

# Dual Labor Markets and Public Debt: An Illustration Using the Lebanese Example

Sheikh Shahnawaz

University of Southern California

shahnawaz@usc.edu

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## Abstract

*A simple two period model is developed to study the peculiar interaction between labor market conditions and the public debt level in developing countries. The model attempts to explain the somewhat surprising phenomenon of pervasive unemployment amongst the citizens of a country while foreign workers continue to pour into it to fill existing jobs. Also, the model employs game theory to functionalize a political explanation for rapidly increasing domestic debt and interest rate levels. We illustrate this by using the very interesting example of Lebanon. Rising interest rates are identified as the primary reason for high unemployment and domestic debt.*

## 1. Introduction

The purpose of this essay is to develop a model to explain the link between the levels of public debt and unemployment observed frequently in developing countries. Various nations around the globe are plagued not only by high levels of unemployment and government debt, but also sizeable inflows of mainly unskilled workers pouring in, legally or illegally, from neighboring states. The situation can be aggravated by diversity, be it ethnic, religious, or ideological, of the country's population that usually gives rise to coalitional and power-sharing structures in government. Many examples are available: Brazil and Argentina with their populists, authoritarians, and democrats, and, until recently, with a strong military presence in political affairs; several nations in Africa, but especially South Africa with its mix of African, European, and Asian ethnicities; Albania, Bosnia, Croatia, and Bulgaria with their rich ethnic mix; and countries like Uzbekistan and Afghanistan from the Central Asian region. Although economically at different stages of development, these countries are well known to be on the receiving end of foreign aid suggesting an aspiration for a strong economic future. The model presented in this paper hopes to help our understanding of the relationship between economic phenomena and the socio-political reality in such countries.

The case of Lebanon in the Middle East region is an especially good example. Despite high unemployment among the Lebanese citizens, a sizeable foreign work force is present in the tiny Mediterranean state. The model explains this apparent paradox of a the huge level of Lebanese public debt along with the decision of many Lebanese not to join the labor market—citizens opt not to work in view of the income they expect to earn through lending operations. So, although they are *looking* for jobs, they do not choose to work in just any position. Instead, they opt not to work if a "good enough" job does not come their way. Also, the government plays an important role in determining government investment and debt. This paper explains within a political economy framework the seemingly insatiable desire of the Lebanese government to borrow domestically. Some of the costs of such a policy, like the crowding out of private investment, are discussed in Shahnawaz (1998). Possible explanations for the puzzling behavior of the Lebanese government with regard to its borrowing may include its desire to protect (i) its economic rents, an idea developed in various stages and different forms by Kuznets (1968), Mokyr (1990), Grossman and Helpman (1994), Krussell and Rios-

Rull (1996), and Parente and Prescott (1997). These studies stress the role of economic gains that politicians can make by stealing or accepting bribes; (ii) its political rents, an idea introduced by Robinson (1997, 1999), and Acemoglu and Robinson (2000), based on North (1981) and Acemoglu and Robinson (1999); or (iii) a combination of both. This paper takes the third approach due to its attention to both economic as well as political motives that politicians are likely to have in reality.

The results on the labor market side obtained from the model reinforce the lessons learned from the seminal work on two-sector labor markets by Harris and Todaro (1970). This is an interesting result since the methodology employed in modeling here is quite different from that of Harris and Todaro. For the workers, we use a simple version of the more elaborate formulations of a search problem mainly delineated in Sargent (1987a) and Ljungquist and Sargent (2000) and based on the pioneering work of Stigler (1961) and McCall (1970). The results are also substantively in agreement with Hassler et al (1998), who also develop a model with labor market search and endogenous policy, and show that there may be outcomes with high unemployment and generous benefits or with low unemployment and less generous benefits.

The layout of the paper is as follows: in Section 2, an historical picture of the Lebanese economy is presented in order to provide the reader with some background. This is important in order to be able to identify characteristics unique to Lebanon and to put policies being followed by the more recent Lebanese governments into better perspective. Section 3 then discusses the current situation of the Lebanese economy, therein delineating the features believed to be at the heart of the Lebanese conundrum. Section 4 briefly describes the political aspect of the story. This is followed by a presentation of the model in Section 5. We conclude in Section 6 with a discussion of policy problems and some suggestions to overcome them as obtained from our model.

## **2. The Lebanese Economy in Historical Perspective**

Lebanon has long been known for its laissez-faire economic system in a region otherwise characterized by pervasive regulations and tight government controls on economic activity. Before the Lebanese civil war that broke out in 1975, it had a strong currency, minimal direct taxation, and limited public spending on either development or defense, a policy of low tariffs, and after 1956 a Bank Secrecy Law designed to attract foreign investment after 1950. These measures are argued by Shehadi (1987) to be a deliberate policy encouraging openness, not simply the result of inaction or inertia. Quantitative manifestations of these policies were a two-thirds share of national income for 1956 coming from banking, commerce, and other services, with only twenty percent coming from agriculture and thirteen percent from industry [1].

Not only was the self-propagation feature of this system useful for Lebanon, but the post-war rise in oil revenues in Kuwait, Bahrain, and Saudi Arabia were also beneficial for the country. Lebanese merchants were quick to establish links with the Gulf elites who preferred to invest their new revenues with the help of Lebanese middlemen rather than Western bankers in London and New York. Owen and Pamuk (1998) quote a figure that almost two-thirds of the Arab oil surplus found its way to Beirut between 1956 and 1965. Lebanon's relative political stability in a tumultuous region qualified it as a recipient of capital in flight from coups and revolutions in countries like Syria, Egypt, and Iraq [2]. After President Chehab's (1958-1964) unsuccessful attempt to influence the country's economic orientation, the crash of the country's largest bank, Intra, in 1966, and the Israeli military victories of June 1967, Lebanon started a new period of rapid growth with oil revenues from the Gulf once again serving as the grease in the country's economic wheel. While revenues from tourism increased, a new source of income during this period was from the remittances sent by the 150,000 Lebanese working in Saudi Arabia and elsewhere. Yet another feature was the arrival of foreign banks.

The outbreak of Lebanese civil war in 1975 put an end to the nation's economic glory. Destruction, forced migration, loss of trade and tourism, and the increasing division of the country into small separately controlled units caused a huge reduction in income and output. The war, which lasted 15 years, caused over one million people to emigrate from the country. A significant proportion of these people had professional

and technical skills and included 22 percent of the country's doctors [3]. The result was a substantial reduction in the economically occupied population from 750,000 in 1975 to a little over 450,000 ten years later [4].

In these trying times, there were three compensating factors. These were continued remittances, the money sent to support the rival militias, and most important of all, a dramatic increase in public expenditure which reached some 37.6 percent of GDP by 1982, approximately double the proportion of the early 1970s [5]. This was a consequence of a larger government payroll as well as the price subsidization of necessities such as petrol, sugar, and wheat. Since the already low tax revenues were in a further sharp decline, this policy was sustained only by the inflationary process of borrowing more and more from the Central Bank. Prices, therefore, rose rapidly with inflation peaking at about 500 percent in 1987 before falling to around 50 percent by the end of the war and to single digits more recently [6].

Lebanon's growth during 1950-1964 had been quite impressive by the available range of estimates (5.2 percent to about 7 percent) [7]. Although the rate declined between 1965 and 1970, it picked up again in the early 1970s breaking into double digits. Prior to the civil war, banking and services were estimated to have contributed anywhere between two-thirds to three-fourths to the GNP, with the main change involving a decrease in the contribution of agriculture and an increase in that of industry [8].

Between 1950 and 1974, there was a major reduction in the labor force in agriculture, going down from close to 50 percent of the total to about 20 percent. This was accompanied by a movement away from the cultivation of cereals toward higher value crops like fruits and vegetables. In the industrial sector, there was an increase in investment, employment, and output from 1950 to the early 1970s. Complex processes involving the working up of imported raw materials or spare parts were also introduced, bringing Lebanon into the vehicle assembly and pharmaceuticals industry while it continued to participate in the manufacture of such traditional goods as textiles, clothing, and shoes. During the early 1970s, a significant stimulus to the expansion in activity was the opening up of new markets for Lebanese manufacturers in the Gulf.

Banking and trade were the main drivers of growth in the services sector. From 1950 to the mid 1960s, the number of individual banks (of Lebanese, foreign, or mixed ownership) increased from 17 to 93, while the ratio of deposits to national income went up from 20 percent to about 100 percent [9]. Following the Intra bank crisis of 1966, the Superior Banking Council was established and laws were tightened, creating the conditions for the entry of large Western banks. The other main contributor to this sector, trade, provided nearly a third of GDP from 1950 to the early 1970s [10].

The size and profitability of the services sector has been blamed for the unequally distributed fruits of economic growth. An illustration of this can be gleaned from the figures provided by Owen and Pamuk (1998): while 23 percent of the working population was employed in commercial, financial, and other services, they produced 47 percent of the national product in the late 1950s. This is in sharp contrast to the meager 16 percent of GDP controlled by an agriculture sector that employed almost 50 percent of the population. Thus, the outbreak of civil war in 1975 was not a complete surprise.

Saidi (1986) estimates the fall in national income by the end of 1976 to be nearly half its pre-war level. It did, however, recover gradually to about 80 percent of its pre-civil war level by 1980-81. However, the volatile intensity of the war took its toll on GDP, and by the end of the prolonged tragedy GDP was down to about a third of its 1974 level in constant prices according to World Bank estimates. Agriculture and industry suffered the largest reductions in contributions to GDP, from 17 and 9 percent to 14 and 7 percent, respectively. Poverty and unemployment increased, while wages lagged behind inflation. At the same time, public and professional services in areas such as education, health, housing, transport, water, and electricity fell drastically. Even something as basic as personal security no longer existed.

### **3. Lebanon After the War**

Only recently has Lebanon started to emerge from the consummate destruction inflicted upon it during its fifteen-year civil war. As described in the previous section, economic progress suffered and, consequently, a good part of the country's best and brightest minds left for abroad in search of better opportunities. More than 200,000 professional and skilled workers had emigrated by 1991 [11]. However, many professionals stayed giving rise to under- [12] and un-employment. The civil war came to an eventual halt in the early 1990s. When Syria was finally able to assert its dominance over the tiny nation thanks to 35,000 troops stationed on Lebanese soil charged with maintaining control. Coupled with the fact that Lebanon has historically served as a land of opportunity for many in the region, this explains to a large extent the conspicuous presence of a nearly 250,000-strong Syrian labor force in Lebanon [13]. However, in contrast with their Lebanese counterparts, an overwhelming number of these workers are unskilled which means that their greatest influence is on the informal sector of the Lebanese economy. We will come back to this later.

In the last several years Lebanon has enjoyed a respectable growth rate. The end of the war allowed households, firms, and the government to return to normal conditions of production and consumption, which, in conjunction with the rebuilding of residential and business structures, the productive capacity of enterprises, the stock of consumer durables, and the government-led reconstruction program to build infrastructure, had the expected strongly positive effect on growth. Although projected by the World Bank at 3.1 percent for 2000-04, the growth rate steadily declined from its level of close to 8 percent in the early days of the reconstruction drive [14]. This is illustrated in Figure 1 in the appendix. The growth rate slowed to 4 percent in 1996 due to bombings in April and the decline in construction activities because of the excess supply in some segments of the real estate market. The rate of growth has stayed at these levels since then.

Another feature of the Lebanese economy since 1991 has been the government's overzealous efforts targeted toward recapturing the country's past eminence as an economic and financial hub to the Middle East. Thus, the government has played a prominent role in reversing the civil war legacy in the hope of again attaining Lebanon's post-independence stature as an economic powerhouse. Total damage to physical assets was estimated at US \$25 billion at the end of the civil war [15]. The government formulated first the National Emergency Reconstruction Program and then the Horizon 2000 Program. The objective of each of these two programs was to rapidly rehabilitate and enhance the country's severely damaged infrastructure. Public investment spending has, therefore, been targeted to the reconstruction and upgrading of existing infrastructure, in part to catch up with countries at similar levels of development. As one would expect, the government has acquired very high levels of debt in the process. This has resulted in calls from concerned circles for concentrating policy efforts toward fiscal adjustment. According to the original ten-year plan, public spending is scheduled to be around US \$12 billion, a figure that is close to 11 percent of GDP per year and front-loaded to around 13 percent of GDP during the earlier years [16].

Although the reconstruction program was mostly viewed as appropriate for post-war Lebanon, some, including the World Bank, found its size and phasing to be excessively ambitious and likely to lead to macroeconomic imbalances. Thus, due to the acceleration in the growth of government capital expenditure (the program has largely been financed on commercial terms with private participation limited mostly to the management and provision of infrastructure), the large and expanding current expenditure (particularly interest payments on domestic debt), and the slow recovery of the revenue-generating capacity, Lebanon is suffering from sizable fiscal imbalances. Although the deficit fell from 16 percent of GDP in 1991 to 8 percent in 1993, it has since risen and has remained high [17]. Gessani and Page (1999) report that, since the launch of the program in 1993, public investment has hovered around 7 percent of GDP during the 1993-98 period. The sheer magnitude of the budgetary effort has led to larger budgetary deficits (about 15 percent of GDP) and faster domestic debt accumulation than was originally expected. A widening budget deficit increases the inflation rate and the interest rate, and hence discourages the participation of the private sector. The deficits have been mostly financed through the issuance of government bonds (with maturities of up to two years) denominated in Lebanese pounds and held primarily by the domestic banking system. During 1993-2000, gross public debt increased from 49 percent to 109 percent, and net public debt rose from 38 percent to 97 percent.

Rapidly accumulating debt has, however, helped Lebanon achieve some favorable macroeconomic outcomes like low inflation, a stable exchange rate, and growing foreign exchange reserves (Figures 2 and 3). But, the high level of debt keeps interest rates up and paying the interest on such debt absorbs an ever-increasing share of public revenues. Table 2 in the appendix presents the composition of public expenditure. It should be noted that, historically, initial recovery through reconstruction has not been a guarantee for sustained growth for countries emerging from war (Gressani and Page, 1999). For example, macroeconomic stability and strong private sector recovery were achieved in post-war West Germany and Japan largely by pursuing tight fiscal policies and ensuring wage restraint. A two-tier approach to fiscal restraint addressing the problem of external imbalances and wage restraint focusing on firm profitability and retained earnings was used. These experiences indicate that, external deficits are difficult to avoid in the early stages of reconstruction and are not necessarily harmful; yet, the fiscal policy stance is crucial for ensuring that external deficits are kept under control and eventually eliminated; and labor market developments are critical for achieving public-sector led reconstruction that is accompanied by a strong private recovery. The sheer size of fiscal imbalances in Lebanon endangers the reconstruction effort itself by raising the prospect of macroeconomic instability, thus undermining the prospects of robust growth beyond the early reconstruction phase.

Although high public consumption does increase future growth and, therefore, repayment capacity, [18] and significant operations and maintenance expenditures can increase the return on public investment, it is debatable whether this actually is the case for the majority of current expenditures in Lebanon. Interest payments on public debt and the government's wage bill represent one of the largest components of current expenditures, as has been shown in Table 2. It is interesting to note that interest payments and the wage bill each exceed the public investment budget.

As Table 1 shows, a distinguishing feature of the Lebanese economy is its heavy reliance on the service sector rather than industrial activities as the main source of export earnings. The occupational distribution of the country's labor force of about 1 million plus as many as 1 million foreign workers is evidence of this reliance: while 62 percent of the labor population is employed in the services sector, only 31 percent and 7 percent of the labor force work in the industrial and agricultural sectors respectively [19]. Table 3 in the appendix presents these shares since 1975. Also, relative to the resident population, a large expatriate population represents a source of transfers and capital inflows, as well as skills that are generally unavailable to other countries in Lebanon's position.

In addition, the tiny nation of 4 million has access to a large supply of unskilled labor from other countries in the region, especially, as mentioned earlier, from Syria. This influx of Syrian labor has increased unemployment among Lebanese nationals to an estimated 18 percent [20], and placed a heavy burden on Lebanon's social security system. As a result of this influx, Lebanon is transferring approximately \$3 billion a year to Syria [21]. This figure constitutes the largest (or second largest, depending on the current price of petroleum) single source of income for Syria. The situation has given rise in Lebanon to nationalistic groups like the Citizens for a Free and Independent Lebanon (CFIL) that have launched a series of terrorist attacks against Syrian civilian workers.

The types of jobs that foreign workers usually undertake are the traditional, dirty, dangerous, and difficult jobs characteristic of the secondary labor market. In particular, since the civil war, Lebanese nationals have been less likely to undertake such jobs because the jobs have been "tainted" by the low status of foreign workers in the country and because they are less prepared to suffer the indignities of degrading work, low pay, and insecurity.

Syrian workers had been a significant part of Lebanon's expatriate workforce prior to the outbreak of civil war in 1975, but their presence had been strictly subject to Lebanese laws. The growing Syrian influence in Lebanon since 1991, however, led to the official removal of most travel restrictions between the two countries. As Lebanon's post-war reconstruction boom gained steam in the early 1990s, a variety of subsequent agreements were implemented which made it possible for Syrians to cross over the border virtually undetected, making Syrian workers a nearly ubiquitous presence on the streets of Beirut. The

Lebanese newspaper, *Al-Nahar*, in October 1994 and July 1995, cited figures obtained from Lebanon's General Security Directorate that put the number of Syrians entering the country at 1,435,991 in excess of the number who departed Lebanon. Marwan Iskander, a Lebanese economist and former adviser to Prime Minister Rafik Hariri, has estimated that the number of Syrian workers in Lebanon remains about 1.4 million [22]. These figures are considered to be conservative since they don't take into account undocumented migration into the country. In addition, the estimated 35,000 Syrian soldiers stationed in Lebanon often have jobs to supplement their meager pay. According to Lebanese economic experts, the Syrian labor force is roughly distributed as follows: construction (39%), seasonal agriculture (33%), municipal and sanitation jobs (20%), services, including street vendors and taxi drivers, (8%), and industry (2%) [23]. It is interesting to note that in 1999, according to the Ministry of Labor, only 530 work permits were issued to citizens of Syria, implying that the vast majority are employed in the informal sector. Table 3 in the appendix further provides annual data from 1993 to 2000 on the number of work permits issued to different Arab and Asian nationals [24].

The influx of workers into Lebanon is driven to a large extent by the availability of jobs that have been created due to the massive government program for the reconstruction and rehabilitation of the country. Since Syria's per capita GNP is less than a third of Lebanon's [25], Syrian workers have been readily willing to work for wages that are extremely low by Lebanese standards. For example, a Syrian taxi driver in Beirut can earn up to \$200 per month [26] [27]—around twice the salary of a university professor in Damascus. Lebanese employers prefer to hire unskilled Syrian workers over their Lebanese counterparts because the transaction is off the books, allowing them to avoid paying the required minimum wage, evade the social security system, and demand long working hours of the workers. However, the effect on the Lebanese labor force of this influx has been inimical. The 18 percent unemployment rate cited earlier is for the Lebanese labor force as a whole but this figure is probably higher for unskilled workers. It is not uncommon for those who get jobs to accept low wages and dismal working conditions, as well as to forgo health insurance and other benefits [28]. According to the results of a study by the Development Studies and Projects Center that was published in a Lebanese newspaper, Lebanon's labor force is expected to grow at an average of 2.3 percent in the next decade, compared to an average of 1.5 percent worldwide [29]. The Lebanese government, therefore, needs to implement policies that encourage growth and currently lacking private sector participation.

#### **4. The Political Situation**

According to a complicated compromise, the government in Lebanon is made up, of the three main religious factions, the Maronite Christians, the Sunni Muslims, and the Shi'ite Muslims. According to the arrangement, the leaders of the three factions assume the role of President, Prime Minister, and Speaker of the Parliament, respectively. The three political figures are also known as the Troika. The relationship among the Troika is generally characterized by tension and rift. Currently, Emile Lahoud is the Maronite President, Rafik Hariri is the Sunni Prime Minister, and Nabih Berri the Shi'ite Speaker of the Parliament. Though historically the Maronite President was the leader of the Troika, post-civil war arrangements have shifted power to the Sunni Prime Minister.

In the Parliament for 2000-05, out of 135 Members of Parliament, 34 were Maronites, 30 were Sunni, while 28 were Shiite [30]. Other significant minorities are 18 Greek Orthodox and 9 Druze. The remaining members belong to small minority groups. This distribution points toward the need for coalitions in the government in order for it to work smoothly. In particular, out of the three main groups, two have to be aligned for the government to be able to pass and implement public policies. The contention of this paper is that this coalitional structure directly contributes to over-investment on part of the government. This is illustrated in Figure 4 in the appendix where a cross-country comparison of capital expenditures is presented for several countries in the region over the recent past. It is interesting to note that average capital expenditures in Lebanon are above those in these other countries in the region. All these countries are either ruled by monarchs or by regimes that have not been based on fragile coalitional arrangements [31]. This is in agreement with a claim made by the model presented in the next section of this paper. According to the

model, coalitional governments are more likely to engage in over-expenditure resulting in higher government investment.

## 5. The Model

Consider an endowment economy with endowment  $Y_t = C_t + G_t$  at time  $t$  where  $C_t$  and  $G_t$  are the consumptions of the agents and government respectively. The model is divided into two parts: we first look at the worker's problem followed by an exposition of the politician's problem.

The model consists of two sectors—one formal, the other informal. Two types of agents make up the total labor force: the Lebanese, who have the option of working in either of the two sectors or to not work at all, and the foreigners who can work only in the informal sector in Lebanon or back in their home country. These conditions are imposed to capture the fact that the Lebanese workers are mostly highly skilled and trained while the foreign job seekers are largely unskilled. The model remains unchanged if we allow for unskilled Lebanese workers provided that they do not have access to jobs in the formal sector [32].

### The Worker's Problem:

We consider a simple two-period model. Each domestic worker maximizes:

$$u(c_0, l_0) + \beta Eu(c_1, l_1), \quad 0 < \beta < 1, \quad (5.1)$$

s.t.  $a_1 \leq R(a_0 + w_0(1-l_0) - c_0)$ , and  $c_1 \leq w_1(1-l_1) + a_1$ . Also,  $L_t + l_t = 1$ , for  $t=0, 1$ .

Here,  $c_t$  and  $l_t$  are, respectively, consumption and leisure at time  $t$ , and  $L_t$  is the amount of time spent doing work at time  $t$ . The total time endowment is taken to equal 1. The wage,  $w_t$ , varies depending on which sector the worker is employed, and whether the worker is working or not. Thus, if the worker is in the formal sector, the wage is given by  $w_f$ , if employed in the informal sector it is given by  $w_i$ , and by  $w_a$  if the worker is employed outside of Lebanon [33]. We make the plausible assumption that the unskilled wage in Lebanon is higher than that available in the foreign worker's home country. Obviously, the wage is zero if the worker is unemployed. The variable  $a_t$  represents each agent's asset position at time  $t$ . Subscripts are used to signify the sector to which the agent holding the assets belongs, just as was done for the case of the wages. Further, wages and interest rates are taken as given by both the agents as well as the government.

We now proceed with our analysis with the assumption that preferences are additively separable and linear. The worker gets  $w_f^0$  in period 0 but searches for a new job in period 1. The probability of finding a job is given by  $\alpha$  and is a function of the size of the Lebanese labor force,  $L_1$ , the amount of capital being employed in the sector,  $K_f$ , and the asset position of the agent in period 1. The probability of getting a job decreases as the size of the labor force increases but goes up as the capital being employed in the sector rises. The asset position of the agent affects the probability of finding a job positively in the sense that an agent with a higher asset level is assumed to have a higher social status that increases his likelihood of finding a job through social connections. If he succeeds in finding a new job, he gets a wage of  $w_f^1$ . If the worker does not find a new job, however, he retains his job from period 0. The problem faced by the worker in the formal sector is then given by:

$$\max - \frac{\alpha^1}{R} + \alpha^0 + w_f^0(1-l_0) + l_0 + \beta \left\{ \begin{array}{l} \alpha(L_1, K_f, a_f^1)[w_f^1(1-l_1) + a_f^1 + l_1] \\ + (1-\alpha(a_f^1))[w_f^0(1-l_1) + a_f^1 + l_1] \end{array} \right\}, \quad (5.2)$$

The worker in the informal sector as well as the unemployed worker in period 0 also searches for a formal-sector job in period 1. Thus, the problems faced by these two agents are given respectively by:

$$\max - \frac{a_{if}^1}{R} + a_0 + w_{if}^0(1-l_0) + l_0 + \beta \left\{ \begin{aligned} & \alpha(L_1, K_f, a_{if}^1)[w_f^1(1-l_1) + a_{if}^1 + l_1] \\ & + (1 - \alpha(a_{if}^1))[w_{if}^0(1-l_1) + a_{if}^1 + l_1] \end{aligned} \right\}, \quad (5.3)$$

and

$$\max - \frac{a_u^1}{R} + a_0 + 1 + \beta \left\{ \begin{aligned} & \alpha(L_1, K_f, a_u^1)[w_f^1(1-l_1) + a_u^1 + l_1] \\ & + (1 - \alpha(a_f^1))[a_u^1 + 1] \end{aligned} \right\} \quad (5.4)$$

Note that we distinguish between the period 1 asset levels of the agents by using the appropriate subscripts depending on their period 0 employment status. This is because decisions regarding period 1 asset levels are going to be affected by which sector the worker belongs to or whether he is employed or not in period 0.

We now solve for two reservation wages, one for a worker who has an offer from the formal sector as well as the informal sector in hand in for period 0, and the other for a worker who has an offer from the formal sector for period 0 in hand and the option of not working at all. First, using (5.2) with (5.3) we solve for the reservation wage between working in the formal versus the informal sector; and second, we take (5.2) with (5.4) to solve for the reservation wage between working in the formal sector versus not working at all. This is done by differentiating the objective functions with respect to the appropriate asset levels and equating, (i) informal-sector agent's solution to that of the agent in the formal sector; and (ii) unemployed agent's solution to that of the agent in the formal sector. This yields, respectively:

$$\left[ 1 - \frac{1}{R\beta} \right] \left[ \frac{1}{\alpha_a(L_1, K_f, a_{if}^1)} - \frac{1}{\alpha_a(L_1, K_f, a_{if}^1)} \right] \frac{1}{(1-l_1)} + w_{if}^0 = \bar{w}_{if}, \quad (5.5)$$

and

$$\left[ 1 - \frac{1}{R\beta} \right] \left[ \frac{1}{\alpha_a(L_1, K_f, a_{if}^1)} - \frac{1}{\alpha_a(L_1, K_f, a_{if}^1)} \right] \frac{1}{(1-l_1)} + 1 = \bar{w}_{uf}. \quad (5.6)$$

The variable  $\bar{w}_{if}$  is the reservation wage of moving from the informal sector into the formal sector and  $\bar{w}_{uf}$  is for moving from being unemployed into the formal sector. We can see that as  $R$  goes up,  $\bar{w}$  also increases in both cases.

The above analysis shows the effect of a change in interest rates on reservation wages and, thus, labor participation. We have concluded that high interest rates would discourage Lebanese nationals from working in the formal sector. A similar kind of analysis can be conducted to study the decision problem of the immigrant workers. To do this, we can look at the maximization problem of the foreign worker that is given as follows:

$$\max \left\{ w_{if}^0 + \beta \phi(L_2, K_{if}) w_{if}^1 + \beta (1 - \phi(L_2, K_{if})) w_a, w_a (1 + \beta) \right\} \quad (5.7)$$

A worker searching in the informal sector has a probability of finding a job given by  $\phi(L_2, K_{if})$ . Here,  $L_2$  is the part of the labor force seeking a job in the informal sector while  $K_{if}$  represents the amount of capital being employed in that sector. The unskilled wage in the worker's home country is assumed to be time invariant. Note that the foreign worker does not care about leisure and has no assets. The former is because

most unskilled foreign workers are interested mainly in maximizing earnings for themselves and their families back home. The latter can be explained as a consequence of the worker's economically weak status as well as a result of the fact that such workers usually end up spending any savings or assets in order to get to the country of work.

We assume that if the worker goes back to his country in period 0, he can never come back. This is based on the fact that moving away from their home countries in search of jobs involves prohibitively high costs that render the possibility of fluid movement across borders infeasible. This is a common feature in the Levantine region where a significant proportion of unskilled workers often do not return to their home countries even for visits for extended periods of time once they have moved abroad [34]. Now, to get the reservation wage for this case, we equate the two available options to the agent to yield:

$$\overline{w_{if}^0} = w_a - \beta \phi(L_2, K_{if})(w_{if}^1 - w_a) \quad (5.8)$$

Note the relationship in probability  $\phi$  of the reservation wage condition above.  $\phi$  is a function of capital in the informal sector and the labor force eligible to work in this sector. Thus, as the amount of capital in the sector goes up (for example, when the government targets its investments toward reconstruction efforts), the reservation wage falls. This implies that more workers would be likely to accept jobs in this sector. On the other hand, however, as the potential candidates for available jobs increase due to this fall in reservation wage, the probability of finding a job also decreases, thereby pushing up the reservation wage again and thus contributing to a rise in unemployment.

#### The Government:

To complete our model, we introduce the government into our analysis. The operative assumption here is that the Lebanese government is coalitional. This is because of the constitutional arrangement of the government discussed earlier whereby politicians have to share power. Subsequently, we compare the results (regarding investment levels) obtained from this approach to the case where the government is constituted as a single ruler. The coalition consists of two politicians who play a simultaneous move game. There is an asymmetry between them in the sense that although both politicians make choices regarding the level of investment that they want to make, but only politician 1 chooses borrowing.

Politician 1 solves his maximization problem taking the  $q$  and  $K$  of politician 2 as given. The maximization problem for politician 1 when the government is a coalition can be stated as:

$$\begin{aligned} \max_{K_{t,1}, D_t} \quad & \frac{1}{R} q_{t+1,1} + p(K_{t,1}, \frac{Y}{D}) Q_{t+1} \\ \text{s.t.} \quad & (q_{t+1,1} + q_{t+1,2}) + (K_{t,1} + K_{t,2}) \leq D_t \end{aligned} \quad (5.9)$$

$$\text{where } D_t \leq ma_{f,t} + na_{if,t}.$$

Here a politician maximizes his or her expected utility in the next period [35].  $p(\cdot)$  is the probability of re-election and is an increasing concave function in  $K$  and the GDP to debt ratio,  $Y/D$ . In addition,  $Q_{t+1}$  are the ego-rents that a politician gets from staying in office while  $D_t$  represents government borrowing in period  $t$ . This is constrained by the amount in the economy that is available to be borrowed, i.e., assets available in the

formal and informal sectors with  $m$  agents in the formal sector and  $n$  agents in the informal sector. Also,  $K_{t,1} + K_{t,2} = K_t$  is the sum of the money that each of politicians 1 and 2 use for investment, while  $q_{t+1,1} + q_{t+1,2} = q_{t+1}$  is the sum of the monetary rents that each of politicians 1 and 2 appropriate for themselves at time  $t$ . Notice that the money diverted by the politicians to their own pockets has the time subscript  $t+1$ . This is to convey the point that the stealing of funds has some inefficiency associated with it and is not a cost-free exercise. Funds stolen today can only be accessed tomorrow, i.e., there is a lag of one period before the sum of money earmarked by the politicians for themselves is available to them.

Solving this problem yields the following useful first-order conditions:

$$\frac{1}{RQ} = p K_1 \quad , \quad (5.10)$$

and

$$\frac{1}{R} = \frac{Y}{D^2} Q p_{a_f} \quad \text{and} \quad \frac{1}{R} = \frac{Y}{D^2} Q p_{a_{if}} \quad , \quad (5.11)$$

As  $R$  rises,  $p_{K_t}$  falls, which implies a higher level of  $K_{t,1}$ . Given this context, we have a plausible explanation for both the high interest rates as well as the extraordinary participation in terms of government investment of the public sector in the country's post-civil war reconstruction effort. Our FOC suggests that the observed level of interest rates and government investment in recent times can be ascribed to the politicians' desire to maintain office and thereby maximize their expected benefits.

The other FOC implies that as the debt to GDP ratio rises or, in other words, as the GDP to debt ratio falls, we have an ambiguous effect on  $R$ . This is because a decrease in the output to debt ratio causes  $\frac{P_Y}{D}$  to go up but makes  $\frac{Y}{D^2}$  go down. Thus,  $R$  will go up if the decrease in  $\frac{Y}{D^2}$  is greater than the increase in  $\frac{P_Y}{D}$ .

Politician 2, like politician 1, solves his maximization problem taking the  $q$  and  $K$  of his coalition partner as given. For politician 2, the problem is as follows:

$$\begin{aligned} \max_{K_{t,2}} \quad & \frac{1}{R} q_{t+1,2} + p(K_{t,2}) Q_{t+1} \\ \text{s.t.} \quad & (q_{t+1,1} + q_{t+1,2}) + (K_{t,1} + K_{t,2}) \leq D_t \end{aligned} \quad (5.12)$$

$$\text{where } D_t \leq m a_{f,t} + n a_{if,t}.$$

Here a politician maximizes his or her expected utility in the next period.  $p(\cdot)$  is the probability of re-election and is an increasing concave function in  $K$ . In addition,  $Q_{t+1}$  are the ego-rents that a politician gets from staying in office. Note that since politician 1 decides the amount to be borrowed, the output to debt ratio does not appear in the objective function of politician 2.

Solving this problem yields the following useful first-order conditions:

$$\frac{1}{RQ} = p K_2 \quad (5.13)$$

The interpretation here is similar to the one given in the case of politician 1: high interest rates imply high investment by politician 2.

To make our conditions clearer, we state them with the assumption that the probability function for re-election above is given by:

$$p(K_1, \frac{Y}{D}) = \frac{1}{1 + e^{\frac{1}{K_1} + \frac{D}{Y}}} \quad \text{and} \quad p(K_2) = \frac{1}{1 + e^{\frac{1}{K_2}}}$$

for politicians 1 and 2 respectively. Then, for politician 1, our first order conditions become:

$$\frac{1}{RQ} = \frac{e^{\frac{1}{K_1} + \frac{D}{Y}}}{K_1^2 (1 + e^{\frac{1}{K_1} + \frac{D}{Y}})^2} \quad \text{and} \quad \frac{1}{RQ} = \frac{e^{\frac{1}{K_1} + \frac{D}{Y}}}{Y (1 + e^{\frac{1}{K_1} + \frac{D}{Y}})^2} \quad (5.14)$$

We get the second condition above when we maximize with respect to  $a_f$  or  $a_{yf}$ . Note that the sum of these two variables is equal to  $D$  that appears in the above expressions.

Unlike before, when we were solving the politician's problem with an implicit probability of re-election, we have an unambiguous interpretation of the first order condition with respect to borrowing. In this case, it is easy to see that a high debt to GDP ratio is associated with high interest rates.

The first order condition for the problem of politician 2 is now as follows:

$$\frac{1}{RQ} = \frac{e^{\frac{1}{K_2}}}{K_2^2 (1 + e^{\frac{1}{K_2}})^2} \quad (5.15)$$

As before, high interest rates and high investment levels go together.

To emphasize the point that the coalitional nature of Lebanon's government structure contributes to high domestic interest rates and government investment, we compare the case above with that of a single-ruler form of government. Assuming that the politician cares about his image in all constituencies, we can write [36]:

$$p_i(K_i) = p(2K_i) \quad (5.16)$$

where  $p_i()$  is the probability that politician  $i$  faces while  $p()$  is the probability that the politician gets re-elected. Differentiating (5.16) with respect to  $K_i$  gives:

$$p'_i(K_i) = 2p'(2K_i)$$

But we can use (5.10) (or (5.13)) to substitute for the probability that the politician gets re-elected, and since  $K_i = \frac{K}{2}$ , we have:

$$p_i'(K_i) = 2p'(K) = \frac{2}{RQ}.$$

Therefore,

$$p_i'\left(\frac{K}{2}\right) = \frac{2}{RQ} > \frac{1}{RQ}. \quad (5.17)$$

Thus, in the case where there is a coalition as opposed to single-entity rule, the optimal level of investment is  $K_i^* = K_i > \frac{K}{2}$ , i.e., it takes more investment in the coalitional set-up to reach the same probability of re-election that a somewhat lower investment level would make possible in a single-ruler framework. Again, this brings forth Lebanon's government structure as a reason behind high government investment that has led to an explosion in the public debt level in post-civil war times. We can also get to this conclusion if we look at our national income identity given by  $C+G=Y$  where  $Y$  is exogenous. Thus, if  $G$  is higher in the coalitional case than in the single-party government case, it would mean that private consumption is going to be lower in the coalitional government scenario as compared to the case of single-party government. This means that a coalitional government diverts more resources from the consumer than does a single-party government.

The preceding analysis of the worker's decision problem and that of the coalitional government contribute to our understanding of the dynamics of the debt and unemployment situation in Lebanon. High interest rates have several significant impacts in our model. First, they explain the high levels of unemployment amongst the Lebanese workers. Our model fulfils the expectation that higher interest rates would cause more and more workers to opt for a work-free life. A reason why this happens is the increased attraction of earning income on assets that the agents own.

While high interest rates discourage private investment and increase the amount of lending by agents, politicians use them as a policy variable that directly affects their expected utility. The nature of the politicians' preferences implies a greater likelihood of re-election with high levels of investment concomitant with higher interest rates. The reconstruction drive in Lebanon has been progressing at a very healthy pace with relatively little help from the private sector. The model provides a self-interest maximizing explanation for the Lebanese government's spearheading of this effort that in turn has most significantly added to the mounting levels of public debt in the nation.

## 6. Conclusion

Unlike the recovering economies of West Germany and Japan in the 1940s and 1950s, Lebanon has the advantage of being different in several key respects. The most important of these is that Lebanon is a much more open economy, and is part of a world that is integrated closely with regard to trade and capital flows. In addition, Lebanon has access to significant pools of capital because of its large expatriate population. Together with the availability of expatriate savings, Lebanon can therefore finance a much larger portion of aggregate spending than would have been possible for West Germany or Japan [37]. A faster recovery of investment and consumption could be generated from higher foreign savings. In the recent past, Lebanon has been able to finance a resource balance deficit in excess of US \$6 billion (equivalent to around 40 percent of GDP) using private capital inflows. This option is most feasible, especially in the medium term, because it does not require a drastic restructuring of the political set-up and institutions, which is a difficult and long task. However, this does not mean that changes in the political structure would no longer be needed. This approach is favorable because it does not impede the correction of current macroeconomic imbalances and

buys time for a possible de-linking of borrowing and investment decisions from re-election prospects of the politicians.

In general, there is interaction between three variables related to monetary policy. These are the interest rate, the exchange rate, and real wages. At medium and long runs, high interest rates and overvalued currency tend to decrease real wages and exacerbate poverty and inequality of incomes. Thus, a restructuring of the political set-up that leads to interest rate determination becoming independent of the politicians' maximization problem would improve welfare by having a positive impact on the level of real wages. In addition, our model suggests that lower interest rates would increase private sector investment. A recent opinion poll reported by the Lebanese Ministry of Industry reports that Lebanese industrialists identified the high level of interest rates as the greatest difficulty they faced. Lower interest rates would therefore accelerate private investment and thus increase the rate of job creation and hence reduce unemployment. Also, asset holders would find working at the new higher real wages more appealing particularly after the returns on their assets decline as a result. Without a significant reduction in the fiscal deficit and real interest rates, macroeconomic stability will be endangered by rising public debt. The sustainability of the reconstruction effort depends on expanding the range of profitable private investment opportunities in addition to keeping domestic interest rates near international levels. The motivation behind this strategy would be the conviction that minimum wage should provide the average family with enough household income to meet the basic needs of the family.

Thus, an interest-rate focused policy could contribute to the solution of two very acute problems. Not only would lower interest rates encourage private sector participation in Lebanon's reconstruction, but also viably address the persistent problem of unemployment. This would happen firstly by making participation in the labor market more attractive for the Lebanese relative to depending on their assets for income, and secondly by rapidly expanding capital availability in both the formal and informal sectors, thus creating more jobs. It would improve macroeconomic stability by relieving the government somewhat from its tremendous debt-servicing burden that has accounted for nearly a third of the budget in recent years.

In short, although much needs to be done to put Lebanon back on the path of rapid development that it followed prior to the civil war, the authorities need to address the more pressing short-term problems before shifting their attention to the requirements of sustainable growth. This is because long-term growth can effectively be targeted only if short-term prospects are first made viable. In order to do this, Lebanon needs to move swiftly to check its macroeconomic imbalances. Rising public debt and unemployment levels threaten not only the country's macroeconomic stability but also its political future. This paper suggests focusing on interest rates as a policy tool to ameliorate the situation by reducing interest rates. This would not only encourage private sector participation—which would reduce unemployment through the creation of more jobs and relieve the government of some of the burden of the country's reconstruction—but also provide breathing space to the government by decreasing the currently immense load of debt servicing.

## ENDNOTES

1. Badre, Albert, "The National Income of Lebanon," *Middle East Economic Papers* (1956).
2. Owen and Pamuk (1998) quote these figures at LL110 million from Egypt, LL150 million from Iraq, and LL300-600 million from Syria, p. 173.
3. Al-Khalil, Yusif, "Economic Developments in Lebanon since 1982," *Beirut Review* 3, 1992.
4. Owen and Pamuk, p. 160.
5. Saidi, Nasser, H., *Economic Consequences of the War in Lebanon*, Papers on Lebanon 3, Oxford, Centre for Lebanese Studies, 1986.
6. Figures provided by the Research Department at Bank Audi. Also see al-Khalil, 1992.
7. The IMF's *International Financial Statistics* claim the lower figure while independent economists like Badre who were associated with the American University in Beirut advocate the higher estimate.
8. Please see Table 1 in the Appendix.
9. Owen and Pamuk, 1998.

10. Nasr, Salim, "Backdrop to Civil War: The Crisis of Lebanese Capitalism," *MERIP Reports* 8, 10, 73, 1978.
11. Eken, Sena et al, *Economic Dislocation and Recovery in Lebanon*, IMF Occasional Paper 120, 1995.
12. Many professionals were forced by the situation to work below their qualifications as job availability became rare. This phenomenon continues to this day, although at a much reduced scale, as the drive for reconstruction in the post-civil war period has only become stronger.
13. *The Economist*, various issues. Alternate estimates are going to be presented and discussed later in the paper.
14. Gessani and Page, 1999. IMF estimates put average annual growth rate of GDP during 1991-97 at an impressive 9.7 percent.
15. Eken, et al., 1995.
16. Gressani, Daniela, and John Page, *Reconstruction in Lebanon: Challenges for Macroeconomic Management*, World Bank Working Paper Series, No. 16, 1999.
17. For example, in 1997, government deficit was reported by the IMF to be 26 percent of GDP.
18. Expenditures on health and education have particularly been shown to have a potential positive impact on economic growth in the medium term.
19. *CIA World Factbook*, various issues.
20. Many experts believe the rate to be between 25 and 30 percent instead.
21. World Bank estimates.
22. Note that this figure is in conflict with the one of 250,000 reported earlier in the paper and that was obtained from *The Economist*.
23. Figures obtained from the United States Committee for a Free Lebanon.
24. As mentioned earlier, the number of work permits issued, however, is not an adequate measure of the number of these foreign workers employed in Lebanon. They include new and renewed permits but do not include those who entered the country illegally, or the "illegal" employment of those whose permits have expired and have not been renewed, those who are working with only tourist visas, and those who are unemployed. There are no reliable figures.
25. World Bank estimates of per capita GNP in 1999 in Lebanon and Syria are \$3720 and \$1010 respectively.
26. In a 1998 study on the economic internal rate of return of Vocational and Technical schools funded by the World Bank, the Bank estimated the average hourly rate of unskilled workers to be \$1.79 and in the range between \$1.53 and \$2.22. The hourly rate for skilled workers in Lebanon (these were taken to be graduates of Vocational and Technical schools) was found to be \$3.08 with the range of between \$2.50 and \$3.61.
27. It is widely believed in Lebanon that the government stipulated minimum wage of LL 300,000 per month, which is about \$200, lies far below the basic family needs calculated by any standards, even if one adds to it family allowances (unemployed spouse and children) and transportation and education allowances.
28. Lebanon stipulates a minimum wage of LL 300,000 per month. However, the law is not enforced effectively. In theory, the courts could be called upon to enforce it but, in practice, they are not.
29. *Al-Safir* (Beirut), 29 January 2001.
30. These proportions hold true for the Parliament in other post-war periods.
31. We include Israel in this list based on the observation that, apart from a brief period of a Labor-Likud coalition, its government's have been fairly homogeneous ideologically.
32. This would make sense due to the lack of requisite training and qualifications of the unskilled Lebanese workers to be able to find employment in the formal sector.
33. The time subscript is dropped for simplicity.
34. See, for example, Goldberg (1996), Hollister and Goldstein (1994), and Lockman (1994).
35. In practice, the politicians make investments and do not give capital to any sector. But we use an abstraction, i.e.,  $K$  represents the capital that each sector gets as a result of that investment.
36. We drop the second argument of the probability function here for notational simplicity.
37. Giersch, Paque, and Schmieling (1993) and Hamada and Kasuya (1993) note that despite the foreign aid these two countries received following World War II, West Germany received less than 2 percent

of GNP in support from the Marshall Plan, and Japan's total external transfers ne

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## **APPENDIX**

Table 1: Lebanon: Structural Change, Selected Years, 1950-1973, (Percentage Shares)

	1950	1955	1960	1965	1970	1973
Agriculture	19.7	16.2	14.1	11.6	9.2	9.0
Industry	13.5	12.7	12.1	13.1	15.9	21.0
Construction	4.1	4.3	3.5	5.7	4.5	4.5
Transportation	4.1	5.4	3.9	8.2	8.2	8.5
Trade	28.8	28.8	32.0	30.6	31.4	33.0
Finance and Insurance	3.8	5.1	6.3	3.4	3.4	4.0
Real Estate	9.2	8.4	11.0	7.6	8.8	10.0
Government	6.9	6.0	7.8	8.0	8.7	10.0
Other Services	9.6	12.0	9.2	11.3	9.9	-

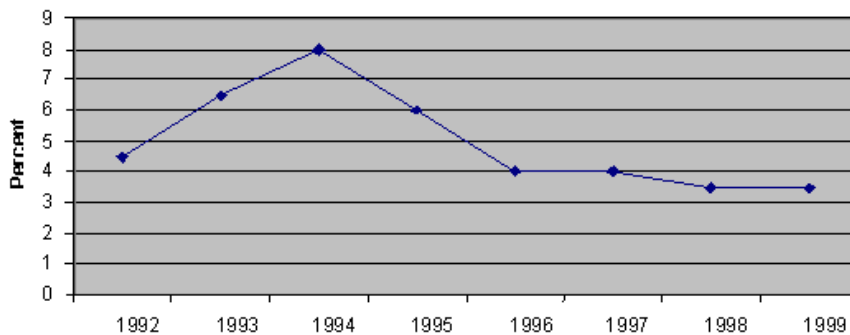
Source: Owen, Roger, and Sevket Pamuk, *A History of Middle East Economies in the Twentieth Century*, p. 258.

Table 2: Composition of Public Expenditure (Current Prices: % of GDP)

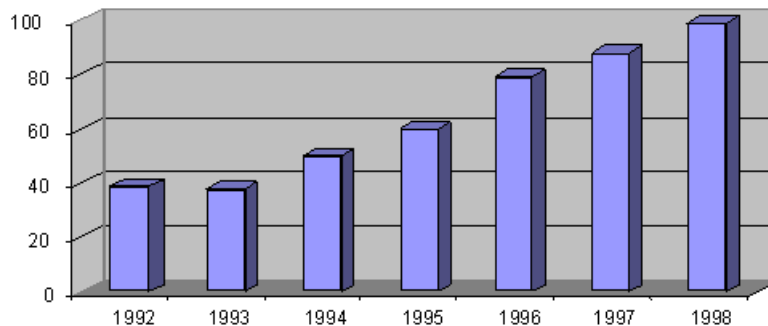
	1992	1993	1994	1995	1996	1997	1998
<u>Current Expenditures</u>	21.8	20.0	25.8	25.7	29.4	31.0	20.0
Interest on External Debt	0.4	0.3	0.3	0.7	1.1	1.1	1.2
Interest on Domestic Debt	5.0	5.7	9.4	9.7	11.9	13.9	13.0
Consumption	14.8	14.0	14.5	14.1	15.5	15.7	15.0
Subsidies	1.5	-	0.6	1.2	1.0	-	-
Wages and Salaries	6.9	9.9	11.2	10.4	11.1	10.7	-
<u>Capital Expenditures</u>	1.5	3.4	9.3	9.4	8.5	5.5	5.5

Source: Extracted from Eken, Sena, and Thomas Helbling, "Back to the Future: Postwar Reconstruction and Stabilization in Lebanon," *IMF Occasional Paper No. 176*, p.87.

**Figure 1: GDP Growth Rate (constant 1994 prices)**



**Figure 2: Total Government Debt (Current Prices; percent of GDP)**



**Figure 3: Real Interest Rates on Public Debt (In percent)**

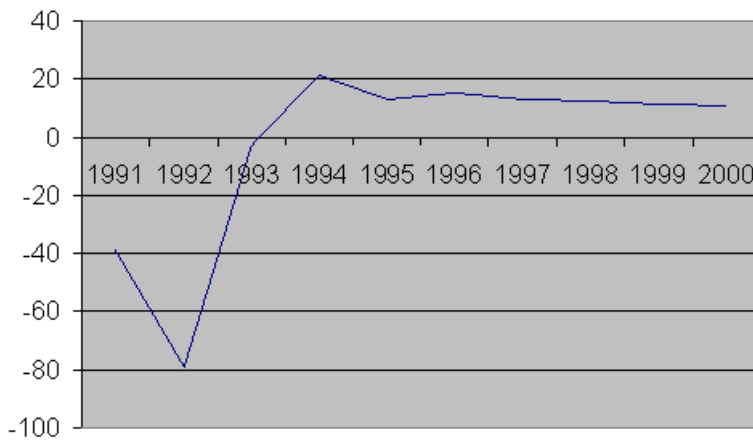


Table 3: Work Permits Issued to Selected Foreign Workers, 1993-2000

	1993	1994	1995	1996	1997	1998	1999	2000
Syrians	5053	2502	1056	834	1061	691	530	449
Palestinians	358	357	354	449	460	358	350	304
Sudanese	246	477	429	384	507	565	495	418
Egyptians	7704	15557	11602	8972	10788	20083	18051	14365
Jordanians	622	546	313	266	278	259	230	182
Iraqis	299	298	129	105	100	79	103	117
Other Arabs	214	203	91	122	139	148	139	126
Total Arabs	14496	19940	13974	11132	13333	22183	19898	15971
Sri Lankans	10136	13274	14253	12552	23668	23516	22917	22430
Filipinos	2833	3689	4344	4304	5501	5315	5788	6436
Indian	3329	3727	4659	4758	6881	6974	7196	6217
Others	164	2269	2218	2187	3138	3610	4348	4614
Total Asians	16462	22959	25474	23801	39188	39415	40249	39697

Source: Ministry of Labor, Lebanon.

**Figure 4: Capital Expenditure in Selected Countries  
(Average 1991-2000; As percent of GDP)**

