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The economic cost of political instability

Nisreen Salti

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The Economic Cost Instability

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Executive summary

In the last six years, Lebanon has experienced both war and political instability, including assassinations, bombings, sit-ins, demonstrations, government resignation, and armed clashes.

This paper examines the impact of political instability on the economy between 2005 and 2010. The research reveals that the assassination of Hariri in 2005 and the July 2006 war both had a negative impact on most economic sectors. However, during other periods of instability, there is no evidence to suggest that the various economic sectors were affected.

More precisely, the construction sector was not impacted by the politically destabilizing incidents occurring during the period under consideration. Alternatively, bank deposits seem to reflect, with a slight lag, some of the violent political incidents, and there was a tendency for depositors to switch their money from Lebanese liras to US dollars following a political shock. Deposits show a sustained increase since June 2008, particularly in local currency, due not to an increase in the interest rate but rather to a combination of factors affecting confidence in the Lebanese banking system. Furthermore, there is a rapid upward trend in imports while exports fluctuate around a constant mean, but neither series seems to show variation reflecting political incidents. Finally, the flow of passengers through Beirut's airport also shows sustained increase, with departures only slightly outnumbering arrivals, an indication of net emigration overall. These findings seem to support the idea that political instability did not have a major negative influence on the Lebanese economy.

However, a systematic analysis of macroeconomic indicators demonstrates that the apparent immunity of individual sectors to daily variations in political confidence hides a significant cost to the economy. Political instability between 2005 and 2008 costs Lebanon 5% of GDP per capita when compared to a synthetic country that looks like Lebanon. This substantial loss in per capita output amounts to \$360 in 2005, \$665 in 2006, and \$640 in 2007. Moreover, the economic gains that accompany political stability are estimated to be 6% of GDP per capita. When political stability returned after the 2008 Doha Agreement, GDP per capita was higher than Lebanon's counterpart by \$648 in 2009 and \$1,260 in 2010.

Introduction

Political instability is believed to have strong adverse effects on economic prosperity. However, while some work has been done to estimate the economic cost of war, evidence linking economic outcomes to political instability in forms other than outright war is scarce. This is most likely the case because it is difficult to estimate how economies would have evolved in the absence of the realities of political conflict.

In the last decade, Lebanon has experienced both war and political instability. This is a paper of inspection and conjecture, as there is a lack of data necessary to attach a monetary value to the losses experienced by any sector or the overall economy as a result of a destabilizing political event. Thus, the goal becomes to utilize existing data to construct a map of where to investigate further in order to identify economic consequences of political events. This paper attempts to closely inspect the data that is available in the hope of identifying sectors, nodes, and markets that are especially sensitive to political shocks, as well as political events and developments that seem to have the most economic impact.

Furthermore, this paper is an exploration of the vulnerability of various sectors of the Lebanese economy to political shocks that had a clear effect on consumer confidence between 2005 and 2010, coupled with an estimation of the aggregate cost of political instability during that period. The analysis is therefore two-pronged. First, the paper maps out a chronology of political events between 2005 and 2010 on monthly sectoral data in order to come up with preliminary conjectures about the sectors which seem most vulnerable to political shocks, and conversely, which sectors stand to benefit the most during periods of stability.

In order to understand their economic impact, the study analyzes the economic outcomes where data series are available with a high frequency of observation. The data examined are all correlated with confidence in the economic climate of the country: Construction, banking and finance, international trade, the flow of passengers at Beirut Rafiq Hariri International Airport, and consumer confidence. Other than the noted effect of the July war, there is no evidence that the construction sector maps either contemporaneously or with some lag the number of politically destabilizing incidents that occurred. Bank deposits seem to reflect, with a slight lag, some violent political incidents, and there is a tendency for depositors to switch from deposits in Lebanese liras (LL) to deposits in US dollars (USD) following a political shock. Deposits show a sustained increase since June 2008—particularly in local currency—due not to an increase in the interest rate but rather to a combination of factors affecting confidence in the

Lebanese banking system. Furthermore, there is a rapid upward trend in imports while exports fluctuate around a constant mean, but neither series seems to show variation reflecting political incidents. Finally, the flow of passengers through Beirut Rafiq Hariri International Airport also shows a sustained increase, with departures only slightly outnumbering arrivals as an indication of net overall emigration.

However, the apparent immunity of individual sectors to daily variations in political confidence comes at a particular price. In the absence of a counterfactual series on the sectoral indicators, this identification of the vulnerability of sectors does not allow us to estimate the overall costs imposed by these shocks. The shifts in sectoral performance of each series—whether in terms of its immunity to shocks or its recovery and compensation for loss after a shock—may itself come at a cost or a benefit that is hard to measure. Instead, the overall cumulative cost of this series of shocks and of the overall period of instability is measured at the aggregate level. Therefore, the second aim of the study is to make use of macroeconomic data that is available annually to impute the cost of political instability and war. This is done by constructing a synthetic control group based on a combination of countries that present similar initial conditions to Lebanon for a variety of macroeconomic determinants of growth. Based on this synthetic group of countries that resemble Lebanon pre-2005, the economic cost of political instability is estimated at 5% of GDP per capita on average. Moreover, the ensuing period of relative political calm shows there are dividends to political stability with gains of 6% of GDP per capita.

Following this introduction, the paper is divided into three sections. The first describes the scope of incidents defined as causing political instability in the period under consideration, and discusses the varying impact of these incidents across key economic sectors. The next section draws on the methodology of constructing a synthetic control model so as to estimate the actual cost of political instability to the Lebanese economy between 2005 and 2010. Section three highlights the key findings of the analysis.

I Assessing sectoral vulnerability to political shocks

This section examines key sectoral outcomes of politically destabilizing events between 2005 and 2010. It first lists and maps across time the types of incidents that are understood to have been politically destabilizing. It then proceeds to examine the effects of these incidents on key economic sectors.

a Defining and mapping political shocks

The paper first compiles a chronology of the incidents and episodes of political instability in Lebanon between 2005 and 2010. All of the events included were significant enough to make the headlines of Lebanese newspapers for at least one day. Most of the incidents are those of violence, but some are non-violent political developments that shook the political scene. Appendix A contains the full chronology of incidents, including dates and a brief description of each event included.

As is clear from the chronology, the period between 2005 and 2010 is characterized by a high frequency of politically destabilizing events, particularly in the months between the winter of 2005 and the spring of 2008. This first period is characterized by political assassinations, the 2006 July war, and a deep political schism—which manifested both violently and non-violently—at the popular level, as well as the conflict at Nahr al-Bared. While there were still violent skirmishes in the period between the second half of 2008 and 2010, they were few and widely spread out compared to the earlier period.

Typically, in such an environment of high instability and uncertainty due to frequent occurrences of political shocks, many of the local incidents of violence tend to have short-lived effects. Understanding their economic impact therefore requires the examination of economic outcomes where data series are available. As will be discussed further on in the paper, such data are not forthcoming for many sectors of the Lebanese economy, and the scarcity of data seriously hampers the scope of the sectoral survey. The political events included in the chronology are not identical in nature, amplitude, or in their significance and their effect on the political environment. In fact, one of the aims of this first exercise is to parse out events with large sectoral repercussions from events with effects of smaller magnitude, as well as to identify the sectors most vulnerable to different scales of events.

In political and security terms, the four largest events over this time span are: (1) the Rafiq Hariri assassination on 14 February 2005, which caused a huge shock that led the country to break from its previous political path and ignited a wave of political assassinations during that calendar year and the next; (2) the 2006 July war; (3) the clashes between the Lebanese army and Islamist groups in the Nahr al-Bared refugee camp between 20 May and 9 July 2007; and (4) the clashes in Beirut and its surroundings between 7 and 14 May 2008 that culminated in the various feuding parties agreeing on a resolution in Doha on 20 May 2008.

b Economic sectors seem resilient to political instability

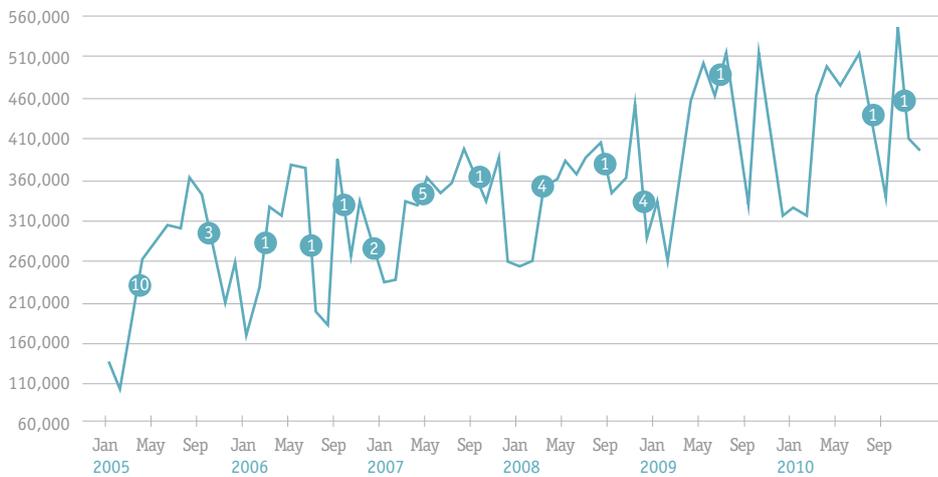
As mentioned above, the choice of sectors is primarily dictated by the availability of data. At times, several political incidents occur in the same month. Short of finding a daily or weekly data series, the study is constrained in the sectoral analysis to examining sectors for which only monthly data series are available. The examined data are all correlated with confidence in the economic climate of the country: Construction, banking and finance, international trade, the flow of passengers at Beirut International Airport, and consumer confidence. Except for the case of the consumer confidence indicators, all the data were obtained from the Banque du Liban. While financial indicators may reflect the extent of activity in real sectors, they largely measure the performance of the real economy. However, these measures, like measures of wellbeing, poverty, social safety, and labor market status, are not available on a monthly basis. The investigation in the paper is therefore limited to a handful of real sectors for which monthly data is obtained, and to financial indicators, on which data are more forthcoming. The following sub-sections discuss those sectors of the Lebanese economy and assess what impact, if any, the various incidents of political instability had on said sectors.

1 An undeterred construction sector

Construction is a long-term investment, so it is premised on long-term expectations. The paper therefore inquires whether the forward-looking calculations that go into investment decisions in the construction industry are affected in the short run by incidents of violence and skirmishes. The vigor of activity in the construction sector is measured by looking at the volume of cement deliveries (in tons) over the period in question, as well as the number of construction permits issued. The construction permits issued (by square meter) are a good measure of variations in the real estate investment climate if it is assumed that most of the variation in the number of construction permits issued results from changes in the demand for construction permits rather than changes in the bureaucratic or institutional framework around issuing the permits.

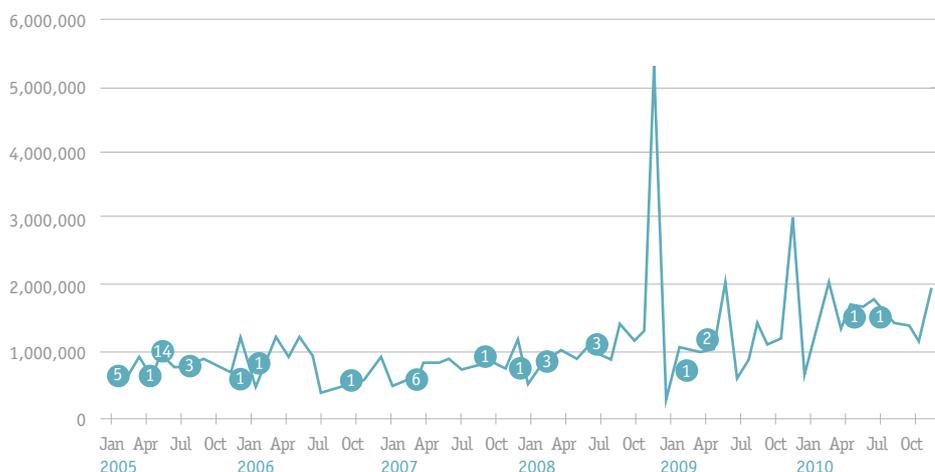
Figure 1 shows a simple time series of cement deliveries. The overall pattern in the series shows a rising average, with occasional troughs. The drops are roughly biannual, with a sharp decrease every winter and a smaller dip in the summer. The noted exception, unsurprisingly, is the 2006 July war, which shows a sudden and drastic drop in cement deliveries, with recovery in the fall of 2006. The subsequent major events—the conflict at Nahr al-Bared and the clashes of May 2008—do not seem to have as drastic an effect as the July war.

Figure 1 Cement deliveries (tons)



This exercise is complemented with a look at the possible effect of the more minor events of the period. The number of political incidents believed to have a negative impact on the investment climate (e.g., bombings, assassinations, violent skirmishes, and general strikes) is overlaid on every upward or downward trend in the series. The presentation is intended primarily as a visual exercise. In the absence of a counterfactual, it is not known what the trend in cement deliveries would have been had any of these events not occurred. Therefore, one cannot confidently attribute any of the movements in the series to the occurrence of any of the events. However, one can observe in this representation that upward trends in cement deliveries tend to occur during, or shortly after, periods of relative calm and stability while downward trends tend to reflect periods of high volatility. There is no evidence of cement deliveries mapping either contemporaneously or with some lag the number of politically destabilizing incidents.

Figure 2 looks at another measure of the extent of activity in the construction industry: The issuance of building permits, measured by surface area. As a result of the fact that the procedure for obtaining a building permit can be bureaucratically burdensome, and because there may therefore be a significant lag between the date of application for a construction permit and the date of issuance, the trend in this series is not expected to reflect contemporaneous investor confidence. The trend shows a sharp decline during the period of the 2006 July war followed by a relatively slow recovery. There is no visible break during or immediately after the Nahr al-Bared war, and the dip around May 2008 is both small in magnitude and short-lived. The more striking features are a massive peak in December 2008 followed by a sharp decline in January 2009, and another sudden rise in June 2009. These are likely reflective of the effect of individual large construction projects that happened to be awarded licenses at that time.

Figure 2 Construction permits (m²)

It has been argued that some of these large construction projects are themselves the direct result of political schisms in the country, as various communities are thought to have responded to rising political tensions by systematically acquiring real estate that afforded them strategic presence in particular localities, or that restricted other communities from particular areas. Due to the difficulty of verifying whether the motives behind a real estate transaction are political, one cannot identify whether or which construction licenses are acquired with the ambition of the demographic engineering of an area. The paper therefore refrains from explicitly attributing any of the movement in the acreage licensed for construction to the climate of political division. In short, and abstracting from the three sharp peaks between December 2008 and December 2009, the more moderate variations in the series do not clearly map the incidents occurring during the same or briefly preceding periods.

2 A mixed effect on banking and finance

As for the banking industry, the paper analyzes the value of checks cleared in foreign and local currencies. The value of checks cleared is an indicator of the extent of economic activity and vigor in the banking sector, and transactions in the local currency are considered to be indicators of confidence in monetary and exchange rate stability. The size of total deposits, in both foreign and local currencies, by residents and non-residents, is also examined.

Figure 3 charts the monthly value of checks in foreign currencies that were cleared (in millions of USD). Once again, of the main events, the troughs associated with the assassination of Hariri and the 2006 July war are clearly visible, while no clear break is discernible around the war in Nahr al-Bared. The clashes of May 2008 may have had a slightly delayed effect as there is a clear decline over the period between July 2008 and March 2009, the longest and sharpest decline other than the one during the 2006 July war.

uphold the peg at LL1,507 to the US dollar. Figure 5 shows the evolution of this series and the broad patterns clearly reflect a relative shift in preference to foreign currencies during the turmoil of 2005, with only momentary recoveries in July and November of that year. The downward trend continues through 2006 and accelerates during and just after the July war. However, a radical switch toward the Lebanese pound follows the war, peaking in November 2006. The resignation of the ministers from the Siniora government and the ensuing sit-in in downtown Beirut by opposition parties coincides with a sustained decrease in the share of the local currency in the value of checks cleared, which is only reversed after the Doha agreement is signed towards the end of May 2008.

Figure 5 Fraction of total checks cleared in local currency

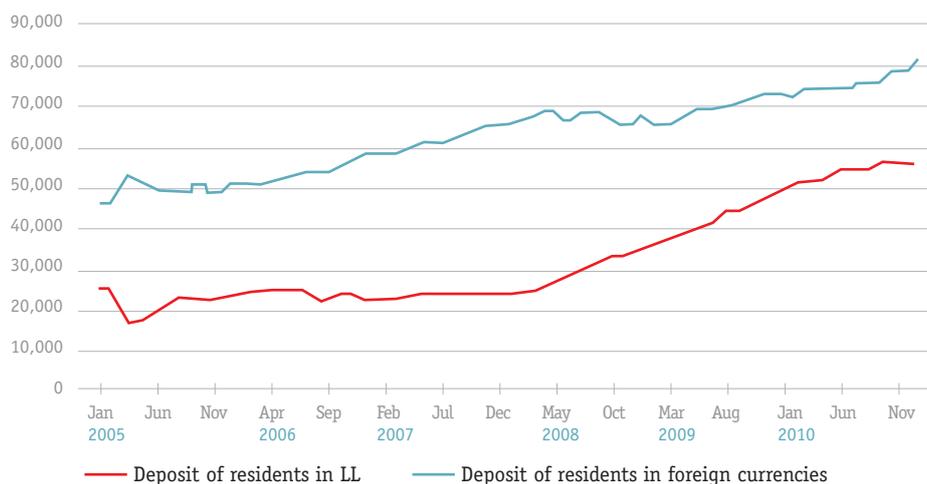


The overall trend since June 2008 is one of increase. The month-to-month variations show a rapid increase in the second half of 2008 followed by a slow decrease in 2009, which is reversed again in 2010. Part of this pattern since the second semester of 2008 is the result of the increase in the inflow of deposits in foreign currencies that the banking sector has experienced since the beginning of the financial crisis, as expatriate Lebanese capital fled European and North American banks and was repatriated, and as Arab capital was also channeled to the Lebanese banking sector, which had shown more resilience to the crisis (Salti and Bâli, 2009). Figure 5 is therefore best understood while keeping the data on the total size of deposits in local and foreign currencies in mind. The paper now examines these series, separated into residents and non-residents.

Figure 6 shows that deposits of residents, particularly those in foreign currencies, are remarkably resilient to political turmoil. The 2005 assassination of former Prime Minister Hariri appears quite clearly in both graphs as effecting a transfer from deposits in Lebanese liras to deposits in foreign currencies. This change of currency is then attenuated in the few months following the assassination, despite the

occurrence of multiple incidents of political instability during that year. The 2006 July war is also visible in the trend of deposits in Lebanese liras, but it does not appear to have caused a transfer of funds from deposits in the local currency to deposits in foreign currencies.

Figure 6 Deposits of residents (billions LL)



The overall pattern of the two series shows a remarkable mirror effect of each series on the other, indicating the tendency of depositors to respond to changes in the economic and political environment by converting the currency of their deposits. Deposits in Lebanese liras are generally believed to be more risky than deposits in foreign currencies, as their value hinges on expectations about the ability of the central bank to sustain the currency peg it has committed to. This currency risk is also reflected in the higher interest rates typically offered on Lebanese deposits.

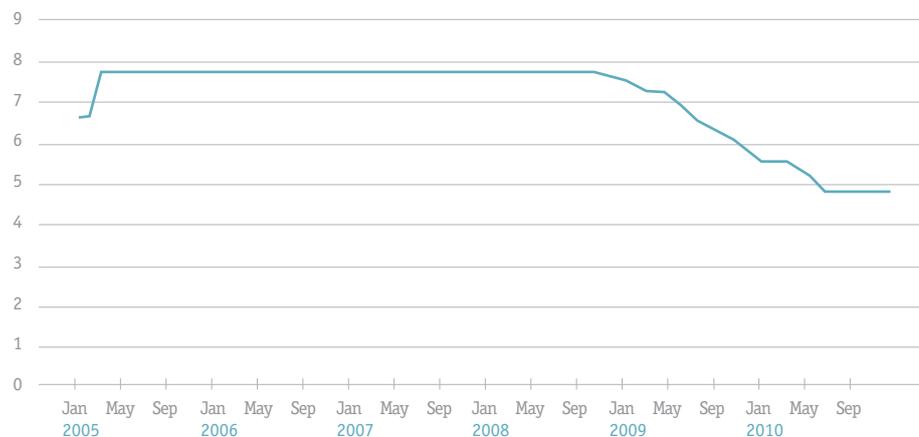
Deposits in foreign currencies show a very slight decrease around May 2008, amid a longer trend of overall increase. The increase coincides with the onset of the global financial crisis that is said to have flushed the Lebanese banking system with deposits. However, the deposits shown in the figure are for residents and as such reflect a response to the crisis as they are the result of Lebanese capital repatriated from abroad. Since around May 2008, while the overall trend in both series is an upward sloping one, deposits in Lebanese liras have increased more rapidly and the graph shows a sustained and consistent shrinking of the gap between the size of deposits in foreign currencies and the size of deposits in Lebanese liras.

If the rate of return on treasury bills is a proxy for the average interest rate offered on deposits in Lebanese liras, then reckoning figure 6 with figure 7—which shows the evolution of the treasury bills rate—indicates that the rapid increase in deposits, and particularly in deposits in Lebanese liras, after May 2008 is not due to an increase in the rate of return.

So while the global financial crisis may explain the increase in deposits, it cannot account for the differential rate of growth between local and foreign currency deposits. Furthermore, a look at the treasury bills rate would instead suggest a drop in deposits in Lebanese liras, especially since 2009. One reading of the series—and particularly of the faster growth in deposits in Lebanese liras—is that such growth could be due to the signing of the agreement to end the political deadlock in the spring of 2008. The resolution brought an end to the political stalemate, filled the executive power vacuums, and was followed by a period of fewer and less frequent security incidents and ones of a new and different nature.

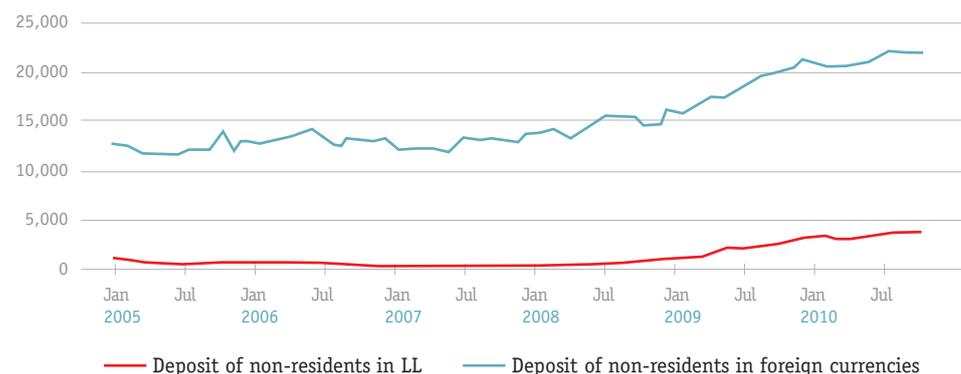
Figure 7 also shows the cost in higher sovereign risk following the Hariri assassination in February 2005, which appears as a discrete and substantial jump in the series from a rate of 6.69% to a rate of 7.75%, which is then maintained until around November 2008, when the series begins a secular decline.

Figure 7 Treasury bills rate (%)



The treasury bills rate also has a bearing on deposits of non-residents, which are shown below in figure 8.

Figure 8 Deposits of non-residents (billions LL)

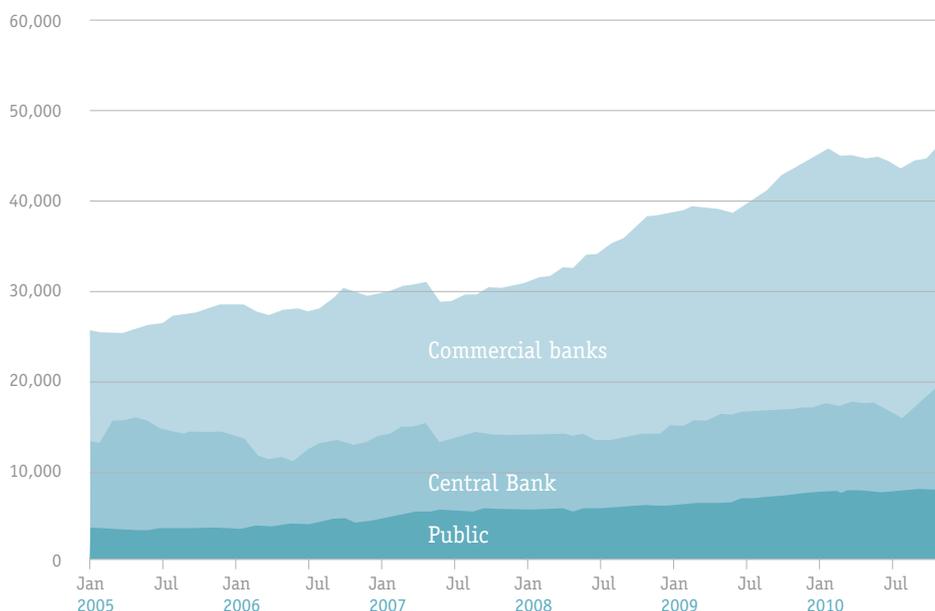


Deposits of non-residents, in all currencies, show a discrete drop after the Hariri assassination. However, deposits in Lebanese liras stabilize after that, and remain roughly constant until the summer of 2008 and the signing of the Doha Agreement. After the summer of 2008, the deposits in Lebanese liras increase consistently through 2010. It should be noted here that this increase occurs in the face of declining interest rates, as indicated by the drop in the treasury bills rate during the same period, which implies that Lebanon's banking sector made considerable regional gains during that period of relative stability.

Meanwhile, deposits in foreign currencies show a rapid recovery after the initial drop, followed by a rise until the 2006 July war. The period between July 2007 and December 2010 shows a secular rise in foreign currency deposits of non-residents, except for a brief drop around the spring of 2008 and another towards the fall of 2008. The series clearly illustrates the inflow of foreign capital during the global financial crisis in the form of foreign currency deposits—particularly during the calendar year 2009, which shows a steep and uninterrupted increase in the series, coinciding with the more modest increase in deposits in Lebanese liras.

Figure 9 takes a closer look at the composition of treasury bills holders over time, wherein the surface represents the value of treasury bills held by each of the three different classes of holders: The general public, the Banque du Liban (BdL), and commercial banks. Commercial banks are, unsurprisingly, the largest holder of treasury bills as Lebanese banking regulations require banks to hold a fraction of all deposits in treasury bills. The surface area corresponding to commercial banks roughly tracks the value of total deposits in commercial banks.

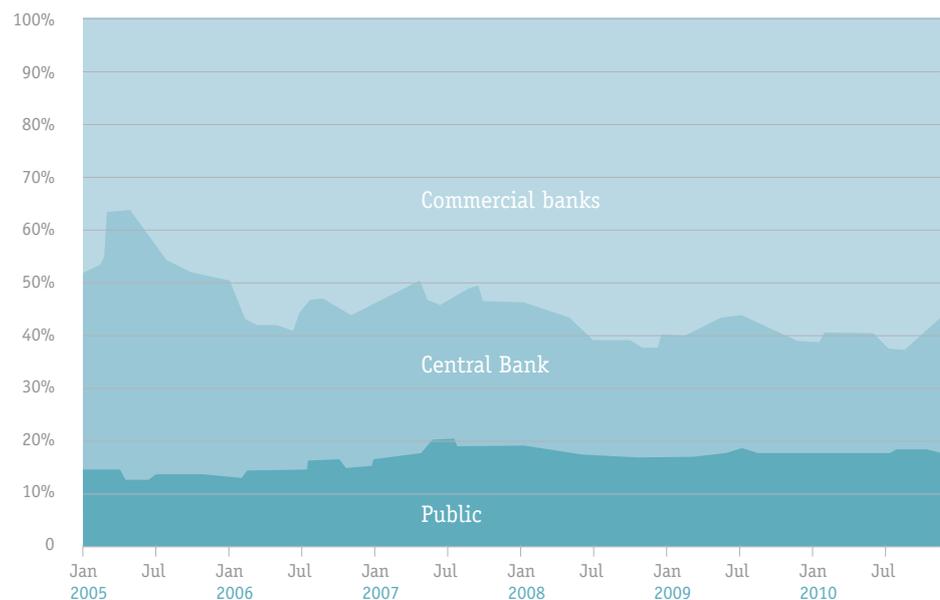
Figure 9 Composition of treasury bill holders (billions LL)



An interesting pattern to note is the consistent—even if slow— increase in the value of treasury bills held by the general public, and the almost complete absence of month-to-month idiosyncratic variation in the series. Treasury bills are typically relatively long-term instruments and will therefore show less variation than deposits. However, the smoothness of the series and the slight upward slope do suggest that the vagaries of the political scene during the period between 2005 and 2010 did not greatly affect the public’s perception of sovereign risk. This is the case even though during the same time the rate of return on treasury bills shown in figure 7 is far from constant or monotonically increasing.

As figure 10 illustrates, despite the rise in the value of publicly held treasury bills, the share of the total value of treasury bills held by the public has not shown as sharp an increase. In fact, the share has been roughly stable since the summer of 2007. Most of the variation in the composition of treasury bill holders has been in the shares held by the central bank and the commercial banks: The central bank stepped up its acquisition of treasury bills right after the assassination of Prime Minister Hariri, but then ceded much of the bills to commercial banks over the following fifteen months until the 2006 July war. The July war was another occasion for the central bank to intervene with a growth in treasury bills purchases outpacing that of commercial banks and the public.

Figure 10 Composition of treasury bill holders (% of value)



The other noted increase in the central bank’s position in the treasury bill market happened towards the end of 2008 and lasted through the first half of 2009.

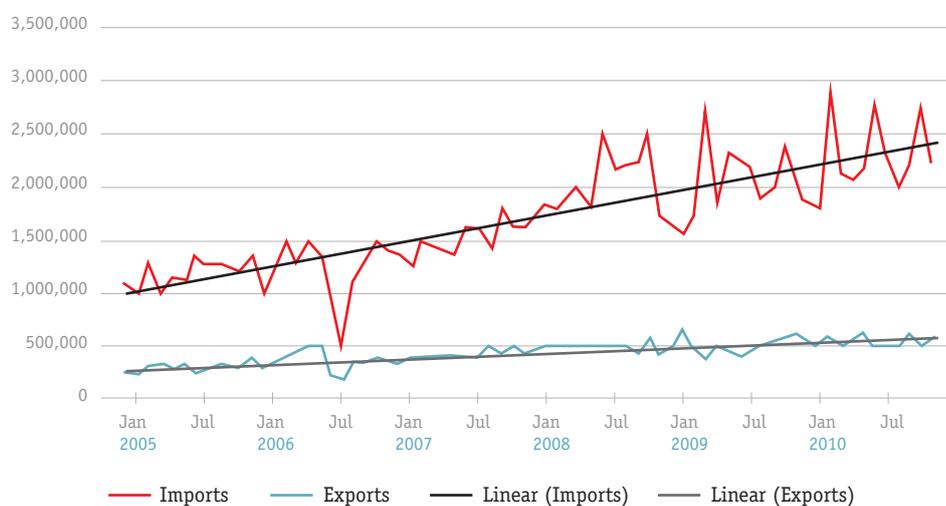
3 International trade: Varying imports and constant exports

As for international trade, figure 11 shows the evolution of imports and exports on a monthly basis with trend lines fitting the series. The trend lines show that both series are expanding, but that the faster growth rate of imports has meant that the trade deficit has widened substantially over the period of six years.

The variations in imports clearly show the effect of the 2006 July war, as well as that of the concomitant naval and aerial blockades which only came to an end in September 2006. While the period immediately following the war and the period during the Nahr al-Bared conflict show successive ups and downs in imports, all of the variations in the series, including the peaks, lie below the trend line until the end of 2007.

There is a surge in imports right after the May 2008 events and the Doha Agreement. In fact, starting with the summer of 2008, the series shows numerous peaks above the trend line. This “excess” of imports is consistent with the view that most of the inflow of capital that Lebanon enjoyed during and after the global financial crisis went towards consumption and not production.

Figure 11 Exports and imports (millions LL)



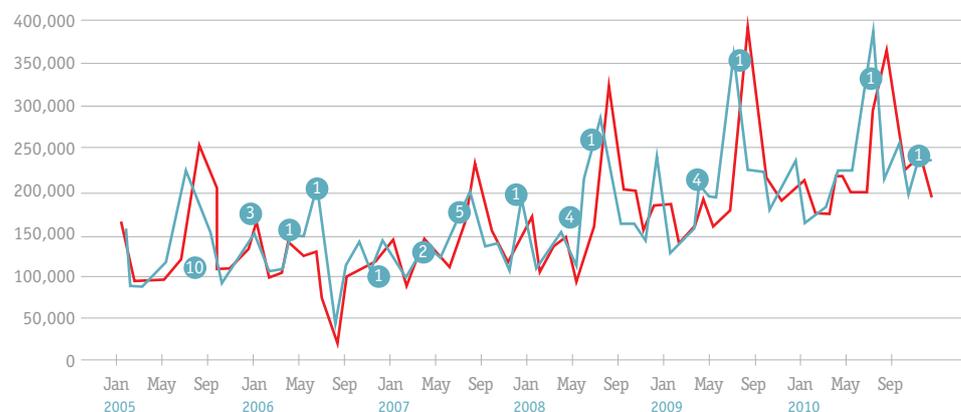
The series for exports shows much less variation and there are just a few noted departures from the trend line. The series peaks just before the July war then drops precipitously. It recovers and follows the trend line throughout 2007 (the Nahr al-Bared conflict included) and 2008 (through the May incidents and Doha Agreement). It shows a slight peak in early 2009, followed by a mild trough in the spring and summer of 2009, only to retrace the trend line by the fall of 2009.

4 An upward trending flow of airport passenger traffic

Figure 12 shows the flow of arrivals to and departures from Beirut International Airport. There are several striking features in this figure. The first is that the peaks are consistently sharper than the troughs, save for the exceptional drop during the 2006 July war. As one might expect, there is a noted seasonality in the series. A second striking feature is that both series are clearly upward trending. There is growing airport traffic in both directions, which means that the seasonal peaks have gotten sharper over the course of the six-year period we examine.

Another pattern of interest is that almost every peak in the arrivals series, particularly the sharper peaks of the summer season, is shortly followed by a higher peak of the departures series, while the troughs of the series are more closely aligned. This indicates that there is a net outflow of passengers out of the Beirut airport. This might be due to young graduates seeking work and study opportunities abroad, particularly since many of these “excess” departures happen during the summer months.

Figure 12 Flow of passengers at Beirut International Airport



5 Optimistic consumer confidence

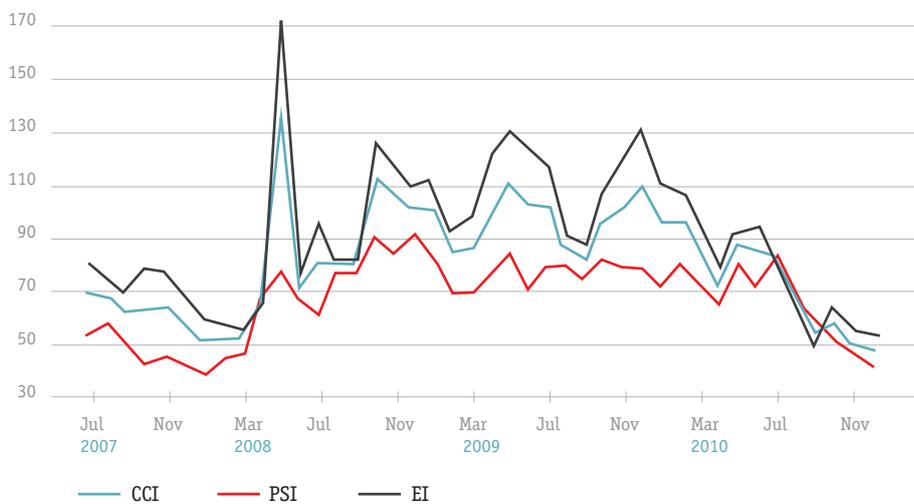
The American University of Beirut and Byblos Bank have recently released a set of monthly confidence indicators for Lebanon that they construct based on a monthly survey of around 1,200 households. The data do not cover the entire period of interest and the series surveys only begin in the second half of 2007. While consumer confidence is interesting in its own right, in the context of the broader inquiry about the economic costs of political instability, consumer confidence is one of the potential mechanisms through which political developments affect economic outcomes.

The Byblos Bank/AUB consumer confidence index (CCI) is a composite index of two sub-indexes: The present situation index (PSI)

and the expectation index (EI). The CCI is normalized to 100 in January of 2009, and it is represented, along with the two sub-indexes in figure 13. The expectation index does not seem to have much predictive power on the present situation index, and it is typically a much higher score, indicating some underlying optimism among consumers. It is also observed that the CCI hovers around the baseline of 100 throughout 2009, but then declines in 2010.

The trend described in the report by Ghobril et al (2012) also concurs with the findings above that the signing of the Doha Agreement shows an overwhelming boost in consumer confidence. While the monthly evolutions of the series in the Ghobril et al (2012) report are traced back to individual political incidents, the picture only becomes complete if one makes the link between consumer confidence, in its various subcomponents, and the relevant economic outcomes described in the sectoral analysis above.

Figure 13 Consumer confidence index



II Macroeconomic cost of instability: Comparison to a “synthetic” control

This section estimates the macroeconomic cost of political instability on the economy by comparing Lebanon to a synthetic control group. The first part presents the methodology of creating a synthetic control group followed by the empirical findings.

a “Constructing” a counterfactual: The methodology of the “synthetic” control

The major challenge in estimating the cost of political instability, in terms of, say, lost output, is the absence of a counterfactual. It remains unknown what output would have been had the political situation in

Lebanon between 2005 and 2010 been stable. In this section, the paper circumvents this difficulty by constructing a “synthetic” control group and using its economic outcomes as a potential counterfactual. The methodology adopted is the approach developed by Abadie and Gardeazabal (2003), and used in Abadie, Diamond, and Hainmueller (2010) as well as Abadie, Diamond, and Hainmueller (2011) to construct a “synthetic” control group by using a weighted average of several countries that resemble Lebanon on a variety of metrics.

The method consists of choosing J countries (in this case, eleven countries are selected) that resemble Lebanon in a baseline period of more political stability (in this case, 2000 to 2004). While each country bears some resemblance and shares some commonality with Lebanon along a particular dimension or axis, no single country is a close enough “match” to Lebanon to act as a valid “control.” Thus, the study resorts to a method that utilizes all the threads of commonality between each of these countries and Lebanon, in order to construct a “synthetic” control that consists of a combination of the countries. In the end, each country is a candidate contributor towards building the synthetic control, and can therefore be seen to represent a “partial” control. The end goal is to find a way to combine the data on a particular series (say, GDP per capita) from these countries to build a valid counterfactual outcome for the same series for the years of instability, and to compare that counterfactual GDP per capita with the observed series for Lebanon to calculate the cost of instability.

In a $(k \times J)$ matrix \mathbf{X} , k determinants of growth potential are recorded (in this case, 6 variables), which are identified from the growth literature. The objective is to find a $(J \times 1)$ vector \mathbf{W} of weights to apply to the $(T \times J)$ vector \mathbf{Y} of GDP per capita figures for each of the T years of instability (in this case, 2005-2010) of these “partial” controls to build a “hypothetical” control that is a weighted average of the partial controls. Each different \mathbf{W} determines a different synthetic control and therefore a different counterfactual series for the period of instability.

The choice of \mathbf{W} is constrained to make the resulting synthetic control most closely resemble Lebanon in the period before instability. “Resemblance” is measured along the variables in \mathbf{X} that are commonly taken to be determinants of growth potential. Suppose \mathbf{V} is a $(k \times k)$ diagonal matrix reflecting the relative importance of each variable in \mathbf{X} as a predictor of growth. \mathbf{W} is then chosen to minimize $(\mathbf{X}_{Leb} - \mathbf{XW})' \mathbf{V} (\mathbf{X}_{Leb} - \mathbf{XW})$.¹ The solution to this minimization will be a function of \mathbf{V} . The elements of \mathbf{V} (and therefore the relative importance of each determinant of growth) are in turn chosen to make the synthetic control in its synthetic GDP per capita most closely match Lebanon before 2005. Details of the optimal choice of \mathbf{V} are discussed in Appendix B.

¹In other words, the search is one for the weights in \mathbf{W} that minimize the sum of the squared deviations between Lebanon and the weighted average in each of k determinants of growth, where each element in the k vector is scaled by the contribution of that factor to explaining growth.

b Empirical findings: Political instability is very costly

A set of eleven countries are selected based on their similarity to Lebanon along a variety of different dimensions during the period between 2000 and 2005. Each of these is a candidate component of the “synthetic” control group that this method constructs. For each of these countries, as for Lebanon, GDP per capita (in purchasing power parity) is recorded as well as some of the main determinants of growth potential, as identified by the growth literature (Barro and Sala-i-Martin, 1995). These countries are: Armenia, Bosnia, Bulgaria, Croatia, Georgia, Jordan, Macedonia, Malta, Montenegro, Serbia and Tunisia.

The determinants of growth are as follows: The share of value added in GDP of each of agriculture, industry, services and manufacturing, population density, and the investment to GDP ratio. Table 1 reports the means of the variables before the period of high instability (so for the years 2000 to 2004) for Lebanon, for the straightforward average of the eleven potential “partial” control countries and for the synthetic control that we build by applying the method described above. The method chooses Bosnia and Malta as components of the synthetic control, with relative weights of 0.751 and 0.249 respectively.

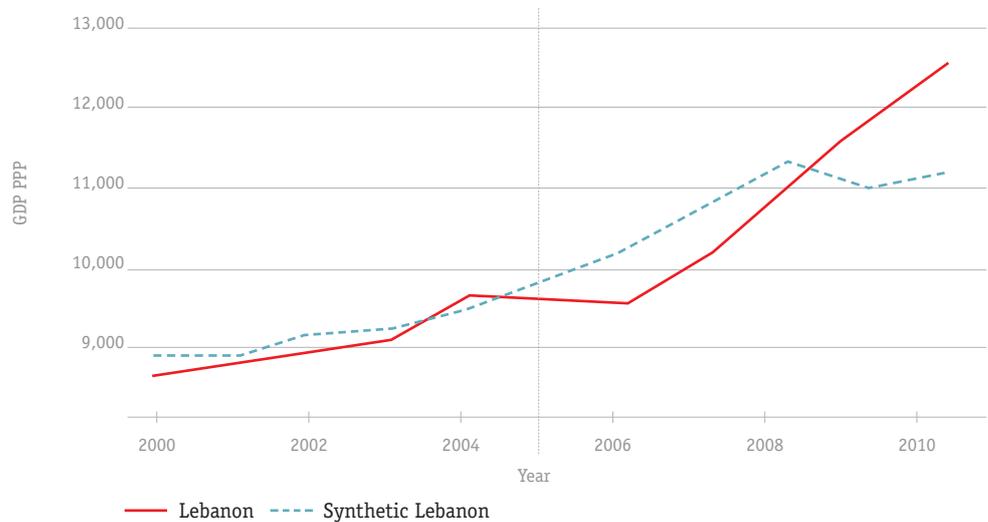
Table 1 Pre-instability characteristics (2000-2004)

	Lebanon	All candidates	Synthetic control
GDP/cap (constant PPP)	\$9,030	\$7,756	\$9,129
Investment/GDP	20.66%	21.39%	19.00%
Agriculture VA (%GDP)	6.68%	11.91%	8.37%
Industry VA (%GDP)	22.49%	29.64%	28.51%
Services VA (%GDP)	70.82%	58.44%	63.12%
Manufacturing VA (%GDP)	12.88%	16.19%	12.70%
Population density	378.24	179.67	363.06

Source [World Development Indicators](#).

The characteristics of the synthetic control are clearly much closer to the figures for Lebanon than the full sample of eleven countries. The ultimate aim of the technique is to be able to identify a “counterfactual” GDP per capita series for Lebanon had the period between 2005 and 2010 not been as volatile. Figure 14 shows the evolution of GDP per capita for the entire period of 2000 to 2010 for Lebanon and for the synthetic control. The discrepancy between the series starting with 2005 can be considered an estimate of lost output due to the increase in political tension and instability that started towards 2005.

Figure 14 GDP per capita (PPP) for Lebanon and the synthetic control group



A striking feature of the graph is that the years 2005 through 2007 represent a clear net loss in terms of GDP per capita compared to the synthetic control which serves as a counterfactual. The loss in output can be quantified at \$360 per capita in 2005, \$665 per capita in 2006, and \$640 in 2007. These figures amount to a loss of 3.76% of GDP per capita in 2005, a staggering 6.9% in 2006 and an equally high 6.28% in 2007.

The period starting in 2008 reverses the trend as Lebanon catches up with the synthetic control in that year (slightly exceeding its GDP per capita by \$30 per capita), after which the series for Lebanon shoots well above the synthetic control, with an excess of \$648 in 2009 (5.48% of GDP per capita) and an impressive \$1,260 in 2010 (9.98% of GDP per capita).

The synthetic cohort technique produces results consistent with the view that the period starting in 2005 and lasting through the spring of 2008 is a period of particularly high volatility: The estimation yields losses that range between 3.76% of GDP per capita and 6.9% of GDP per capita in any one year of instability.

The results are also consistent with the view that the second half of 2008 brings a windfall in terms of bank deposits in response to the global financial crisis. But this massive inflow of capital is only possible since on the political scene, the second half of 2008 also heralds a period of boosted confidence and stability. Confidence and stability that appear not only to allow for some recovery relative to the synthetic control, but also suggest there might be a dividend to ending political deadlocks and to reducing tensions after turmoil, over and above the mere halting of politically destabilizing incidents.

Conclusion

The objective of the paper is primarily inspective and exploratory. In the first instance, the paper visually inspects—in the context of a severe dearth of high frequency data on particular sectors—economic outcomes with a backdrop of a chronology of political incidents and shocks for sectors for which the data are forthcoming. The aim is to identify the sectors most vulnerable to political shocks and, conversely, to identify which events have a more significant impact on economic outcomes than others.

The effects of the assassination of Prime Minister Hariri in February of 2005, and the 2006 July war are ubiquitous in all the series inspected. There is no visible effect on sectoral performance for most political shocks that occurred during the 2005 and 2008 period based on the available data. Moreover, a mere count of the number of violent incidents does not seem to have much predictive power for the series considered here.

However, the seeming resilience of various sectors suggested by the immunity of indicators of sectoral performance to political shocks comes at a high cost. When the cost of political instability on the overall economy is estimated by constructing a synthetic control for Lebanon based on a choice of countries that resemble Lebanon's growth profile during the period 2000 to 2004, the price of periods of political volatility in terms of GDP per capita becomes clear. The size of the estimated macroeconomic loss from political instability ranges from 3.76% of GDP per capita in 2005, and 6.9% of GDP per capita in 2006, to 6.28% of GDP per capita in 2007. The loss in output can be quantified at \$360 per capita in 2005, \$665 per capita in 2006, and \$640 in 2007.

Through all the series inspected, there is a sustained economic improvement starting in the middle of 2008, around the time that some political deadlocks were resolved, and a concerted effort emerged to reduce political hostility by toning down inflammatory stances and diffusing the charged tension at the street level, the constituency, and the political apparatus. While, once again, it is hard to attribute the gains in any of the series to the reduction in political instability, the clear message is that the indicators of sectoral activity consistently reflect the improved political climate, suggesting that just as there is a loss to political instability, there are dividends to confidence building measures and developments.

More specifically, the period starting in 2008 reverses the trend as Lebanon catches up with the synthetic control group in that year (slightly exceeding its GDP per capita by \$30 per capita), after which the series for Lebanon shoots well above the synthetic control, with an excess of \$648 in 2009 (5.48% of GDP per capita) and an impressive \$1,260 in 2010 (9.98% of GDP per capita).

The approach used to obtain the estimates of the aggregate losses allows the measure of the cost of the resilience of individual sectors to political shocks that have a clear effect on consumer confidence: Losses to overall output per person during periods of high instability that are not accounted for by fluctuations in the performance of each sector suggest that there may be an aggregate cost to immunity at the sectoral level. The results of the two exercises together indicate that there is much to be gained from political climates that are less punctuated by incidents of violence and tension.

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Appendix A

Chronology of politically destabilizing incidents

2005	Feb 14	Assassination of Rafiq Hariri
	Feb 28	Resignation of Karamé's cabinet
	Mar 19	Bombing in New Jdeide (commercial/residential area)
	Mar 23	Bombing in Kaslik (commercial area)
	Mar 26	Bombing in Sad el Bouchrieh (industrial area)
	Apr 01	Bombing in Broumana (touristic area)
	Apr 15	Najib Mikati appointed as prime minister
	Apr 27	Withdrawal of Syrian armed forces from Lebanon
	May 07	Bombing in Jounieh (residential area)
	Jun 02	Assassination of Samir Kassir
	May 29- Jun 20	Parliamentary Elections
	Jun 21	Assassination of George Hawi
	Jul 12	Assassination attempt on Elias el Murr
	Jul 22	Bombing in Monot (touristic area)
	Aug 12	Bombing in Zalka (commercial area)
	Sep 17	Bombing in Jeitawi (residential area)
	Sep 25	Assassination attempt on May Chidiac
Dec 12	Assassination of Gebran Tueni	
2006	Feb 05	Protests outside the Danish embassy turn violent
	Jul-	
	Aug 14	July War
	Sep 05	Assassination attempt on Samir Chehade (officer internal security forces)
	Sep 08	End of the naval and aerial blockade
	Nov 13	Ministers resign from Siniora's cabinet
	Nov 21	Assassination of Pierre Gemayel
Dec 01	Start of the opposition sit-in	
2007	Feb 13	Bombing in Ain Alaq
	May 23	General strike (including some violence)
	May 25	Clashes in Beirut Arab University
	May 20- Sep 07	Nahr al-Bared War
	Jun 13	Assassination of Walid Eido
	Jun 24	Bombing against UNIFIL in Marjayoun
	Sep 19	Assassination of Antoine Ghanem
	Nov 24	Emile Lahoud term ended, presidential vacuum
	Dec 12	Assassination of François Hajj

2008	Jan 15	Blast aimed at US embassy vehicle
	Jan 25	Assassination of Wissam Eid (officer, Internal Security Forces)
	Feb 12	Assassination of Imad Mughnieh (in Damascus)
	May 07- May 14	Armed clashes in Beirut, Mount Lebanon, and North Lebanon
	May 20	Doha Agreement; end of the sit-in
	May 25	Election of Michel Suleiman as president of the republic
	Aug 11	Fighting in Beirut between Amal and Future supporters
	Aug 13	Bombing in Tripoli (targeting Lebanese soldiers in a civilian bus)
	Sep 10	Assassination of Saleh Aridi
	Sep 29	Bombing in Tripoli (targeting Lebanese soldiers in a civilian bus)
2009	Mar 23	Assassination of Kamal Naji (PLO officer)
	Jun 07	Parliamentary elections
	Jun 24	Fighting in Beirut between Amal and Future supporters
	Sep 11	Saad al-Hariri appointed as prime minister (national unity government)
2010	Jul 04	Clashes between Lebanese civilian and UNIFIL troops (French)
	Aug 24	Clashes in Bourj Abi Haidar Blast aimed at US embassy vehicle

Appendix B

Creating the synthetic control group

Take the $(5 \times J)$ vector \mathbf{Z} that contains for each of the control countries data on GDP per capita before the period of instability (so in this context, for the years 2000 to 2004).

\mathbf{W} is chosen, as explained in the main text of the paper, to minimize $(\mathbf{X}_{Leb} - \mathbf{X}\mathbf{W})' \mathbf{V} (\mathbf{X}_{Leb} - \mathbf{X}\mathbf{W})$ in the pre-instability period (2000 to 2004). The solution \mathbf{W}^* to this minimization will be a function of \mathbf{V} .

\mathbf{V} , in turn, is chosen so that the pre-instability GDP per capital for Lebanon \mathbf{Z}_{Leb} is best reproduced by the synthetic control $\mathbf{W}^*(\mathbf{V})$. So \mathbf{V} is found by minimizing $(\mathbf{Z}_{Leb} - \mathbf{Z}\mathbf{W}^*(\mathbf{V}))' (\mathbf{Z}_{Leb} - \mathbf{Z}\mathbf{W}^*(\mathbf{V}))$.



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