

What Has Algeria Done Wrong That Indonesia Has Done Right?

A Preliminary Analysis on Exchange-Rate Management

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Résumé

Abstract: This study discusses a comparison of macroeconomic policies in Indonesia and Algeria in terms of their differing economic performances. In particular, it highlights the issues of exchange-rate and international reserves management in Algeria. In the context of costly mismanagement, the consensus leans toward flexible rates as the satisfactory option if a country is developing and has a degree of openness. The standard balance-of-payments model suggests that the management of real and monetary sectors are key determinants of exchange-rate problems. Algeria's exchange rate policies should be a major focus of the current discussions on its new economic architecture as to the country has been facing a severe problem on its balance of payments.

ملخص

ملخص: ما الذي نجحت إندونيسيا في القيام به وفشلت الجزائر؟
تحليل أولي لإدارة سعر الصرف
يتناول المقال، بالمقارنة، السياسات الاقتصادية الكلية لكل من الجزائر وأندونيسيا من حيث اختلاف أدائها الاقتصادي. يركز المقال على توضيح أهمية الإدارة السليمة لسعر الصرف والاحتياطي الدولي (RESERVES INTERNATIONL)، ليؤكد على أن الإجماع يتجه نحو اتباع سياسة مرنة لسعر الصرف.
ويخلص المقال إلى أن نموذج ميزان المدفوعات المعياري، اعتمادا على الاختبارات التي تم إجراؤها انطلاقا من البيانات للفترة 1969 - 1989، يؤكد أن الإدارة المحكمة للقطاع النقدي والقطاع الحقيقي تشكل العوامل الأساسية للتعامل مع إشكاليات سعر الصرف.

1. Introduction

Although it is not possible to conclude about one particular exchange rate regime being superior to another, some studies emphasize the different effects that policy variables have on growth under different regime. The studies show that when a country, whose fundamentals make it unlikely to adopt another regime, adopts a floating regime, it would result in lower inflation [Melvin 1985].

Other studies [Binsardi 2001, Harvie 1999] indicate that in order to avoid price instability and to attract international capital, a developing country such

as Indonesia need to adopt flexible ¹ currency management. The policy has been successful for sustaining economic growth [IMF 1997].

Exchange-rate overvaluation, weak trade balance and a large foreign-currency-denominated debt leave developing nations vulnerable to speculative outflows and withdrawal of international investors. This in turn would deplete international reserves. The Asian and Brazilian crises of 1997-99 and the Mexican crisis of 1994-95 illustrate this vulnerability [Fischer 2001].

What matters most is the policies credibility. The exchange rate is a crucial price for a small open economy in which its fluctuations may damage domestic stability. In addition, the choice of the exchange-rate policy is related to the pursuit for "macroeconomic quality". Uncertainties about the quality may make it more difficult to attract international investors in financing domestic investment; due to an increase of the exchange rate risk and an increase of the cost of capital.

Algeria's exchange rate policies should be a major focus of the current discussions on the new economic architecture. To date, apart from the IMF research, little research has been undertaken on modelling the behavior of Algeria's balance-of-payments and its exchange rate.² Aims and Objectives

The aims of this paper are:

- To investigate briefly the key differential factors responsible for the economic performance of these two countries, focusing upon the factors contributing to the economic development and slowdown
- To provide direction for future research for recovery of Algeria's economic performance in terms of balance-of-payments modelling and their policy simulation

While the specific objectives are:

- To compare exchange rate policies in Indonesia and Algeria in the context of their differing economic performances. By comparing these key factors, macroeconomic policies for Algeria's recovery could be formulated
- To examine Algeria's exchange-rates and international reserves movement

¹ Flexible Exchange Rate Management here means that developing countries like Indonesia and Algeria need to pegged their currency to USA dollar or to a basket of foreign currency then gradually they needs to move toward floating exchange rate management to liberalize their currency markets.

This study is a preliminary analysis on the exchange rate policies in Algeria. While previous studies on exchange rate policy choices may offer insights in an *ad hoc* manner, recent theory on exchange rate policy has advanced to include the nature of exogenous disturbances, as determinants of exchange-rate choice. The analysis presented could aid in the elaboration of the balance of payments and exchange-rate management in Algeria. It would guide further research in that it indicates which approach is consistent with Algeria's objective function. This study builds on previous work undertaken [Fischer 1977, Melvin 1985, Binsardi 2001] to develop an exchange-rate model using N-chotomous Logit Estimation [Mckelvey and Zavolina 1975].

3. Balance-of-Payments Model

Recent theory regarding the choice of an exchange rate policy has focused on how the choice of an exchange-rate regime will affect the economic stability. While the emphases of the various regimes differ, the common element is the notion that the appropriate exchange rate system will differ with the nature of the disturbance to the economy.

The criteria for investigating the exchange rate policy can be analyzed indirectly from a simple balance-of-payments model. There are two balance-of-payments model in the literature, the monetary sector model and the real sector model. The real sector model is based on the previous work undertaken by Melvin (1985), while the monetary-sector is based on Frenkel-Musa (1985) and Binsardi (2001).

The monetary sector of the balance of payments states that the relationship between the demand for and the supply of money is regarded as the main determinant of Algeria's exchange rate and reserves problems. The demand for money in real terms (μ) is postulated to be a function of real income (Y^r), domestic interest rate (i) and domestic inflation (Π) as follow

$$\mu = M^d / P = \Phi (Y^r, i, \Pi) \quad 3.1$$

By differentiating logarithmically 3.1 with respect to time, gives

$$d\mu/dt = d\mu/dY^r \cdot dY^r/dt + d\mu/di \cdot di/dt + d\mu/d\Pi \cdot d\Pi/dt \quad 3.2$$

By manipulation, 3.2 reduces to 3.3 and 3.4 as follows,

$$d\mu/dt \mu^{-1} = \xi_{Y^r} Y^{r-1} dY^r/dt + \xi_i i^{-1} di/dt + \xi_{\Pi} \Pi^{-1} d\Pi/dt \quad 3.3$$

$$M^{d-1} dM^d/dt = \xi_{Y^r} Y^{r-1} dY^r/dt + \xi_i i^{-1} di/dt + \xi_{\Pi} \Pi^{-1} d\Pi/dt \quad 3.4$$

On the supply side, real money (M^s) is defined as the product of the money multiplier (λ) and the stock of high-powered money (H) which consists of international reserves (R) and domestic credit creation of the Central Bank

(D) algebraically as follows,

$$M^s = \lambda H = \lambda (R + D) \quad 3.5$$

Equation 3.5 may be restated as 3.6 and 3.7 as follows

$$M^{s-1} dM^s / dt = R H^{-1} dR / dt R^{-1} + D H^{-1} dD / dt D^{-1} + \lambda^{-1} d\lambda / dt \quad 3.6$$

$$R^{-1} dR / dt = R H^{-1} (M^{s-1} dM^s / dt - \lambda^{-1} d\lambda / dt) - R^{-1} D dD / dt D^{-1} \quad 3.7$$

Long-run equilibrium in the money market implies that $M^d = M^s$, accordingly the key relationship of the balance of payments model of the monetary sector can be rewritten by substituting 3.4 into 3.7 to give the unrestricted form 3.8 as follows

$$R = \phi(y, p, p^*, e, i) \quad 3.8$$

The real sector of the balance of payments model can be derived following the aggregate supply function as follows,

$$y_t = \alpha_0 + \alpha_1 \{ p_t - E_{t-1}(p_t) \} + \alpha_2 y_{t-2} + v_{1t} \quad 3.9$$

$$y_t = \beta_0 + \beta_1 \{ i_t - E_t(p_{t+1} - p_t) \} + \beta_2 \{ e_t + p_t^* - p_t \} + \beta_3 y^* + v_{12} \quad 3.10$$

$$p_t^c = \delta p_t + (1 - \delta)(e_t + p_t^*) \quad 3.11$$

$$M = \eta_0 p^c + \eta_1 y_t + \eta_2 i_t \quad 3.12$$

$$i_t = i_t^* + E_t(e_{t+1} - e_t) + v_{13} \quad 3.13$$

where y = domestic output, p = domestic price level, E = expectations operator, i = domestic nominal interest rate, p^* = foreign price level, e = spot exchange rate, y^* = foreign income, p^c = a composite price index, t = time variable, $*$ = foreign / international variable and v = stochastic error term, the model is stated in log-linear form The above equations suggests that

- economic growth varies from trend due to unanticipated price changes. (rational expectations) – equation 3.9, the Aggregate Supply Function

- aggregate demand depends upon the real interest rate, the terms of trade, and foreign real income – equation 3.10, the Aggregate Demand Function

- average price condition identifies p^c as a weighted average of domestic and foreign prices, where the weights are the consumption shares devoted to domestic (δ) and foreign $(1 - \delta)$ goods – equation 3.11, the Composite Price Function

- equilibrium requires that sets money supply equal to money demand, in which the money demand depends upon the price level, income, and the interest rate – equation 3.12, the Equilibrium Condition

- real interest rate effect is a standard IS curve effect – equation 3.13, the Interest Function

- the small country assumption allows the foreign price (p^*), foreign income (y^*), and foreign interest rate (i^*) to be taken as given. Hence, the endogenous variables of the model will depend upon the exchange rate policies (pegged or flexible) i.e., the dependent variable is the choice of an exchange rate system (countries are described as lying between pegged and floating exchange rates).

Although there are variations among the empirical formulation, the basic structure of the models can be obtained by solving the above equations, hence the testable equation for Algeria can be derived as follows, $y = \phi(p, p^*, I, e)$ 3.14

Under pegged exchange rates, the greater the domestic money supply shock, the larger the domestic price shock. The intuition is that international reserve flows act as a shock absorber under pegged rates. Since foreign price shocks enter with a peg but not a float, the greater the foreign price shocks, the more likely is a float. A country experiencing large monetary shocks can use the rest of the world as a monetary shock absorber under a pegged rate regime as domestic excess supplies and demands are remedied by international reserve flows. In the case of large foreign price shocks, a float will insulate the domestic price from the foreign disturbance as the exchange rate changes to offset the transmission of the foreign shock to the domestic economy.

4. Indonesia and Algeria; A Brief Comparison

Indonesia's Scenario

Indonesia's economic achievement has ranked among the best in the developing countries [Harvie 1999] as the structure of the economy has been more diversified; moving towards export oriented manufacturing and reducing dependency on the petroleum sector.

Indonesia's macroeconomic future framework is reflected in the targets growth in the 3 percent range in 2001 and aims to bring inflation well within the 10 percent target. Tight monetary policy aims to keep real interest rates at adequate positive levels by reducing base money growth to 12 percent. Indonesia remains committed to maintaining a flexible exchange rate regime and an open capital account, and no restrictions on capital flows.

Indonesia has promoted medium-term fiscal sustainability and reduced dependence on external financing by strengthening non-oil tax revenues, lower subsidies, fiscal decentralization and continued wage restraint. In the institution

side, Indonesia is developing a legal framework for public debt management and a liquid government securities market (treasury bills). The privatization process of domestic banks has already undertaken. The process is taking place through private placement to strategic investors so as to ensure that both banks attract strong partners. In addition, Indonesia has provided a supportive regulation for domestic economic restructuring. This includes the introduction of tax relief and regulatory protection at the Jakarta Stock.

Indonesia has implemented a number of measures to improve court governance. The Independent Commission for the Audit of the Wealth of State Officials has already begun to receive financial reports and assess the wealth of judges and other high-ranking officials. In light of the recent Supreme Court, the Anti-Corruption Commission is responsible for prosecuting court system and higher-level officials corruption.

Algeria's Scenario

Algeria is very dependent on hydrocarbon resources. Accordingly, fluctuations in oil prices have a significant impact on the economy. The Authorities currently face a severe problem of exchange-rate management and international reserve depletion.

Over the last decade, Algeria's economy has been characterized by stagnant growth, declining per capita income, increasing unemployment, and high inflation. The Authorities began to implement economic reform programs starting in 1989 but, until 1994, these efforts were insufficient. Studies indicate that Algeria's economic performance is worse after the 1988 reforms [Hodd 2001].

The IMF program in 1994 was the first step in the liberalization process that sought to establish a solid macroeconomic basis for an improvement in the growth performance and a reduction in unemployment [IMF 1994]. Economic policies of the program emphasized tight demand management and wage restraint (same as Indonesia's case), including a dinar depreciation and reducing the fiscal deficit. These policies have resulted some successes such as non-hydrocarbon growth, decreased inflation and increased reserves.

Between 1994-1998, Algeria was successful in restoring macroeconomic stability and implementing structural reform owing to the implementation of IMF programs. Growth resumed, inflation was tamed, and the balance of payments position strengthened. Progress on the structural front was also widespread, with the establishment of market mechanisms from a centrally planned to a diversified-market economy.

In 1998-1999, the Algerian economy was affected by low world oil prices. This resulted in a sharp fall in hydrocarbon receipts. The balance of payments position was also weakened by a large deficit of the capital account reflecting limited access to new external borrowing. This resulted in a loss of international reserves, pressurizing the price of Algerian dinar. The Authorities' policy response was to tighten the fiscal stance by maintaining high interest rates, and let the dinar depreciate.

To illustrate the above points further; Indonesia, Korea, Thailand, Russia, Brazil and Mexico became floaters after the major crises of the last decade, while Colombia joined the group in 1999. This is the transitions that has influenced the view that fixed exchange rate are not viable for sustained periods for nations with semi open and developing such as Indonesia. In fact, there has been a significant shift among these emerging market economies from various forms of pegged towards floating exchange system. Studies also indicate that economies open to international capital flows have been in the process of moving away from fixed systems towards systems with greater flexibility. The fact that pegged exchange rates has a short life expectancy for any type of economy was emphasized notably by Obstfeld and Rogoff (1995).

Illustration 4.1

Indonesia's and Algeria's Comparative Economic Development

No.	Subject	Indonesia	Algeria
ECONOMIC			
1	Real Sector	Market-Planning Approach to Development Fully Market-Oriented Trade Liberalization (Foreign Investment Incentives) Growth in Exports, Diversification Growing Property Markets (20-35% pa) Developing Infrastructure / Telecommunication Structural Reforms starts in 1965 Highly Subsidized Manufacturing Protection for Some Sectors Semi Distorted Resources Allocation Trade / Tariff Liberalization Investment Incentives for Service, Financial and Other Non-Oil Sectors No Barriers to Machinery / Capital Imports Increased Import Substitution and Increasing Capacity Utilization	Centrally Planning Approach to Development Partial Liberalization Only, not fully Semi Liberalization (?) Non-Hydrocarbon only 5% of Exports Premature Property Markets Lack of Infrastructure / Telecommunication Slower Structural Reforms starts in 1988 Highly Subsidized Manufacturing Higher Degree of Protection Fully Distorted Resources Allocation Uneven Structured of Nominal Tariff Investment Incentives biased in favour of Oil-Related Activities Imposition of Non-Tariff Barriers to Imports Reduced Access to Imported Products Falling Capacity Utilization
2	Public Finance	Long-Term Financing Debts with Longer Maturities Major Spending in Education & Health Conservative Fiscal Policy (Budget Surplus)	Short-Term Public Financing Higher External Debts with Shorter Maturities (30% in 1985 to 62% in 1993) Rising Debt Service Ratios
3	Financial Sector	Tight Monetary Policy Reducing Excess Demand But Rapid Lending for Property Markets Constraining the Growth of Consumers' Credit High Domestic Investment Incentives Freed Local Banks from the Credit Ceilings and Credit Allocation Rules	Easy Monetary Policy (Deficit Financed by Money Creation) Discouraging Private Investments Inflationary Effects Crowding-Out Effect on Private Investments Lower Attraction of Marginal Investment
4	External Sector	Small Persistent Devaluation (Annually 4-5%) Flexible, Pegged then Floating Rate Manageable Current Account Deficit Liberalization of International Markets Jakarta Stock Exchange	Large Devaluation (?) Fixed-Pegged Exchange Rate Limitation of Foreign Exchange Currency Restriction (Not Liberalized) Black Markets
5	Overall Economic	GDP Growth 7% Annually Reduced Inflationary Pressure	Declining PCI since 1985 Deflationary Pressure
NON-ECONOMIC			
1	Social Aspects	Remarkable Poverty Reduction (64% in 1975 to 11% in 1995)	State-Owned Enterprises Social Dimension of Privatization
2	Political Aspects	The Pressure from Islamic Fundamentalist Muslim versus Christian Domination	The Pressure from Islamic Fundamentalist Muslim versus Fanatical Muslim Domination
	Non-Economic Aspects	Rampant Corruption Monopolies, Government Subsidies Protected Markets (Family/Nepotism) Lack of Transparency Underground Economics	Family Business, Traditional Governing State-Government Enterprises Monopolies, Government Subsidies Protected Markets High Cost Economy

5. Summary and Further Research

Summary

Using data over the 1969-1998 period, the balance-of-payments models were estimated. The real sector of the exchange rate model (equation 3.14) performs poorly. Several *ad hoc* modelling has been tried for the equation using stepwise regression but the results are still poor and were not reported. The real sector model underwent structural changes in 1988 although the parameters have wrong signs. This structural change in the economy is studied notably by Hodd (2001).

Using the monetary sector of the balance-of-payments model (equation 3.8) for the same period of 1969 to 1998, the result is as follows:

$$R = 1879.80 - 195.26 M - 6.49 P + 8.18 Y \quad 3.8$$

(t) (3.01) (2.11) (3.91) R^2 0.61

The three variables i.e. Algeria's money supply, price level and domestic income have been reported as significant determinants of the Algeria's foreign exchange reserves. The major prediction of the monetary theory that money supply coefficient should be negative appears to be verified in the Algerian case.

The interest rate variable performs poorly and was not entered in the equation. This may be the interest rate was administratively determined by the Authorities (as the case of Indonesia before 1965); the interest rate was not market determined. The above equation 3.8 passes diagnostic test for autocorrelation, heteroscedasticity and multicollinearity, but it does not pass the normality test. The model is stable for the whole period, but the equation 3.14 (the real-sector model of the balance of payments) was not stable as indicated by Chow test but was not reported because of the wrong signs.

All estimated coefficients of Money Supply, Price Level and Domestic Income yield the signs as expected by the economic theory. A growth in the domestic income leads to an increase in the Algeria's foreign exchange reserves thus strengthening Algeria's balance of payments and its exchange rate position.

The significant influence on the Algeria's foreign exchange reserves seem from money supply and price level. This suggests some macroeconomic policy implications for Algeria that an increase in the money supply (by money

creation or domestic credit creation by the Authorities for example) will "spill over" the balance of payments. It follows that continuous exchange rate problems in Algeria as well as the balance of payments deficit occurred partly because of the amplification of Algeria's money supply. Thus, any escalation of Algeria's money supply must be offset by a diminution in the domestic credit expansion in a subsequent period. To attain the desired stock of Algerian foreign exchange reserves, or to maintain a strong exchange rate, the management of money supply or domestic credit should be employed.

As the Authorities have undertaken devaluation policies, the devaluation has to be supported by restrictive demand management policies. Demand management can be tightened by cutting budget expenditure, reduction in the money supply and domestic credit expansion. These policies are important in limiting the depletion of foreign exchange reserves and consolidating the fiscal position, as the case of Indonesia.

Higher oil prices and an improved political climate can create an opportunity to address Algeria's major policy challenges by reducing dependence on the oil sector such as improvement in the incentive regulations to promote private economic activity, including domestic and foreign investment for the development of Algeria's real sector such as manufacturing and housing. Algeria has also to undertake structural measures aims at liberalizing the economy and establishing market mechanisms as the case for Indonesia. These measures included a managed floating, liberalization of external trade, removal of price restrictions, and a reduction of subsidies.

In order to avoid price instability and to attract international capital, Algeria needs to adopt flexible exchange rate. As previously cited, Mexico, in 1994, Thailand, Indonesia and Korea in 1997, Russia and Brazil in 1998, and Argentina and Turkey in 2000 has involved a fixed exchange rate regime which leads to the major crises. The fact that pegged exchange rates has a short life expectancy for any type of economy was emphasized previously.

Although temporary controls on capital outflows can be used to maintain a pegged exchange rate, given domestic policies consistent with maintenance of the exchange rate. However such controls tend to lose their efficiency over time. Capital inflow controls may for a time be useful in enabling a country to run an independent monetary policy when the exchange rate is pegged but their long-term effectiveness is doubtful. A tax on capital inflows as exercised in Indonesia previously can in principle help maintain a wedge between the two

interest rates. In addition, by taxing short-term capital inflows more than longer-term inflows, capital inflow controls can also in principle influence the composition of inflows.

Exchange rates are key variables in Algeria. Movements in exchange rates can influence the prices of traded goods in world markets. Imported goods are purchased by consumers and used as inputs into the Algerian production process. As the Algerian exchange rate devaluates, the prices of imported consumption goods increase, directly raising the consumers' price index. The price of imported intermediate inputs also rises, raising firms' production costs. Higher production costs tend to culminate in higher consumer prices, as firms attempt to pass on their higher costs to consumers through higher prices for their final product. On the real economy side, the exchange rate influences world demand for domestic goods. An appreciation of the exchange rate leads to less demand for domestic goods, as both foreign and domestic consumers substitute cheaper foreign goods. Falling domestic demand leads to less pressure on prices to rise and may even lead to falling prices.

Further Research

Since the previous balance of payments and exchange rate models analyse different elements of the balance of payments, they can be viewed to some extent as complementary models of monetary sector equation of 3.8 and real sector equation 3.14. The avenue of future research in Algeria's economy may involve combining of valid elements of explanatory variables in the Algeria's balance of payments by employing "the Encompassing Principle" (Hendry-Mizon 1982). The all-encompassing model will become the "true" balance of payments model for Algeria if it can explain the data better than any other specific models.

Traditional statistical tests of equation 3.8 and 3.14 may lead one to accept the existence of relationship between regressand and regressors when this in fact spurious (Granger-Newbold 1974). Future research for Algerian economy should examine whether the regressand and the regressor of the balance of payments model (for both monetary and real sectors) move together in the long run and whether the stationarity condition is satisfied. This would require the use of Cointegration Techniques (Eagle-Granger 1987). Again, larger data set and data mining would be required; also employing cross section data to complement the existing limitation of Algeria's time-series data.

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