Exchange Rate-Based Stabilization in War-Ravaged Economies:
The Case of Lebanon

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Abstract

This article examines exchange rate-based stabilization in an economy that has been badly destroyed by war or other calamities. The article does this in the context of post-civil war Lebanon. Both Iraq and Afghanistan are prime candidates for such a policy. This article first demonstrates the validity of the theory and empirical regularities (initial boom followed by an economic contraction) in the case of Lebanon and argues for the suitability of such programs for war-ravaged economies. It then empirically highlights the role played by the credibility of policy makers in the success or failure of the program and the resulting dynamics of economic variables. The article concludes that the success depends on a political environment that engenders credible policy.

JEL Classification Codes: E63, F41, O24, O53

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1 Introduction

This article is concerned with exchange rate-based stabilization programs in developing countries. In particular, the focus is on the experience of post-civil war Lebanon (a) to discuss the effectiveness of exchange rate-based stabilizations in economies with destroyed infrastructure, (b) to compare the observations with empirical regularities associated with exchange rate-based stabilizations in general, and (c) to highlight results that might be of interest to countries in similar situations faced with choosing between different stabilization policies. The stabilization program embarked upon by Lebanon following the end of its bloody civil war took a toll on its economic and social infrastructure and aggravated its problems. The experience could prove relevant in the present global environment where several countries, for example, Iraq and Afghanistan, face the challenge of putting their economies on the road to stable and sustainable growth. However, it is useful to emphasize that the focus here is specifically on the Lebanese experience and that generalizations to other cases need to be handled with caution.

Bringing inflation under control will have to be an important target of any policy designed to meet the challenge of stabilization, as there is strong consensus in the economics profession that high inflation is harmful for the growth of economic capacity. High rates of inflation have been a persistent problem in developing countries. Latin American countries have been infamous for their excessively high levels of inflation and have therefore been the focus of studies that have analyzed policies and programs that have been implemented to address this issue. Inflation rates of over 10 percent and even periods with sustained inflation over 25 percent have not been uncommon. While many countries (mostly in South America) have experienced what is now commonly labeled as "chronic" high inflation (Pazos, 1972), several other developing countries have suffered from high inflation associated with large changes in terms of trade and political instability. This phenomenon has been present in Africa and Asia and even in some developed countries like Iceland (Fischer, 1988).

Various approaches have been used in attempting to stabilize high inflation. While numerous countries have tackled the problem using the so-called *populist* programs that entail direct intervention in the wage-price process, others have relied on more *orthodox* policies that attempt to get the fundamentals right. Such policies have involved using money and exchange rates to achieve their objectives. In fact, a combination of the two aforementioned approaches known as *heterodox* policies have also been employed.

Both the populist and heterodox programs are premised, at least in part, on the assumption that the economy possesses a substantial amount of unutilized productive capacity. This assumption, however, is likely to be violated in the case of war-ravaged economies that usually have severely damaged infrastructure. The choice from among the two orthodox policies largely rests upon the kind of after-effects that appear more compatible with the path the policymakers prefer to take to stabilization. While the beginning of exchange rate-based stabilizations are characterized by economic booms and sustained real appreciations, contractions take hold toward the end and beyond. In contrast, evidence suggests that a recession is more likely toward the start of money-based stabilizations. This implies that the choice between the two programs depends upon when the country is willing to bear the costs of disinflation in terms of output losses (Calvo and Vegh, 1999). For developing countries emerging from debilitating wars, exchange rate-based stabilization would hold special appeal stemming from the need to rebuild and rehabilitate and expand economic activity quickly. In fact, exchange rate-based stabilization was the program of choice of the Lebanese government after the end of its civil war in the early 1990s. Comparing the results obtained from the Lebanese experiment to theoretical predictions and empirical observations from experiences of other countries with economic disturbances should therefore help us shed more light on the peculiar case of Lebanon.

The next section discusses the theory and empirical evidence of exchange rate-based stabilization programs followed by a section that analyses the Lebanese program in particular. The article

subsequently discusses and examines the role policy credibility as manifested in the political leadership plays in Lebanon in generating the results we observe. The article concludes with lessons for such countries culled from the Lebanese case.

2 Exchange-Rate Based Stabilization: Background

2.1 The Theory

As stated earlier, the two main approaches to stabilization utilized by developing countries suffering from high inflation are money- and exchange rate-based. Given the evidence lending support to the view that money-based stabilization leads to a recession taking place at the beginning of the program (Calvo and Vegh, 1994a) and that exchange rate-based stabilization causes an initial boom and an eventual contraction (Kiguel and Liviatan, 1992; Vegh, 1992), the choice between the two nominal anchors really translates into a choice between bearing the costs of disinflation, in terms of output, "now" versus "later". Clearly, countries that are emerging from the devastation of war and are attempting to stabilize their economies in order to make the economic environment more conducive to subsequent sustained growth have a straightforward choice to make. Since the need for rehabilitation is immediate and pressing under these circumstances, a policy that is likely to cause a recession soon after implementation can be reasonably expected to have lesser appeal than others.

Preference to delay a contraction in an economy with an urgent need to rebuild is not the only reason for choosing the exchange rate as the policy instrument. Exchange rate regimes also allow the authorities to do away with the requirement to have information about money demand or velocity, which are crucial when a monetary anchor is being used and which are also quite difficult to predict in the transition from high to low inflation. Another related issue is that prolonged periods of high inflation often contribute to creating highly dollarised economies.[1] This leads to a situation where the relevant money supply includes foreign currency holdings and deposits and this component is not controlled by domestic policymakers. Therefore, a contraction in domestic money supply is not likely to have a significant effect on liquidity or inflation in countries that are plagued by violence, upheaval, and social instability.

Finally, since the exchange rate is a price as opposed to a quantity, it serves as a much clearer signal to the public of not only what the government intends to do but also what it is actually doing. This, in turn, influences the public's inflationary expectations by giving it an anchor that can be continuously monitored and hence makes the government more credible. All of these considerations make reliance on the exchange rate as opposed to a monetary aggregate more attractive and this is precisely the choice that was made by the Lebanese policymakers following the end of civil war.

A variety of analytical models have attempted to explain the boom-recession cycle in exchange rate-based stabilization programs. One key feature of these models has been their emphasis on the dynamic effects of imperfectly credible policy, which is a consequence of varying expectations about present and future government policies. The main explanations have been put forward by Rodriguez (1982), and Calvo and Vegh (1993a, 1993b).

Rodriguez bases his model on a small open economy where the exchange rate path is pre-announced, the money supply is endogenous, expectations follow a backward-looking process, and capital is perfectly mobile internationally. For given levels of the real interest rate and the real exchange rate, this model determines the inflation rate. In the steady-state equilibrium, the model implies that the domestic real interest rate must be equal to the world interest rate and the long-run inflation rate is equal to the devaluation rate. Backward-looking expectations serve the purpose of generating the observed short-run boom in this model. The initial reduction in the devaluation rate leads to a fall in the nominal interest rate and a downward jump in the real interest rate. This in turn

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[1] Dollarisation refers to a situation where domestic currency is substituted for a foreign currency (in most cases, the US dollar) as a unit of account, store of value, and medium of exchange.

leads to an increase in demand for non-traded goods. The contraction in demand results from the appreciation of the real exchange rate that is caused by the upward pressure on domestic prices due to the initial increase in demand for home goods. The explanation provided by this model relies on an arbitrary specification of behavioral functions and expectations formation. However, this formulation with its focus on a backward-looking expectations process appears untenable in the context of war-ravaged economies that are undergoing comprehensive macroeconomic adjustment programs since history in this instance does not serve well the role of providing usable expectations. In addition, Calvo and Vegh (1994b) have argued that the existence of backward-looking expectations may not even be sufficient to explain the initial expansion in output following the implementation of an exchange rate-based stabilization program.

To counter these shortcomings, Calvo and Vegh (1993a, 1993b) provide an explanation based on forward-looking expectations instead. They consider a small open economy that produces traded and non-traded goods. The representative household maximizes the discounted lifetime sum of utility subject to a cash-in-advance constraint and a lifetime resource constraint. Output in the non-traded goods sector is determined by demand. Inflation in this sector is assumed to be negatively related to excess demand, which is defined as the difference between actual output and its long-run level. The price mechanism works on the assumption that firms in the non-traded goods sector determine the prices of their products in an unsynchronized manner, taking the average price prevailing in the economy and the future path of demand into account. Although the price is therefore predetermined at any given period, inflation can jump since it conveys individual prices set by firms. For example, some firms increase their prices when excess demand increases in the non-traded goods sector, which leads to a rise in inflation. Over time, however, this inflation falls since the number of firms that are yet to adjust their prices to the change in excess demand goes down. This implies an inverse relationship between the change in inflation rate and excess demand in the non-traded goods sector. Due to this formulation of prices, the real exchange rate is predetermined in the short run. Finally, the overall inflation rate is written as a weighted average of the devaluation rate and the rate of inflation in home goods prices. The formulation asserts that, for the real exchange rate to remain constant over time, the rate of inflation in home goods prices must be equal to the devaluation rate. Also, for the inflation rate in the non-traded goods sector to remain constant, the consumption of home goods must be equal to the long run output.

Calvo and Vegh use this framework to emphasize the role of credibility in exchange rate-based stabilizations. The authors identify two distinct cases. The first is an economy with full credibility while the other has imperfect credibility. Under full credibility, an announcement by the government of an immediate and permanent reduction in the rate of devaluation convinces private agents of the commitment of the government to indeed keep the devaluation rate low in the indefinite future. This lower devaluation rate causes the nominal interest rate to fall through the uncovered interest parity condition under which the domestic nominal interest rate is equal to the sum of the world nominal interest rate and the devaluation rate. Given full credibility, the agents would expect the domestic nominal interest rate to remain at this lower level forever. Due to the everlasting nature of this drop in nominal interest rates expectations, private agents would have no incentives to engage in intertemporal consumption substitution. Consumption remains constant over time since tradable resources do not change. The overall inflation rate of the economy also falls instantaneously with the drop in the devaluation rate. Therefore, a fully credible exchange rate-based stabilization program reduces the inflation rate instantaneously at no real cost.

The analysis changes somewhat under imperfect credibility where the assumption is that private agents believe that the reduction in devaluation rate would be reversed at some point in the future. This means that the nominal interest rate would be lower until the devaluation rate is expected to stay low. In this period, the effective price of traded goods is also lower leading to a rise in their consumption above the level of initial permanent income. However, once the devaluation rate reverts to a higher level, consumption of traded goods falls below initial permanent income and remains there forever. This occurs to satisfy the intertemporal resource constraint of the economy. The current

account deficit increases until the lower devaluation rate is adhered to but jumps into balance once the policy is abandoned. In general, the net effect on inflation in the home goods sector is an initial decrease but a subsequent continuous increase in anticipation of the abandonment of the low devaluation-rate policy. This increase would continue if the policy is indeed abandoned but the inflation rate would drop in the face of a continuation of this policy. The overall inflation rate also follows the same path as inflation in the home goods sector up to the point where a reversion in the devaluation rate is expected. Thus the model predicts inflation inertia under imperfect credibility. Moreover, the drop in inflation is small the lower the credibility of the program.

2.2   Empirical Regularities

The aforementioned models have been attempts to explain what has been observed in Argentina, Brazil, Chile, Israel, Mexico, and Uruguay—countries that embarked on exchange rate-based inflation stabilizations in the recent past and that have served as the basis for identifying the main empirical regularities associated with exchange rate-based programs as identified in Kiguel and Liviatan (1992), Vegh (1992), and Hamann (2001). These are listed below:

- Inflation falls gradually and converges to the rate of devaluation.
- The real economy initially expands following the implementation of the program but eventually contracts.
- The domestic currency appreciates in real terms and depreciates following the collapse of the program.
- The trade and current account balances worsen.
- The effect on real interest rates is ambiguous.

Good recent examples, for comparison, of postwar reconstruction and stabilization come from South East Europe from countries such as Bosnia and Herzegovina. The approach has been credited for bringing about macroeconomic and financial stability to these countries. However, in the case of Bosnia and Herzegovina, growth has been lower than expected averaging around five percent per year according to the World Bank. The saving grace of the policy has been the gradual but unambiguous decline in inflation that, according to the central bank of Bosnia and Herzegovina, hovered around 0.6 percent in 2003. Tracking the empirical regularities mentioned above, the trade and current account balances have worsened and stand around 56 and 30 percent respectively of GDP, again according to the country's central bank. Another example is that of Croatia that achieved a high level of price stability using the exchange rate as nominal anchor but only at the expense of low growth (averaging around 3.5 percent over the past decade)—which again seems to agree with the empirical regularities listed earlier—but relatively benign current account deficits (averaging around 5.5 percent according to the National Bank of Croatia).

Two broad approaches found in the theoretical literature on exchange rate-based stabilizations are the use of an equilibrium framework to examine these programs (see, for example, Rebelo and Vegh, 1995; Dornbusch, 1982) and the recognition of the importance of persistent high inflation as a significant factor in influencing inflationary dynamics (for example, Calvo and Vegh, 1994; Edwards, 1993).

Using the exchange rate as the nominal anchor to act directly on inflationary expectations appears attractive from a policy-making point of view because they should theoretically increase the chances of lowering inflation at no significant real cost. However, in the late 1970s, the Southern-Cone countries comprising of Argentina, Chile, and Uruguay that launched stabilization programs based on a pre-announced exchange-rate path that exhibited a declining rate of devaluation, policy-makers observed inflation that responded only gradually to changes in the exchange rate. Kiguel and Liviatan (1990) examine the case of these countries and Israel in the 1980s—which actually succeeded in

sharply bringing down inflation—to describe the typical aftermath of exchange-rate based stabilization programs as a consumption/output expansion and appreciation of the real exchange rate followed by a consumption/output contraction and a depreciation of the real exchange rate. But theory suggests an almost immediate contraction following the implementation of the program while the observed "business cycle" runs counter to conventional wisdom.

This can be explained by again invoking Calvo and Vegh (1993a, 1993b) and the issue of credibility. As a general rule, stabilization programs lack credibility at the time they are being launched. This is natural given that high inflation is likely to be viewed as a consequence of the failure of existing policy or of political tensions. This is evident from the protracted large differential between domestic and world interest rates in economies these stabilization programs have been implemented. In war-ravaged economies, this issue takes on a unique form. One point this paper investigates is the type of post-stabilization business cycle that occurs in countries in the period following war and whether lack-of-credibility can account for that type of business cycle.

3   Exchange Rate-Based Stabilization in Lebanon

3.1   *Post-War Reconstruction in Lebanon*

Prior to 1975, the year in which civil war started, the Lebanese economy was the most dynamic in the Middle East region. Among its distinguishing features were low rates of inflation, high economic growth rates, large balance of payments surpluses, small fiscal deficits, and a floating, stable, and fully convertible domestic currency. The liberal economic regime was characterized by limited regulations on the functioning of markets for goods and services, labor, capital, and trade, as well as by low levels of taxes compared to other similar developing countries. Lebanon also served as an important intermediary between Europe and the rest of the Middle East. Its well-educated population gave it a comparative advantage in service sectors like banking and finance, and tourism and this, combined with the factors mentioned earlier, made Lebanon the hub of economic activity in the region.

This legacy was disrupted by the advent of the debilitating civil war that lasted from 1975 to 1990. Following the war that inflicted total damage to physical assets estimated at $25 billion (Gressani and Page, 1999), the Lebanese authorities started on the difficult task of simultaneously stabilizing and rebuilding the country. At the end of the war in 1991, real GDP stood at 3.72 billion Lebanese pounds, down from LP 6.82 billion in 1975, while real per capita income had gone down to less than half of pre-war levels (Eken, et al, 1995). The government played a primary role in reconstruction by first formulating the National Emergency Reconstruction Program and following it up with the Horizon 2000 Program. The idea was to rehabilitate and enhance the country's infrastructure and lay the groundwork for private sector led growth over the medium term.

While the end of the civil war came later, Lebanon managed to lay down the foundations for a peaceful settlement in 1989 with the Taif Accord for National Reconciliation. The conflict eventually came to an end in 1990 and government authority was gradually restored. The years 1991 and 1992 proved to be difficult both politically and economically. Contributing to this situation were the needs for reconstruction of physical, social, and legislative infrastructure. While the Lebanese pound-US dollar exchange rate stabilized in 1991 (to about 880 pounds per dollar according to Banque du Liban), hinting at some economic and political confidence, it dropped rapidly by 64 percent in nine months by September 1992 (Gaspard, 2004). The government was forced to resign in the face of angry labor demonstrations. There was no surprise in these developments given the untenable situation following the end of the civil war, a period characterized by frequent attacks on the exercise of civil and political rights and significant economic uncertainty. From the end of the civil war up until 1992, Lebanon remained in a transitory state, having to undergo political reconstruction, including the reestablishment of its political, military, security, and administrative capabilities. The resignation cleared the way for the first parliamentary elections in 20 years, which were completed at

the end of 1992. This, together with the installation of the new government, significantly contributed to the restoration of confidence. Under the premiership of Rafik Hariri, who served as Prime Minister from late 1992 to 2004 with a gap only from 1998 to 2000, political stability improved in 1993. His government set reconstruction as its foremost task and based this on a publicly stressed commitment to stable exchange rates. The billionaire Prime Minister, who also held the portfolio of Finance Minister, had made his fortune in real estate in Saudi Arabia and enjoyed external and internal political support as well as a reputation for being an astute economic manager. These characteristics lent substantial credibility to the government and contributed to the subsequent success of the stabilization program. This type of success is an important distinction that many post-conflict economies in the process of reconstruction often share with each other. The most often cited examples of these are post-World War II Germany and Japan that are discussed with the relevant institutional context by Cowen and Coyne (2005).

"Horizon 2000, for Reconstruction and Development" delineated the reconstruction program to be undertaken by the Lebanese government. This plan proposed the expenditure of $14.3 billion over the period from 1993 to 2002 on sectoral and regional rehabilitation and development. The idea was predicated on the belief that peace would assist in the rehabilitation and upgrading of infrastructure, which would in turn lay the groundwork for the economy to regain its past glory. The private sector was envisioned as the driving force behind this strong economic recovery, returning to Lebanon climbing living standards and its premier pre-war status of a regional hub for trade and finance. The plan was to thrust Lebanon into the category of upper middle-income countries by 2002 by doubling its per capita GDP relative to levels immediately following the collapse of Mr. Hariri's predecessor government. In fact, GDP was to touch 1974 levels in 1995. To see how ambitious this really was, one only needs to note that GDP was a mere 64 percent of its 1974 level in 1992.

The private sector was to play a leading role in the plan by investing at twice the rate of the public sector with the average total rate averaging 31 percent of GDP over the life of the plan. GDP growth over 1993-2002 was expected to be 9.3 percent with international trade playing a major part—exports of goods and non-factor services were to grow at twice the rate of GDP growth. The plan also placed considerable focus on financial targets. The plan anticipated a current fiscal surplus by 1995, the same year in which public sector debt was to peak at 84 percent of GDP, declining thereafter to 39 percent of GDP by 2002. Annual consumer price inflation was to fall to and stay steady at four percent by 1996 from its 1993 level of 15 percent.[2]

The plan, however, lacked a reasonable incorporation of post-war realities and failed to base itself on the availability of existing resources in the economy as well as the badly battered economic structure. The ripple effect of these miscalculations influenced the actual growth in output and exports. The notorious inefficiency of the public sector adversely affected any chances of correcting fiscal imbalances and in the absence of any substantial reform, growth and public spending followed widely divergent paths with the former soon losing steam while the latter continuing its unchecked ascent. As a consequence of these structural and macroeconomic problems and other uncompromising economic developments, the suspension of the implementation of the plan by 1997 came as no surprise.

During the lifetime of the program, however, the Hariri government did have considerable success in both stabilizing macroeconomic indicators as well as in rebuilding infrastructure. His reputation as an astute economic manager was bolstered by his success in attracting domestic and international investment and support for the program. However, this progress, while impressive in its own right, did not meet the objectives as stated by the government. These included a return to the position of the regional financial and commercial center.

Indications of the plan's impending failure were indeed present early on. As stated earlier, fiscal recklessness had made massive budget deficits a pervasive feature of Lebanon's economic landscape. Mounting public debt levels led to financing problems making the suspension of the Horizon 2000

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[2] Inflation actually fell from 131 percent in 1992 to 12 percent in 1994 (Najem, 2000).

program inevitable. While significant physical infrastructure rehabilitation had been completed by this time, social infrastructure projects still needed attention. Given that the latter is crucial in supporting the productive sectors of the economy, it is easy to understand the unimpressive role of the private sector in driving investment and the ultimate abandonment of the plan.[3] Also, Hariri had not been particularly successful in attracting long-term private sector investment with the exception of banking and real estate. However, even this investment had a rather ephemeral effect on the Lebanese economy, which goes some way towards explaining the slump that the economy experienced in 1997, the same year of the demise of the Horizon 2000 plan. The first Hariri government disintegrated in 1998.

3.2   Assessment

To gauge the influence and effectiveness of this exchange rate-based stabilization and to illustrate the dynamic response of the different variables to the implementation of the policy, profiles over time of these variables are presented below. Figure 1 below presents the monthly real exchange rate values over the past 13 years (1992-2004). The distinguishing feature of real exchange rates here is its continual appreciation over the post-war period, which is unlike the case of other exchange rate-based stabilizations where the program often collapses and the exchange rate reverts to it depreciative tendencies. Generally, the real exchange rate appreciates for three consecutive years following the stabilization before beginning to depreciate. One reason for this is the less than stellar record of success of exchange rate-based programs versus the triumphant episode in Lebanon. Also, a war-ravaged economy is likely to attract substantial foreign capital to rebuild. In fact, Lebanon in particular reformed its tax regime in order to encourage both domestic and foreign investment and spur entrepreneurial activity. This would also explain the appreciation pressure on the Lebanese currency. The trade balance, in general, worsens up to the year in which the real exchange rate reverts. For Lebanon, there was a very slight trend towards improvement almost four years after the implementation of the program following continual decline in the trade balance immediately after the program's implementation, but this has since changed into the largest trade deficit since the end of the civil war (Figure 2).
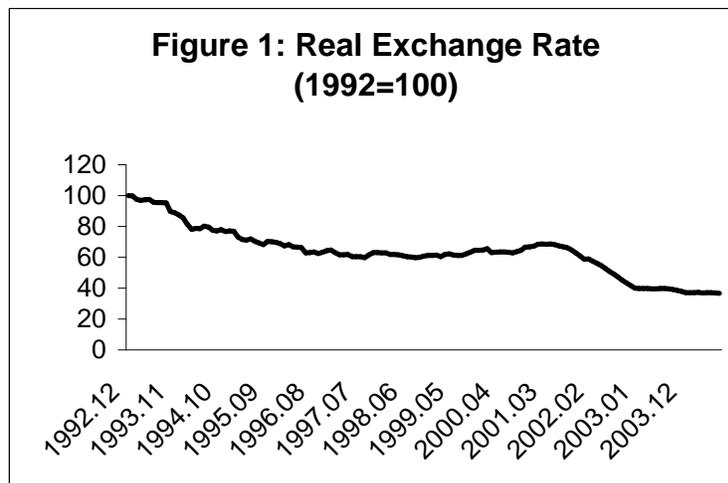

Source: Author's calculations based on data from Banque du Liban and Banque Audi.

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[3] An example of this was the failure to revitalize the previously vibrant tourism sector.

Figure 2: Trade Balance
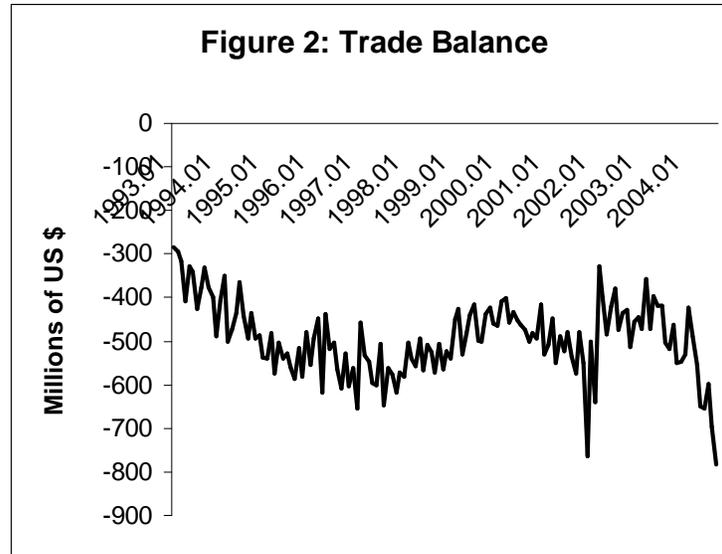
Source: Banque du Liban.

Figures 3 and 4 present the behavior of the rates of inflation and devaluation respectively. The Lebanese program's achievement of its objective is clear from figure 2, which shows annualized monthly inflation not only being brought under control and down to levels below 10 percent from upwards of 144 percent, but being consistently kept there for almost over a decade. More recently, the inflation rate has dropped further to below 5 percent. However, the observation that sets the case of Lebanon apart from the previous ones is the performance of the devaluation rate. The devaluation rate under past programs has tended to initially go down from about the same levels as inflation followed by a reversal to an upward direction. This has been due to the fact that, more often than not, after a brief period with a fixed exchange rate, policymakers either switch to a more flexible exchange rate or dump the program altogether. While the trend in Lebanon has been similar to an extent, the difference is that the slowing down of the devaluation rate was in fact initially an increase in the appreciation rate. However, the situation changed swiftly and the exchange rate started to experience a decrease in the appreciation rate (or an increase in the devaluation rate). The inflation rate was highly responsive to this initial increase in the rate of appreciation and has remained at desirable levels even after the switch in the direction of the devaluation rate because, after all, the currency has appreciated overall.

Figure 3: Inflation Rate
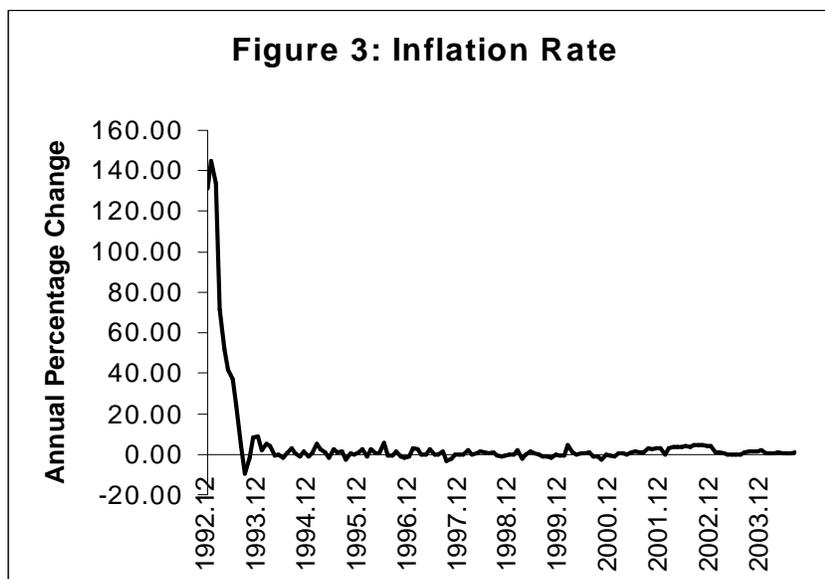
Source: Banque Audi Research Department.

## Figure 4: Devaluation Rate (1992=100)
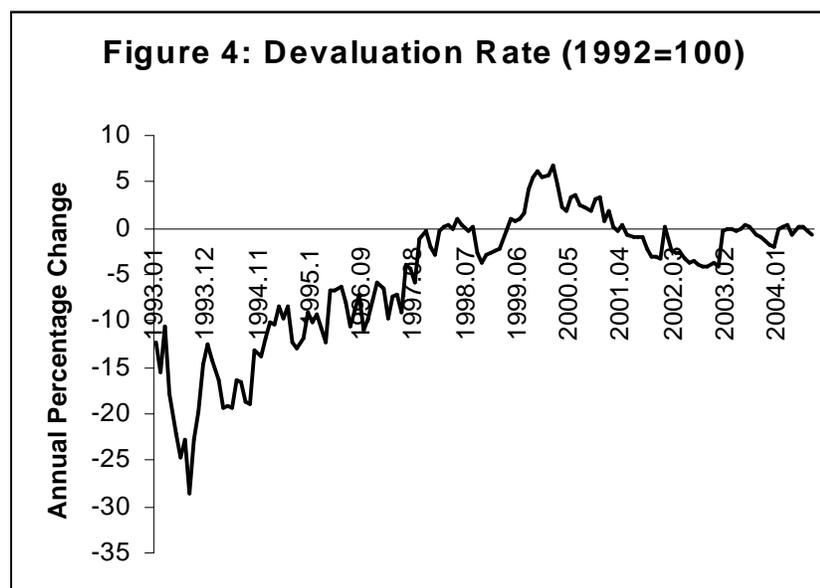
Source: Author's calculations.

The appreciation can be attributed to a rebound after some semblance of order and stability takes hold in a country devastated by war and chaos. As pointed out earlier, the more accommodating tax regime aimed at stimulating investment from domestic as well as from foreign sources that led to higher capital inflows could also have contributed to the appreciation. Another explanation could be the considerably high level of interest rates that prevailed at the beginning of the program and that the government needed to finance its ambitious reconstruction drive following the civil war, another feature common to economies trying to rehabilitate. Figures 5 and 6 below show the behavior of the domestic real lending and deposit rates. The effect on real interest rates has been ambiguous with

some previous exchange rate-based stabilization episodes characterized by a sharp rising trend in interest rates immediately following the implementation of the program while others have displayed a decrease in the initial stages. This has been clearer with annual data and even quarterly data has been shown to display the same behavior but with spikes. The corresponding figures for Lebanese monthly data confirm this ambiguity with even more spikes. Real interest rates did not rise immediately following the implementation of the program experiencing only a minor increase after a few years. They have been on a steady declining trend since the mid-nineties.
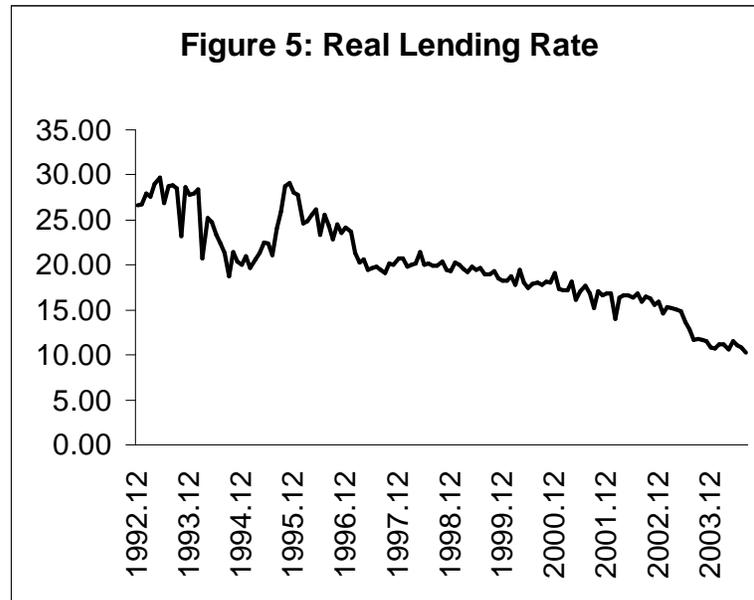

Figure 5: Real Lending Rate
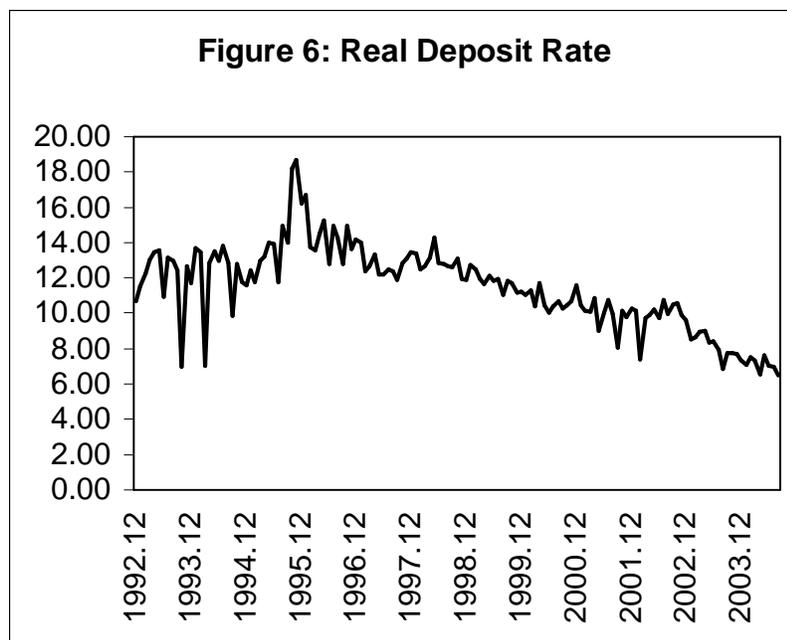
Source: Author's calculations based on data from Banque du Liban and Banque Audi.

Figure 6: Real Deposit Rate

Figures 7 and 8 present evidence related to the boom-recession cycle in the growth of annual real GDP and consumption respectively. In accordance with the stylized facts, real GDP growth increases for a couple of years following the implementation of the program and decreases thereafter. The same pattern is observed in consumption growth. Note, however, that in terms of magnitude, the cycle is more pronounced in the case of consumption. At its peak, consumption growth reaches 10 percent per year while real GDP growth touches 8 percent. Thus we can see that the profiles here closely follow the contours of a boom-recession type cycle that has been attributed to exchange rate-based stabilization programs. Although the Lebanese case is an example of a successful stabilization, recessions have been known to occur in the case of both successful and unsuccessful programs. In unsuccessful cases, a recession typically takes hold before the collapse of a program. The decline in the growth rate here starts about two years after the institution of the program, which is what has been observed on average in previous cases of exchange rate-based stabilizations, such as Uruguay, Chile, Turkey, and Israel (Calvo and Vegh, 1993b, 1999). Hamann (2001) also obtains similar results using a comprehensive panel study.
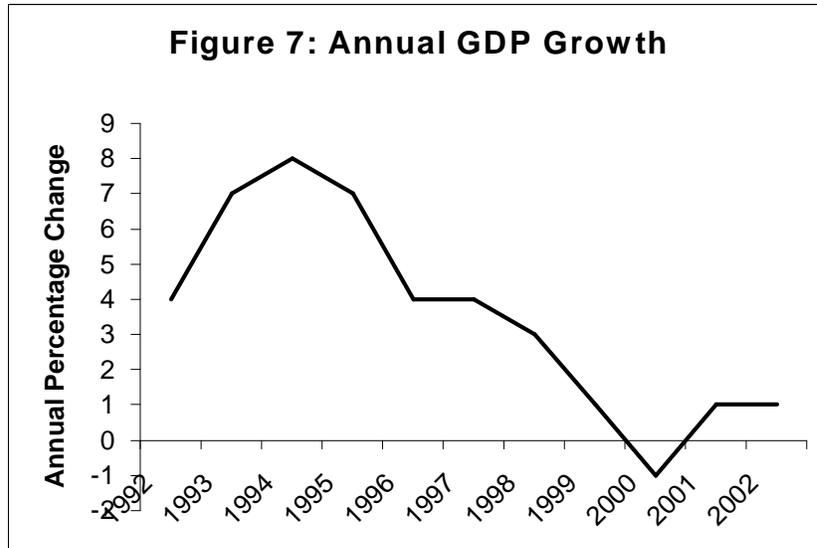
Figure 7: Annual GDP Growth

Source: *World Development Indicators* Database, World Bank.

Figure 8: Consumption Growth
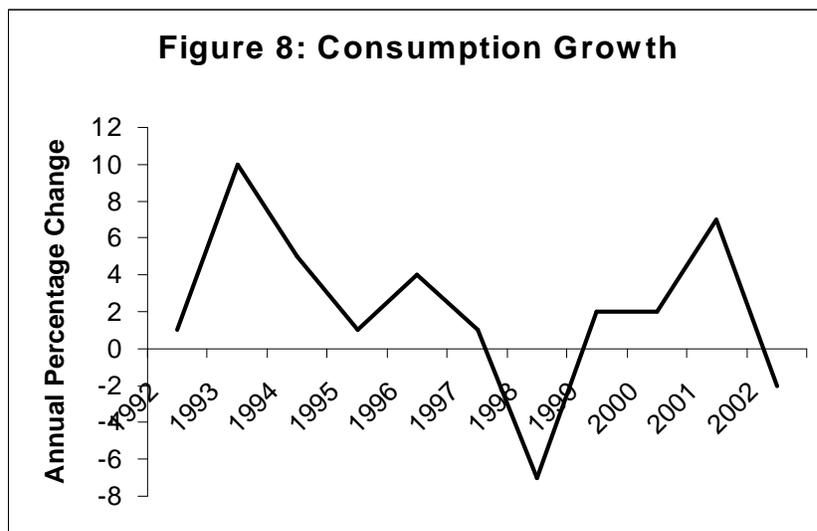
Source: *World Development Indicators* Database, World Bank.

The profiles in stabilization displayed in the figures are largely consistent with the stylized facts listed earlier. However, there are a few important differing points. The most significant of these that should be taken note of is the absence of a serious recession in the Lebanese case. While the real growth rate did eventually slow down in Lebanon and the country did pass through a mild recession, it never came close to the severity of recessions experienced by other countries that had earlier attempted stabilization via the use of an exchange rate anchor. As pointed out earlier, Lebanon's currency appreciated overall, ultimately settling at a stable nominal exchange rate. Consequently, the real exchange rate has gradually appreciated over time and has been almost constant over the last few years. Real interest rates, after having displayed no real trend in the couple of years immediately following the program, have also been on a steady decline.

4   The Role of Credibility in Stabilization

While the work of Calvo and Vegh described earlier explains the importance of credibility in exchange rate-based stabilizations, it does not provide us with any idea of how statistically significant this role really is. Although investigating this is a far from trivial exercise, simple econometrics can provide some useful insight. In the spirit of Reinhart and Vegh (1994), we run a regression on a dummy variable intended to capture policy credibility and test whether Lebanese inflation is significantly related to the devaluation rate. The sample for the regression contains 140 monthly observations (January 1993-August 2004). We define the credibility dummy as taking on the value of one from January 1993 to December 1995.

This period was chosen since it closely corresponds to the time through which socio-political goodwill and trust in government policy intentions can reasonably be claimed to have persisted. However, the amity started to dissipate with periodic opposition that Hariri had to face from members of his own cabinet and from the members of the Lebanese parliament, not to mention the president, Elias Hrawi, and the powerful Speaker of the House, Nabih Birri. Hariri was forced to compromise with parliament on a number of issues including the 1995 budget. The prime minister's economic programs came under fire from several important members of parliament due to the concern that the Horizon 2000 program would saddle Lebanon with an unmanageable debt burden.

The climax was reached in December 1995 when Hariri announced his resignation, although he later recanted this. The reasons for the move were the constant accusations of corruption directed against him and the refusal by the parliament to pass the 1995 budget. The stated reason for the resignation was to protect reconstruction projects for Beirut's city center. Hariri had, on several previous occasions, used the threat to resign in attempts to break political deadlock. However, the December 1995 limit was chosen for the credibility dummy because the resignation announced in this month had the most visible adverse effect on the economy and particularly the exchange rate—Banque du Liban had to spend an estimated \$342 million to stabilize the currency (Najem, 2000). Further reasons for inimical effects on credibility are provided by Shahin (2002) who identifies political instability as a significant reason for the declining confidence of businesses and investors in the Lebanese economy. Not only did the economic environment had to contend with the whims of Prime Minister Hariri and the tumultuous presidential elections of 1995 on the domestic front, it also had to suffer Israeli attacks in 1996 that destroyed key infrastructure.

The estimated regression equation is as follows:

$$INF_t = \alpha_0 + \alpha_1 DEVRATE_t + \alpha_3 CRED_t + \varepsilon_t,$$

where *INF* is the Lebanese inflation rate, *DEVRATE* is the devaluation rate, *CRED* is the credibility dummy, and ε is the error term. All variables, except *CRED*, are in logarithms. The results are presented in Table 1 below.

	Table 1: Regression Results		
	Intercept	Devaluation Rate	Credibility
Coefficient	2.618	0.038	0.431
t-statistic	9.494	0.476	2.382
p-value	<0.001	0.635	0.019

The results show that Credibility has played a strongly statistically significant role in the stabilization process. This lends further support to the role of imperfect credibility in stabilization programs pointed out by Calvo and Vegh and which was discussed earlier. In Lebanon, the inflation rate came down rapidly with the initial decrease in the rate of depreciation (or, more accurately, the initial increase in the appreciation rate) but then remained contained even after the reversion to the subsequent gradual increase in the depreciation rate. The substantial cushion of being able to increase the rate of depreciation (which, in this case, was really a decrease in the rate of appreciation) without actually causing the currency to depreciate is a major reason for inflation to have stayed low. Sensitivity analysis conducted on these results suggests that credibility becomes even more statistically significant if we move up the date to before December of 1995. In fact, that is what we observe if we closely follow the definition used by Calvo and Vegh, which is that Credibility ends once the depreciation rate starts to increase after an initial decrease. This would mean that instead of making the end of 1995 our cut-off for Credibility, we would have to assume it over by the end of 1993, which is also the period by which inflation had effectively been tamed.

5   Conclusion

This article has analyzed Lebanon's post-war exchange rate-based stabilization in order to assess the role and scope of this policy and to shed light on the efficacy of the approach in other economies that have undergone severe economic dislocation. Both Iraq and Afghanistan could be considered for such a policy after having taken their specific institutional characteristics into account. Economic research suggests that the two stabilization approaches based on the use of nominal anchors, namely money- vs. exchange rate-based stabilization, present the policy maker with a choice: either accept a contraction in economic activity right after the implementation of the program (for money-based stabilizations) or after a period of a few years (for exchange rate-based programs). Due to the initial boom immediately following implementation of exchange rate-based stabilizations, this approach should be more suitable for countries emerging out of periods characterized by devastating wars, natural disasters, or other such occurrences that exact a heavy toll in human and material terms and cause fundamental changes to the structure of the economy.

However, there is a further level of analysis that needs to be considered even after an exchange rate-based stabilization is identified as the suitable policy. Earlier research has found the role of credibility to be of paramount importance in determining not only the success or failure of the program but also the dynamics of economic variables. The case of Lebanon demonstrates further the crucial role of credibility as manifested in the early period of leadership of Prime Minister Rafik Hariri. The quick success with which the program was met and its objective of stabilization achieved, are highlights of the exchange rate policy being carried out on the shoulders of credible policy makers. Lebanon's economic slump in 1997 came on the heels of the Prime Minister's evaporating credibility and claimed his government victim. Although the usual disclaimer against far-reaching generalizations applies, the analysis above does suggest the usefulness of considering the credibility of policymakers among their populations if war-ravaged countries like Afghanistan and Iraq are to embark on a program of exchange rate-based stabilization. Therefore, while exchange rate-based stabilization programs hold considerable promise for countries suffering from economic instability,

the eventual success of such programs may depend on an absence of chaos and a relatively healthy political environment conducive to policy makers who inspire trust in the population at large.

This paper, while discussing the theory of exchange rate-based stabilizations in general, has not covered models that analyze this policy following a conflict. The reason is a lack of relevant theory in the existing literature. This points to a new and potentially very fruitful area for further research, concerned with the development of political economy models of exchange rate-based stabilizations in postwar economies that incorporate the often-unique institutional features not present in the majority of cases where stabilization is the objective. In that sense, the extensive analysis of the Lebanese case and the discussions on the South East European countries in this article should serve as helpful starting points.

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