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### *By Invitation:*

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The purpose of this note is to identify the channel of transmission of the money supply process in Lebanon. In other terms, what drives money? And, concurrently, what is driven by money? The answers to these two questions will determine whether monetary policy is feasible and independent, or whether it is constrained and powerless. In technical parlance the issue is whether money is exogenous or endogenous. An exogenous variable implies that it can be controlled. If, in addition, money translates into a significant impact on nominal variables, like the foreign exchange rate or prices, and on real variables, like unemployment or macroeconomic output, then it becomes the preferred instrument to policy-makers. Otherwise, money could have a contemporaneous effect on current nominal income without there being a link between monetary policy-making and aggregate activity.

As the reader might have deduced already, there are two competing theories which have been held by different affiliation of economists. On the one hand, there are the monetarists and the new Keynesians; and, on the other hand, there are the post-Keynesians. The first believe that authorities have control over the money supply through open market operations, which results from a complete control of the monetary base. In turn, the components of the monetary base create money through multiple deposit creation and the money multiplier, which is assumed to be constant or, at least, stable. The equilibrium is obtained by matching money supply creation with money demand as determined by the public. Equilibrium is assured because of spillovers on interest rates which adjust to maintain equality of demand and supply. If the money

stock is (S), CC is the currency in circulation, central bank foreign reserves are FRESLL, LOANSLL are bank loans to residents, and Y is output then the following scheme will materialize.<sup>1</sup>

$$FRESLL \uparrow \Rightarrow CC \uparrow \Rightarrow S \uparrow \Rightarrow Y \uparrow$$

The arrow  $\Rightarrow$  means a causality running from the left hand side of the mechanism towards the contiguous right hand side. A sign  $\uparrow$  means an increase in the variable. The above states that an increase in FRESLL can be considered to be a form of open market operations, especially if official intervention in the foreign exchange market is unsterilized. Hence, an expansionary monetary policy starts from an increase in FRESLL, which is followed by an increase in the monetary base, like currency in circulation CC. Accounting-wise, a higher CC is obtained, which leads to a higher money stock, culminating in a higher level of final goods (Y). The transmission from CC to money stock (S) is possible if the money multiplier is constant, or is variable but stable. Ultimately, monetarists conclude that a control of the monetary base by open market operations will allow for a stimulation of the money supply (S), and will have a positive impact on activity. In other words, monetary policy could be highly effective -- although it may be only for the short term.

Post-Keynesian economists argue otherwise. They hold the opinion that money supply depends on the internal behavior of commercial banks. Banks generate loans to the private sector by satisfying loan demand, and deposits are created as a consequence. Deposits are then multiplied further due to the deposit creation process and the fractional reserve system. Creation of deposits creates a demand for reserves at the central bank. The monetary base thus can't be controlled by the monetary authorities, but is endogenously generated. However, the central bank keeps a control on interest rates, and banks react by charging a premium on the loan rate. For post-Keynesians, the following are the causality relations.

$$LOANSLL \uparrow \Rightarrow S \uparrow \Rightarrow CC \uparrow \Leftrightarrow Y$$

In order to find the direction of causality, an econometric procedure, named Granger causality, is applied. Consider two variables Z and X. Variable Z Granger causes variable X if lagged values of Z explain significantly current X once the history of variable X is taken into account. This is an econometric causality which could be logically true or false depending on the case. (To elaborate: for example, if theory predicts that a variable Z moves in tandem with the future expected value of another variable X, and if expectations are unbiased on average, then Granger causality will erroneously find a relation between current X and future Z, with variable X Granger causing variable Z. As another anomalous application, sometimes bidirectional causality might be present).

The Table below performs Granger causality to the variables in this note. The marginal level of significance is chosen to be 10%. If the actual p-value (Prob.) is higher than 10%, then it is inferred that Granger causality is absent. The key results are summarized on top of each panel. They support the following two schemes:

$$FRESLL \Rightarrow CC \Rightarrow M2$$

$$M2 \Rightarrow LOANSLL (\Rightarrow Y)$$

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<sup>1</sup> The monetary base consists of the sum of CC and bank reserves at the central bank.

The first scheme corroborates exactly the monetarist position, and the second scheme adds an additional corroboration. Hence loans, or bank credit, are not the driving force behind money supply creation, and money and monetary policy are shown to have a causality running from open market operations, to the monetary base, and to the broader money supply. Independent monetary policy is potentially achievable. It remains to be found out whether monetary policy is effective in affecting favorably the stance of output, and that there are no long and variable lags that undermine the actual conduct of monetary policy.

We can deduce a very interesting conclusion and policy implication from the above analysis. It is widely believed that the fixed exchange rate regime was quite costly and had not served Lebanon well, especially during the second decade of the 2000s. Nonetheless, it did not prevent *completely* Lebanon from having an independent monetary policy. The “Impossible Trinity” -- monetary independence or control of the money supply *can't* coexist with free capital mobility and a fixed exchange rate regime, as was the case in Lebanon prior to the financial crisis in 2019 -- did not *totally* bind. But things are different today. The financial crisis has made it clear that flexible (or adjustable) exchange rates are a better regime for Lebanon. This means that monetary policy independence should be *a more feasible* policy avenue for the economy. Not only that, preliminary indications point out that it would actually be potentially effective given the results obtained above. And as a flexible exchange rate regime will most likely be an important pillar in an IMF-backed reform program for the country, the viability of monetary policy independence could bode well for the success of this program if and when it is implemented.

**Table:** Granger causality between the four variables, money stock (M2), currency in circulation (CC), foreign reserves in Lebanese pounds (FRESLL), and bank loans to residents in Lebanese pounds (LOANSLL), and for two to four lag-length selections. The sample size is from 12/1998 till 1/2018, with 230 observations.

PANEL A: FRESLL & CC  
FRESLL  $\Rightarrow$  CC

Null Hypothesis:	Obs.	Lag = 1		Lag = 2	
		F-Statistic	Prob.	F-Statistic	Prob.
FRESLL does not Granger Cause CCC	230	5.07121	0.0253	3.66267	0.0272
CCC does not Granger Cause FRESLL		0.11049	0.7399	0.09863	0.9061

PANEL B: LOANSLL & CC  
CC  $\Rightarrow$  LOANSLL

Null Hypothesis:	Obs.	Lag = 1		Lag = 2	
		F-Statistic	Prob.	F-Statistic	Prob.

## How Viable is Independent Monetary Policy in Lebanon?

LOANSLL does not Granger Cause CCC	230	9.11923	0.0028	0.36850	0.6922
CCC does not Granger Cause LOANSLL		4.04050	0.0456	5.01519	0.0074

Null Hypothesis:	Obs.	Lag = 3		Lag = 4	
		F-Statistic	Prob.	F-Statistic	Prob.
LOANSLL does not Granger Cause CCC	230	0.20102	0.8956	0.07428	0.9899
CCC does not Granger Cause LOANSLL		3.68060	0.0129	4.04115	0.0035

### PANEL C: FRESLL & LOANSLL FRESLL $\Rightarrow$ LOANSLL

Null Hypothesis:	Obs.	Lag = 1		Lag = 2	
		F-Statistic	Prob.	F-Statistic	Prob.
FRESLL does not Granger Cause LOANSLL	230	4.45531	0.0359	2.36805	0.0960
LOANSLL does not Granger Cause FRESLL		0.10708	0.7438	0.05360	0.9478

### PANEL D: M2 & LOANSLL M2 $\Rightarrow$ LOANSLL

Null Hypothesis:	Obs.	Lag = 1		Lag = 2	
		F-Statistic	Prob.	F-Statistic	Prob.
LOANSLL does not Granger Cause M2	230	2.46100	0.1181	2.00225	0.1374
M2 does not Granger Cause LOANSLL		4.73242	0.0306	2.65851	0.0723

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