

# The Demand for Import Documentary Credit in Lebanon

Samih Antoine Azar<sup>1</sup> & Khaled Abdallah<sup>2</sup>

<sup>1</sup> Faculty of Business Administration & Economics, Haigazian University, Beirut, Lebanon

<sup>2</sup> Doctor in International Business Law and Bekaa District Investigating Judge, Lebanon

Correspondence: Samih Antoine Azar, Professor, Faculty of Business Administration & Economics, Haigazian University, Mexique Street, Kantari, Beirut, Lebanon. Tel: 961-1-349-230. E-mail: samih.azar@haigazian.edu.lb

Received: December 8, 2014

Accepted: December 30, 2014

Online Published: January 25, 2015

doi:10.5539/ibr.v8n2p111

URL: <http://dx.doi.org/10.5539/ibr.v8n2p111>

## Abstract

This paper examines the demand for import documentary credit in Lebanon. Five explanatory variables are selected that stand respectively for risk, price, size, conjecture, and availability of credit. As expected, the long run elasticities are significantly higher than the short run ones. Risk has an adverse impact. Interest rate elasticities, or price elasticities, are all negative and statistically significant except for bills for collection which are paid in cash at presentation of the shipping documents, and that do not depend on the interest rate. Size and conjectural elasticities are all positive and statistically significantly different from zero. As expected, the availability of credit is only important for opened and utilized letters of credit and not for outstanding documentary credit and bills for collection. In the long run risk, price, and conjectural elasticities are all statistically insignificantly different from one in absolute values, but, surprisingly, long run size elasticities are statistically significantly less than +1. The paper concludes that the determinants of the demand for import documentary credit in Lebanon are similar to those of the demand for any other good or asset.

**Keywords:** documentary credit, demand function, log-log specification, ratio of documentary credit on imports, risk elasticity, price elasticity, size elasticity, conjectural elasticity, credit availability elasticity, short run and long run elasticities

## 1. Introduction

Documentary credit can be defined as a written instrument issued by a bank at the request of a customer, the importer (buyer), whereby the bank promises to pay the exporter (beneficiary) for goods or services, provided that the exporter presents all documents asked for, exactly as stipulated in the documentary credit, and that meets all other terms and conditions set out in the documentary credit. A documentary credit is also called a letter of credit and can be of two types: revocable and irrevocable. A revocable letter of credit can be revoked without the consent of the exporter meaning that it can be canceled or changed up to the time the documents are presented. However it gives the exporter little protection. That is why it is rarely used. An irrevocable letter of credit cannot be canceled or changed without the consent of all parties.

Letters of credit have been a cornerstone of international trade dating back to the 1900s and still continue to play a vital role in international trade. For this purpose the International Chamber of Commerce published internationally agreed upon rules, definitions, and practices governing letters of credit (or documentary credit) called "Uniform Customs and Practice for Documentary Credits" (UCP) in order to facilitate standardization of letters of credit among all banks worldwide. Lebanon is by no chance away from these rules and standards. The Lebanese Central Bank issued several circulars to regulate the implementation of documentary credits in Lebanon, knowing the fact that such credit plays a major role in transit operations as a route for world trade. The central bank circulars integrated Lebanon with UCP rules. As an example, the latest circular numbered 7144 dated 10/30/1998 obliged banks dealing with the documentary credit to impose on its clients a 15% cash margin of the credit value for importing operations.

Documentary credits finance international trade. If a US importer wants to purchase goods from a British exporter, and both importer and exporter do not know each other well enough to trust each other, then a documentary credit is the alternative. The importer enjoins his bank to pay the full amount of the invoice to the banker of the exporter. When the goods arrive at destination, the importer's bank checks the documents attached to the goods, especially the bill of lading, which is a legal title to the merchandise, and if these documents

conform to the requirements of the letter of credit, then the bank pays the exporter's bank, which, in turn, pays the exporter. See Levi (1990) for details. Some letters of credit are back-to-back. This involves an intermediary who is usually the agent. In Lebanon, back-to-back letters of credits are common for the simple reason that most exporters to Lebanon have a legal agent in Lebanon who distributes the goods to the retail market.

Since the US and Europe are in general closed economies international trade does not represent a big component of aggregate output, hence aggregate documentary credit statistics are not available. This explains why there are no empirical studies that were undertaken to explain the determinants of documentary credit. A search on the web, using Google, Google Scholar, and EBSCO did not return any hit despite all efforts to change the key words. This means that this paper is a pillar in the study of the documentary credit.

The paper is organized as follows. The second section presents some graphical relations on the extent of documentary credits relative to total imports in Lebanon. The third section presents the theory. The fourth section is the empirical part. The last section summarizes and concludes. All data are retrieved from the web site of the central bank of Lebanon. The sample sizes are made out of 259 monthly observations from February 1993 to August 2014.

## 2. Graphical Relations

The first exhibit, Figure 1, is for the ratio of opened documentary credit on imports. It is obvious from the graph that there are three stages in the relation. The first subsample goes from February 1993 to June 1995. The second subsample goes from July 1995 to June 2007. Moreover, the last subsample goes from July 2007 to August 2014. The first subsample produces an average ratio of 0.850407 (t-statistic: 41.30202). The second subsample produces an average ratio of 0.404306 (t-statistic: 29.49070). Moreover, the last subsample produces an average of 0.298149 (t-statistic: 31.29070). The standard errors for these coefficients are robust (Newey and West, 1987). When taking them pair-wise these three coefficients are statistically significantly different from each other with marginal significance levels lower than 0.0001. The reason for the fall of the ratio over time is maybe because the war period in Lebanon ended in 1992, and that Lebanon had to build up its confidence for external exporters. This assumes that a low level of documentary credit represents a high level of trust in commercial relations.

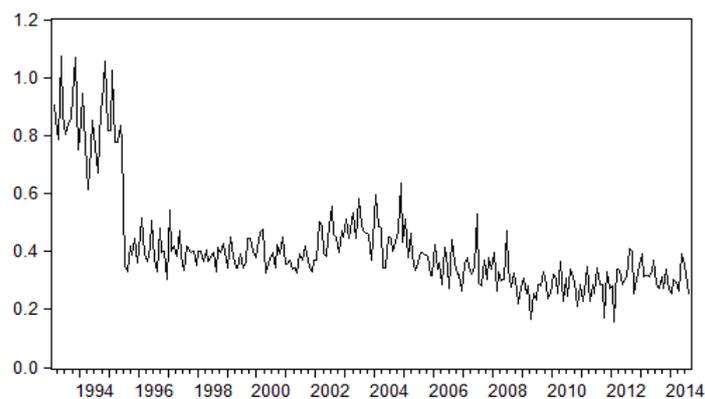


Figure 1. Opened documentary credit on imports

The second exhibit, Figure 2, is for the ratio of utilized documentary credit on imports. It is obvious from the graph that there are also three stages in the relation, which correspond to the three stages in the previous graph. The first subsample produces an average ratio of 0.782405 (t-statistic: 38.77822). The second subsample produces an average ratio of 0.392443 (t-statistic: 38.31028). Moreover, the last subsample produces an average of 0.287478 (t-statistic: 41.27118). The standard errors for these coefficients are robust (Newey & West, 1987). When taking them pair-wise these three coefficients are statistically significantly different from each other with marginal significance levels lower than 0.0001. The reason for the fall of the ratio over time is maybe due to the same reason as above from a build-up in confidence. It is noticeable that the three averages are close to the averages for the previous ratio (see Figure 1).

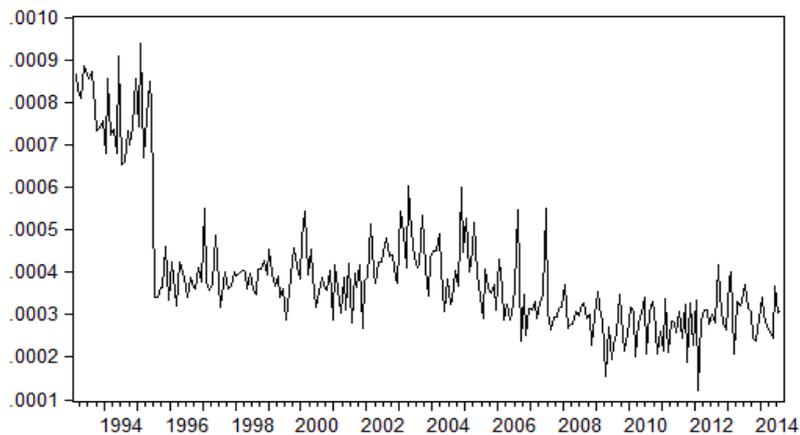


Figure 2. Utilized documentary credit on imports

The third exhibit, Figure 3, is for the ratio of outstanding documentary credit on imports. It is obvious from the graph that there are three stages in the relation, which correspond to the three stages in the previous two graphs. The first subsample produces an average ratio of 1.939402 (t-statistic: 39.29575). The second subsample produces an average ratio of 0.850803 (t-statistic: 33.74983). Moreover, the last subsample produces an average of 0.615721 (t-statistic: 40.12307). The standard errors for these coefficients are robust (Newey and West, 1987). When taking them pair-wise these three coefficients are statistically significantly different from each other with marginal significance levels lower than 0.0001. The reason for the fall of the ratio over time is maybe due to the same reason as above because of a build-up in confidence. It is noticeable that the three averages are much higher than the averages for the previous two ratios (see Figure 1 and Figure 2). Figure 3 also shows a spike in mid-2006 when Israel waged a war on Lebanon that lasted a couple of months.

The fourth exhibit, Figure 4, is for the ratio of bills for collection on imports. It is obvious from the graph that there are three stages in the relation, which correspond to the three stages in the previous three graphs. The first subsample produces an average ratio of 0.310893 (t-statistic: 15.55167). The second subsample produces an average ratio of 0.136742 (t-statistic: 16.73204). Moreover, the last subsample produces an average of 0.093474 (t-statistic: 44.05496). The standard errors for these coefficients are robust (Newey & West, 1987). When taking them pair-wise these three coefficients are statistically significantly different from each other with marginal significance levels lower than 0.0001. The reason for the fall of the ratio over time is maybe due to the same reason as above because of a build-up in confidence. It is noticeable that the three averages are much lower than the averages for the previous three ratios (see Figure 1, Figure 2, and Figure 3). The same spike in mid-2006 is present in Figure 4.

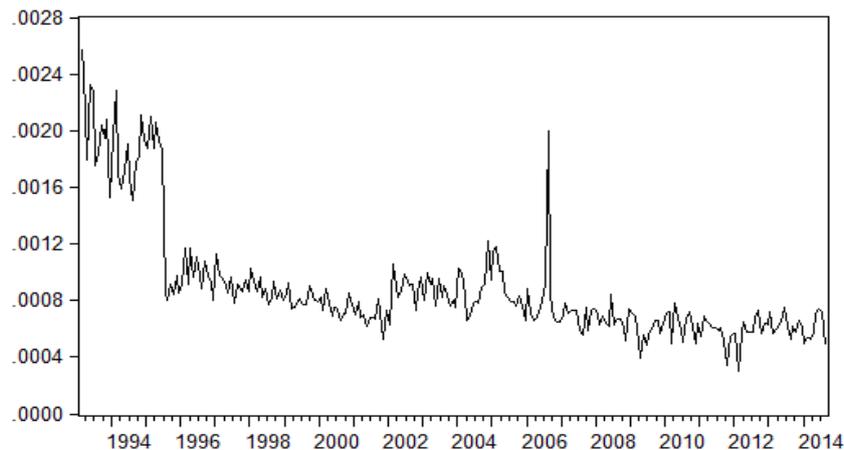


Figure 3. Outstanding documentary credit on imports

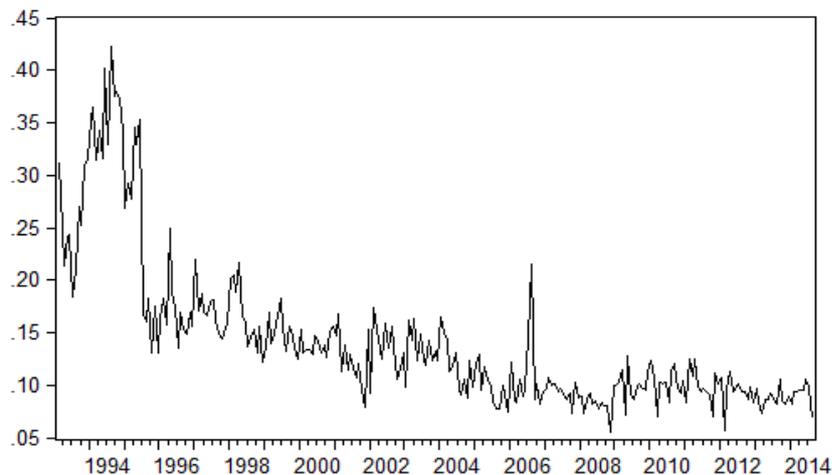


Figure 4. Bills for collection on imports

### 3. The Theory

As mentioned above four categories of import documentary credits are studied: opened import documentary credits, outstanding import documentary credits, utilized import documentary credits, and import bills for collection. According to the theoretical demand for a good in Snyder and Nicholson (2012), and to the theoretical demand for a bond in Mishkin (2013) the demand for a documentary credit is specified as follows, where  $f(\cdot)$  is a given functional form:

$$Demand = f(\text{risk}, \text{price}, \text{income}, \text{population or size})$$

In this function demand has negative partials with respect to the first two variables and positive partials with respect to the last two variables. Moreover documentary credits are modeled to depend on business and consumer confidence, an important conjuncture factor in Lebanon, and on the availability of credit. Since there is no credit issuance for bills for collection, credit availability should not impact the demand for these bills significantly. The demand function is adjusted to include confidence and credit availability:

$$Demand = f(\text{risk}, \text{price}, \text{income}, \text{population or size}, \text{confidence}, \text{credit availability})$$

In this extended form, the demand function has positive partials with respect to these two additional variables.

The total of the consolidated balance sheet of the Lebanese banking system is considered to be a measure of macroeconomic risk. This is true because loan risk increases with the size of the balance sheet. The marginal loan is likely to be riskier than the already held and older loan, assuming that banks begin by issuing loans to less risky entities and little by little are forced to give loans to riskier entities simply because the pool of less risky clients dries up in the process. In the context of this paper, the price elasticity is the relative magnitude of the effect of changing the interest rate on loans on the demand for documentary credits. Obviously bills for collection should not depend on interest rates because no loan is generated, and none is granted, and the bill is paid in cash at the time of submission of the required documents. The population under consideration is simply the size of total imports. This variable can also pick up proportionately long term scale effects coming from aggregate income and wealth. Short term sentiment, arising from business or consumer confidence, should measure the extent of short run political deadlocks and current security issues accurately. It is common knowledge in Lebanon that short run economic and political upheavals affect trade significantly despite the resilience of the Lebanese economy over a long protracted wartime period. This long wartime period made the Lebanese people more risk-averse, but they were still ready to engage in relatively less risky activities. In other terms, the risk appetite fell but still endures. The variable on confidence is proxied by the coincident indicator compiled by the central bank of Lebanon. The availability of credit is measured by the total credit loans of the banking system to the private sector.

The actual estimated demand functions have the log-log functional form, which implies that all estimated coefficients are elasticities. In two cases, opened and outstanding documentary credits, the demand function includes the first lagged value of the dependent variable, while, in the remaining two, it includes the first and the

second lagged values of this dependent variable. Assuming that  $X$  is a vector of the above five independent variables, that  $\beta$  is a vector of their respective coefficients, and that  $\lambda$  is the coefficient on the lagged value of the dependent demand variable  $Z$ , then the following holds:

$$Z_t = X_t\beta + \lambda Z_{t-1}$$

In this equation, the short run elasticities are the  $\beta$  and the long run elasticities are the  $\beta/(1-\lambda)$  (Kennedy, 1998; Gujarati, 2003). Another method to estimate the long run elasticities is by running the same regression but without the lagged values of the dependent variable. In such regressions, serial correlation of the residuals is a major econometric problem. Nonetheless, the estimated coefficients remain unbiased.

The same rationale can be implemented if the first and the second lagged values of the dependent variable  $Z$  are included in the regression. Assume that  $\lambda_1$  is the coefficient on the first lag  $Z_{t-1}$ , and that  $\lambda_2$  is the coefficient on the second lag  $Z_{t-2}$ , and then short run elasticities are still the  $\beta$  and the long run elasticities are the  $\beta/(1-\lambda_1-\lambda_2)$ .

#### 4. The Empirical Results

This section is divided into seven parts. Each part takes up a particular empirical finding. The first finding is whether long run elasticities are significantly greater than short run ones. The second is about risk elasticities, measured relative to the size of the balance sheet of the banking system, and which should be negative. The third is about the price elasticities which are, in the context of this paper, the relative magnitude of the effect of changing the loan interest rate on the demand for documentary credits, and which should be negative. Obviously bills for collection should not depend on the interest rate because the bill is paid in cash at the time of submission of the required documents. The fourth is about the elasticities of total imports, and the impacts are expected to be positive. These latter elasticities could also pick up long term scale effects arising from aggregate income and wealth. The fifth is about the elasticities arising from short term sentiment, be it from a business or consumer confidence, and these elasticities are expected to be positive. The sixth is about the elasticities of the availability of credit in the form of loans. It is expected that, if financing is available, then the demand for documentary credits rises, except for bills for collection that do not require a loan issuance, or loan assistance. In general the four regressions have acceptable goodness-of-fit statistics, with R-squares ranging between 0.831828 and 0.946657. These statistics are relatively high for monthly data. The last part applies some robustness tests.

##### 4.1 From the Short to the Long Run

Long run elasticities are greater than short run ones if  $1/(1-\lambda)$ , or  $1/(1-\lambda_1-\lambda_2)$ , are statistically significantly higher than +1. See Tables 1 and 2. In Table 1,  $1/(1-\lambda)$  is respectively 1.399117 and 4.139834 for opened, and outstanding, documentary credits. Both coefficients are statistically significantly different from zero with respective t-statistics of 13.09944 and 6.945142, and are statistically significantly larger than +1 with respective t-statistics of 3.736793 and 5.267504. In Table 2,  $1/(1-\lambda_1-\lambda_2)$  is respectively 1.772410 and 4.155115 for utilized documentary credits and for the bills that are for collection. Both coefficients are statistically significantly different from zero with respective t-statistics of 8.751185 and 5.484122, and are statistically significantly larger than +1 with respective t-statistics of 3.813735 and 4.164274. This is strong evidence that long run elasticities are a multiple of short run ones. One drawback of the functional form is that all long run elasticities in a given regression have the same multiple. Nonetheless by comparing these long run elasticities with the elasticities obtained from straight regressions without the lagged dependent variables one can get a sense of the comparisons, and in most cases this comparison stands well.

##### 4.2 Risk Elasticities

The short run risk elasticities are -0.701655, -0.225482, -0.491868, and -0.278949 for respectively opened, outstanding, and utilized documentary credits, and bills for collection (Tables 1 and 2). All four elasticities are statistically significantly different from zero with absolute t-statistics ranging between 2.329170 and 4.630752. The long run elasticities are respectively -0.981698, -0.933458, -0.871791, and -1.159064, are all statistically significantly different from zero with the lowest t-statistic being 2.781568, and are all statistically insignificantly different from +1, with the highest absolute t-statistic of 0.537027. The long run elasticities from the regression without the lags are respectively -0.958802, -0.865779, -0.893158, and -1.442160. These elasticities are close to the above ones except for the last estimates. Any way it seems that there is strong evidence for a negative, unitary, and long run risk elasticity.

##### 4.3 Price Elasticities

The price elasticities are against loan interest rates and are therefore interest rate elasticities. The short run price elasticities are -0.616765, -0.225598, -0.396795, and -0.071443 for respectively opened, outstanding, and

utilized documentary credits, and for bills for collection (Tables 1 and 2). The first three elasticities are statistically significantly different from zero with absolute t-statistics ranging between 3.017957 and 4.565523. As expected the fourth elasticity is statistically insignificantly different from zero with an absolute t-statistic of 0.779108. The long run elasticities are respectively -0.862926, -0.933939, -0.703283, and -0.296852, and are all statistically significantly different from zero with the lowest t-statistic being 3.296510, except for the fourth one which is, as expected, statistically insignificantly different from zero with an absolute t-statistic of 0.802820. The first three elasticities are all statistically insignificantly different from +1, with the highest absolute t-statistic of 1.390805 and the lowest t-statistic of 0.241753. The long run elasticities from the regression without the lagged dependent variables are respectively -0.846234, -0.823587, -0.754935, and -0.505657. These elasticities are close to the above ones except for the last estimates. Any way it seems that there is strong evidence for a negative, unitary, and long run price or interest rate elasticity for all documentary credits except for bills for collection. The latter have zero price elasticity because they are paid in cash when the transport documents are submitted and received by the corresponding bank.

#### 4.4 Scale Elasticities

The scale elasticities are computed by regressing on the log of total imports. The short run scale elasticities are 0.283937, 0.109173, 0.185630, and 0.080567 for respectively opened, outstanding, and utilized documentary credits and bills for collection (Tables 1 and 2). All four elasticities are statistically significantly different from zero with absolute t-statistics ranging between 2.229174 and 5.685305. The long run elasticities are 0.397262, 0.451959, 0.329013, and 0.334767 respectively and are all statistically significantly different from zero with the lowest t-statistic being 2.459102, and the highest being 5.930264. The four elasticities are all statistically significantly different and less from +1, with the highest absolute t-statistic of 8.997591, and the lowest t-statistic of 4.886613. The long run elasticities from the regression without the lags are respectively 0.364937, 0.383780, 0.302704, and 0.346614. These elasticities are very close to the above ones. Any way it seems that there is strong evidence for a positive, non- unitary, and long run scale elasticity for all documentary credits including for the variable bills for collection. The finding of an inelastic elasticity may be due to wealth effects.

Table 1. Multiple regression analysis (Absolute t-statistics are in parentheses)

Dependent variable	Opened Documentary Credits	Outstanding Documentary Credits
Constant	4.537330 (3.955862)	1.940190 (3.146643)
$\alpha_1$	-0.701655 (4.630752)	-0.225482 (2.838071)
$\alpha_2$	-0.616765 (4.565523)	-0.225598 (3.164199)
$\alpha_3$	0.283937 (5.685305)	0.109173 (3.968709)
$\alpha_4$	0.490369 (3.251336)	0.194139 (2.418394)
$\alpha_5$	0.289291 (2.470289)	0.033755 (0.567640)
$\lambda$	0.285264 (5.228211)	0.758444 (21.80660)
$1/(1-\lambda)$	1.399117 (13.09944)	4.139834 (6.945142)
$1/(1-\lambda)-1$	0.399117 (3.736793)	3.139834 (5.267504)
$\alpha_1/(1-\lambda)$	-0.981698 (4.893581)	-0.933458 (3.051620)

long run $\alpha_1$	-0.958802	-0.865779
$\alpha_1/(1-\lambda)-1$	0.018302	0.066542
	(0.091233)	(0.217537)
$\alpha_2/(1-\lambda)$	-0.862926	-0.933939
	(4.825902)	(3.417802)
long run $\alpha_2$	-0.846234	-0.823587
$\alpha_2/(1-\lambda)-1$	0.137074	0.066061
	(0.766586)	(0.241753)
$\alpha_3/(1-\lambda)$	0.397262	0.451959
	(5.930264)	(4.427877)
long run $\alpha_3$	0.364937	0.383780
$\alpha_3/(1-\lambda)-1$	-0.602738	-0.548041
	(8.997591)	(5.369199)
$\alpha_4/(1-\lambda)$	0.686084	0.803702
	(3.365622)	(2.586810)
long run $\alpha_4$	0.694272	0.815565
$\alpha_4/(1-\lambda)-1$	-0.313916	-0.196298
	(1.539935)	(0.631810)
$\alpha_5/(1-\lambda)$	0.404752	0.139738
	(2.522135)	(0.571055)
long run $\alpha_5$	0.413076	0.181345
$\alpha_5/(1-\lambda)-1$	-0.595248	-0.860262
	(3.709174)	(3.515550)
Adjusted R-squared	0.831828	0.946657
p-value of the Breusch-Godfrey test		
with three lags:	0.3046	0.0311
with six lags:	0.0044	0.1727
with twelve lags:	0.0001	0.0147

*Note.* The coefficient  $\alpha_1$  is on the log of the total balance sheet of the banking system. The coefficient  $\alpha_2$  is on the log of the interest rate on loans. The coefficient  $\alpha_3$  is on the log of total imports. The coefficient  $\alpha_4$  is on the log of the coincident indicator of the central bank of Lebanon. The coefficient  $\alpha_5$  is on the log of total credit to the private sector by the banking system. The coefficient  $\lambda$  is on the delayed dependent variable, which is the log of the given documentary credit.

Table 2. Multiple regression analysis (Absolute t-statistics are in parentheses)

Dependent variable	Utilized Documentary Credits	Bills for collection
Constant	2.851112 (2.557330)	0.184885 (0.241647)
$\alpha_1$	-0.491868 (3.339909)	-0.278949 (2.329170)
$\alpha_2$	-0.396795 (3.017957)	-0.071443 (0.779108)
$\alpha_3$	0.185630 (3.881621)	0.080567 (2.229174)
$\alpha_4$	0.423981 (3.006101)	0.423122 (3.709510)
$\alpha_5$	0.240688 (2.118951)	0.107055 (1.189917)
$\lambda_1$	0.281495 (4.605047)	0.558652 (9.066039)
$\lambda_2$	0.154301 (2.630441)	0.200680 (3.338812)
$1/(1-\lambda_1-\lambda_2)$	1.772410 (8.751185)	4.155115 (5.484122)
$1/(1-\lambda_1-\lambda_2)-1$	0.772410 (3.813735)	3.155115 (4.164274)
$\alpha_1/(1-\lambda_1-\lambda_2)$	-0.871791 (3.651656)	-1.159064 (2.781568)
long run $\alpha_1$	-0.893158	-1.442160
$\alpha_1/(1-\lambda_1-\lambda_2)-1$	0.128209 (0.537027)	-0.159064 (0.381729)
$\alpha_2/(1-\lambda_1-\lambda_2)$	-0.703283 (3.296510)	-0.296852 (0.802820)
long run $\alpha_2$	-0.754935	-0.505657
$\alpha_2/(1-\lambda_1-\lambda_2)-1$	0.296717 (1.390805)	0.703148 (1.901626)
$\alpha_3/(1-\lambda_1-\lambda_2)$	0.329013 (4.144963)	0.334767 (2.459102)
long run $\alpha_3$	0.302704	0.346614
$\alpha_3/(1-\lambda_1-\lambda_2)-1$	-0.670987 (8.453217)	-0.665233 (4.886613)
$\alpha_4/(1-\lambda_1-\lambda_2)$	0.751468 (3.075749)	1.758122 (4.099571)
long run $\alpha_4$	0.656043	1.363252
$\alpha_4/(1-\lambda_1-\lambda_2)-1$	-0.248532 (1.017239)	0.758122 (1.767782)
$\alpha_5/(1-\lambda_1-\lambda_2)$	0.426597 (2.226321)	0.444827 (1.297213)
long run $\alpha_5$	0.480001	0.834237
$\alpha_5/(1-\lambda_1-\lambda_2)-1$	-0.573403 (2.992471)	-0.555173 (1.619003)
Adjusted R-squared	0.847581	0.902042

p-value of the Breusch-Godfrey test		
with three lags:	0.1281	0.0025
with six lags:	0.0856	0.0049
with twelve lags:	0.0425	0.0040

See notes under Table 1. The coefficient  $\lambda_1$  is on the first lag of the dependent variable. The coefficient  $\lambda_2$  is on the second lag of the dependent variable. All other coefficients are specified in Table 1.

#### 4.5 Conjectural Elasticities

The conjectural elasticities are computed by regressing on the log of the coincident indicator of the Lebanese central bank. The short run conjectural elasticities are 0.490369, 0.194139, 0.423981, and 0.423122 for respectively opened, outstanding, and utilized documentary credits, and bills for collection (Tables 1 and 2). All four elasticities are statistically significantly different from zero with t-statistics ranging between 2.418394 and 3.709510. The long run elasticities are 0.686084, 0.803702, 0.751468, and 1.758122 respectively and are all statistically significantly different from zero with the lowest t-statistic being 2.586810, and the highest being 4.099571. The four elasticities are all statistically insignificantly different from +1, with the highest absolute t-statistic of 1.767785 and the lowest t-statistic of 0.631810. The long run elasticities from the regression without the lags are 0.694272, 0.815565, 0.656043, and 1.363252 respectively. These elasticities are very close to the above ones. Any way it seems that there is strong evidence for a positive, unitary, and long run conjectural elasticity for all documentary credits including for the variable bills for collection.

#### 4.6 Elasticities of Credit Availability

The elasticities of credit availability are computed by regressing on the log of the total credit granted to the private sector by the banking system. The short run elasticities are 0.289291, 0.033755, 0.240688, and 0.107055 for respectively opened, outstanding, and utilized documentary credits and bills for collection (Tables 1 and 2). The first and third elasticities are statistically significantly different from zero with t-statistics of 2.470289 and 2.118951 respectively. The second and fourth elasticities are statistically insignificantly different from zero with t-statistics of 0.567640 and 1.189917 respectively. This is as expected because outstanding documentary credits have already been given credit before the current period and because bills for collection do not necessitate an extension of the loan. The long run elasticities are 0.404752, 0.139738, 0.426597, and 0.444827 respectively and have the same statistical significance and insignificance as their short run counterparts. The four elasticities are all statistically significantly different from +1, with the highest absolute t-statistic of 3.709174, and the lowest t-statistic of 2.992471, except for the elasticity in the bills for collection regression, which is insignificantly different from +1 with a t-statistic of 1.619003. The long run elasticities from the regression without the lags are 0.413076, 0.181345, 0.480001, and 0.834237 respectively. These elasticities are very close to the above ones. In conclusion, only opened and utilized documentary credits have short and long run credit availability elasticities that are statistically significantly different from zero, while outstanding documentary credits and bills for collection do not, for reasons already mentioned.

#### 4.7 Robustness Tests

The Ramsey RESET test, Ramsey (1969), is applied on all four regressions. The square and the cube of the fitted dependent variable are included as independent variables in all four regressions. The actual p-values of the F-statistic under the null of regression stability are 0.9176, 0.1092, 0.2570, and 0.6855 for respectively opened, outstanding, utilized documentary credits, and bills for collection. This is evidence that the four regressions are well specified.

The Breusch-Godfrey serial correlation LM test, Breusch (1979) and Godfrey (1978), is applied on the regression residuals of all four regressions. The results are mixed depending on the number of residual lags included. Three lag lengths are chosen because the data is monthly: 3, 6, and 12. In general, all regressions fail the test for at least two lag lengths, unless very low marginal significance levels are chosen. See the p-values at the bottom of Tables 1 and 2. Hence higher-order serial correlation of regression residuals appears to be an econometric problem, without being a too severe problem however.

### 5. Conclusion

This paper studies the demand for import documentary credit in Lebanon. Four types of such credit are considered: opened, outstanding, and utilized documentary credit, and bills for collection. Five explanatory variables are retained that are part of demand functions for goods or assets: risk, price, size, conjecture, and

availability of credit. The functional form that is selected is log-log. All coefficients are therefore elasticities. As expected, long run elasticities are significantly higher than short run ones. Risk impacts all four types of documentary credit adversely. Risk is measured by the consolidated total balance sheet of the banking system. Price elasticities are all negative and statistically significant except for bills for collection which are paid in cash at presentation of the shipping documents, and that do not depend on the interest rate, which is the own price in this case. Size elasticities, measured against imports, are all positive and statistically significantly different from zero. Conjectural elasticities are also positive and statistically significantly different from zero. The availability of credit is only important for opened and utilized letters of credit. Long run risk, price, and conjectural elasticities are all statistically insignificantly different from one in absolute values. Long run size elasticities are statistically significantly less than +1. The four models have near-perfect goodness-of-fit characteristics with adjusted R-Squares between 0.831828 and 0.946657, figures that are very high for monthly data. In conclusion, the determinants of the demand for import documentary credit in Lebanon are appropriately selected, and these determinants are similar to those of the demand for any other good or asset.

### References

- Breusch, T. S. (1979). Testing for autocorrelation in dynamic linear models. *Australian Economic Papers*, 17, 334–355. <http://dx.doi.org/10.1111/j.1467-8454.1978.tb00635.x>
- Godfrey, L. G. (1978). Testing against general autoregressive and moving average error models when the regressors include lagged dependent variables. *Econometrica*, 46, 1293–1302. <http://dx.doi.org/10.2307/1913829>
- Gujarati, D. N. (2003). *Basic Econometrics* (4th ed.). Boston: Mc Graw-Hill.
- Kennedy, P. (1998). *A guide to econometrics* (4th ed.). Cambridge, MA: The MIT Press.
- Levi, M. D. (1990). *International Finance: The markets and financial management of multinational business* (2nd ed.). New York: McGraw-Hill Publishing Company.
- Mishkin, F. S. (2013). *The economics of money, banking, and financial markets* (10th ed.). Boston: Pearson.
- Newey, W., & West, K. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica*, 55, 703–8. <http://dx.doi.org/10.2307/1913610>. JSTOR1913610
- Ramsey, J. B. (1969). Tests for specification errors in classical linear least squares regression analysis. *Journal of the Royal Statistical Society Series B*, 31(2), 350–371.
- Snyder, C., & Nicholson, W. (2012). *Microeconomic theory: Basic principles and extensions* (11th ed.). Australia: South-Western.

### Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).