



# Financial progress and the stability of long-run money demand: Implications for the conduct of monetary policy in emerging economies<sup>☆</sup>

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## ABSTRACT

This paper examines whether recent financial changes in three emerging market economies in the Gulf region (Bahrain, the UAE, and Qatar) have distorted the character and the stability of their underlying long-run money demand relations. Money demand instability prompts concerns about the appropriateness of targeting monetary aggregates and could weaken the presumed link between monetary policy and its ultimate objectives. Our results suggest that the quick pace of financial changes in the three emerging market economies did not cause undue shifts in their equilibrium money demand relations. Further evidence from direct tests of cointegration stability indicates the superiority of targeting M1 in the UAE and M2 for Qatar. In Bahrain, both M1 and M2 prove equally appropriate to guide monetary policy. Thus, despite the wave of financial developments that have recently swept the three Gulf economies, the evidence suggests that monetary authorities in these countries should maintain a close watch on monetary growth as a principal policy guide.

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## 1. Introduction

Theory and evidence have long supported a significant role of a smooth-functioning financial market for promoting high and sustained economic growth [De Gregorio and Guidotti (1995), Levine (1997), Darrat (1999), and Darrat, Chopin and Lobo (2005)]. A well-developed financial market enhances growth by promoting a more efficient allocation of resources, encouraging a faster accumulation of physical and human capital and technological progress, and reducing production costs relating to transaction, information and monitoring.

Not surprisingly, financial markets in most emerging economies, including those of the Gulf Cooperation Council (GCC), have witnessed rapid expansion in recent years. Among the GCC countries, recent financial developments in Bahrain, Qatar and the UAE are particularly noticeable. These three countries have embarked on several reform measures in the last two decades, including facilitating the new entry of domestic and foreign banks, the gradual deregulation of lending and

deposit interest rates, facilitating the use of credit and debit cards, updating payment technologies like ATM machines and electronic transfer of deposits, expanding a variety of internet banking services like e-banking and mobile banking technology, enhancing telecommunications infrastructure, supporting their financial sectors with such measures like tax-free environment, stable and restriction-free exchange rate systems and solid regulatory environment. In their study of recent financial developments in the Middle East and North Africa (MENA) region, Creane, Goyal, Mobarak and Sab (2003) argue that Bahrain, Qatar and the UAE exhibit a significantly higher level of financial progress compared to other MENA countries.

While fast financial developments could promote economic growth, such developments may also hamper the effectiveness of monetary policy. Theoretically, financial development and the proliferation of new financial products and deposit substitutes could cause instability in the underlying money demand relationship with important consequences for the conduct and efficacy of monetary policy. This debate dates back to Gurley and Shaw's (1955) thesis that the emergence of new interest-bearing money substitutes resulting from financial developments may unexpectedly increase the interest-rate sensitivity of money holdings. Such elasticity shift in the money demand relation could weaken the presumed stable relation between monetary aggregates and the ultimate policy objectives of high economic growth and price stability. If valid, the Gurley–Shaw hypothesis casts serious doubts on the efficacy of monetary policy and calls into question the common use of monetary

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targeting in the conduct of monetary policy. As the conventional equation-of-exchange indicates, without a stable money demand (or velocity of money), there will be no predictable link between monetary aggregates and ultimate policy objectives. Indeed, there is some empirical evidence that further financial advancements in several developed countries in the late 1980s have destabilized their underlying money demand relationships [see, for example, Taylor (1987), Mullineux (1994), Mariscal, Trautwein, Howells, Arestis and Hagemann (1995), Hendry and Ericsson (1991), Ericsson and Sharma (1998), Gowland (1991), Arestis, Hadjimatheou and Zis (1992)].

To the best of our knowledge, this paper represents the first attempt to examine whether financial progress has distorted the long-run money demand relationships in the three Gulf countries and assess the implications for the operation of monetary policy in these countries.<sup>1</sup> It can be reasonably argued that if fast financial developments experienced by the three Gulf countries have not altered their long-run money demand models, then the relatively more sluggish financial developments in the rest of the GCC region (Kuwait, Oman and Saudi Arabia) would likely have had no effect on their long-run money demand equations either. We focus on the long-run money demand relations since a large and growing body of empirical research reveals that short-run money demand relations in both developed and developing economies are subject to unpredictable changes despite repeated efforts to adjust the estimated equations. Thus, the link between money growth and policy objectives over shorter periods has admittedly become tenuous at best. Consequently, the European Central Bank, and most recently the Bank of Japan, has exceedingly adopted longer-term monetary policy strategies.<sup>2</sup>

The rest of the paper is organized as follows. Section 2 outlines the methodology and data used. Section 3 reports the empirical results and provides some evidence of robustness. Section 4 offers concluding remarks and draws policy implications.

## 2. Research design and data

The empirical analysis begins with specifying appropriate long-run money demand equations for the three GCC countries which will then be tested if recent financial developments have caused significant instability in these functions. Measured in logarithms,<sup>3</sup> a standard long-run money demand equation may take the form:

$$(M/P)_t = \alpha + \beta X_t + \gamma I_t + \delta \pi_t^e + \varepsilon_t$$

where  $M/P$  refers to real money balances defined as nominal money stock divided by the price level,  $X$  is real GDP (representing the budget constraint),  $I$  is nominal interest rates,  $\pi^e$  is expected inflation,  $t$  stands for time, and  $\varepsilon$  is a white-noise disturbance term. Interest rates and expected inflation represent the opportunity costs of holding money balances rather than financial or physical assets, respectively. Theory predicts that  $\beta > 0$ , but  $\gamma < 0$  and  $\delta < 0$ . Our data are annual observations covering the period 1973–2005, the longest period for which consistent data are available for all variables. The data come from the CD-ROM of the International Financial Statistics as well as from various publications of the Central Banks in the three Gulf countries. Table 1 provides a quick preview of the various variables in the three countries.

<sup>1</sup> A few recent studies estimate money demand equations in the Gulf region but without any reference to the role of financial developments. See Harb (2004) and Lee, Chang and Chen (2008).

<sup>2</sup> See The Economist (2006) and several research papers published by the Bank for International Settlements.

<sup>3</sup> Money demand studies typically enter the variables in natural logarithms for convenience since this particular format smooths out the underlying variances thus inducing homoskedastic errors. Using natural logarithms also directly converts the estimated coefficients into elasticity measures.

**Table 1**  
Descriptive statistics.

	Variables	Mean	Std. dev.	Min	Max	Skewness	Kurtosis
Bahrain	$M_1$	5.79	0.45	5.17	6.92	1.15	0.62
	$M_2$	7.07	0.56	6.03	8.12	0.06	-0.74
	$X$	7.54	0.40	6.83	8.44	0.50	-0.27
	$\pi^e$	4.22	7.45	-2.63	24.41	1.60	1.48
United Arab Emirates	$M_1$	9.59	0.68	8.25	11.17	0.53	0.01
	$M_2$	10.96	0.68	9.47	12.30	-0.26	-0.24
	$X$	11.75	0.39	10.97	12.70	0.34	0.29
	$\pi^e$	2.17	5.39	-6.77	13.86	0.32	-0.48
Qatar	$M_1$	8.30	0.39	7.46	9.41	0.70	1.84
	$M_2$	9.50	0.64	8.30	10.47	-0.69	-0.79
	$X$	10.35	0.42	9.79	11.35	0.76	-0.55
	$\pi^e$	5.28	13.65	-20.78	33.95	0.33	-0.10
	$I$	8.54	3.33	3.55	15.12	0.23	-1.07

$M_1$  = Log of real  $M1$  in millions of local currencies,  $M_2$  = Log of real  $M2$  in millions of local currencies,  $X$  = Log of real GDP in millions of local currencies,  $\pi^e$  = expected inflation (measured statically as the lagged inflation rate),  $I$  = the three-month Treasury Bill-rate in the United Kingdom (representing a foreign interest rate). The data are annual spanning the period 1973–2005.

Some technical issues regarding the proposed money demand equations for the three Gulf countries warrant a few comments. The first pertains to the particular definition of the money stock,  $M$ . This paper, like most other prior studies, reports the results from using two conventional measures of money stock; namely, the narrow  $M1$  definition (currency with the public plus their demand deposits), and the broad  $M2$  definition ( $M1$  plus the public holdings of time and saving deposits). In the GCC countries,  $M1$  is usually referred to as the “Money Supply”, while  $M2$  is typically referred to as “Domestic Private Liquidity”.<sup>4</sup> As to measuring expected inflation, we assume static expectations which allow the use of lagged inflation rates as a proxy for  $\pi^e$ .

A second issue relates to the appropriateness of including some measures of interest rates in the money demand equations. Most prior research for developing economies suggests dropping the interest rate variable since financial assets (other than money balances) in these countries are seriously lacking. The little substitutability available between money and other financial assets has effectively limited the choice of domestic asset holders to either money or real goods. Consequently, consistent and reliable data on interest rate in most developing economies, including the GCC countries, are simply unavailable.

Therefore, most empirical studies on money demand in developing countries solely use expected inflation to represent the opportunity cost of holding money. However, another interesting, though unduly restrictive, aspect of most prior money demand studies is that they are also closed-economy models. Yet, holding foreign assets is a viable alternative to holding domestic money balances in most contemporary open economies (see Darrat, 1986). Since the three GCC countries have open economies with reasonably free capital mobility, this paper includes a measure of foreign interest rates in the money demand equations estimated. We use the short-term interest rate in the United Kingdom (the three-month Treasury-Bill rate) as a proxy for the international opportunity cost of holding domestic money in the GCC countries.<sup>5</sup> Note that our money demand equations exclude the exchange rate variable for two main reasons. For most of the estimation period, currencies of the GCC countries are fixed relative

<sup>4</sup> The Central Bank of the UAE also discusses in its official publications another measure dubbed “M3” defined as  $M2$  plus “government” deposits. However, such a measure defies convention since, by definition, money stock should only include assets at the hands of the non-bank public (that is, outside banks and outside the government).

<sup>5</sup> We also used the U.S short-term interest rate instead of the U.K. interest rate but the main conclusions remained unaltered. Note further that domestic nominal interest rates may embed the effect of expected inflation on money demand. However, our use of foreign interest rates minimizes this redundancy problem.

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