

## Economic Papers Series

# To Peg or not to Peg: A Quantitative Analysis of UAE Dirham

The study presents a model to analyze economic and financial characteristics for the choice of flexible or fixed exchange rate. Different quantifiable measures of attributes - trade orientation, financial integration, economic diversification, macroeconomic stabilization, credibility, and "fear-of-floating" type effects - have been identified in the literature as key potential determinants of regime choice. The model is applied to UAE and results present strong case in favor of pegged exchange rate in UAE.

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# TO PEG OR NOT TO PEG: A QUANTITATIVE ANALYSIS OF UAE DIRHAM

## I: Introduction

The choice of proper exchange rate regime is tricky and technical. Some developing countries have adopted fixed exchange rate and others have flexible exchange rate system. Some countries have changed the exchange rate system from fixed to flexible. The discussion about right exchange rate regime got momentum after Asian crisis which is often interpreted as evidence against pegging. Generally the choice of exchange rate regime is seen in the context of structural characteristics of economies, such as exports, government revenues, importance of oil sector in GDP and future forecasts about the economy. In this context, the important question about exchange rate regime is to analyse whether the choice of regime selection is right for the economy or not?

Generally the literature on exchange rate highlights that a flexible regime permits a country to have an independent monetary policy, providing the flexibility to accommodate domestic and foreign shocks. A fixed exchange rate regime reduces the degree of flexibility but provides a higher degree of credibility (Giavazzi and Pagano, 1988). On the other hand, it is argued that under fixed exchange rates, the pegging country not only loses the ability to stabilize domestic shocks, but it also imports monetary policy and consequently the price changes of the country to which it pegs. However, the proponents of fixed exchange rate argue that high level of changes in foreign output supports the choice of fixed exchange rate regime as foreign country's monetary policy targets the same real shocks that can hit the domestic economy. So there are arguments in favor of and against each exchange rate regime choice.

Edwards and Savastano (1999) refer to various studies that explain the downward trend in the number of pegging countries, arguing that a flexible exchange rate system has advantages from a political-economy point of view. The switch to more flexible systems lowers the political costs of exchange rate changes.<sup>1</sup>

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<sup>1</sup> Williamson (1998) dissents from the “newly emerging consensus on the gains that developing countries will

The objective of our research is to assess whether or not a country's economic and financial characteristics make it an appropriate candidate for a pegged exchange rate regime. Our model contains quantifiable measures of attributes—trade orientation, financial integration, economic diversification, macroeconomic stabilization, credibility, and “fear-of floating” type effects—that have been identified in the literature as key potential determinants of regime choice. To illustrate, the model is applied to United Arab Emirates and although the results indicate a fairly strong case in favour of pegged regime in UAE, yet some of the implications for UAE are mixed as changes in the economy in recent years strengthen the case against a peg.

This paper proposes a broad set of quantitative indicators based on analytical factors that have been identified in the literature as having important effects on the performance and the choice of exchange rate regimes.<sup>2</sup> The selection of the key factors—trade orientation; financial integration; economic diversification; macroeconomic stabilization; credibility; and “fear-of-floating” type effects—is guided by quantifiability and techniques to measure each factor empirically and are specified in the form of a model.<sup>3</sup>

A few qualifications to the analysis should be noted. First, the literature generally considers the relative advantages of fixed and flexible regimes without explicitly dealing with “nearly fixed” regimes. Some of the conclusions about fixed regimes may or may not be valid for nearly-fixed regimes and should therefore be interpreted with caution. Second, the analysis for the most part takes as given that macroeconomic policies needed to support the chosen regime are in place, and methods to assess the sustainability of a particular regime are not covered. Regime choice would clearly be of limited importance in improving economic

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reap from moving toward ‘more flexible’ exchange rate regimes” (Edwards and Savastano (1999), p. 19)

<sup>2</sup> See Edwards and Savastano (1999) for a discussion of issues in assessing the relationship between regime choice and performance. Husain, Mody, and Rogoff (2005) present recent evidence regarding the durability and performance of alternative regimes.

<sup>3</sup> Husain (2006) contains a condensed version of the model, with application only to the case of Pakistan.

performance if policies are not sustainable. Third, the assessment of the effectiveness of a fixed regime under a particular criterion may well depend on the sample period over which the relevant indicator is measured. Fourth, different analytical considerations could well point in different directions in terms of whether or not a given country should peg. The fact that some factors may suggest that a fixed exchange rate regime is advantageous in a particular country, while other factors may suggest that a fixed regime is inappropriate, is in line with the empirical finding that no single factor consistently explains actual regime choice across a wide group of countries (Juhn and Mauro (2002) and Rogoff, Husain, Mody, Brooks, and Oomes (2004).

The remainder of the paper is organized as follows. The next section uses Reinhart and Rogoff's (2004) methodology to assess the degree of "fixity" of the *de facto* (as opposed to the announced or *de jure*) exchange rate regime in UAE at present and in the recent past. Section III summarizes the analytical arguments supporting selected considerations for regime choice, proposes alternative quantitative measures in a model and assesses the implications of the measures for UAE exchange rate regime choice. Section IV presents a summary of our results and concludes with an assessment for the "right" regime for UAE and how the right regime may change in the future.

## II: De Facto Regimes in UAE

IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* is considered as the main source of information about the exchange rate policies being pursued by member countries. It contains classification which can be used to study the evolution of exchange rate arrangements over time, the determinants of countries' choice of exchange rate regime, as well as the association between exchange rate arrangements and economic performance. It also records what exchange rate policy the countries themselves declare they are pursuing, and as such it has been called the *de jure* classification, even though at least, since the end of the Bretton Woods system, there is no legal commitment implied.

It has long been recognized that even though a country has announced that it has adopted a particular exchange rate regime, it may not necessarily be following policies that are compatible with it. For example, during the classical gold standard, the Bank of England did not allow gold flows to have a one-for-one impact on the domestic money supply. Later, during the Bretton Woods period, many countries prevented reserve flows from influencing domestic monetary conditions by actively pursuing sterilization policies. Furthermore, during the first ten to fifteen years of the Bretton Woods system, many countries maintained severe restrictions on the official foreign exchange market with the result that parallel markets became widespread. The exchange rates quoted on these markets evolved very differently from the officially announced exchange rates.

As a result of these differences between the policies that countries say they have been following with respect to the exchange rate and the policies that they actually have adopted, new classifications of exchange rate arrangements have recently emerged. The need for these new sets of classification was further highlighted when at the time of Asian crisis; this gap between real and reported exchange rate regimes became too obvious. The best known of these have been documented in Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2005), although others have also been proposed in the literature. The classifications may differ in details, but they are all based, partially or fully, on the actual behavior of the exchange rate. In other words, the new classifications describe what countries actually do rather than what they say they do on paper. Hence they are known as *de facto* exchange rate arrangements.

The *de facto*—as opposed to the *de jure*—rigidity of exchange rate regimes may be assessed by employing a methodology used by Reinhart and Rogoff (2004). According to this technique, a regime may be considered a *de facto* peg if its exchange rate (against the main partner currency, measured at a monthly frequency) fluctuates by one percent or less at least 80

percent of the time. Reinhart and Rogoff use both 5-year and 2-year intervals to measure the frequency of “significant” fluctuations. By the Reinhart and Rogoff measure, UAE has maintained a de facto peg for much of the time since the early 1986.

Was the choice of de facto pegs for UAE dirham consistent with economic considerations? The analysis in subsequent sections attempts to address this question.

### III: The Model

This section summarizes the template for assessing the implications of a selected set of analytical considerations on the choice of whether or not a country should peg its exchange rate. An assessment for UAE based on each consideration is also presented.

#### Economic Integration/Optimal Currency Areas

The higher the degrees of integration of an economy's trade with its partners, greater the benefits of a fixed exchange rate or common currency. An argument that has often been advanced in favor of fixed exchange rates is that exchange rate volatility discourages trade and investment. It is argued that a country can promote trade by eliminating this volatility and the associated transactions costs via a peg. Although time series studies have generally found a small or negligible effect of exchange rate variability on trade and investment (Edison and Melvin, 1990), gravity models such as those in Rose (2000) and Frankel and Rose (2002) find larger effects and conclude that countries that trade a lot will tend to benefit from entering into a currency union with their principal trading partner(s).

The simplest measure of a country's trade orientation, and hence the magnitude of its potential gains from nominal exchange rate stability, is the ratio of its exports plus its imports to GDP. The larger is this ratio, the larger might be the transaction costs saving associated with a stable exchange rate. However, even if a country's trade ratio is relatively large, its trading patterns may well be spread across different partners that have different currencies. Since a country can eliminate the volatility of its exchange rate against only a single currency via a peg, the potential transaction cost saving is limited to trade with the largest partner (or partners using a common currency). This may be measured by the weight of the top currency in total exports, where the top currency captures the share of exports destined for countries that either use the top currency or peg their exchange rates against the top currency.

On the other hand, despite the potential trade gains, a peg may lead to difficulties if the country's business cycle is not synchronized with the cycle of the main trading partner (against whose currency the exchange rate has been fixed). Thus, the degree of cyclical synchronicity may be important in determining the efficacy of a peg. Given data limitations for the large sample of countries used here, each country's cycle is measured as the annual growth rate of GDP and the correlation of cycles is taken as a rough measure of cyclical

synchronicity.<sup>4</sup> Table 1 below shows the economic integration variable in terms of quantitative measure calculated as exports plus imports as ratio of GDP of UAE from 1981 to 2005-06.

**Table 1**  
**Economic Integration measured as (Exports + Imports)/GDP**

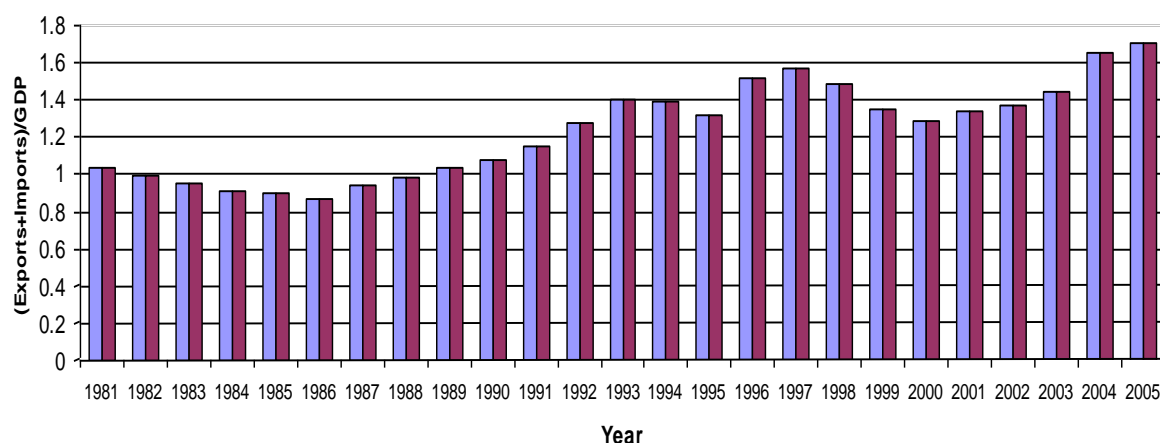
<b>Year</b>	<b>Exports (Million AED)</b>	<b>GDP (Million AED)</b>	<b>Imports (Million AED)</b>	<b>Ecointeg</b>
1981	83660	120800	41050	1.0324
1982	71580	113200	40430	0.9895
1983	60870	102200	36970	0.9573
1984	60010	101600	32300	0.9086
1985	58270	99190	30660	0.8966
1986	37900	79570	31430	0.8713
1987	48560	87370	33770	0.9423
1988	46880	87110	38870	0.9844
1989	59850	100800	44710	1.0373
1990	81980	123500	50950	1.0764
1991	84250	124500	59440	1.1541
1992	92000	130000	74150	1.2781
1993	97380	131200	87300	1.4076
1994	100800	140500	94560	1.3905
1995	108400	157100	99040	1.3204
1996	141900	176200	124900	1.5142
1997	156200	188000	139000	1.5702
1998	129600	178100	134300	1.4818
1999	141700	202700	131900	1.3498
2000	190100	259200	143500	1.2870
2001	186500	255400	154400	1.3348
2002	199600	273900	175700	1.3702
2003	255400	323800	211800	1.4429
2004	345300	384100	288400	1.6498
2005	449300	476300	363500	1.7065

Source: World Development Indicators, World Bank 2007.

<sup>4</sup>We find a correlation coefficient of -0.05076 between GDP growth rates of USA and UAE from 1981 to 2005. This shows that there is no cyclical synchronicity between USA and UAE and this presents a case against peg. However as the basic fundamentals of two economies are quite different, so we do not attach much weight to this variable as compared to trade patten variable which shows the economic integration of a country during a particular time period.



**Figure 1**  
**Economic Integration**



It appears from the data that UAE is continuously maintaining this ratio and portray a strong case for peg. Looking at the graph and table of UAE with reference to Trade orientation and economic integration, it seems that the distribution is pretty normal and there are not many fluctuations in the trade/ GDP ratio. When we compare the economic integration of UAE with other countries in Arab region, we observe that those countries which are maintaining their (exports imports)/GDP ratio, they are following the peg exchange rate.

**Table 2**  
**Ratio of (Exports plus Imports)/GDP**

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>JORDAN</b>	0.66	0.63	0.71	0.73	0.76	0.80	0.98	1.07	1.08
<b>EMIRATES</b>	1.22	1.24	1.20	1.24	1.20	1.28	1.45	1.44	1.34
<b>BAHRAIN</b>	1.06	1.18	1.33	1.22	1.25	1.24	1.22	1.32	1.28
<b>TUNISIA</b>	0.68	0.70	0.72	0.78	0.68	0.68	0.74	0.79	0.81
<b>ALGERIA</b>	0.39	0.44	0.57	0.52	0.54	0.56	0.59	0.64	0.65
<b>SAUDI ARABIA</b>	0.45	0.47	0.56	0.53	0.54	0.59	0.67	0.75	0.79
<b>SUDAN</b>	0.25	0.19	0.24	0.20	0.23	0.24	0.28	0.32	0.29
<b>SYRIA</b>	0.40	0.44	0.47	0.49	0.54	0.47	0.58	0.62	0.57
<b>IRAQ</b>	0.68	0.93	1.42	1.36	1.18	1.71	1.45	1.31	1.25
<b>OMAN</b>	0.76	0.73	0.80	0.82	0.83	0.82	0.86	0.87	0.88
<b>QATAR</b>	0.79	0.76	0.82	0.81	0.76	0.75	0.76	0.82	0.73
<b>KUWAIT</b>	0.67	0.63	0.69	0.67	0.62	0.66	0.70	0.73	0.72
<b>LEBANON</b>	0.45	0.39	0.39	0.45	0.38	0.42	0.48	0.48	0.49
<b>LIBYA</b>	0.32	0.38	0.47	0.51	0.85	0.82	0.82	0.94	0.95
<b>EGYPT</b>	0.22	0.23	0.23	0.22	0.23	0.27	0.40	0.45	0.46
<b>MOROCCO</b>	0.46	0.50	0.49	0.46	0.46	0.44	0.47	0.50	0.50

Source: World Development Indicators, World Bank 2007.

## B. Financial Integration

It is argued that disadvantages of pegged exchange rate increase if a country's trade increases with more countries whose exchange rates are volatile. In other words, other factors being equal, the disadvantages of exchange rate inflexibility rise as economies' integration into global markets increases. As noted by Rogoff and others (2004) and Husain, Mody, and Rogoff (2005), in developing countries with limited access to private external capital, pegs and other exchange arrangements with limited flexibility have been associated with lower inflation, without incurring an apparent cost in terms of lower growth or higher growth volatility. In emerging market economies, where exposure to international financial flows is greater, less flexible regimes have had a higher propensity to experience banking and/or currency crises. In advanced economies, free floats have, on average, registered faster growth than other regimes without incurring higher inflation. The method used by Rogoff and others (2004) to assess whether an economy has access to private external capital is whether or not it is included in the Morgan Stanley Capital International (MSCI) emerging markets index. This index is based on a number of qualitative and quantitative indicators of each economy, including GDP per capita, local government regulations, perceived investment risk, foreign ownership limits, and capital controls. Other indices include JP Morgan's Emerging Market Bond Index Plus (EMBI+) and the International Finance Corporation's (IFC) various emerging market indices which are now maintained by Standard and Poors. Among the IFC's indices, the IFCI Composite covers the emerging market economies whose stock markets are considered the most liquid (based on market capitalization and turnover). Another index, the IFCG Composite includes the IFCI Composite group plus a number of other countries where stock markets are somewhat less liquid; and the IFCG Frontier Composite comprises countries that have less extensive information availability and are thus not included in the other indices. Clearly, countries that are not in any of these indices would appear not to be integrated into global financial markets; countries that are only in the IFCG Frontier Composite would also appear to be relatively less integrated. Some countries may have been excluded from the major emerging market indices because of their small size, even if foreign investor participation in their financial markets was significant relative to the size of their economies. The IFC indices, for example, initially had indicative thresholds of \$2 billion for stock market capitalization and \$1 billion for annual stock market turnover. Over time, however, some countries that did not meet the thresholds were added to the indices, if the IFC received queries and expressions of interest from international investors in these countries' stock markets and high-quality stock market data were available. The thresholds did not apply to the Frontier Composite index. Hence, a quantitative measure of the ratio of

the countries' stock market capitalization and/or annual stock market turnover to GDP may be a useful supplement to the previous measure. In principle, this measure could facilitate identification of small economies that are relatively well integrated into global financial markets but have not been included in the major emerging market indices. Another proxy for international financial integration may be the level of financial development. If so, countries that are at a relatively early stage of financial development—as indicated by a low money-to-GDP ratio—may also have less access to private global capital and therefore be less susceptible to financial risks under a pegged regime. The table 3 below shows money to GDP ratio in UAE from 1996 to 2005 and it indicates that this ratio is relatively small and be less susceptible to financial risks under a pegged regime.

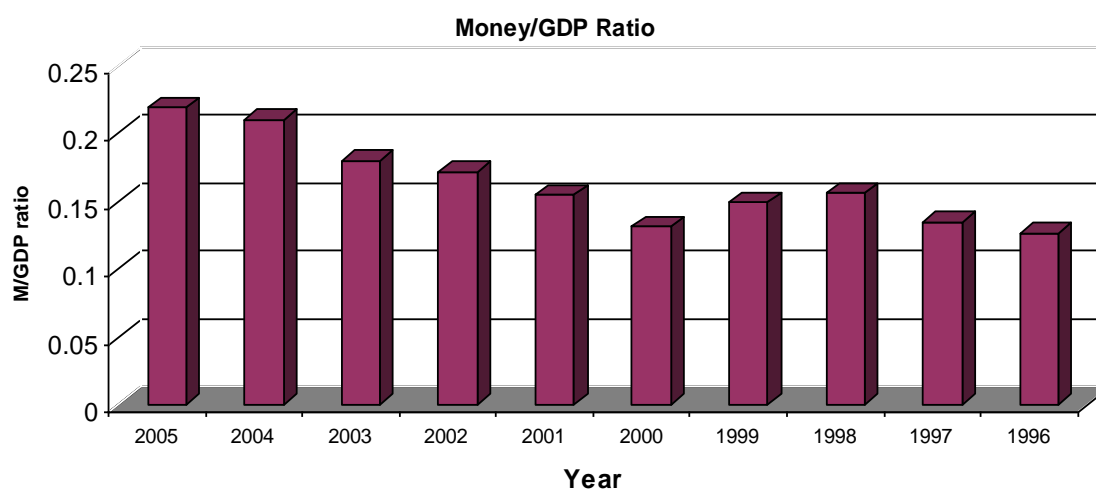
**Table 3**

**Money GDP Ratio in UAE**

Year	MONEY	GDP	M/GDP
1996	22,266.00	176200	0.126368
1997	25,368.00	188000	0.134936
1998	27,784.00	178100	0.156002
1999	30,252.00	202700	0.149245
2000	34,067.00	259200	0.131431
2001	39,464.00	255400	0.154518
2002	47,054.00	273900	0.171793
2003	58,262.00	323800	0.179932
2004	80,818.00	384100	0.210409
2005	104,449.00	476300	0.219292

Source: Statistical Bulletin, Central Bank of UAE, 2009

**Figure 2**



When we compare the money GDP ratio of selected countries of the region with that of UAE, it appears from the data that those countries which are experiencing high money to GDP ratio are maintaining flexible exchange rates such as Tunisia, Syria and Jordan. On the other hand countries such as Oman, Qatar, Saudi Arabia and Kuwait are maintaining smaller money to GDP ratio and experiencing the pegged exchange rates. The data is shown in Table 4 below.

**Table 4**  
**Money GDP ratio in selected countries of the region**

Year	Jordan	Bahrain	Tunisia	Saudi Arab	Syria	Oman	Qatar	Kuwait
1997	11.6334	0.0013	8.6178	0.0342	209.0733	0.0131	1.3304	0.0126
1998	11.5057	0.0013	9.9324	0.0333	246.5020	0.0137	1.4965	0.0134
1999	11.3430	0.0014	11.3719	0.0375	228.3936	0.0125	1.2273	0.0139
2000	12.2459	0.0012	11.9292	0.0372	251.2012	0.0103	0.9119	0.0119
2001	11.8155	0.0013	10.0964	0.0344	255.8420	0.0134	1.0832	0.0144
2002	11.4471	0.0013	8.9600	0.0322	239.4010	0.0146	1.1822	0.0165
2003	13.0921	0.0015	9.0338	0.0198	207.3299	0.0142	1.7443	0.0163
2004	11.7689	0.0014	8.8570	0.0186	189.5703	0.0141	1.6745	0.0157
2005	14.3236	0.0015	8.1021	0.0127	184.6748	0.0141	1.9169	0.0130
2006	14.6016	0.0020	8.4068	0.0112	180.1200	0.0133	1.9251	0.0101

Source: World Development Indicators, World Bank 2007.

International financial integration considerations suggest a case in favor of peg in UAE. UAE is not included in most emerging market indices, suggesting that it is relatively less integrated into global markets and, therefore, relatively less exposed to the volatility of private international capital flows. Despite a stock market turnover ratio that ranks in the middle of the sample, UAE is not included in any of the major indices and its monetization ratio has been relatively low. Hence, the low degree of international financial integration (historically) implied by these measures suggests relatively little exposure to capital flows volatility and, consequently, a modest case for a peg.

### **C. Diversification/Terms of Trade**

It is generally believed that countries avoid pegging of their currencies if their trade is not diversified. Trade diversification can be described in terms of "commodity composition" and in terms of "market diversification". The countries that are heavily dependent on the exports of one or few commodities are more vulnerable to shocks in global economy. Similarly, large market diversification of exports allow the countries to absorb macroeconomic shocks more rapidly as compared less diversified trade patterns. Diversified economies are less

vulnerable to terms of trade shocks and therefore less likely to require exchange rate flexibility to facilitate adjustment to such shocks. Conversely, countries that are heavily reliant on a single commodity (or group of commodities) will likely require exchange rate flexibility to respond to changes in world commodity prices to mitigate spillovers into other sectors.

Frankel (2003) has suggested that countries heavily reliant on a single commodity (or set of commodities) should peg to the international price of their principal export commodity. This suggests that oil producers consider pegging their currencies to the international price of crude oil. This may lead to *de facto* flexibility against the currency of any single trading partner and therefore not be considered a “fixed” regime. A country’s vulnerability to terms of trade shocks can be measured by simply calculating the historical volatility of its terms of trade (export unit value divided by import unit value). As the terms of trade reflect both export and import prices, high volatility of the former need not necessarily reflect a lack of export (and production) diversification and may arise on account of sharp movements on the import side (e.g., from heavy reliance on oil imports). Even so, however, greater terms of trade volatility would indicate higher costs associated with foregoing adjustment via exchange rate changes and, hence, a case against a peg.

**Table 5**

**Terms of Trade of UAE**

Year	Export value index (2000 = 100)	Import value index (2000 = 100)	TOT (exports value index/import value index)
1980	44.0415	24.6537	1.7864
1981	43.6906	28.0128	1.5597
1982	36.5372	25.0278	1.4599
1983	30.8573	22.4028	1.3774
1984	32.0582	18.7695	1.7080
1985	29.6002	18.6723	1.5852
1986	20.3076	19.4407	1.0446
1987	25.5924	20.2234	1.2655
1988	24.5599	24.3423	1.0089
1989	35.2781	28.5926	1.2338
1990	47.2032	31.9889	1.4756
1991	48.9915	39.2642	1.2477
1992	49.6331	49.7301	0.9981
1993	47.3956	55.7571	0.8500
1994	54.9140	60.0531	0.9144
1995	58.4947	59.9389	0.9759
1996	67.3904	64.6634	1.0422

Year	Export value index (2000 = 100)	Import value index (2000 = 100)	TOT (exports value index/import value index)
1997	68.1944	85.5551	0.7971
1998	62.2699	70.6333	0.8816
1999	73.1685	94.9213	0.7708
2000	100.0000	100.0000	1.0000
2001	97.7846	106.5240	0.9180
2002	104.5812	121.8315	0.8584
2003	134.5984	148.7446	0.9049
2004	182.4151	205.8671	0.8861
2005	235.0495	260.3616	0.9028
2006	279.3877	283.0758	0.9870

Source: World Development Indicators, World Bank 2007.

**Figure 3**

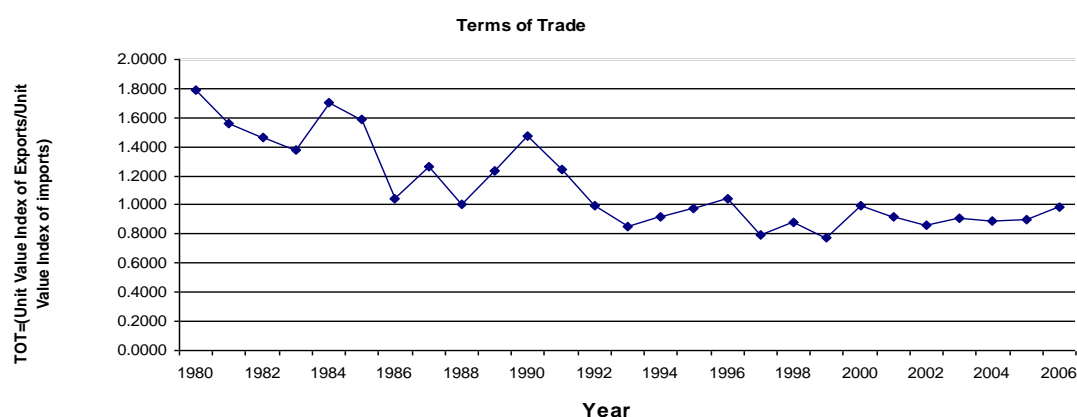


Table 5 shows the unit value index of exports, unit value index of imports and terms of trade of UAE economy from 1980 to 2006. The data and graph portrays that initially there appeared some volatility in TOT during 1980s but since 1990s the TOT of UAE is more stable and there are not much fluctuations in TOT. This strengthens the case for peg of UAE currency.

It may be noted, however, that such data are available at only an annual frequency, which may understate true volatility. Moreover, the quality of the data may well be uneven across countries, especially as the structure of trade has changed significantly in some countries over the past two decades.

An alternative measure of production and export diversification is the share of primary commodities in a country's exports and GDP. The higher are these ratios, the more reliant is the country on its main commodity, the less diversified its economy and the weaker the case for a peg. The United Arab Emirates has been a center of trade since ancient times, copper, pearls and oil being some of its most precious commercial commodities. Today, trade is still a

central cornerstone of the economy, oil and gas exports remaining an important component as far as exports are concerned. The UAE exports 62 per cent of its crude oil to Japan and gas exports are almost entirely to Japan.

Despite the predominant role played by oil and gas, the numerous free trade zones established in the country are also contributing enormously to the value of exports and the UAE has become the third most important re-export center in the world (after Hong Kong and Singapore). In fact re-export trade provides a substantial one-third of the entire trading sector in the UAE. In Dubai, where a large part of the re-export trade is concentrated, it forms an even greater proportion of that emirate's total income. Although Iran and India feature prominently as destination countries there is a fairly even spread of re-exports across at least 35 countries. This suggests that pegging of UAE dirham is also justified as UAE is not dependent on the exports of few items and its exports are diversified.

A direct measure of an economy's reliance on a particular commodity is the correlation of the country's economic cycle with the world price cycle of the commodity. This may be assessed by correlating the country's annual GDP growth rate with the corresponding change in the world price of its key commodity. Since commodity price changes may affect activity with a lag, the relevant correlation may well be that of activity with lagged commodity prices. It should be noted, however, that world commodity prices are synchronous with global activity, and a high correlation could be due to strong links with the global economy rather than heavy dependence on the commodity itself.

The regression results of correlation between GDP growth rate and oil price changes are reported in Table 6 below.

**Table 6**  
**Regression Results: Dependent Variable: GDP Growth Rate of UAE<sup>5</sup>**

Explanatory Variables	Co-efficient	t-value
Constant	0.073	3.36
Oil Price Change	0.0154	7.20*
GDP growth Lag	-0.029	-0.21
R-square	0.89	
DW Stat	2.16	

<sup>5</sup> The specification of this regression equation is without the relevant variable inclusion and this creates "specification bias". However, a sensitivity analysis can be performed to include the relevant variable(s) and the effect of oil price change on GDP growth rate can be computed with the inclusion of more variable which have likely impact on GDP growth rate. The estimated equation includes GDP growth lag as explanatory variable which is common practice to use with the target variable impact on the dependent variable (GDP growth rate).

Regression results show that oil price changes have a significant effect on GDP growth rate in UAE. However the small coefficient suggests that 1 unit change in the price of oil brings only 0.015 percent change in GDP growth of UAE economy which remained very robust since 1980s. This analysis, thus, suggest a strong case for currency peg of UAE dirham.

#### **D. Stabilization**

There are different views regarding shock absorptions of fixed rate regimes as better insulation against shocks depends on the depends on the degree of capital mobility and on the relative importance of real and nominal shocks. Ghosh, Gulde, and Wolf (2003) outlined three cases related to the broad topic of shock absorption in fixed exchange rate regime: If capital is relatively immobile, a positive aggregate demand shock in a country with a fixed exchange rate leads to higher imports and a loss of reserves. Unless sterilized, this leads to a contraction in the money supply and thereby partly offsets the initial shock. Under a floating regime, the shock results in depreciation, this exacerbates the effects of the initial shock. Hence, a fixed regime provides better insulation of output against shocks to aggregate demand when capital mobility is low. Under high capital mobility, however, a fixed regime is disadvantageous. In this situation, the same demand shock raises domestic interest rates and induces a capital inflow that more than offsets the loss of reserves. This results in an increase in the money supply, which exacerbates the demand shock. Under a floating regime, by contrast, the shock leads to an appreciation of the exchange rate, partly offsetting the initial shock.

Fixed rates better insulate against monetary shocks, regardless of the degree of capital mobility. A positive money demand shock raises interest rates, thereby curbing aggregate demand and imports. Under a fixed regime, there is more capital inflow because of high interest rates. This increase in reserves expands the money supply to match higher money demand. Under a floating regime, however, the increase in domestic interest rates causes the exchange rate to appreciate, thereby curbing exports and amplifying the initial shock. Thus, economies where monetary shocks are relatively more important than real shocks may be candidates for a fixed exchange rate. A fixed regime may also be preferable in economies where real shocks are relatively more important but international capital mobility is low (especially in relation to international trade flows).

A natural quantitative measure to analyze external sector's stability relates to capital mobility. As the degree of capital mobility is intended to measure the relative importance of capital versus trade flows, a simple measure is the ratio of the sum of all (gross) capital flows to the sum of all trade flows. While the degree of “netting out” of inflows and outflows in



individual line items in the Fund's *Balance of Payments Statistics* may differ across countries, the sum of the flows recorded under the principal headings should provide a reasonable approximation of the relative magnitude of gross capital flows in different countries. To minimize the impact of cyclical fluctuations in capital flows, the time period should cover several years, ideally a full cycle. To assess the importance of capital *versus* trade flows, the magnitude of gross capital flows needs to be scaled by trade flows.

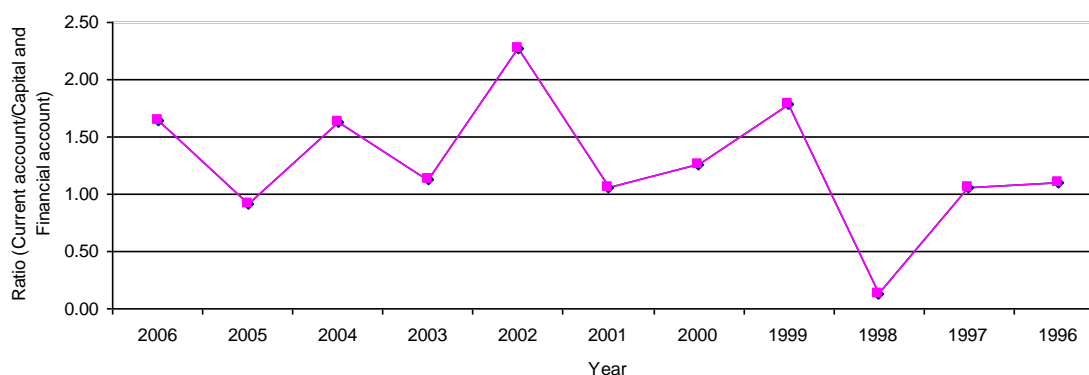
**Table 7**  
**Ratio of Current Account Balance to Capital & Financial Account Balance**

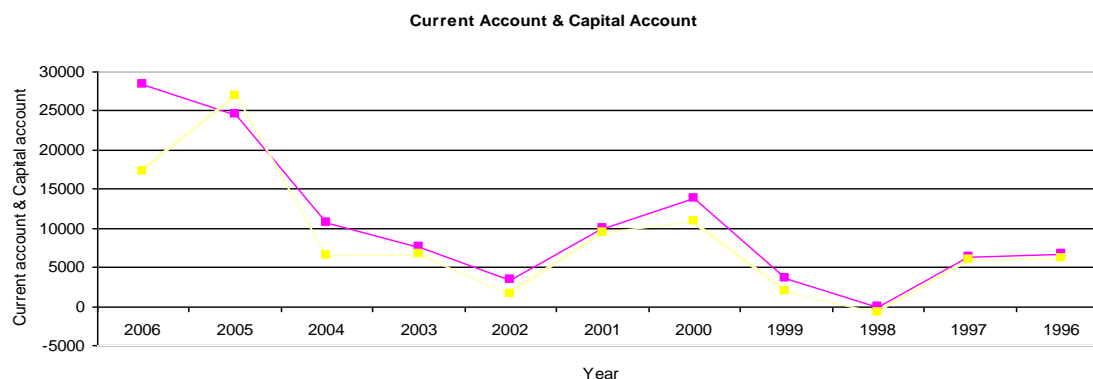
Year	Current Account Balance	Capital and Financial Account Balance	Ratio
1996	6663.03	-6041.95	1.10
1997	6306.33	-5979.58	1.05
1998	-106.19	857.73	0.12
1999	3488.09	-1957.79	1.78
2000	13753.57	-10916.27	1.26
2001	9949.63	-9464.94	1.05
2002	3406.40	-1497.62	2.27
2003	7553.44	-6695.71	1.13
2004	10589.52	-6499.66	1.63
2005	24452.01	-26859.09	0.91
2006	28373.04	-17200.82	1.65

Source: Statistical Bulletin, Central Bank of UAE, 2007.

**Figure 4**

**Ratio of Current account balance to Capital and Financial accounts of UAE**





The data shows that ratio of current account balance to capital account balance is volatile and fluctuations in capital account balance are almost same as are the fluctuations in current account balance over the years. This may presents a case in favor of peg as in case of more volatile capital mobility, it becomes difficult to control over money supply and independence of central bank policy. This also refers to the phenomenon of "original sin". However, maintaining the current account balance at the similar rate of volatility favors the case of peg exchange rate.

#### E. Credibility/Nominal Anchor

A weak central bank may face difficulties in maintaining low inflation over a sustained period. In such circumstances, a country may be able to “import” monetary policy credibility and lower inflation by pegging the exchange rate (or adopting a foreign currency) and forgoing monetary autonomy. Countries that have a history of high inflation or frequent episodes of high inflation may therefore benefit from a pegged regime.

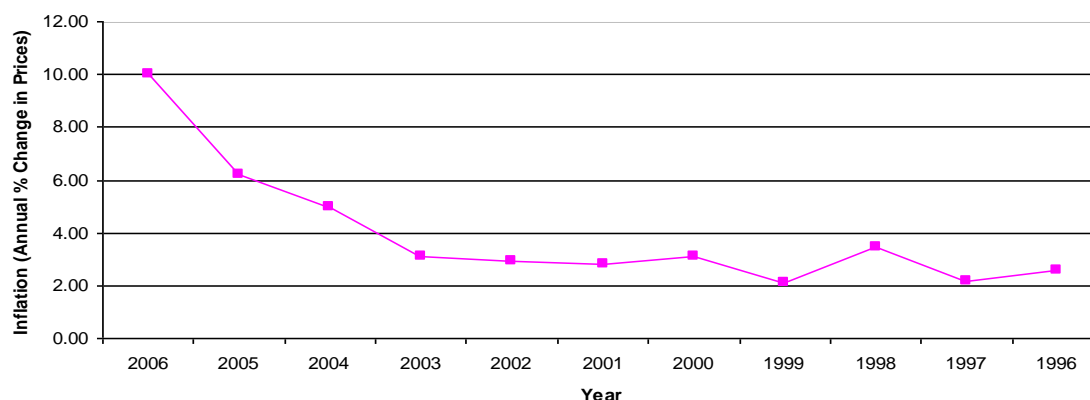
**Table 8**  
**Inflation rate in the region (Annual % change in prices)**

Year	JORDAN	EMIRATES	BAHRAIN	SAUDI ARABIA	OMAN	QATAR	KUWAIT
1996	6.50	2.60	-0.20	0.90	0.30	2.50	3.60
1997	0.47	2.14	1.00	-0.40	0.60	4.88	0.68
1998	5.70	3.44	-0.30	-0.20	-0.59	2.98	0.19
1999	0.50	2.10	-1.30	-1.30	0.50	2.08	2.97
2000	0.70	3.09	-0.70	-1.11	-1.19	1.68	1.80
2001	1.78	2.80	-1.22	-1.10	-0.80	1.48	1.30
2002	1.80	2.90	-0.51	0.60	-0.30	0.17	0.90
2003	1.60	3.10	1.65	0.20	0.20	2.30	0.97
2004	3.40	4.96	2.30	0.30	0.70	6.80	1.31
2005	3.51	6.20	2.60	1.10	1.90	8.80	4.07
2006	6.30	10.00	2.10	1.80	3.20	11.80	3.10

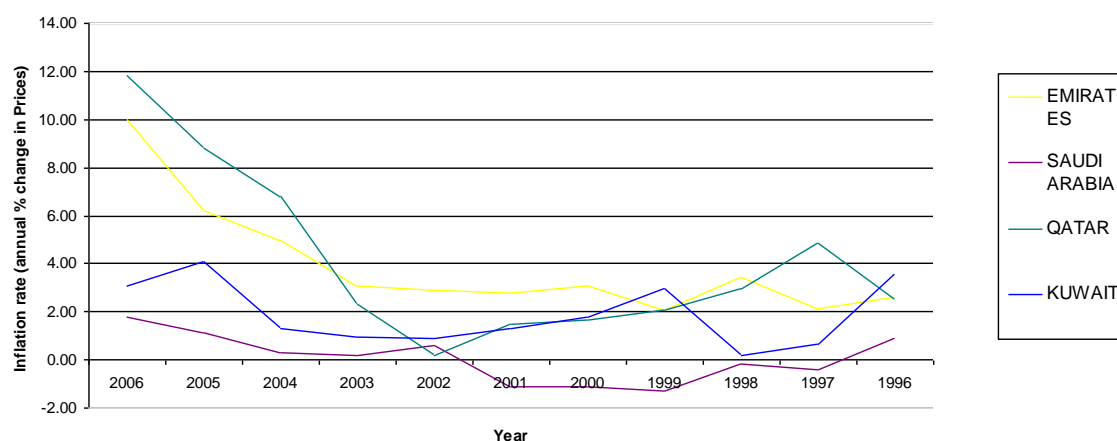
Source: World Development Indicators: World Bank 2007.

Figure 5

## EMIRATES Inflation Rate



## Inflation in the region



Based on these crude measures alone, the inflation history of UAE presents a favourable case in the debate for and against a pegged regime for UAE dirham, as data reveals that UAE is experiencing relatively high inflation as compared to inflation rates of other countries in the region, thus the peg was maintained to import low inflation from the country of peg exchange rate—indicating that a peg could carry significant nominal anchor benefits.

### F. Fear-of-Floating/Balance-Sheet Effects

Calvo and Reinhart (2002) argue that there are additional factors that may explain why some countries are reluctant to allow much exchange rate flexibility. The literature on "fear of floating" points out that a high degree of liability dollarization can result in major balance-sheet effects of large exchange rate shocks, thereby exposing strong effects on the economy through the banking and/or corporate sectors, or even the public sector finances. Similarly, a

high degree of pass through of exchange rate changes to the domestic price level will result in a serious inflationary impact of large exchange rate shocks without capturing significant gains in adjustment or competitiveness.

While a gradual and eventual move to flexibility may help restrict dollarization—and, hence, the prospect of balance-sheet effects and high exchange rate pass through—the presence of these types of effects means that exchange rate changes may be highly disruptive in the near term. To the extent that a lack of exchange rate flexibility over time contributes to a buildup of dollarization and fear-of-floating type effects, countries that do not have such effects at present may be well advised not to maintain a peg and thereby avoid having the effects develop.

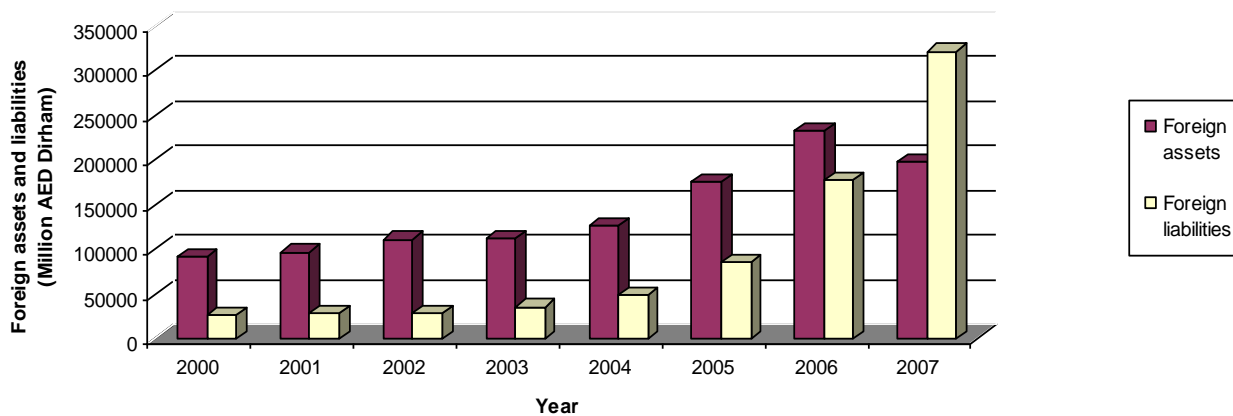
In terms of quantitative measures, we take the %age of foreign assets to total assets of central bank and %age of foreign liabilities to total liabilities of central bank of UAE. A comparison provide a rough estimate of dollarization of economy in a sense that how much country needs to pay and how much it is holding in the form of foreign currency.

The data from 1996 to 2003 shows that, although the share of foreign assets to total assets has gradually decreased, yet the decrease in foreign liabilities to total liabilities decrease was relatively higher.

**Table 9**  
**Foreign Assets and Foreign Liabilities of the Central Bank of UAE**  
*(Million AED Dirham)*

Year	Total assets/liabilities	Foreign assets	Foreign assets to total assets	Foreign liabilities	Foreign liabilities to total liabilities
2000	50136	90916	1.81	26075	0.52
2001	51838	96618	1.86	27995	0.54
2002	55273	110675	2.00	28197	0.51
2003	54502	111727	2.05	35059	0.64
2004	67639	126108	1.86	48793	0.72
2005	80336	175028	2.18	85215	1.06
2006	103233	231938	2.25	177688	1.72
2007	285949	196896	0.69	320970	1.12

Source: Central Bank of UAE: <http://www.centralbank.ae/annualdata/>

**Figure 6****Foreign assets and liabilities of Central Bank UAE**

The data and graph shows that UAE have less degree of "dollarization" liability and this indicator is not posing any "fear of floating" effect and the consequent effects on the balance sheet of the central bank of UAE. The pegging of exchange rate is intact and the data poses a strong case in favor of pegging the exchange rate.

## Conclusion

Taken together, the measures capturing the various regime choice considerations for UAE indicate a fairly strong case in favor of pegging the UAE Dirham. As real shocks are now emanating in some sectors (real estate, retail business, tourism), so pegging seems advantageous from a macroeconomic stabilization perspective. Since UAE external trade orientation is getting momentum in the last few years, the trade gains that could be achieved via a peg are also seems positive. Hence, economic integration factors also weigh in favor of a peg.

UAE's high degree of economic integration within the region and integration with global financial markets, and relatively low inflation history suggest that an exchange rate peg may carry benefits. However, even if these factors are accorded high priority in determining the appropriate regime, the choice of the partner currency against which the Dirham could be pegged is far from clear. Economic integration considerations point to the dollar as well as euro and oil price basket, but on credibility grounds the oil price basket would not be the best choice as it has undergone considerable volatility itself. The economic diversification indicators also offer a case for peg.

While UAE's economic cycle was not initially synchronous with that of major developed countries, but now this is reflected in the importance of the oil sector—and the importance of the international oil price cycle—in UAE economy. Moreover, UAE's trade share of re-exports and other commodities is getting momentum so on balance economic integration considerations point to a neutral assessment of the efficacy of a peg for the UAE dirham.

For UAE, macroeconomic stability will mainly indicate the maintenance of peg. More recently, as credibility has been enhanced, economic integration with countries in the region may reduce the financial risks associated with a peg. It can be assessed from the analysis above that any move towards flexibility of exchange rate, even limited, may contain more financial risks and may not facilitate economic adjustments to external shocks in the period of crisis.

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