸ Projections made by taking a three-year rolling average of year-over-year growth rates and multiplying by the prior year.

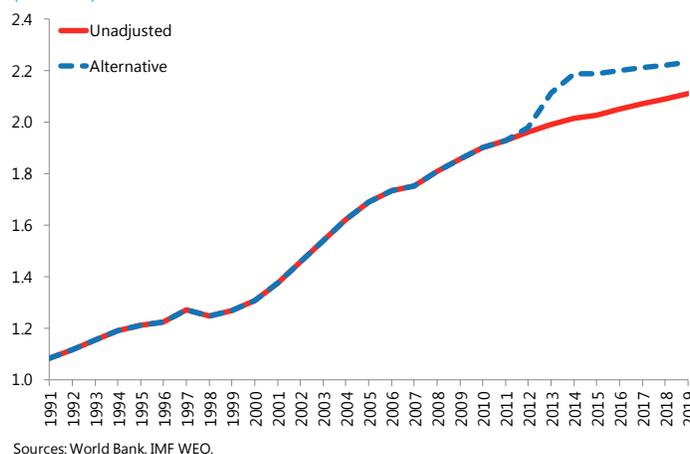
⁹ See World Bank (2013).

¹⁰ See Ianchovichina and Ivanic (2014).

Capital-Labor Ratio (K/L)

12. The estimated labor force is calculated by combining the World Bank’s employment ratio with its estimate of the total population. By itself, however, the data does not account for the impact on Lebanon’s labor force by the influx of Syrian refugees. We thus also draw from population data provided by the United Nations High Commissioner for Refugees (UNHCR) as an addition to the Bank’s total population data for years 2012–15. To get a more accurate reflection of the impact on the total employed labor force, we use International Labor Organization (ILO) survey data from 2013¹¹ on the Syrian population in Lebanon. This provides demographic data (sex and age) as well as a breakdown of labor force participation and employment rates by demographic group. We apply the 2013 survey rates to the UNHCR population totals for each year during 2012–15, and use these numbers to add to the baseline (see figure).

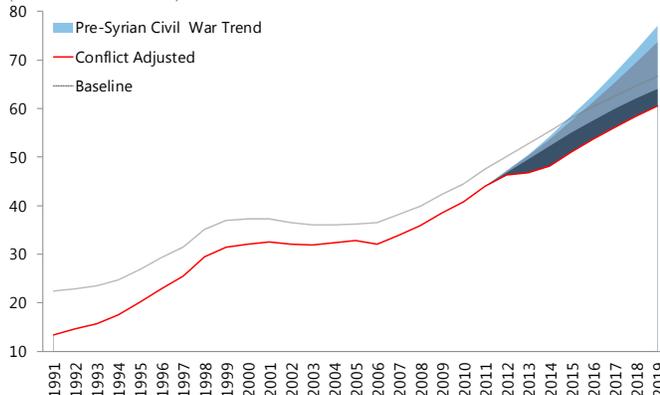
Lebanon’s Employed Labor Force
(In millions)



It is worth noting that this macro-level picture of Lebanon’s labor force does not account for the relative mix of high-skilled to low-skilled/informal workers—refugees represent a larger increase in the latter category compared to the former.

13. Lebanon’s capital-labor ratio shows a general increase since the early 1990s, albeit with a decade long plateau (1998–2006). The capital stock has increased markedly since 1990, with a capital labor ratio that has tripled (see figure). However, the plateau in the middle (1998–2006) is a significant anomaly, caused by both: (i) a slowing in the growth of the capital stock, due to the end of the postwar reconstruction boom’s high spending on public capital,¹² (ii) and a fast growing labor force. Our adjusted capital stock value also shows a visible decline in the ratio during the 2006 Israeli conflict, but we see a return to an increasing capital-labor ratio between 2007–10, a period of exceptionally high investment and growth.

Lebanon’s Capital-Labor Ratio, 1991-2019
(in thousands 2005 USD)

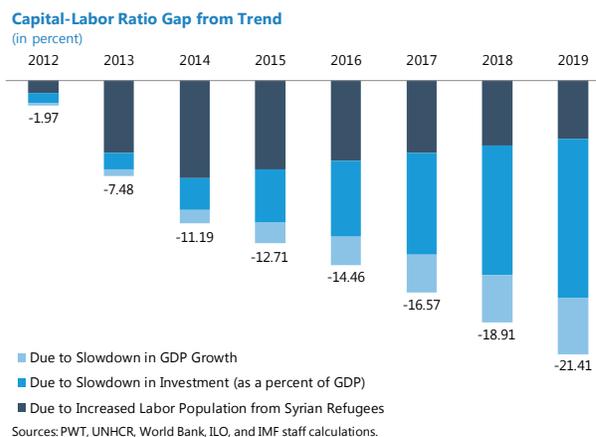


¹¹ See International Labour Organization (2013).

¹² See Dibeh (2005).

14. The Syrian civil war, along with its influx of refugees into Lebanon, has significantly decreased the capital-labor ratio from its 2011 trajectory. Looking at the past few years, and

projecting forward,¹³ we can separate out different factors underlying this decline (see figure). Firstly, and most obviously, the influx of Syrian refugees has resulted in an increase in the labor force. Secondly, the Syrian conflict has adversely affected investment and growth, and so has reduced the growth rate of the capital stock. This latter term can be broken down further into two components: (i) the drop due to a fall in the investment-to-GDP ratio (at unchanged GDP growth rates); and (ii) the drop due to lower GDP growth (at an unchanged investment-to-GDP ratio).



15. In the short term, the refugee effect on the supply of labor is the most significant cause of Lebanon's reduced capital-labor trajectory. Between 2011 and 2014, we calculate that the labor force population grew by around 14 percent, compared to the non-Syrian refugee adjusted baseline of 5 percent. This is not only considerably higher than the baseline, but is also a significantly higher growth rate in the labor force than during the immediate pre-Syrian civil war years. The average 3-year growth rate between 2007 and 2011 was roughly 7 percent.

16. Looking forward, however, the most significant drivers come from lower investment and GDP. As the impact from the sudden influx of Syrian refugees dissipates after 2015, the share of lost capital-labor ratio due to the investment slowdown grows rapidly. As confidence continues to wane as well the continuing Lebanese economic imbalances, growth will continue to lag below potential and investment as a share of the economy will continue to fall. As shown above, investment-to-GDP falls steadily from 27 percent in 2011 to 17 percent in 2019.

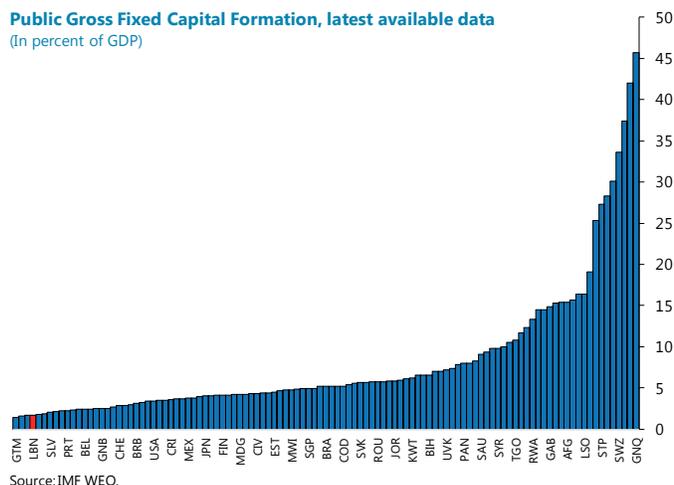
17. Lebanon's slowing capital-labor ratio points to a key policy challenge—investment. An economy's ability to accommodate a sudden inflow of refugees depends largely on its ability to match these new workers with new investment and capital—the easier it is to scale up the capital stock, the more quickly the economy will move to a more normalized trajectory, with output per worker approaching pre-crisis trends (see Selected Issues Paper on the Syrian Refugee Crisis). In advanced economies with predictable migrant inflows, this scaling up generally takes place in a few years (Dadush, 2014). But Lebanon's case is more challenging. Aside from the sheer scale of the refugee inflow, Lebanon's investment climate has a number of shortcomings. Access to finance is generally not a problem, but poor infrastructure, bureaucratic red tape, and political uncertainty have long hampered the ability of Lebanese firms to invest in new projects. Addressing this investment climate, and so boosting the private sector's ability to add to the capital stock, is now an

¹³ Projections past 2015 use three year rolling average growth rates for underlying variables, except for Syrian refugees, which use the 2014–15 growth rate for every year.

increasingly pressing priority. But perhaps more immediately, the authorities might perhaps add to capital growth directly by increasing public investment—though the fiscal space to do so is severely constrained.

18. Lebanon’s public investment is well below most countries, suggesting sizable potential gains. The average country spends roughly 8.2 percent of GDP on public investment, while Lebanon spends 1.7 percent of GDP (see figure).¹⁴ This puts Lebanon as the fourth lowest country in a sample of 111 countries, including low-income countries, emerging markets, and advanced economies. In this context, the need for greater public investment is compelling—infrastructure quality, in particular, has eroded since the end of the civil war, and regularly features in business surveys as a key constraint to growth. A modest increase in Lebanon’s public investment, therefore, moving the economy closer to global norms, could make a substantive difference in mitigating the expected decline in the capital-labor ratio.

Public Gross Fixed Capital Formation, latest available data
(In percent of GDP)



D. Conclusions

19. Lebanon’s capital ratios have been affected by two types of conflict, those within its borders and those outside its territory. Lebanon’s civil war (1975–90) as well as the July 2006 conflict occurred inside its territory, resulting in the destruction of physical capital, and reducing the overall capital stock. The civil war’s end saw a large peace dividend from high current and capital public spending that quickly stabilized Lebanon’s capital-output ratio, and saw a rapid rise in its capital-labor ratio.

20. However, the Syrian civil war has had a profound effect on Lebanon’s capital ratios. The spillover has led to a marked drop in investment and a large, multi-year influx of refugees. These developments have decreased the capital-labor ratio, and so have helped prompt a fall in economy-wide output per worker. The refugee crisis provided the greatest immediate effect, while the medium term reveals a larger problem.

21. As slowing investment becomes a greater drag on Lebanon’s per-capita productivity, restoring Lebanon’s living standards will require greater investment. This highlights the need for an improved investment climate, but also underscores the potential gains from addressing

¹⁴ The council for development and reconstruction is an implementing agency for the government's investment projects that are externally financed. While the loans are reflected in public debt data, the investments themselves are not reflected in the public investment numbers.

Lebanon's large public investment gap. A lower capital-output ratio also points to greater potential benefits from increased investment. Similar to the end of the Lebanese civil war, which brought about the space to implement large capital spending, the response to the Syrian civil war will also require such action.

22. Fiscal rebalancing, away from consumption and toward capital spending, is better suited over outright spending increases. Drawing from the IMF's 2016 Article IV report's fiscal recommendations and DSA finds, Lebanon does not have the fiscal space for outright spending increases, unlike the post-Lebanese civil war. Infrastructure spending would be particularly helpful, given the constraints Lebanon's current infrastructure creates on growth. This would not only boost investment, but also boost confidence as it would show that Lebanon's government is up to the task of addressing its public debt and economic imbalances.

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Annex I. Measuring Capital Stock in Lebanon

Overview

1. We use the Perpetual Inventory Method (PIM) for determining the capital stock over time (K_t) for Lebanon. Our starting point is the law of motion for capital:

$$K_{t+1} = (1 - \delta_t)K_t + I_{t+1}$$

such that real capital stock in the next period is the net of depreciation of the real capital stock from this period plus the real investment in that next period. For such an exercise, while investment (or gross capital formation) data can be obtained from national accounts,¹ a key challenge is getting good estimates for both the initial level of capital, and the time series of depreciation rates. The latter is especially challenging for a country like Lebanon that has faced large conflicts in recent history. Therefore, to estimate the capital stock one must take into account the physical destruction associated with war episodes. In this section we describe our methodology and ways in which we tackled some of these empirical challenges.

2. As a starting point, we use cross-country relationships to estimate an initial capital stock level of Lebanon in both 1970 and 1990. Following the approach of Penn World Tables (PWT), we estimate the initial capital stock based on the assumption that capital-output ratio of Lebanon at the beginning of the period would be close to the cross-country average of similar countries. That is, PWT finds that countries with little information and communication technology (ICT) assets have a capital-output ratio of about 2.6 over time. While this estimate is subject to a wide confidence interval, as we will see later, the choice of initial capital stock has little impact on future capital stock levels (particularly over decades). This is due to the compounding effect of depreciation of the initial level of capital. In addition, we also performed the same operations starting in 1990, in order to flush out potential data issues stemming from the civil war in Lebanon.

3. We adjust depreciation rates data from PWT to take into account potential measurement errors, and also the impact of physical destruction due to conflicts.

PWT 8.0 constructs a country-specific time series of depreciation rates. They construct the depreciation rate for each country as a weighted-average of depreciation for different asset classes.² The main asset class across most countries is *structures*, which includes real estate, buildings, etc. Since this asset class typically has a much lower depreciation rate than other asset classes (e.g., machinery) the average depreciation rate of a country is sensitive to the share of structures in the capital stock. For our exercise, therefore, we take the PWT depreciation rates as baseline, but also

¹ For our calculations, the real investment data comes from the IMF World Economic Outlook database (gross capital formation in 2005 U.S. dollars).

² The depreciation rate is determined by: $\delta = \sum_a (P_{ait} * \delta_a * K_{ait-1})$; P= asset deflator, K=investment, a=asset type, i=country, and t=year

consider alternate scenarios in which the share of structures is higher or lower than that estimated by PWT. In addition, we adjust the depreciation rate from 1975-1990 (the civil war) and 2006 (the Israeli war) to account for the increased destruction of capital, using a “conflict coefficient”³. The choice of this coefficient is based on *a narrative approach*, whereby we adjust the depreciation rates to account for the size of physical destruction that occurred during this period. Since no formal study—to the best of our knowledge—was conducted to estimate the physical damage, we rely on various commentaries from experts in the country and also from international institutions to identify a plausible range for the two conflict episodes.

4. After our adjustments to Lebanon’s depreciation rate, the average from 1970–2011 moves from the median to the upper end, for all countries analyzed by PWT. Specifically, Lebanon is 86 out of 166 countries, or the 52nd percentile with an average value of 3.87 percent (see figure). However, if we account for conflict-related destruction of capital into the depreciation rate, the average value increases to 3.92 percent (54th percentile), with the 2006 Israeli conflict; and 5.55 percent (97th percentile) when accounting for the civil war as well.

Countries' Average Depreciation Rate (1970-2011)
(in percent)



5. The different scenarios for our alternate capital stock series are described below.

Table 2 summarizes the three scenarios with a baseline (given data), as well as low and high scenarios, where the variables being altered will either be lowered or raised by a pre-determined amount. The next three sections discuss the sensitivity of the capital stock series to varying the three different key assumptions as described in the table below.

Key Ingredients for Capital Stock			
Variable	Baseline	Alternative (Low)	Alternative (High)
Initial Capital Stock (K_0)	PWT	PWT's-25%	PWT's+25%
Depreciation Rate for heavy conflict years (1975-1990, 2006)	*PWT's	(.75*)*PWT's	(1.25*)*PWT's
Share of Investment in Structures	PWT's=%	SMS ^{1/} *0.75	SMS=100%

1/ SMS = percent of manufacturing gross capital formation in use that is considered structural according to IMF staff calculations of PWT's depreciation rates
Sources: Penn's World Table (PWT), Lebanon's National Accounts

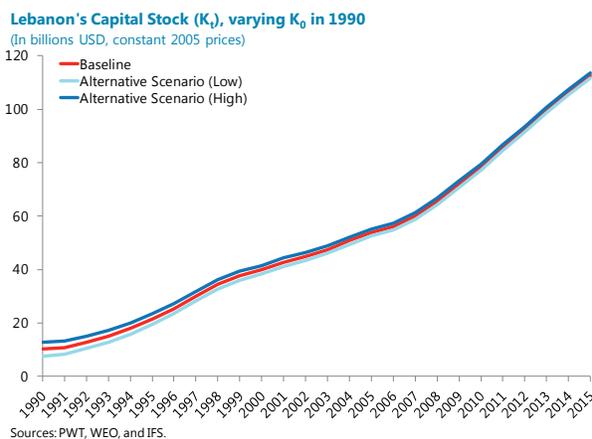
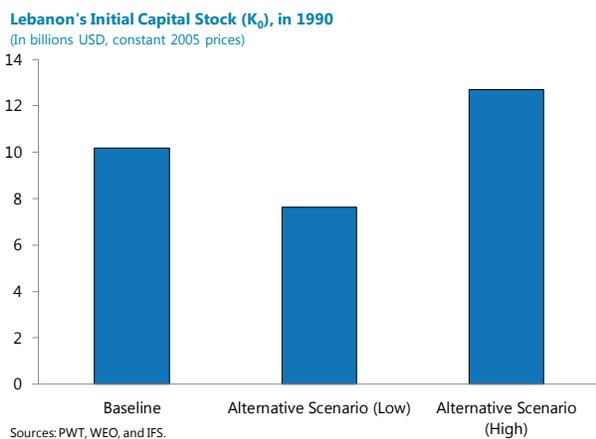
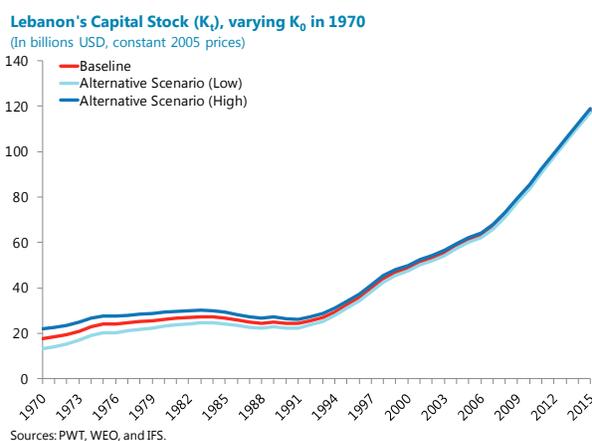
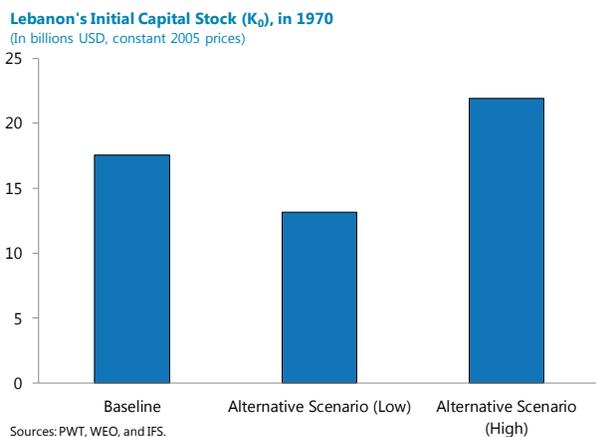
³ Conflict coefficient = $\frac{1-(K[t=2006]-[Damage\ to\ capital\ from\ conflict]-I[t=2006])\div K[t=2005]}{\delta[t=2006]}$

6. Lastly, we extend depreciation rate data past 2011 to 2015 by using prior three year rolling-average trends. This creates a potentially artificially steady depreciation rate; however, the given data shows an already steadying depreciation rate between 2009 and 2011. Along with published IMF gross capital formation data for added investment, this allows us to project the capital stock out to 2015.

Sensitivity of Capital Stock to Changes in Initial Capital Stock Assumptions

7. Varying the initial capital level has little effect on the future time path of capital. We consider the impact of changing the initial capital stock (K_0) assumptions by changing the baseline capital-output ratio from 2.6 to be either 25 percent higher or lower, such that the ratios under the three scenarios are given by: (i) $K_0=Y_0*2.6$, (ii) $K_0=(Y_0*2.6)*.75$, and (iii) $K_0=(Y_0*2.6)*1.25$. This gives us an initial capital stock in 1970 ranging from 13 to 22 billion 2005 US dollars (see figure). We then use each of these values as inputs for PIM to get the capital stock over time (see figure). The same task is performed starting in 1990 as well (see figures).

8. The effect on the capital stock diminishes as time progresses. This is due to the exponential decay of initial capital caused by the depreciation rate, which holds true even when the time window is shortened by 20 years to 1990. Thus, even though the initial capital stock in 1970 ranged between 13 to 22 billion in 2005 U.S. dollars under the three scenarios, the capital stock in 2015 ranged only between 117 to 119 billion.



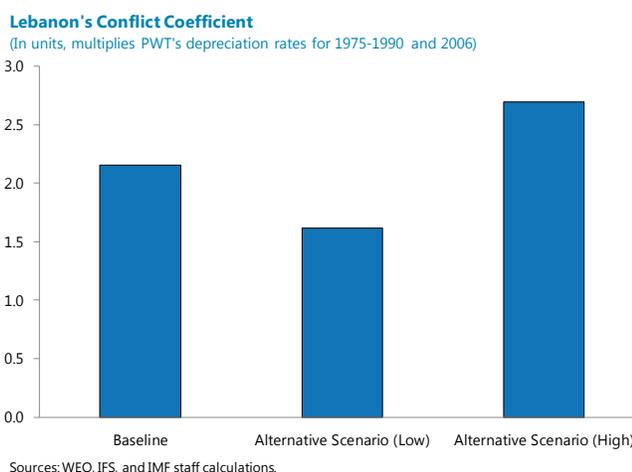
Sensitivity of Capital Stock to Changes in Assumptions of Conflict Destruction

9. One way that the capital stock is affected by conflicts is through the decrease in the level of new investment. The decrease in the level of investment, accounted through PIM, during conflict years comes from draining government spending on infrastructure to war resources as well as private investment drying up due to: 1) uncertainty, 2) capital flight, and 3) increased dissaving if the population believes the conflict is a short-term event.

10. The second way conflict decreases capital stock is by the physical destruction of pre-existing capital. The PIM formula does not account for this, nor does PWT's depreciation rates (except in the conflict's effect on the relative capital mix). This is because under their method, the level of capital is determined by the Commodity-Flows Method (CFM = production + imports – exports, for each asset type), and therefore only accounts for the creation-side of capital.

11. Therefore, we set out to account for the destruction of capital by conflict to get a more accurate measure of the capital stock. We did this by accounting for the conflict-related destruction of capital through adjusting the depreciation rate by a fixed ratio. The ratio was determined by taking the reported level of destruction due to the Israeli conflict on infrastructure and subtracting that from the capital stock (pre-conflict adjusted) and determining the new depreciation level using PIM. We then determined a coefficient by taking the ratio

between the new (conflict adjusted) depreciation level and PWT's reported depreciation level for that year⁴ (see figure). This amounts to a drop in the capital stock of roughly 3 billion in 2005 U.S. dollars (or 15 percent of GDP in 2006). We then apply this ratio to the depreciation rates from 1975 to 1990 to account for physical capital destruction, partly because of the lack of monetary destruction data during this period as well as anecdotal evidence that the Israeli-conflict was similar to the civil war in terms of destructive capability.

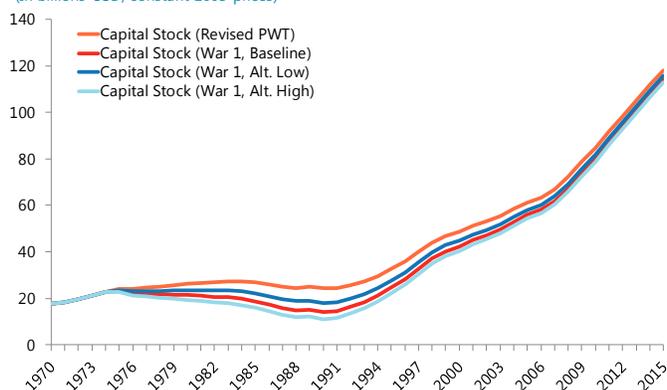


⁴ We treat the relative level of destruction from Lebanon's two major conflicts, the civil war (1975-1990) and the Israeli conflict (2006), as roughly equal due to lack of data for the civil war's destruction to capital. This may not be the case though, as some scholars note that international wars (if fought in that country) tend to be more destructive than civil wars (Collier, 1999).

12. The stock of capital is shown to have decreased because of the civil war, the Israeli conflict, and both combined; though the effects diminish over time. The figure below shows a large effect on the capital stock immediately after the end of the civil war, with the capital stock decreasing 42 percent. However, there is little consequence to the 2015 capital stock from the civil war as it was far back enough for the effects to be washed out. The following figure shows even less effect from the Israeli conflict because it was a one-off event concentrated in a few months of 2006. As expected, the last figure's combined effects show a larger, though still relatively small impact on the final level of capital in 2015. However, if we take the worst combined scenario and compare it to the baseline with no conflict adjustment, we see a 6 percent reduction in the capital stock for 2015.

Lebanon's Capital Stock (K_t), varying Depreciation Rate (δ) for the Lebanese Civil War ending in 1990

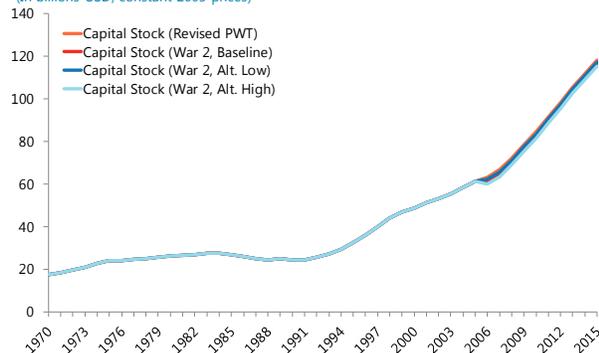
(In billions USD, constant 2005 prices)



Sources: PWT, WEO, IFS, and IMF staff calculations.

Lebanon's Capital Stock (K_t), varying Depreciation Rate (δ) for the Israeli-Lebanese Conflict

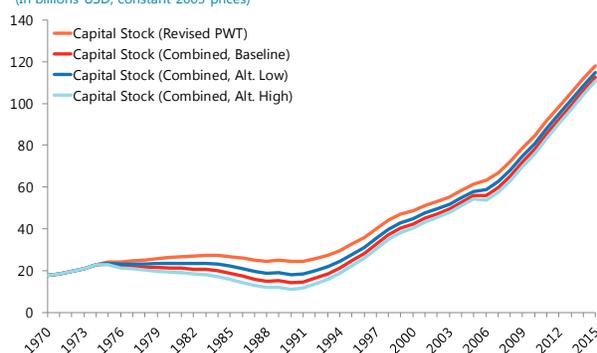
(In billions USD, constant 2005 prices)



Sources: PWT, WEO, IFS, and IMF staff calculations.

Lebanon's Capital Stock (K_t), varying Depreciation Rate (δ) for the Civil War and the Israeli-Lebanese Conflict

(In billions USD, constant 2005 prices)



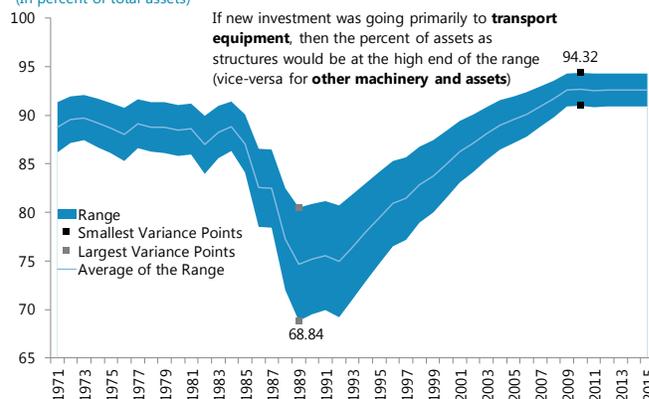
Sources: PWT, WEO, IFS, and IMF staff calculations.

Sensitivity of Capital Stock to Changes in Structures Share of Capital

13. Lastly, we varied the relative weighting of asset types that comprise PWT's depreciation rates for Lebanon in order to test the robustness of δ . First we constructed a time series based on the three main asset types that construct PWT's depreciation rate for Lebanon 1) structures, with an average depreciation rate of 2.0 percent; 2) equipment and transportation, at 18.9 percent; and 3) other machines and assets, at 12.6 percent. The first figure shows the share of capital in structures over time, depending on the relative mix of equipment/transportation and other machinery assets. We then manipulate the relative share of assets around the average line by taking the gross capital formation use data for Lebanon in 2011 and multiplying the implied amount of manufacturing that is structural by +/- 25 percent. We then apply this across the time series using the relative ratio and multiplying the average share of capital in structures by the high and low ratios.

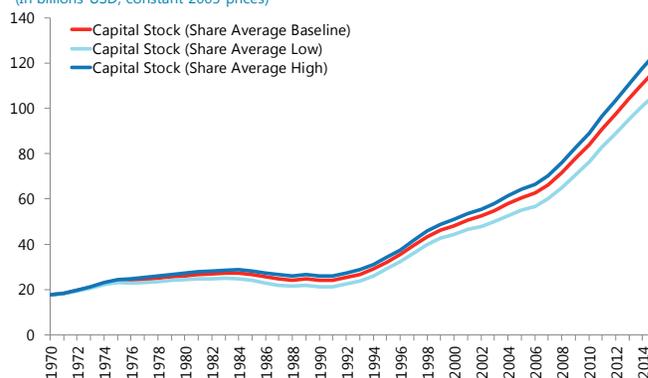
14. We find that the overall capital stock is relatively sensitive to alterations in the capital mix (see middle figure). Using the different series of depreciation rates, we find that the high and low end change the 2011 capital stock by +6.10 and -8.87 percent, respectively.⁵ This implies that the relative share of structures in Lebanon capital stock is highly important. However, when we measure all of PWT's available depreciation rates across entity and average across time, we find Lebanon is not an outlier in either direction (see last figure). Therefore, using PWT's implied capital mix as our main scenario may be the best course of action, until better analysis can be conducted on this issue.

Range of Percent of Assets as Structures, given δ from PWT
(In percent of total assets)



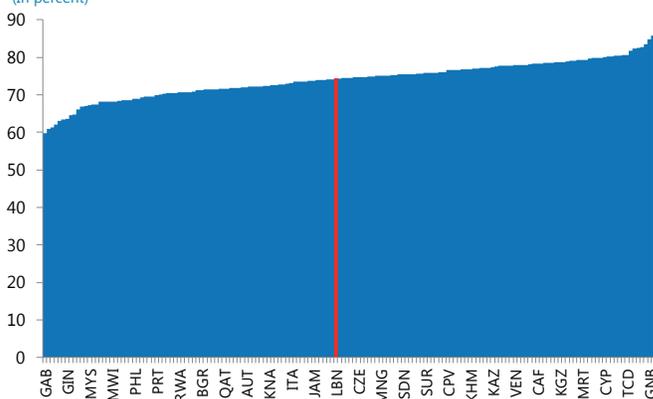
Sources: PWT and BEA.

Range of Capital Stock (K_t), varying based on different proportions of structures in total asset mix
(In billions USD, constant 2005 prices)



Sources: PWT and CAS.

Range of Average Share of Capital in Structures, by country
(In percent)



Sources: PWT and BEA.

⁵ Last year of analysis is 2011 because Penn World Table's depreciation rates do not go past 2011.

THE POTENTIAL OF HUMAN CAPITAL IN LEBANON¹

Lebanon's knowledge economy sector offers the promise of harnessing the country's strong endowment of human capital and the presence of several internationally-known universities. It could potentially be a source of growth and employment of skilled labor in the future, and help in diversifying Lebanon's economy. Developments in this sector could be important as the country's traditional growth sectors appear to suffer from continued slowdown, innovative activity remains low, and significant brain drain deprives the country of significant talent. However, while various steps have been taken to promote the knowledge economy, key challenges remain for the sector to take off in a sustainable way.

A. Motivation

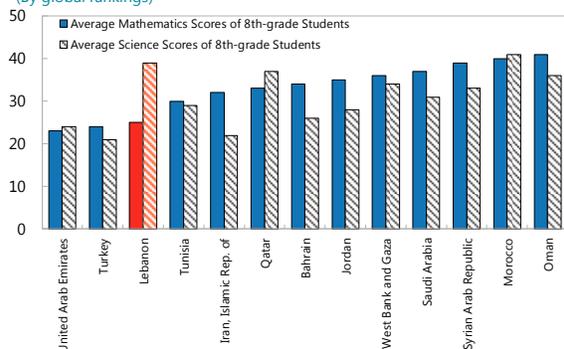
1. The traditional growth drivers in Lebanon have stalled, leaving the economy in search for alternative sources of growth. In the past, real estate, construction, and tourism sectors have been the primary drivers of economic growth in Lebanon. However, since the onset of the Syrian crisis in 2011, these sectors have significantly cooled down, accounting for a significant reduction in economic growth. In addition, as these traditional sectors crucially depend on confidence, security, and exogenous factors largely outside the control of policymakers, high reliance on them makes the economy particularly vulnerable to shocks and subject to significant volatility. Finally, even in earlier periods of high growth, Lebanon did not generate sufficient jobs to absorb new high-skilled graduate. For all these reasons, the Lebanese economy could look to diversify away from its traditional sectors, by exploiting its areas of comparative advantage to promote long-run, job-rich and sustainable growth.

B. Strong Endowment of Human Capital

2. Lebanon has an endowment of a talented student population and several top universities in the Arab region. According to the "Trends in International Mathematics and Science

Latest Rankings based on TIMSS

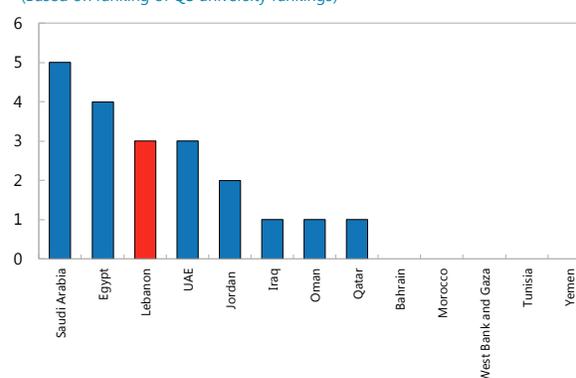
(By global rankings)



Source: Trends in International Mathematics and Science Study (TIMSS, 2011).

Number of Top 20 Universities in Arab Region, 2015

(Based on ranking of QS university rankings)



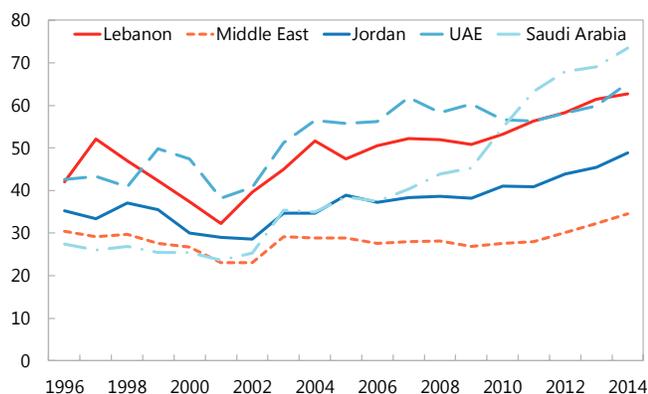
Source: QS University Rankings, 2015.

¹ Prepared by Ruchir Agarwal (MCD). We thank Marianne Hoayek of the Banque du Liban for useful discussions and feedback on these issues.

Study” (TIMSS)—an international assessment of mathematics and science knowledge of students—Lebanese 8th graders performed comparatively much better than most peers in the region in the subject of mathematics (although less so in science).² As for higher education, Lebanon also has several strong academic institutions with strong international reputation. Based on the 2015 QS University Rankings, Lebanon has three universities in the top 20 universities. This is a remarkable achievement, considering that the countries in first and second position, namely Saudi Arabia and Egypt, have a much larger population size—about 30 million and 53.5 million respectively compared to 4.5 million people in Lebanon.

3. Lebanon also continues to improve its scholarly production with strong ties to the international research community. Over the past 20 years several countries in the Middle East have boosted their scholarly production by 3 to 5 times (as measured by the number of citable scholarly publications per population size). The growth in scholarly production has been particularly strong in Saudi Arabia, while it is showing signs of peaking in Jordan and UAE. By comparison, Lebanon continues its strong growth in scholarly production and now is more productive than both Jordan and UAE in terms of number of publications per population. Furthermore, evidence from publication suggests that Lebanon continues to be well-connected to the international research community. The percent of scholarly publications with at least one international collaborator is at about 60 percent in Lebanon, which is comparatively much higher than the average seen in the Middle East.

Scholarly Publications with at Least One International Collaborator
(In percent)



Source: Scopus.

C. Limited High-Tech Economic Activity

4. Despite the strong endowment of human capital high-tech economic activity remains low in Lebanon. A few indicators point to the under-utilization of human capital, including patenting activity, size of the Information and Communication Technology (ICT) sector, and degree of collaboration between university and industry.

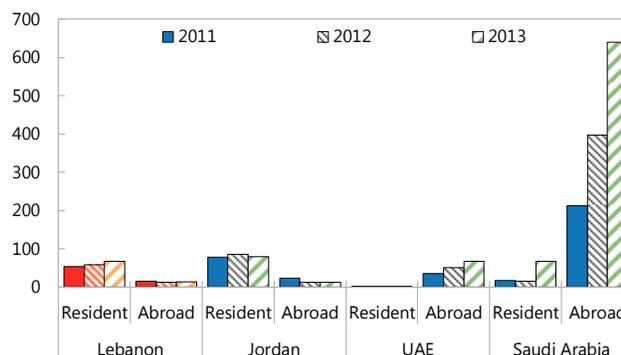
² Trends in International Mathematics and Science Study, 2011.

5. Commercialization of innovation as measured by patenting activity remains low in Lebanon.

Patent grants is one measure of commercialization of innovation since it is used as a defensive strategy by firms or inventors to restrict the use of the invention.³ Data on patenting activity from the World Intellectual Property Organization indicate that Lebanon has very low patenting activity compared to its peers both at home and abroad. Although the usual caveats to interpret patent data apply (Griliches, 1990), this likely reflects the low degree of commercial activity in high-tech sectors in Lebanon at present.

Patent Grants

(Number)



Source: World Intellectual Property Organization.

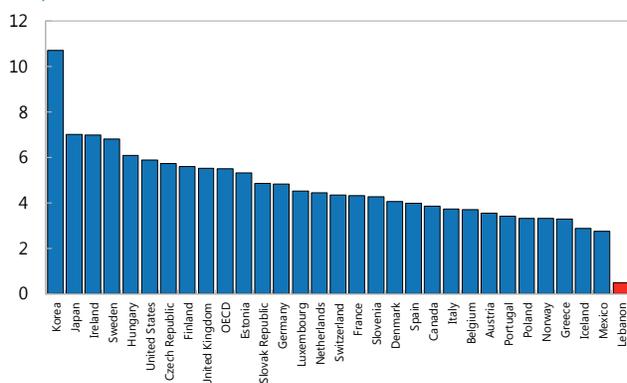
Notes: Resident refers to domestic filings; Abroad refers to filings going out to other countries.

6. The low degree of high-tech activity is also reflected in the small size of the ICT sector.

The market size of the ICT sector still remains small (below 1 percent of GDP) as per data from Investment Development Authority of Lebanon (IDAL), with substantial room to catch up to all OECD countries. In this context, Lebanon scores relatively low in international rankings of ICT development such as the Network Readiness Index of the 2015 World Economic Forum (ranked at 99) and the 2013 ICT Development Rank of the International Telecommunication Union (62). These rankings suggest that while there is significant room for sizable growth in the ICT sector in Lebanon several constraints have to be removed to achieve that.

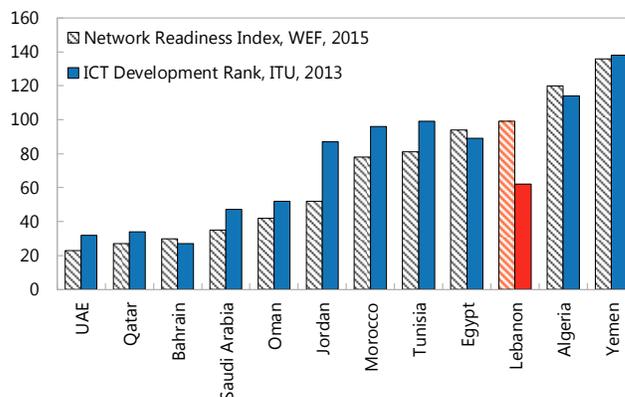
Value Added of ICT Sector, 2013

(In percent of GDP)



Sources: OECD, Investment Development Authority of Lebanon.

Rankings in ICT Development



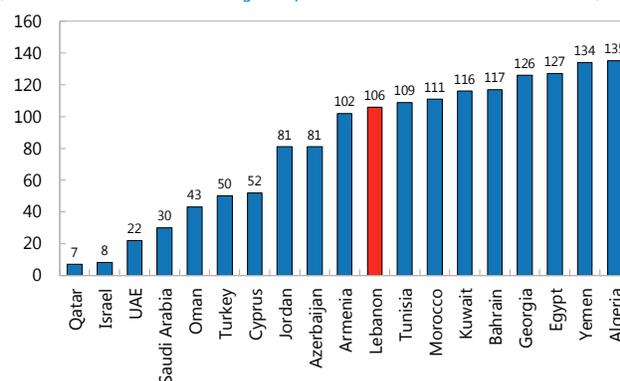
Sources: World Economic Forum, International Telecommunication Union.

³ Patent protection means that the invention cannot be commercially made, used, distributed imported or sold by others without the patent owner's consent. A feature of note is that patents are territorial rights. That is, the exclusive rights are only applicable in the country or region in which a patent has been filed and granted. For this reason, one should distinguish between the patent grants received by residents (i.e., domestic filings in Lebanon) versus patents grants abroad (i.e., filings going out to other countries from Lebanon).

7. There is also a low degree of collaboration between university and industry in Lebanon. The Global Innovation Index uses a comprehensive survey of stakeholders in each country to determine the rank for some of its subcomponents. One such subcomponent is about the degree of research collaboration between university and industry. While several countries in the region rank quite high (e.g., Qatar with a rank of 8), Lebanon receives a low rank of 106. That is, it appears that the strong human capital at the universities is not translating into greater high-tech economic activity.

University/Industry Research Collaboration Ranking

(Global Innovation Index Ranking, Sample = Northern Africa and Western Asia)



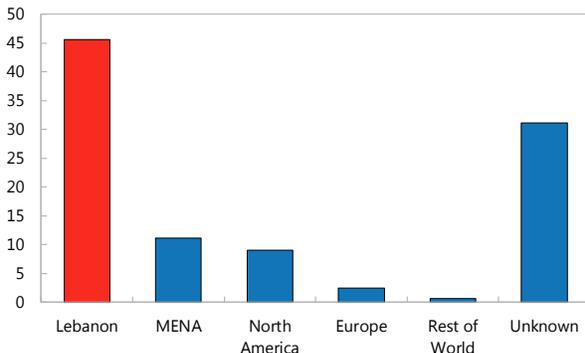
Sources: Global Innovation Index, 2014.

D. Brain Drain

8. Lebanon continues to be subject to significant brain drain. The migration dynamics of top talent can be assessed by focusing on the dynamics of the student population of the American University of Beirut (AUB) (ranked as number 2 in the Arab world by the 2015 QS University Rankings). As of 2014, only 45 percent of the entire alumni population could be traced to be living in Lebanon, suggesting a strong brain drain. This finding is also consistent with a 2014 survey of 73 top entrepreneurial firms in Lebanon conducted by Endeavor. The survey finds the key issues entrepreneurs encounter during recruitment are the scarcity of experienced candidates (especially at mid-management level) and the shortage of knowledgeable candidates (especially in the field of technology). In addition, the survey finds that 52 percent of the surveyed firms identified challenges in talent retention. Among the sample of firms that cited talent retention as a problem, over 75 percent of the firms identified brain drain as the main challenges. The report's conclusions are that even if entrepreneurs perceive human capital as available in the country, finding skilled and experienced workers remained a challenge for most of them.

AUB Alumni Distribution by Region

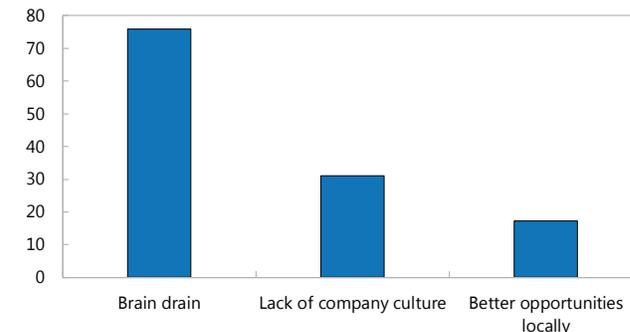
(In percent)



Source: American University of Beirut FactBook, 2014.

Main Challenges Facing the Firms in Talent Retention

(In percent, sample = conditional on firms saying that they face challenges in talent retention)



Sources: Endeavor Impact Report 2014, IMF staff calculations.

Notes: In this survey multiple responses were allowed to the firm. 58 percent of the surveyed firms said they faced challenges in talent retention. This number is used to compute the conditional response rate by dividing the unconditional response rate by .58.

E. Current Challenges

9. Given the availability of human capital in Lebanon, the knowledge economy could contribute to economic growth and employment. Experience in other countries suggests that the knowledge-intensive parts of economies tend to be the most dynamic in terms of output and economic growth.⁴

10. The central bank believes that the difficulty of accessing financing is one key impediment to the development of the knowledge economy. Venture capital is about taking a stake in an entrepreneur's idea, nurturing the business until it reaches a sufficient size, and then exiting the investment by selling it to another corporation or attracting liquidity through the public-equity markets (i.e., through an initial public offering). Venture capital solves a critical problem in financing of ideas. Typically, startups have limited collateral that they can pledge to enter a debt contract with a bank. Also, the return profile could be skewed such that there is a small possibility of huge returns, combined with a large likelihood of failure. Venture capital can overcome such hurdles by allowing the investors to take an equity stake in the firm, and also be more involved in the nurturing of the firm.

11. The central bank has therefore taken steps to alleviate the funding constraint. The Banque du Liban (BdL) introduced Circular 331 in August 2013 with the goal of fostering the development of high-tech activity and stemming brain drain to promote investment in the knowledge economy (see Box 1).

Box 1. Banque du Liban (BdL) Circular 331

The aim of Circular 331 is to capitalize on the endowment of human capital, create jobs especially for the talented youth who are most likely to be part of the brain drain, and jump-start a high-tech knowledge sector in Lebanon. Also, while previously a government-backed debt-financing scheme existed to help small-medium scale enterprises (Kalafat), Circular 331 made equity-financing available to entrepreneurs. This scheme allowed commercial banks to invest up to 4 percent of their tier 1 capital in startup companies directly or in venture capital funds investing in such companies. The stimulus from the BdL involves an upfront guarantee of 75 percent of any investment made by the bank. To execute this guarantee, first, the bank receives an interest-free loan from the BdL, which the bank uses to buy treasury bills. Second, the bank turns around and sells the treasury bills back to the BdL at a premium, such that the 'profit' from the transaction equals 75 percent of the investment made by the bank. In this way the banks get an immediate boost to their capital by 75 percent of any investment in the knowledge economy. In return, any profits from the investment are split equally between the bank and the BdL. Theoretically, if all banks invested the maximum possible amount—i.e., up to 4 percent of their capital—then total investment in the knowledge economy would be upwards of \$450 million. However, by Q3 2016, the total amount invested in startups under the auspices of this program stood at about \$10 million.

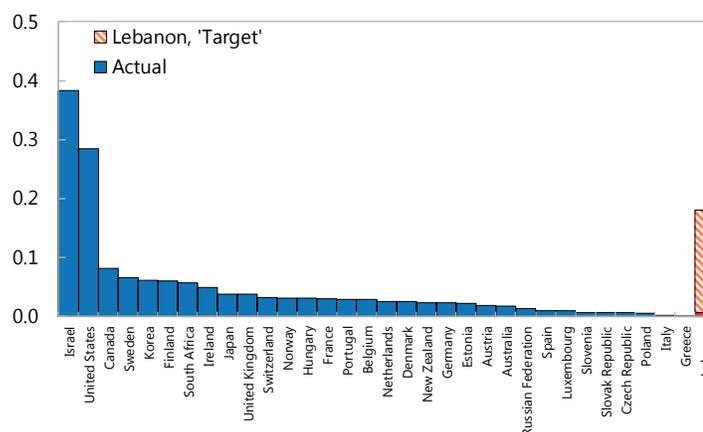
⁴ The Knowledge-Based Economy (1996), OECD.

12. Given the potential size of financing available, the program has spurred sizable interest in Lebanon. Several steps have been taken in Lebanon to elicit interest in entrepreneurial activity. Significant public relations effort has been made in Lebanon to increase awareness about the financing scheme and possibility of starting a company to innovators, students, diaspora, banks, venture capitalists, etc. In addition, the BdL has been hosting a popular annual conference to promote the prospects of innovative activity in Lebanon.

13. At the same time, easy financing can also create disincentives. Financing of ideas is a risky business, and venture capitalists have developed clever ways to overcome information challenges and risks (e.g., by developing a sophisticated mechanism to screen ideas, structuring investments to ensure discipline among the entrepreneurs, and by offering intensive oversight after the money is made available). That is, the role of venture capital is beyond just providing capital, as it is crucial to accelerate growth of the firm and ensure long-term success. Therefore, one implication of making ample cheap financing available is that some of these traditional incentives of the venture capital industry might be blunted. For example, in situations where too much money is chasing too few ideas, the screening process is likely to weaken. In the case of Lebanon, the BdL intends to reach about \$450 million of financing within half a decade of the program. This roughly would need to translate to venture capital investments of about 0.2 percent of GDP annually—an ambitious target compared to even the most successful OECD countries. Therefore, from a cross-country perspective, the high degree of guarantee (75 percent of investments) and the size of the funding appears significantly large relative to potentially investable projects (as per Lebanon's GDP).

Venture Capital Investments, 2014

(In percent of GDP)



Source: OECD.

14. Beyond the ample availability of financing, obstacles both for seed stage funding and exits remain. While the potential size of financing made available is large, the venture capital funds (presently 8) are mainly set up to cater to startups that are in the middle of their life-cycle. By contrast, both the seed stage (i.e., at very early stages of the project), and the exit stage remain relatively undeveloped.

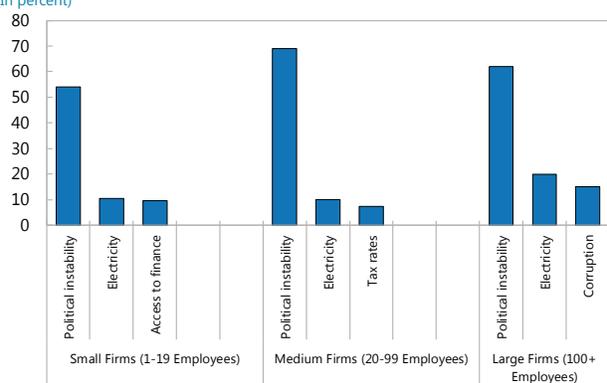
- Stronger emphasis on seed stage could help build a strong pipeline of projects, and also incentivize a larger fraction of those at risk of brain drain. In this context, some recent steps to increase the number of incubators, and expand the number of firms that can benefit from accelerators are encouraging signs.

- At the other end of the life-cycle, there also appears to be hurdles at the exit stage. Without adequate development of the capital markets to enable initial public offerings, venture capitals will have to rely solely on acquisition by other corporations. Such hurdles may obstruct the movement of capital to be reinvested in future projects by tying up resources in existing projects for longer, and may also discourage investments by favoring only firms that are potentially acquirable by international corporations. In this context, finalizing and implementing capital market regulation, and the preparation and adoption of a capital market development plan could help.

15. Restoring political stability, improving infrastructure and strengthening the business climate will also be critical. A strong infrastructure enhances the competitiveness of an economy and generates a business environment conducive to firm growth and development. A firm-level survey of a representative sample of an economy's private sector from the World Bank shows that political instability and electricity were identified as the main obstacles for doing business by Lebanese firms (World Bank Enterprise Surveys - Lebanon). Corruption, taxes, and access to finance were also identified as problems. In addition, more than 50 percent of firms surveyed in 2013 in Lebanon identify electricity as a major constraint. Among the list of countries surveyed in the region, only Yemen had a higher percent. Furthermore, Lebanon has one of the lowest ranks in the world in internet connection speeds. As per data from Akamai, the average internet speed in Lebanon in Q1 2016 was recorded at 1.8 Mbps, significantly lower than the global country average of 6.3 Mbps.

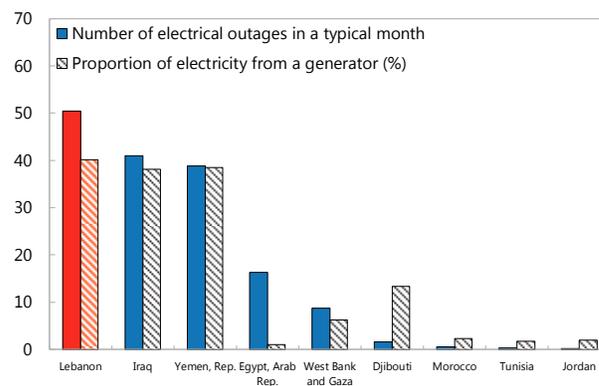
Firms Identifying the Problem as the Main Obstacle, 2013

(In percent)



Source: Enterprise Surveys - Lebanon.

Enterprise Survey Responses to Electricity Infrastructure in 2013



Source: Enterprise Surveys.

Notes: Data for Iraq is from survey in 2011, while for all others the survey was conducted in 2013.

F. Conclusions

16. Creating a successful and self-sustained knowledge-based hub in Lebanon will require efforts from all stakeholders. Several countries around the world are trying to create a knowledge-based hub (Lerner, 2009), though few have succeeded. In part due to increasing returns only a few such hubs can be sustainable over the long term. Lebanon has been operating in a difficult political and security environment, and with a weak infrastructure base. Therefore, to transition towards a more knowledge-based economy the various stakeholders have to work together to create a better political and business climate, strengthen the country's infrastructure, and create a transparent process with proper governance to realize the full potential of the strong endowment of Lebanon's human capital.

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REVENUE MOBILIZATION OPTIONS FOR LEBANON: NARROWING THE VAT TAX GAP¹

By regional and international standards, Lebanon tax performance is significantly below its potential. Tax revenues have weakened by 4 percentage points of GDP since 2010—largely attributable to softer economic performance reflecting the spillovers of the Syrian crisis. But policy changes have also played a role, including new tax exemptions and reduced rates. Yet, there is significant potential to strengthen tax collections by leveraging tax bases, strengthening tax administration and improving tax compliance. More specifically, reforms of the complex VAT regime offer one of the most promising avenues going forward. Under the current VAT rate, removing exemptions, streamlining deductions and refunds, and gradually improving tax compliance could improve VAT revenues by about 4 percentage points of GDP and significantly contribute to debt sustainability.

A. Introduction

- 1. Since 2011, Lebanon has experienced a sharp decline in tax revenue.** While non-tax revenues have been relatively stable, tax revenues have dropped reflecting both policy changes as well as the deteriorating economic environment following the Syrian crisis—recording a decline of 4 percentage points of GDP in just four years, through end-2015.
- Increasing revenue is key to stabilizing Lebanon’s public finances. As the structure of expenditures is rigid—wages and salaries, interest payments and transfers to Electricité du Liban accounted for almost three quarters of total expenditures in 2015—revenue increases offer a viable option to address swiftly Lebanon’s fiscal adjustment needs.
- 3. Among various tax instruments, increasing VAT collections is the most promising solution.** Potential gains from mobilizing VAT revenues could be significant, up to 5 percent of GDP annually. In fact, such increases—based on both policy and revenue administration measures—would be sufficient to stabilize the debt to GDP ratio over the medium run.

B. Lebanon's Tax Performance in Context

- 4. Since 2011, tax revenues have been declining sharply.** While nontax and other revenue have remained broadly stable at about 6 percent of GDP,² tax revenue has declined by about 4 percentage

Central Government Revenue, 2010-15 (percent of GDP)

	2010	2011	2012	2013	2014	2015
Revenue	22.1	22.8	21.8	19.8	21.8	18.8
Tax revenue	17.4	16.4	15.3	14.1	13.8	13.5
Nontax and Other revenue	4.7	6.4	6.4	5.7	8.0	5.4

Sources: National authorities and IMF staff calculations.

¹ Prepared by Kamil Dyzczak (FAD), Mariusz Jarmuzek (EUR), and Najla Nakhle (local economist, MCD).

² Non-tax and other revenue, generated from income of public institutions and government properties as well as administrative fees and charges, fluctuated significantly during that period on account of irregular telecom transfers—a component that constitutes anywhere between 47 to 70 percent of total non-tax revenues.

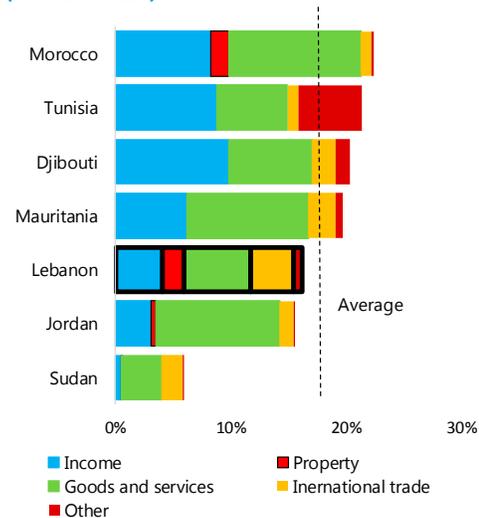
points of GDP between 2010 and 2015, driven by broad-based decreases across virtually all tax categories (Box 1). This drop can be attributed to two main reasons:

- **The Syria crisis has directly affected tax revenue performance.** In addition to its impact on economic activity and disruption of trade and tourism routes—in turn affecting revenue—the Syrian crisis has also made tax administration more difficult, in particular in border regions—as evidenced by the drop in VAT collected at customs by 12 percent over 2013–15. And perhaps not surprisingly, the difficult regional and domestic political environment has likely affected compliance and further impacted collections as documented by a total number of 1,866 enterprises that filed requests to and were granted permission by the tax administration to cease operations and consequently stop paying income tax.³
- **On the policy side, significant VAT exemptions were introduced in March 2012.** Faced with high oil prices over 2008–11, the government decided to exempt red and green diesel from the VAT. The associated revenue losses are estimated at LL 295 billion in 2012, or some 0.4 percent of GDP (MoF, 2012). In addition, gasoline excises were reduced by half in May 2011 with an associated revenue loss of LL 498 billion that year (about 0.8 percent of GDP, MoF, 2011).

5. At about 15 percent of GDP, tax revenue performance in Lebanon is close to the average of most MENA oil-importing countries. Collections of income and consumption taxes seem to be relatively low compared to peers. This can be partly attributed to the fact that Lebanon’s tax rates for key taxes are among the lowest in the region:

- The VAT rate is the second lowest in the region after Djibouti.
- Both the corporate income tax and the personal income tax (PIT) are the second lowest among oil-importing MENA countries—and these two rates are only lower in Jordan.

Tax Revenue in MENA Oil-Importing Countries (Percent of GDP)



Source: IMF staff calculations

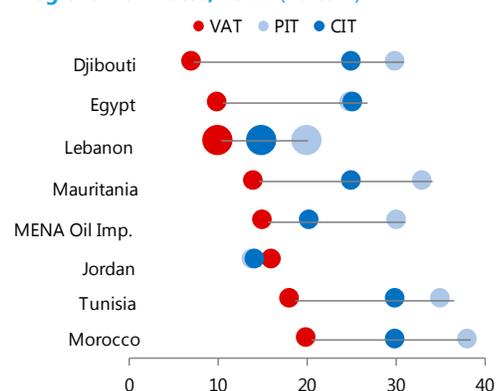
³ Ministry of Finance, Revenue Directorate.

At the same time, likely reflecting the importance of real estate, construction and trade in its economic structure, Lebanon's property and international trade taxes are high compared to regional peers.

6. The simple comparison of revenue collection as percent of GDP, however, says little about Lebanon's potential revenue collection. Varying economic, social, institutional, and demographic characteristics of countries shape their individual capacity to raise taxes. Tax capacity, defined as the maximum tax revenue a country can ideally achieve, and tax effort, defined as the ratio of actual tax revenue to capacity, are lower in Lebanon than in other MENA countries.

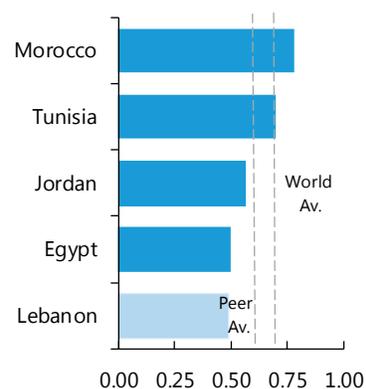
7. Lebanon's tax performance is significantly below its potential. Lebanon's tax capacity is estimated at 34 percent of GDP, implying that at an average tax revenue of 15 percent of GDP, its tax effort is only half of potential. These compare to an average capacity of around 33 percent of GDP and effort of 60 percent for similar MCD countries and a world average of about 35 of GDP and 70 percent, respectively (Fenochietto and Pessino, 2013).

Regional Tax Rates, 2012. (Percent)



Sources: National Authorities, and IMF staff calculations

Tax Effort in MENA Oil-Importing Countries



Source: IMF staff calculations

C. Zeroing in on the VAT Performance

8. Typically, VAT is a good candidate for revenue mobilization. It is one of the least distortive taxes with generally the highest share in total tax revenue. As the structure of the Lebanese economy is oriented towards private consumption and a high share of imports (87 percent and 70 percent of 2013 GDP, respectively) the potential gains from mobilizing VAT revenues are significant.⁴

9. There is a scope to strengthen VAT performance in order to increase Lebanon's tax effort. As noted above, VAT collections as a share of GDP in Lebanon have fallen since 2010, from 5.6 percent in 2007 to 4.1 percent in 2015. A preliminary analysis of VAT performance and regional comparisons would suggest that both increasing rates and broadening the base might therefore be a promising option. In addition, strengthening compliance would also contribute to increase VAT yields.

⁴ The latest official (preliminary) GDP figures are for 2013.

Box 1. Lebanon's Tax Structure and Performance

The tax revenue decline in Lebanon since 2011 has been broad-based. Four out of five key tax categories—taxes on property, domestic goods and services, international trade and other taxes—drove the decline of 4 percentage points of GDP. Taxes on income and profits have been the only tax category that witnessed a small increase over the period. More specifically:

- **Taxes on property**—The tax on property is a progressive tax ranging from 4 percent (on values below LL 20 million) to 14 percent (on values higher than LL100 million) with some exemptions. With the slowdown in the sector, taxes on property declined from 1.9 percent to 1.5 percent of GDP over 2011–15.
- **Taxes on domestic consumption**—All consumption taxes dropped over 2010–15. Taxes on domestic goods and services dropped from 6.3 percent to 4.9 percent of GDP mostly as a result of a decline in VAT from 5.6 percent to 4.1 percent of GDP.
- **Taxes on international trade**—With the disruption of land trade to and through Syria, taxes on international trade dropped from 4.9 percent to 2.7 percent mainly due to a drop in excise revenue almost which almost halved to 1.8 percent of GDP in 2015 from 3.5 percent of GDP in 2010.
- **Other tax revenues**—These are mainly stamp fees and are collected on contracts and business documents like constitution permits, bank guarantees, certificates of origin, and invoices. They amount to 3/1000 of the value of the agreement. These also declined with the drop in economic activity—to 0.6 percent of GDP in 2015 from 0.8 percent of GDP in 2010.

Taxes on income, profits, and capital gains. The income tax is schedular and divides income into profits, wages and salaries, capital gains and dividends in addition to a tax on interest income. The tax on income is based on a 1959 law and subsequent fifty amendments. Reforms of the taxes on income and profit were introduced in 1993 in anticipation for the Global Income Tax (GIT).^{1,2} Taxes in this category remained almost unchanged as a percentage of GDP as the increases in income taxes on wages and penalties on income tax were offset by a drop in the tax on interest income.

Central Government Tax Revenue, 2010-15 (percent of GDP)

	2010	2011	2012	2013	2014	2015
Tax revenue	17.4	16.4	15.3	14.1	13.8	13.5
Taxes on income and profits	3.6	4.0	3.8	3.5	3.7	3.8
Income Tax on Profits	1.4	1.7	1.5	1.4	1.5	1.4
Income Tax on Wages and Salaries	0.7	0.8	0.8	0.8	0.9	0.9
Income Tax on Capital Gains & Dividends	0.4	0.4	0.4	0.3	0.3	0.4
Income Tax on Interest Income	1.1	1.1	1.0	0.9	0.9	1.0
Penalties on Income Tax	0.0	0.1	0.1	0.1	0.1	0.1
Taxes on property	1.9	1.9	1.8	1.7	1.7	1.5
Taxes on domestic goods and services, o/w	6.3	6.1	5.6	5.3	5.1	4.9
VAT revenues	5.6	5.5	4.9	4.6	4.4	4.1
Taxes on international trade	4.9	3.6	3.4	3.0	2.7	2.7
Tariff revenues	1.4	1.3	1.2	1.1	1.0	0.9
Excise revenues	3.5	2.3	2.2	1.9	1.7	1.8
Other taxes	0.8	0.8	0.7	0.7	0.7	0.6

Sources: National authorities and IMF staff calculations.

¹ For more details on reforms, refer to Abdel-Rahman (2003).

² Despite attempts to introduce it since 2003, the GIT has not been implemented to date. Preparatory work on the GIT was at an advanced stage prior to the 2006 conflict with Israel but progress halted since then and implementation was subsequently postponed several times. For more details, see Hemming and others (2006).

VAT Tax Gap Analysis

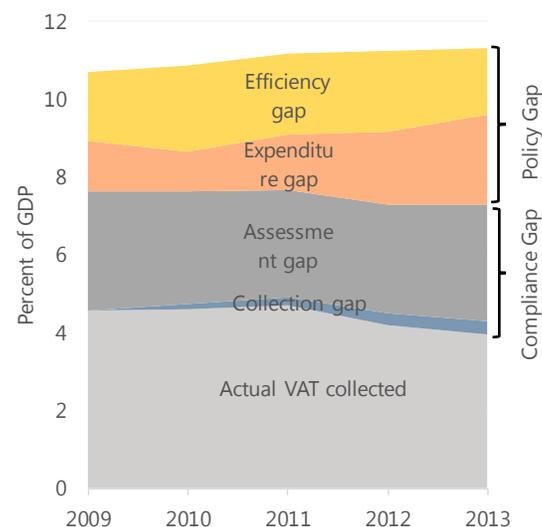
10. The VAT gap analysis provides a useful framework to assess VAT performance. It measures the gap between actual VAT receipts and potential receipts under a perfectly enforced benchmark tax system⁵—where the benchmark representing potential receipts is a tax levied on all consumption (Box 2). Potential VAT revenues are defined as revenues that could have been collected under existing economic conditions, full compliance and all final consumption being taxed at the standard rate.⁶ Potential VAT revenues are estimated using detailed national accounts data published by the national statistics agency, the Central Administration of Statistics. For VAT actual collections, the Ministry of Finance provided tax returns data between 2009 and 2014, which was used to calculate collections on an accrual basis.

11. The overall VAT gap for Lebanon is estimated at 7.4 percent of GDP in 2013 (figure below and Annex Table). The RA-GAP results indicate that the overall gap has been widening from about 6 percent to 7.4 percent of GDP over the period 2009–13. The analysis also suggests that in a hypothetical situation when full compliance is being achieved and all consumption is being taxed by the standard VAT rate, the VAT collections could have been higher by more than 7 percent of GDP in 2013.

12. The VAT compliance gap in Lebanon—estimated at 3.3 percent of GDP in 2013—is relatively high compared to actual collections. Over the period 2009–11, the compliance gap was relatively stable; however, since 2011, the compliance gap has seen an increase from 3 percent to 3.3 percent of GDP. Thus, in 2013 revenue lost through noncompliance was only slightly lower than what was collected.

13. The assessment gap is much higher than the collection gap in Lebanon. The great majority of the compliance gap in Lebanon is attributable to the assessment gap, that is to amounts not declared or assessed as due.

Overall VAT Gap and its Subcomponents (percent of GDP)



Sources: National authorities and IMF staff calculations.

⁵ The Revenue Administration-GAP (RA-GAP) approach is based on accrued VAT collections instead of usually presented cash collections data. As the original cash data are reallocated into periods in which tax due was accrued, the figures presented in this study as actual collections differ slightly from the official figures presented by the authorities.

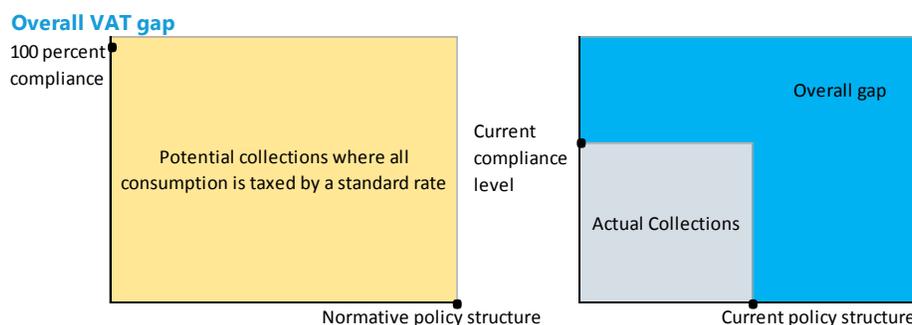
⁶ Thackeray and others (2016), based on a study undertaken by the Lebanese Ministry of Finance on VAT gap analysis under IMF's revenue administration gap analysis (RA-GAP) program.

Box 2. Definition of VAT Tax Gaps

The overall VAT gap is the difference between revenues collected and the potential revenues that could have been collected during a particular year. The RA-GAP approach defines potential VAT revenues as revenues that could have been collected under existing economic conditions, full compliance and all final consumption being taxed at the standard rate.

The overall VAT gap can in turn be broken down into two main components—the compliance gap and the policy gap.

- The compliance gap is the difference between potential collections given the current policy framework and actual collections.
- The policy gap is the difference between the potential revenues given the overall potential base for the VAT at the chosen standard rate, and the potential revenues given the current policy framework. i.e., where all final consumption is taxed at the standard rate.

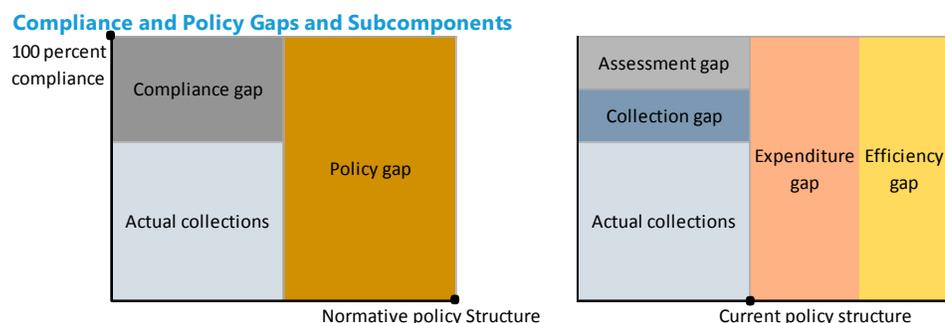


The compliance gap can be broken down into an assessment gap and a collection gap.

- The assessment gap is the difference between the estimated VAT that should have been declared and the VAT which has been declared or assessed.
- The collection gap is the difference between VAT declared or assessed and the VAT actually paid.

The policy gap can be broken down into an expenditure gap and an efficiency gap.

- The expenditure gap is the difference between the potential VAT where most of final consumption is taxed at the standard rate, but where a set of minimal standard exemptions are maintained, and the potential VAT given the current policy framework. In other words, the expenditure gap is the component of the policy gap due to discretionary policy decisions.
- The efficiency gap is the difference between the potential VAT if all final consumption were taxed at the current standard rate and the potential VAT where most of final consumption is taxed at the standard rate, but where a set of minimal standard exemptions are maintained. In other words, the efficiency gap is the portion of the policy gap that results from the typical VAT exemptions necessary due to pragmatic considerations in the design of a VAT.



14. The estimated collection gap rose from 2009 to 2013, and may be under-stated. The collections gap in Lebanon rose from negligible levels in 2009 to 0.3 percent of GDP in 2013, which is relatively high by international standards, and should be addressed by appropriate enforcement measures.

15. The policy gap has been growing over time, reaching a level very close to actual VAT revenue in 2013. Over the period 2009–13, the policy gap accounted for slightly more than half of the overall VAT gap, rising more strongly than the compliance gap. In 2009, the compliance and policy gaps were about the same size, equivalent to just over 3 percent of GDP. Since 2009, the policy gap has risen more strongly than the compliance gap, to 4 percent of GDP for the former, compared to just under 3.5 percent for the latter.

16. Most of the policy gap in Lebanon is attributable to tax expenditures, i.e., to the expenditure gap. The latter rose from 1.3 percent of GDP to 2.4 percent in 2013, as a result of the introduction of exemptions for diesel used in electricity generation and road vehicles in March 2012 and changes in the composition of GDP (Box 3). At the same time, the efficiency gap in Lebanon peaked in 2010, at 2.2 percent of GDP. The subsequent decline in the efficiency gap to 1.7 percent of GDP in 2013 has been more than compensated by an increase in the expenditure gap, which rose from 1.3 percent of GDP to 2.4 percent in 2013.

Box 3. Exemptions Under Lebanon's VAT Law¹

The Lebanese VAT system departs from the typical exemption model in various ways. It provides for refunds of VAT paid on inputs by persons that make exempt supplies (Article 59); it allows for refunds for non-registered persons; and it provides for exemptions of inputs used in a number of economic sectors. For example, full VAT recovery is granted on purchases of current and capital inputs made by organizations in the sectors of manufacturing of medicines; manufacturing of food products; hospitalization and medical laboratories; education; non-profit organizations; collective transport of persons; and manufacturing of books, newspaper and magazines. The Lebanese VAT thus effectively removes some consumption entirely from the tax net, through a complex mix of input exemptions, end-user exemptions and refunds.

Lebanon's VAT law includes a significant number of exempt supplies. These encompass end-user exemptions in the following sectors: health; education; non-profit organizations; agriculture; banking and insurance; betting, lotteries and other forms of gambling; real property; and transportation. State activities undertaken as public authorities and sales of non-built lands are also exempted but without the right to claim refunds under Article 59. Specific end-user exemptions apply to staple consumer foods. Input exemptions are also provided in the health and agriculture sectors, in addition to the end user exemptions available in those sectors.

Reforms of the VAT with respect to exemptions, deduction and refunds could help increase yields. These include limiting exemptions, removing or limiting refunds, revisiting VAT refunds to diplomat and international organizations, and evaluating the feasibility of taxing sales of new or substantially renovated residential properties and taxing non-life insurance services.

¹ This box is based on findings of Mansour and others (2010).

Policy Simulations

17. There is significant scope for revenue mobilization by eliminating current VAT gaps.

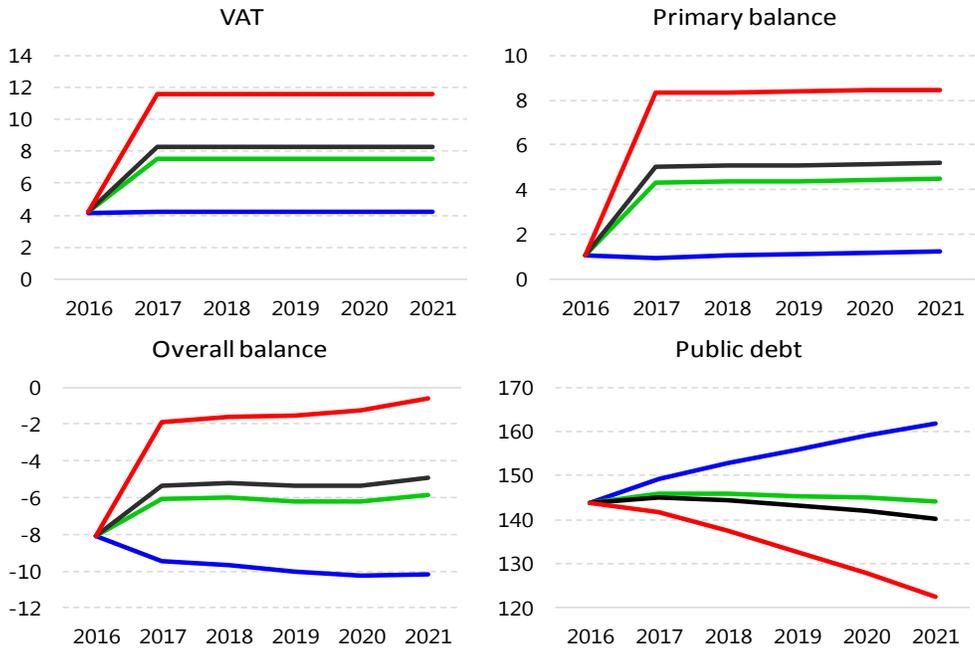
The estimates of compliance and policy gaps indicate that there is a large potential to increase revenue just by improving compliance and eliminating the VAT expenditure gap.

18. Higher VAT revenue would have a more-than-proportional impact on public debt via lower deficits and lower cost of financing (Figure 1). The dynamics of the already very high level of public debt are sensitive to the size of primary balances as well as interest payments. Higher revenue would lead to lower deficits, which would translate into slower accumulation of the debt stock and thus lower cost of financing. Consequently, an increase in VAT revenue would reduce the stock of debt more than proportionally in the steady state. Two illustrative scenarios are presented below.

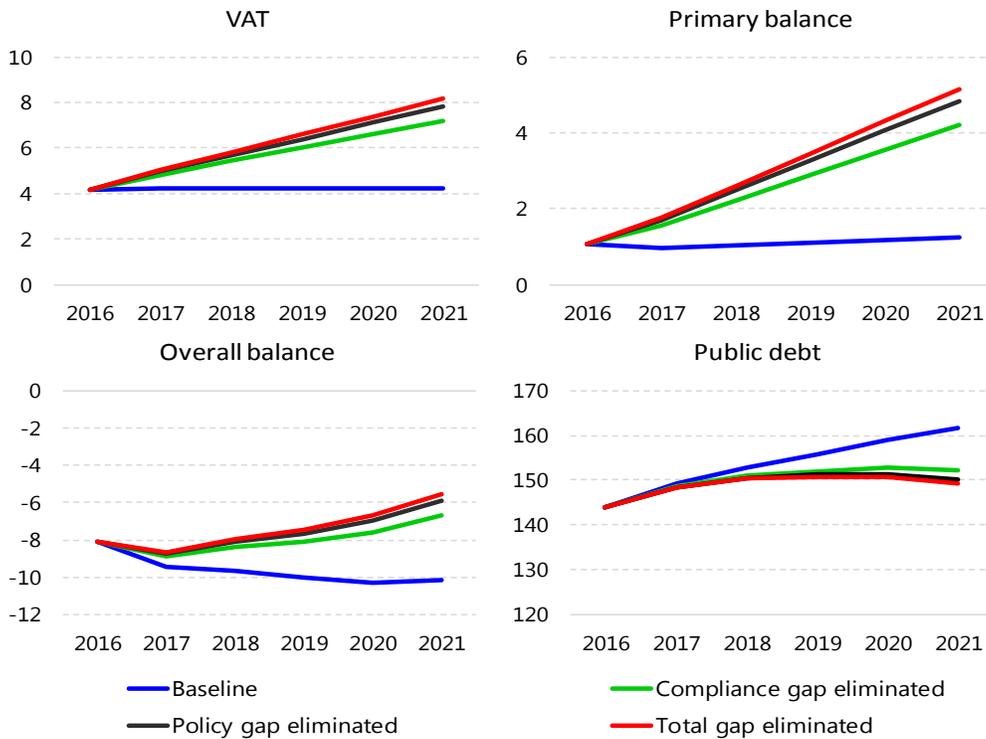
- **Full and immediate elimination of the VAT gap.** This measure would increase total revenue by more than 7 percent of GDP, bringing VAT revenue close to 12 percent of GDP. The primary balance would reach above 8 percent of GDP and the overall balance would converge towards zero by 2021. As a result, public debt would continuously decline, from the current level of 140 percent of GDP to about 120 percent of GDP in 2021. This option is clearly not plausible, and therefore presented for sake of completeness. In reality, each country faces some degree of noncompliance and not all goods and services are taxed by the standard rate.
- **Incomplete and gradual elimination of the VAT gap.** Under the assumption that (i) the compliance gap is eliminated by half, (ii) only the expenditure part of the policy gap is eliminated and (iii) the gaps are eliminated gradually over next five years, the estimated gains in terms of improving fiscal balances and debt dynamics would still be significant. The primary balance would increase from 1.1 percent to 5.2 percent of GDP, the overall balance would improve from -8.1 to -5.6 percent of GDP and the public debt would stabilize at about 150 percent of GDP in 2021. Implementation of these measures—in and by themselves—would still be sufficient to at least stabilize the debt to GDP ratio over the medium run.

Figure 1. Policy Scenario
(In Percent of GDP)

Complete and Immediate Implementation



Incomplete and Gradual Implementation



Sources: National authorities and IMF staff calculations.

D. Conclusions

19. This paper provides an initial analysis of options for revenue mobilization. By regional and international standards, Lebanon has ample scope to increase tax revenue; more specifically, reforms of the complex VAT regime offer one of the most promising avenues going forward.

20. Stronger VAT yields could be generated via higher rates, broader base, and improved collections. Although Lebanon's VAT rate is among the lowest in the region, the authorities have in the past expressed a strong preference for not increasing it on political and social grounds. This paper shows that there is significant potential—under the current VAT rate—to boost VAT collections by leveraging the tax base, strengthening tax administration and improving tax compliance. Other reforms with respect to limiting or removing exemptions, deduction and refunds could also help increase yields.

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Annex I. Overall VAT Gap and Subcomponents (In Percent of GDP)

	2009	2010	2011	2012	2013
1. Overall gap (2 + 8)	6.1	6.3	6.5	7.1	7.4
2. Compliance gap (3 + 6)	3.1	3.0	3.0	3.1	3.3
3. Assessment gap (4 - 5)	3.1	2.9	2.8	2.8	3.0
4. Potential collections given the current policy framework	7.6	7.6	7.7	7.3	7.3
5. VAT declared or assessed	4.6	4.7	4.9	4.5	4.3
6. Collection gap (5 - 7)	0.0	0.1	0.2	0.3	0.3
5. VAT declared or assessed	4.6	4.7	4.9	4.5	4.3
7. Actual VAT collected	4.6	4.6	4.7	4.2	4.0
8. Policy gap (9 + 12)	3.1	3.3	3.5	4.0	4.0
9. Efficiency gap (10 - 11)	1.8	2.2	2.1	2.1	1.7
10. Potential VAT where all final consumption is taxed at the standard rate	10.7	10.9	11.2	11.2	11.3
11. Potential VAT where most of final consumption is taxed at the standard rate but a set of minimal exemptions are maintained	8.9	8.6	9.1	9.2	9.6
12. Expenditure gap (11 - 13)	1.3	1.0	1.4	1.9	2.3
11. Potential VAT where most of final consumption is taxed at the standard rate but a set of minimal exemptions are maintained	8.9	8.6	9.1	9.2	9.6
4. Potential collections given the current policy framework	7.6	7.6	7.7	7.3	7.3
<i>Memorandum Item:</i>					
GDP	52,974	57,300	60,419	66,481	71,185

Sources: National authorities and IMF staff calculations.

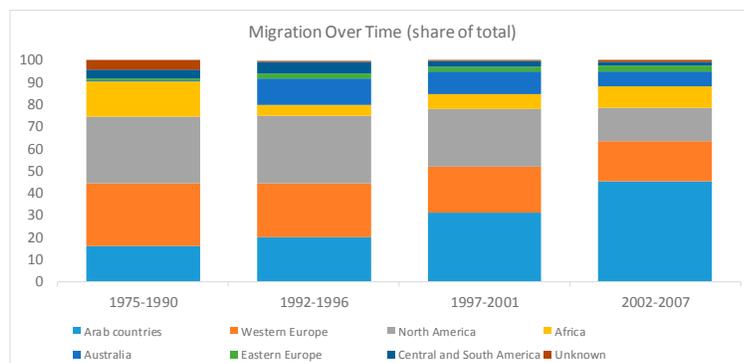
OIL-PRICE SPILLOVERS IN LEBANON: THE ROLE OF REMITTANCES¹

Remittance inflows are a key feature of Lebanon's economy—not only representing a sizable source of funds, but also constituting a critical pillar of the country's social safety net. But these inflows have declined in recent years, owing perhaps to lower oil prices and their impact on the Lebanese diaspora's incomes. The link between remittances and oil prices has clear implications for Lebanon's outlook going forward, though measurement challenges make it difficult to disentangle the impact of any particular individual factor on remittance inflows. In this context, this note outlines the role of remittances in Lebanon and assesses their link with oil prices. Estimates from a general equilibrium model suggest that recent oil-price movements could reduce inflows by at least 19 percent (about \$1.5 billion or 3 percent of GDP).

A. Remittances—International Links and Domestic Role

1. The Lebanese diaspora is spread widely, but an increasingly large portion live in the MENA region. Understanding where migrants have traveled to is important to get a sense of where remittances inflows may come from.

In the case of Lebanon there have been several waves of migration: (i) from mid-19th century to World War I, (ii) during the civil war (1975–90), and (iii) after the end of the civil war. Although the diaspora has elements across the globe, historically most Lebanese have migrated to Arab countries, and during the latter waves the share of migrants to Arab countries has increased.



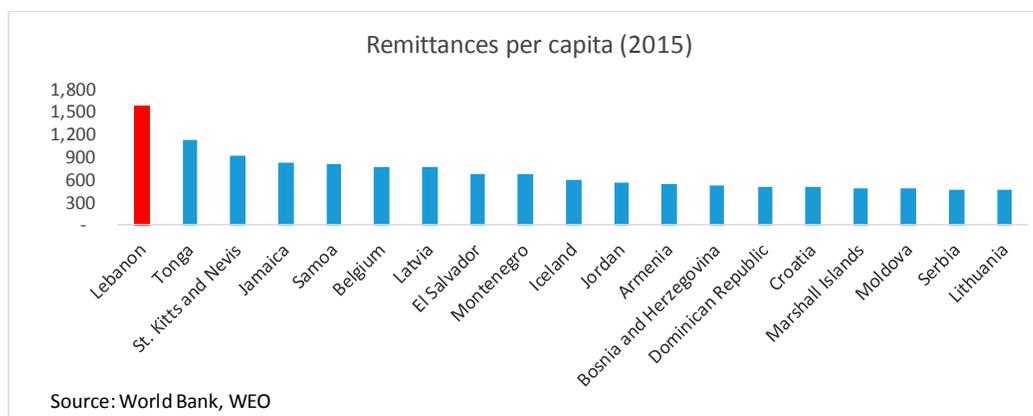
2. As a result, remittances now originate mostly in Arab countries. Notwithstanding World Bank data on bilateral remittances—which finds that only one quarter of inflows come from Arab countries—survey evidence finds instead that migrants in Arab countries are the largest remitters to Lebanon (Kasparian, 2014). Moreover, the frequency of transfers from these countries is higher, and the amounts transferred are larger. These findings are confirmed by BdL data; which estimates that 60 percent of remittance inflows come from GCC countries. The BdL also lists UAE, Qatar,

	Average annual transfer (dollars)	Share of total inflows
Arab countries	8105	43.3
North America	4285	15.2
Western Europe	4274	14.7
Africa	9038	14.2
Australia	2111	5.1
South America	4380	3.7
Eastern Europe	12053	2.4

¹ Prepared by M Belen Sbrancia (SPR).

Saudi Arabia, and Kuwait consistently among the top five origin countries. This suggests that bilateral data from the World Bank should be used with caution.

3. Lebanon's remittances are sizable. Remittance inflows have averaged almost \$7 billion in the last 10 years, which places Lebanon among the world's top 20 receivers in absolute terms. Moreover, Lebanon is among the top five emerging-market receivers of remittances as a share of GDP, at 20 percent of output. In per capita terms Lebanon tops the list by a wide margin.



4. Lebanese remittances are relatively stable. This result is standard across most countries, but in the case of Lebanon, remittances inflows are also 50 percent larger than the economy's merchandise exports, and equivalent to half of Lebanon's service exports. Remittances inflows are also twice as large as non-resident deposits, a traditionally important source of foreign exchange.

5. Remittances also comprise a key part of Lebanon's de-facto safety net. Kasparian (2014) has conducted a survey to study the household characteristics of senders and recipients of remittances in Lebanon.²

- **More than half of Lebanese migrants send remittances, and almost a quarter do so on a regular basis.** Moreover, migrants who emigrated 6–10 years ago are more likely to send remittances. About 65 percent of those recent migrants send transfers, compared with about 50 percent for those who emigrated 20 years ago, or 40 percent for those who left Lebanon more than 30 years ago.

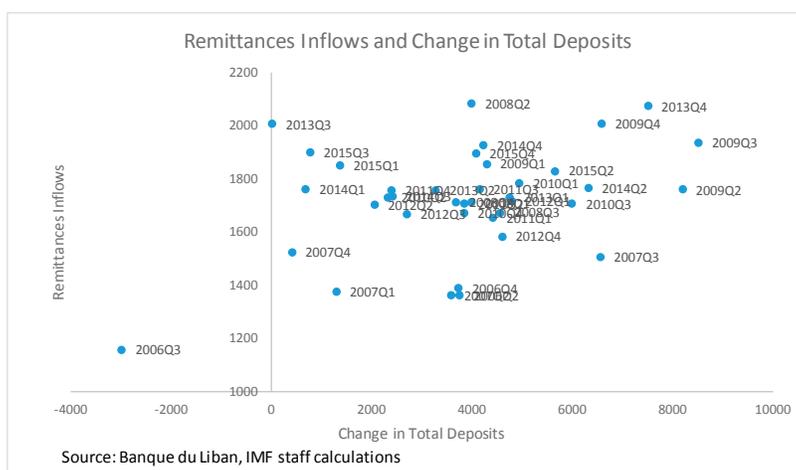
² The sample consists of 2,000 households, half of which receive remittances and half who do not. For this reason, this methodology is suitable for making comparisons between both types of households but does not allow to derive absolute figures related to migration nor amounts remitted.

- Remittances play a crucial role in allowing access to education and health.** For a start, remittances constitute 40 percent of the income of recipient households. And these households finance 40 percent of their education costs with remittances, relying on their own resources to cover another 43 percent. In contrast, households with no transfers pay for 75 percent of education costs from their own resources. When it comes to access to health services, the share of families with no insurance is higher for those who receive remittances (48 vs 41 percent). Yet, remittances provide 40 percent of the funding to pay for health insurance and also provide an important source of financing for medicines.

Use of remittances by spending (% of households)

Food	61.4
Housing costs	58.9
Improvement in quality of life	53.9
Health	46
Education	18
Buying a house	3.2
Starting a business	1.6
Buying land	0.8

- The composition of consumption is similar among households who receive remittances and those who do not.** According to Kasparian, the quality of the expenditure data is not very precise since many households do not keep track of their spending behavior. Nevertheless, there are no large differences in the reported consumption shares for different categories across both groups, which is indicative of a similar spending pattern by both sets of households.
- 6. Most remittance inflows enter Lebanon as cash (in kind) rather than through bank deposits or money transfers.** The BdL estimates that during the last 6 years, remittance inflows through bank deposits accounted for only 27 percent of the total, while 14 percent came through money transfer operators (MTO) and the remaining 59 percent in kind. In a similar vein, Kasparian (2014) estimates that 35 percent of the transfers take place through banks, 26 percent via MTOs, and the rest in kind.



- This suggests that remittances and non-resident deposit inflows are two separate processes.** Indeed, the simple correlation between the two series is highly dependent on the sample period. For instance, over the period 2006–15 the correlation is 0.59 while it drops to 0.10 for over the period 2008–15.

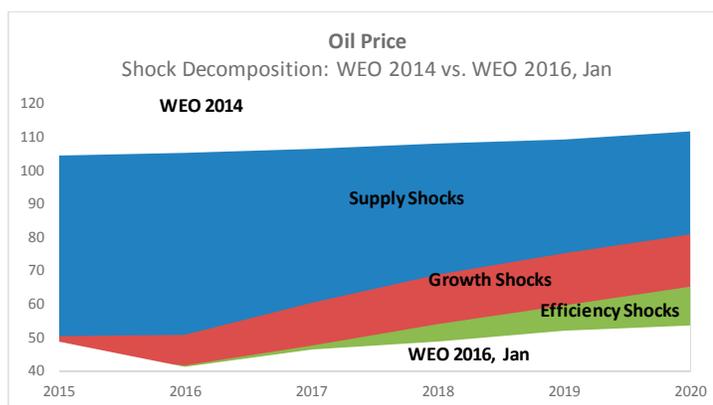
B. Falling Oil Prices and Their Impact on Remittances

8. The net impact of lower oil prices on an oil importer like Lebanon is mixed, as discussed in more detail in Box 2 of the staff report. Despite Lebanon's large oil import bill, the tight linkages to oil producing Arab countries suggests that, when those countries face strains, so does the Lebanese economy.³

9. A quantitative model of the Lebanese economy,⁴ incorporating international remittances, helps shed light on the impact of a global oil price decline. The IMF's Flexible System of Global Models (FSGM) is an annual, multi-region, general equilibrium model of the global economy designed to study international spillovers. The model includes a market for oil whose demand is driven by world demand, and where both demand and supply are relatively price inelastic in the short run. Since oil is consumed by households and used in production, it affects the economy through several channels: inflation, the consumption basket, demand for capital and labor and total factor productivity. Snudden (2016) adds a remittance channel to the FSGM model, and this model is calibrated to match the dynamics of remittances and oil prices estimated through a Structural Vector Auto Regression (SVAR).

10. The impact on Lebanon from a decline in oil prices depends on whether the drop results from global supply or global demand factors. In both cases, remittances inflows decline

but when the shock is purely supply driven, real GDP increases owing to higher household real incomes and wealth, which more than compensates for the lower remittances flows. The opposite is true when the shock is demand driven as lower external demand depresses household real income and wealth. In order to study the likely impact on Lebanon's economy, the recent oil price shock is



decomposed into demand and supply factors, as outlined in the April 2016 *World Economic Outlook* (WEO).⁵ As shown in the figure, most of the initial decline in oil prices is attributed to supply factors while demand factors become more important for the latter part of the period.

³ See also Selected Issues Paper, "The Price of Oil and the Lebanese Economy: A Blessing in Disguise?" from the 2012 Article IV Consultation which finds a positive link between oil prices and real economic activity in Lebanon.

⁴ For details on the model and the refinement to incorporate remittances flows see Andrieu and others (2015) and Snudden (2016).

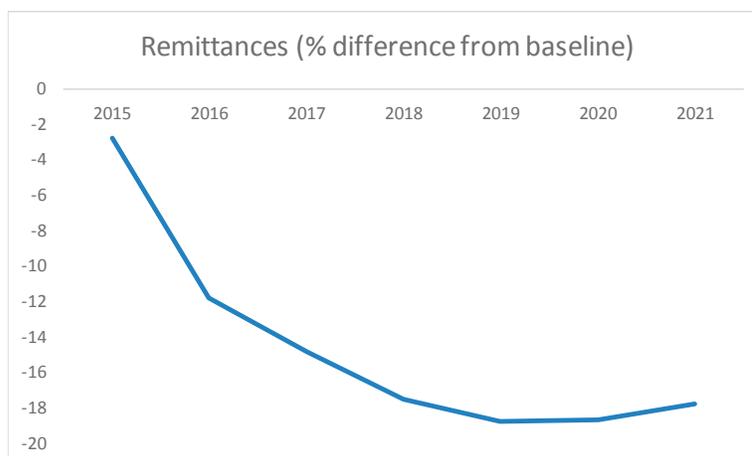
⁵ Available via Internet: <http://www.imf.org/external/pubs/ft/weo/2016/01/pdf/text.pdf>.

11. Simulating the recent oil price decline, the model suggests that remittance inflows decline by about 19 percent.

This is relative to a counterfactual of no change in oil prices, and is equivalent to about USD 1.5 billion or 3 percent of GDP. To grasp the particular impact of the remittance channel on Lebanon, a model with and without the remittance and migration channel is estimated for the same oil shock.

The addition of the remittance

channel reduces GDP by an additional 0.4 percent in 2016–18—a sizable shock given the low growth rates that Lebanon has been experiencing in recent years.



12. As a caveat, the actual impact may be larger than suggested by model simulations. The model is calibrated using World Bank bilateral data, which provide a consistent worldwide view of remittance flows. But this dataset tends to downplay the role of GCC countries, so the model results should perhaps be treated as a conservative lower bound.

13. The Syrian war represents a further factor affecting remittances outflows. The results of the model speak only to the impact of oil prices on remittance inflows. However, remittance outflows have been declining in Lebanon, as many Syrians who used to come to the country as seasonal workers are now either living in Lebanon or have moved to another country. The implication is that net remittances (inflows less outflows) might decline by less than suggested by a model that considers only the oil shock.

C. Conclusions

14. Remittance inflows constitute a large and relatively stable source of foreign exchange in Lebanon, with a significant impact on the well-being of recipient households. Micro-level survey data highlight the role of remittances in supplementing the income of households and allowing them to access education and health services that they would not be able to afford otherwise.

15. The recent decline in oil prices could have a sizable impact on remittance inflows. Simulations from a multi-country general equilibrium model suggest that inflows could decline by at least 19 percent (about \$1.5 billion or 3 percent of GDP). These results are likely to be conservative, but they nonetheless showcase the importance of remittances in the Lebanese economy, along with the broader impact of the recent oil shock.

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Annex I. A Short Primer on Remittance Data

Remittances are transfers between residents and non-residents. Their measurement according to the Balance of Payments Manual 6 (BPM6) draws on two items from the current account: (i) personal transfers (secondary income); and (ii) compensations of employees (primary income). At the moment, Lebanon is still compiling external sector statistics according to BPM5 but the mapping between these two is fairly straightforward. Under the new definition, personal transfers replaced a BMP5 category known as “workers’ remittances.” The new and simplified definition is independent of the source of income, and does not depend on the relationship between the households and the purpose of the transfer—a change that makes it easier to capture and record remittances.

Measuring remittances is not an easy task given the nature of the flows—as most transactions are small and largely through informal channels. At a global level, there is a large discrepancy between remittance receipts and remittance payments. In the case of Lebanon, the Banque du Liban (BdL) estimates three channels of remittances (inflows and outflows) separately: bank transfers, money transfer operators (MTOs) and in kind. Data for transfers through banks come from the International Transaction Reporting System (ITRS), through MTOs from a monthly reporting these institutions make to the BdL, while in-kind cash transfers are derived from estimates of Lebanese abroad (credit) and work permits for foreigners (debit).

The impact of remittances inflows on economic activity is not well understood. Clemens and McKensie (2014) argue that there three reasons why testing the impact of remittances on GDP is difficult. First, the recent rise in remittances may be due to a change in how these are measured rather than an actual change in the flows. Second, panel regressions are likely to have low power due to the small size of the transactions and high variance in the data. And last, the increase in remittances is largely driven by an increase in migration which also represents a cost for the source countries—overall muting/diminishing the likely impact of remittances on economic activity. Yet, the impact on poverty and welfare is less contested; several studies have shown how remittances can affect the well-being of recipients by complementing their income and allowing them access to services that would have not been available otherwise.