Impact du Commerce bilatéral Intra-Zone dans la zone UEMOA et CEMAC: Approche par les VAR Structurels

Latif Dramani and Oumy Laye

National Agency of Statistics and Demography

8. March 2007

AGENCE NATIONAL DE LA STATISTIQUE ET DE LA DEMOGRAPHIE

IMPACT ON THE BILATERAL TRADE IN WAEMU AND CEMAC ZONE

VAR APPROACH

Latif DRAMANI : latif.dramani@yahoo.fr

Oumy LAYE[1] : layendiaye78@yahoo.fr

Adresse : Agence Nationale de la Statistique et de la Démographie

Rue des Ecrivains X Boulevard de l'Est

BP : 116 Dakar Sénégal

Tel : 00 221 824 03 01

Fax : 00 221 825 33 32

[1] Latif DRAMANI and Oumy LAYE are researcher at the National Agency of Statistic and Demography

ABSTRACT

In this article, we empirically try to answer the second hypothesis on the theory of the ZMO developed by Mc Kinnon (1963), while working on a sample of the countries of the franc zone. We found on the assets of the gravity models to put in evidence the existing monetary union impact on the bilateral trade flux.

In order to measure the effects of the monetary union on the intra zone trade, we call on, a structural VAR, to which is associated the method of space state model assessment with the aim of distinguishing the impact of an economic policy shock in a group of country in open economy. Our sample is constituted in this particular case of the 12 countries of the zone franc; seven countries of the UEMOA zone and five countries of the CEMAC zone.

The originality of the approach is based on the fact that we tempt an endogeneisation of the flux of bilateral trade of every country in this analysis. The results of our investigations show a sensitive reduction of the effects borders, an improvement of the institutional effects as well as the effects bound to the distance on the flux of the intra zone trade. On the other hand, the survey by structural VAR and state measure models shows a relative symmetry of shocks observed in the real shocks of demand while the shocks of price and supply rather present an asymmetric character. With the importance of the real demand shocks, in our survey we globally notice that some efforts must be made to vary the structure of the economy of the franc countries, currently based on the food-processing industries, which are very sensitive to the climatic risks; in order to hope to have the sustained growth rates which will allow to reach the objectives of poverty reduction by 2015.

Key words: Structural VAR model, optimal Currency area, symmetry of the shocks, Kalman filter

INDEX TABLE

INTRODUCTION

The internationalization of the economy characterized by a widening of the access to the markets, the inputs, the technology and the information, is a long historic process that is considered by a lot of observers like a phenomenon that only benefits to developed countries. Globalization imposed itself to African States with the advantages, drawbacks and systemic risks that it triggers off. Facing this problematic, the economic and monetary integration is more and more considered by a lot of researchers as a relevant strategy to assure a harmonious African national economy insertion in the world-wide economic tissue allowing the African States to better profit this phenomenon. Thus, some countries of West and Central Africa aware of this reality, started notably after the independences, the integration processes with the setting up of monetary unions in a common monetary zone that is the zone franc and the zone of economic communities. It is in this context, that those of West Africa, and those of the zone franc instituted, in place of the CEAO, the West African Economic and Monetary Union (UEMOA) and those of Central Africa set up the Economic and Monetary Community of Central Africa (CEMAC) that is endowed with other institutions namely the Monetary Union of Central Africa (UMAC) and the Economic Union of Central Africa (UEAC). These attempts of integration were made in the aim of encouraging the growth and the mobility of factors and in order to widen the markets in view of the under dimensionality of the national market.

While entering into a process of integration, the franc zone countries give up the exchange rate as means to re-establish the balance following an asymmetric shock. One of the criteria allowing to define an optimal monetary zone is the mobility of factors. Mundell, one of the first theoreticians of the optimal monetary zones, argues that, a strong mobility of the factors and or a strong flexibility of the prices and wages can minimize the costs related to the neglect of this instrument of unbalance correction. For Mc Kinnon the degree of opening economies makes lower the costs due to the neglect of the exchange rate as economic policy instrument.

Several studies on the relationship between monetary union and trade showed that, the adherence to a unique currency intensifies the commercial exchanges between country members. However the analysis on the trade data shows that the zone Franc countries of CFA exchange relatively little with the other countries of the zone. The part of the intra regional trade represents less than 10% of the total trade in the countries of UEMOA (9,47% on average between 1995-99) and less than 3% in the countries of CEMAC (Julie Lochard, 2005). Considering these data, we can think that the agreements of integration didn't really contribute to increase the intra - regional trade.

Our study is about the impact of a monetary union on the bilateral intra zone between the different countries constituting the zone franc. Thus, the main works of research made on the theme used the model of gravity; the evaluations have been done with the least square method or in panels.

Our approach combines the classic approach of the gravitational model but is mainly based on the method of Blanchard and Quah, and is completed by the state measure models. We use the structural VAR model. The originality of this approach resides in the fact that we tempt to analyze the effect of the shocks of commercial policies of every country in this analysis.

The identification of the shocks of production, real demand, and price, allows us to assess the intensity of the impact of a shock in a country nonspecified in all the other countries of the zone franc. Besides, the analysis of the costs and profits of participation of every country in the monetary zone will depend on the degree with which the shocks of the prices and the supply are correlated between country and the one of their macroeconomic similarity degree.

I- THE STATE OF INTRA REGIONAL TRADE

The intra zone exchanges are very weak and very erratic in the CFA zone. On the set of the period 1981 - 1999, the part of the intra - regional trade passed from 8,5% to 11% for the UEMOA and 2,47% to 2,17% for countries of the CEMAC. The tendency is similar for the inter zone trade. The UEMOA zone and the CEMAC zone trade relatively little between them; exchanges between countries of the UEMOA and the zone franc rise to 11,90% in 1999 and those of countries of the CEMAC with the CFA zone are of only 3,34% the same year. However, it is necessary to note that the intra regional trade of these countries is the most often sustained by one or two countries of which the economic weight in the zone is higher. This is how Senegal and Ivory Coast are the main exporters toward the other countries of the UEMOA (14% of their total exports in 1999 are destined to the other country members) and countries enclosed of the Sahel (Burkina, Mali and Niger) are those that import the more of countries of the UEMOA (between 20% and 25% in 1999). In the CEMAC zone the main importers are the Central African Republic and Chad (with respectively 15% and 22% of the total imports in 1999) and the main exporter is Cameroon with only 6% of intra - regional exports (Julie Lochard, 2005).

II - SELECTIVE LITTERATURE REVIEW

Facing the new structure of the international monetary system, countries in search of real and monetary economic stability choose more and more intermediate solutions, compromised between stationary and flexible change regimes. The monetary union as "a mixed solution" seems to be a good alternative and according to Mundell the only one compatible with the sudden important opening of the markets to the fluxes of funds.

Besides, it gives many advantages to the countries members: reduction of the costs of transaction and the speculative movements, the reduction of uncertainty, the increase of commercial relationship and the reduction of the negative externalities between the zone counties etc. Thus, some built-in economic regions choose to evolve toward the setting up of a perfect regional fixity in relation to an unique currency of reference and flexible with the other mottos (as it is the case with the Union Monetary European). Other regions such as the CFA zone prefer a monetary union based on a key currency (dollar, yen or euro). However, this option is accompanied by constraints related to the use of stationary change by each of countries of the region, passing by the loss of independence of the monetary policy oriented according to the global situation of the zone. According to Mc Kinnon (1963), the costs related to the neglect of the exchange rate as economic policy instrument decreases according to the degree of opening economies (measured by the ratio of the exchangeable on the non exchangeable) and of the importance of their reciprocal exchanges. The more important, the degree of opening of a country is, the likelier the transmission of a world price change on the relative prices interns is. It misleads that the monetary illusion tends to disappear: the real income decrease becomes obvious and the agents ask for the revision of their nominal incomes. It is necessary to limit the variations of the exchange rates therefore to limit the variations of price. On the other hand the efficiency of the change policy decreases with the degree of opening of the economy. In a very open economy the costs of production are influenced strongly by the prices of the raw materials and the intermediate consumptions imported, which they find very difficulty to replace with a local production. In a devaluation, the effects of inflation due to the necessary import raise in prices immediately reverberate on the other goods prices and wages and limit the effects expected from devaluation. The exchange rate is therefore less efficient as instrument of adjustment. Besides, Mac Kinnon thinks that savings achieved concerning costs of transaction increase according to the intensity of the intra zone trade. In order to measure the impact of the monetary union on the trade, several authors had resorted to an equation of gravity, that is the empiric model generally used to explain the level of the trade between two countries. Already in 1962, after Ravenstein (1885) and Young

(1924), Tinbergen used this model in order to explain the intensity of the migratory movement according to the size of nations - of regions or cities - concerned and of the distance that separates them. The theoretical foundations of these models progressively developed thanks to the works of Linneman (1966), Leamer (1970, 1974), Anderson (1979), Bergstrand (1985 and 1989), Deardorff (1995), Evenett and Keller (1998). This approach has been badly considered for a long time by the specialists of international economy because of its microeconomic foundation lack, even though it gave good empiric results to explain the bilateral exchange flux better than the models of Ricardo and Heckscher-Ohlin that distinguish countries by some structural features, but don't localize them in a geographical space. The numerous authors who use this model agree that the determining factors of the bilateral trade are the distance, the levels of income and the size of country (Rose, 2001). According to the specifications of these models one expects a positive effect of the income, and a negative effect of distance. While the variable prices and exchange rates have a positive effect if the prices of the exporting country are lower than those of the importing country. According to Combes, Mayer and Thisse (2005), in the basic version of the gravitational model, the bilateral commercial flux are positively bound to the size of each of the partners and negatively affected by the level of the transfer costs. Helpman (1987) and Hummel-Levinsohn (1995) experienced the theory of gravitation then on the OCDE countries on more global data. They analyzed the impact of the sizes and especially of the scattering on the relative exchange volume. The results showed that for the OCDE countries the scattering plays positive and meaningful way in the determinants of the exchange volume. Regarding the non OCDE countries, the results are more mitigated since the coefficient of scattering have negative effect. According to these authors the modern equations of gravity refined themselves to take in account a border effect independent of the distance (costs of transportation or right of customs).

Frankel estimates the gravitational equation for the years 1967, 1970, 1975, 1980, 1985, 1987, 1990, 1992 and 1994. His study on the exchanges of goods refers to 63 countries (either 1953 observations) industrialized or not. Frankel makes a regression on each of the 9 years and on the set of years while using the econometrics of the panels. He concludes that if two countries have a common border, a same language and historic past, it increases their commercial exchanges.

One of the main uses of the gravitational model was the one made by Rose (2000) and Engel and Rose (2001). Rose (2001), while using the herfindahl index, showed in a survey done on the common monetary zones, that countries belonging to a monetary union are more opened and more specialized than countries that have their own currency. In this same study, Rose uses the gravitational model of the international trade to assess the effect of the adherence to an unique currency on the intensity of commercial exchange, while keeping stationary several other foreign determining exchanges. The data are about more than 150 countries (dependencies, territories, overseas departments, colonies, etc. merely called "country "). According to the results, the remoteness of two countries reduced the exchanges, whereas the increase of the "economic" mass (estimated according to the real GDP and the GDP per capita) intensifies them. On the other hand, the estimations indicate that the use of a same currency increases the bilateral exchanges. These results are similar to those obtained by the same author in a study done in 2000 on comparable data.

Until lately, most estimations using an equation of gravity were achieved from data in transversal cut. Many authors Shapiro and Watson (1988) and Blanchard and Quah (1989), proposed to identify the structural impulses that are economically explainable; shocks of supply, of demand, of economic policy, etc. So, the procedure of decomposition of the VAR method (Vector autoregression analysis) allows to identify the shocks of supply and demand and to differentiate them from the answers to the shocks. This method gives an opportunity, not only to measure the correlation of the shocks between countries but also to examine the speed with which economies adjust to these shocks.

Just as Blanchard and Quah, Bayoumi and Eichengreen (1994, 1996) and Funke (1995) used reduced VAR to identify the structural shocks of every variable (inflation and growth rate of the production) while imposing a set of restrictions including the theory based on the hypothesis according to which by a long time the shocks of production can affect the inflation, but not the opposite (David Fielding and Kalvinder Shields, 1999).

III- METHODOLOGY

III-1 The theoretical gravity model

Our empiric analysis is based on an augmented form of the traditional gravity model. The use of this augmented model allows us to surround the effect of the distance and the belonging to a same monetary zone on the commercial exchange intensity between countries members of the CFA zone. This distance is usually measured between the economic centres or the capitals of the two concerned countries. The equation of gravity, in its simplest shape, is given by:

$$X_{ij} = A\frac{Y_i Y_j}{D_{ij}} \qquad (1.1)$$

When *Xij* represents the value of the trade flux (for example the exports) between an *i* country and a *j* country, Y their national income, *Dij* a measure of the distance between these countries and *A* a coefficient of proportionality. It is generally estimated in logarithm. In addition to the traditional variables of GDP and distance we added different variables to this formulation of basis to especially grasp some specificities of the bilateral relation: the sharing of a land border, the effect of oil and cotton producing countries. The variable of GDP per capita has been introduced also to measure the level of development of each of the two countries, because one supposes that as a country develops, it tends to specialize more and to trade more (see Frankel, 1997). The effect of the monetary union on the trade is measured refering to the method used in the literature since the article of Rose (2000), while introducing in the traditional gravity equation a dummy that takes the value 0 for countries that have their own currency, and the value 1 for countries members of a monetary union.

The estimated gravity equation is the following:

$$Log(XIJCOR_{IJ}) = \alpha_0 + \alpha_1 Log(GDP_i * GDP_j) + \alpha_2 Log(GDPT_i * GDPT_j) + \alpha_3 Log(D_{ij}) + \alpha_4 UM_{ij} + \alpha_5 LAND + \alpha_6 OIL_{ij} + \alpha_7 COTON_{ij} + \varepsilon_{ij} \quad (1.2)$$

Where *XIJCORij* is the flux of the exports between the *i* countries and *j* in the period t,

GDP represents the real global GDP,

GDPT is the real GDP per capita,

Dij is the distance between i and *j*, coming from the CEPII site.

UM is a dummy that is worth 1 when *i* and *j* share the same monetary zone. It is decomposed in UMOA and UDEAC during the period of 1980 to 1993, and in UEMOA and CEMAC during the period of 1994 to 2000.

LAND is dummy that is worth 1 when *i* and *j* share a border.

OIL is a Dummy that takes into account the oil-producing countries,

COTTON is a dummy who takes into account the cotton producing countries

ε_{ij} is the term of error.

The data used to estimate our gravitational model come from the CEPII site.

III-2 THE VAR STRUCTUREL MODEL

In addition to the gravitational model, we use the structural VAR method (Vector autoregression analysis) and the procedure of decomposition developed by Blanchard and Quah (1989) in order to measure the correlation of the shocks between countries and to examine the speed with which economies fit to these shocks.

III-2-1 Shocks identification

The use of the structural "VAR" model allows to pass from some shocks stem from canonic VAR to economically explainable shocks. According to an approach made by Blanchard and Quah (1989), the identification is obtained while imposing a set of restrictions on the long term effect of every disruption in the three variables included in our VAR model:

- The flux of the exports apprehended by the flux of the bilateral intra zone trade
- The prices apprehended by the indication of the prices to the consumption
- The production apprehended by the GDP per capita.

The goal of this paper is to identify and to compare the different shocks of economic policy between the countries members of the CFA zone. The identification of the structural impulses is based on three hypotheses:

1 - a trade policy shock doesn't transmit to either to the price or to the supply global

2 - a shock on the prices has an impact on the trade policy and on the supply global

3 - a shock of supply has an effect on all variables of the system (bilateral trade flux, price, supply)

The model can be expressed in the shape of mobile average:

$$\Delta X_t = A_0 \varepsilon_t + A_1 \varepsilon_{t-1} + \ldots = \sum_{i=0}^{+\infty} A_i \varepsilon_{t-i}$$

Avec

$$\Delta X_t = \begin{bmatrix} \Delta X_t \\ \Delta P_t \\ \Delta Y_t \end{bmatrix}$$

When, ΔX_t, $\Delta P_t, \Delta Y_t$, respectively designate the flux of the exports, the prices, and the production.

$$X_t = \sum L^i A_i \varepsilon_t$$

When L is the lag operator and VAR(t) = I

The choice of the lag number is determined thanks to the criteria of Akaike and Schwarz.

$$\varepsilon_t = \begin{bmatrix} \varepsilon_t^d \\ \varepsilon_t^p \\ \varepsilon_t^s \end{bmatrix}$$

When $\varepsilon_t^d, \varepsilon_t^P, \varepsilon_t^s$ respectively represent, the shocks of real demand, of prices and the shocks of supply that affect the economy,

$$(1.4) \qquad A_i = \begin{bmatrix} a_i^{Xd} & a_i^{Xp} & a_i^{Xs} \\ a_i^{Pd} & a_i^{Pp} & a_i^{Ps} \\ a_i^{yd} & a_i^{yp} & a_i^{ys} \end{bmatrix}$$

When a_i^{ys} must be interpreted as the effect of a supply shock in *t - i* on the real GDP in t.

In summary the vector obeys a mobile average vectorial process of infinite order. Thus one gets the two traditional tools of the VAR modelling; it is about the answer functions to the shocks and the decompositions of the variance of the forecasting mistake. However, with the difficulty related to the modelling structural VAR, one makes an orthogonalisation as recommended by Shapiro and Watson (1989), Blanchard and Quah (1989), King and Al (1992). The orthogonalisation allows a decomposition of the variance of the forecasting mistake corresponding to the different sets as the contribution of the different structural shock. This method enables us to define for every country the shocks of supply, real demand and of price.

III-2-2 Identification of common and specific of shocks by Kalman filter

It means to identify a common and a specific component (to every country) within a type of shock for the studied country group, considering the case of the real demand shocks of a country group. It is necessary to decompose these shocks in the following way:

$$\begin{pmatrix} \varepsilon_{1t}^{d} \\ \varepsilon_{2t}^{d} \\ \varepsilon_{3t}^{d} \end{pmatrix} = \begin{pmatrix} \theta_1^d & 1 & 0 & 0 \\ \theta_2^d & 0 & 1 & 0 \\ \theta_3^d & 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} \alpha_{ct}^{d} \\ \alpha_{1t}^{d} \\ \alpha_{2t}^{d} \\ \alpha_{3t}^{d} \end{pmatrix} \qquad (1.5)$$

where the first vector constituted the real demand shocks that we previously determined in the structural VAR models, the θ indicate for every country how the common component determines the real demand shock, α_c representing the common shock and αi the specific shock in every country (still as regard to supply). The θ and α which cannot be observed, we estimate them through a space - state model (to components that are not observed) by the procedure of the filter of Kalman. Therefore we need to determine an equation of measure and an equation of transition. Indeed, the equation of measure is expressed by the previous equation. The equation of transition is presented in the following way:

$$\begin{pmatrix} \alpha_{ct}^{d} \\ \alpha_{1t}^{d} \\ \alpha_{2t}^{d} \\ \alpha_{3t}^{d} \end{pmatrix} = IIDN\left(\begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & \sigma_1^2 & 0 & 0 \\ 0 & 0 & \sigma_2^2 & 0 \\ 0 & 0 & 0 & \sigma_3^2 \end{pmatrix} \right) \qquad (1.6)$$

We make the hypothesis that the common components are some white noises and that the different structural shocks are not autocorrelated. The filter of Kalman is going to allow us to estimate the set of α (common and specific components), the parts of the common component within the national real demand shocks, as well as the variances σ. Thus, we have with the identification of a common tendency, a new instrument of measure of the asymmetry between countries. Countries having recorded an important contribution on behalf of the variance of their real demand shocks of the common tendency present a symmetrical character in relation to this shock. In other words, the more the part of the variance of the real demand shocks of a country is explained by the common tendency, the more it will tend to present a symmetrical character of these same shocks faced to the countries presenting the same features. The decomposition of the shock variance is represented in the following way:

$$\sigma^2_{\varepsilon ij} = \theta^2_{ij} + \sigma^2_{\alpha j} \quad (1.7)$$

with *i* the studied country and j the nature of the shock. The part of the variance of the shock explained by the common tendency is then equal to the ratio

$$\frac{\theta^2_{ij}}{\sigma^2_{\varepsilon ij}} \quad (1.8)$$

IV- RESULTS INTERPRETATION

IV-1 The gravity model

The equation of augmented gravity was estimated on data of panel by using the MCG without effects with heteroscedastic correction. The estimator used is PCSE (Panel Cross Section Error). The results obtained were more robust than those obtained with the MCG with fixed and random effects. The sample comprises 2358 observations of 1980 to 2002. The dependent variable is the supply of exports. The sample was divided into two under periods; the interest of this cutting is double. Initially, it makes possible to take into account the effect of the programs of structural adjustments over period 80-93 as well as the effects of the competitive devaluation which has occurred over the period 94-2000. In the second time, the interest of cutting comes from the importance of the analysis of the institutional effects. Indeed, between 1980 and 2000, there was a change in the institutions in zone CFA with the advent of the UEMOA and the CEMAC. The results of our estimate are presented at the table (15, 16, 17).

IV-1-1 Period of 1980 to 1993

This under period corresponds to the period of application of the structural adjustment programmes in the countries of zone CFA following macroeconomic imbalances. In view of the results obtained, the estimates carried out over the period 1980-1993 are rather robust. The explanatory capacity of the model is 94.3 % and the model is overall significant. All the variables except the GDP per capita are significantly different from zero. The estimates obtained are in conformity with the empirical results obtained in former work. The distance of two countries reduces the exchanges of 0,73 times, while the increase in the real GDP and the GDP per capita intensifies them. The share of a common border is also one of the determining elements which explains the increase in the bilateral exchanges. The GDP and the dummy variables of monetary union (CEMAC, UEMOA) and common border contribute more to the increase of supply of exports. The countries of the zone, having a common border, trade three times more than the other countries. In addition, the results show that the bilateral exchanges increase in zone UEMOA (ex CEAO) of 22.27 times and in zone CEMAC (ex UDEAC) of 3.28 times, in other words, the trade in zone UEMOA is 6,78 times more intense than in zone CEMAC. The analysis of the statistics of the IMF confirms the results obtained. On this under period, the share of commercial intra zone on the total trade of the UEMOA is more significant than in CEMAC zone. This one lies between 8 and 11% in the UEMOA while in zone CEMAC, it fluctuates between 0.90 and 3.51 %. In view of these results, we can affirm that the objective of the CEAO which was amongst other things to support the exchanges between these countries in response to the problems of outlets was achieved. The oil-producing countries more trade between them that those producing cotton.

During under period 80-93, the exchanges between the oil-producing countries increase by 1,38 times, while in those producing of cotton, they increase by 0,87 times. This is explained by the fall of the prices at export of the raw materials agricultural (cotton in particular) during this period following the deterioration of the terms of trade and the competitive policy devaluation followed by the close countries not belonging to CFA zone.

IV-1-2 Period of 1994 to 2001

On under period 94-2001, we add to the gravitational model dummy variables CEMAC, UEMOA, LAND, OIL and COTTON to take account of the effect of the various monetary areas, the borders and the cotton and oil-producing countries of the zone on the bilateral exchanges. The quality of the adjustment evaluated by the coefficient of determination R^2 indicates that 43% of the fluctuations of supply of exports are explained by the model.

All the coefficients associated with the estimated variables are significantly different from zero. The model is overall significant. The introduction of variables LAND, OIL and COTTON in the model shows that the supply of exports is not only explained by the traditional variables of the gravity model. The exchanges increase 4.17 times more in the countries which have a common border than the other countries of the zone, and the effect of the distance on the exogenous variable decreases by half.

In addition, the GDP of countries i and j positively explain commercial supply between them; when the GDP increases by 1%, the supply of exports increases by 0.1%.

However, compared with under period 80-93 this effect is weak. The political and economic crisis which prevails in the countries of zone CFA since 1999, involved a new deceleration of the economy of the Member States. The introduction of dummy variables CEMAC and UEMOA indicates that the membership of a common monetary area acts positively on the bilateral exchanges; however this effect, compared with under period 1980-1993, decreases (the countries of zone UEMOA trade 13.87 times more than the countries of zone CEMAC).

However, it is also noted that the effect of the monetary areas is not identical. We can conclude from it that, the constitution of the monetary and economic unions in the two zones has a negligible effect on the bilateral intra zone exchanges.

However, the creation of these institutions, beyond facilitating the circulation of the goods and services has as objective to catalyse exports in general and the trade in particular. The bilateral trade between the oil-producing countries increases by 2.8 % while the increase is 0.38 % in the cotton producer countries.

These results dissimulate the weakness of the trade intra-zone; according to the IMF, the trade intra-UEMOA is always slowed down by significant non-tariff barriers (national standards, quantitative restrictions on certain imports, discrimination of treatment of the national and regional products, etc). As for zone CEMAC, the preferential rate adopted in 1994 on the intra-community trade is applied in an unequal way. We can conclude from it that, the constitution of the monetary and economic unions in the two zones had only one negligible effect on the bilateral exchanges.

IV-1-3 Period of 1980 to 2002

Over the total period 1980-2002, the estimates obtained show that the supply of exports is explained to 92.86 % by the gravitational model. The coefficients of all the variables except that of the variable cotton are significant. Just like in under periods, the contribution of the monetary variable union of zone UEMOA to the increase in supply of export is most significant. This rises owing to the fact that the process of integration in the zone reinforced freedom of movement of the goods, the services and the people, while in zone CEMAC, in spite of the institution of a customs union, there are always institutional barriers which blocks the bilateral trade. In a thorough study and comprising more recent data, Carrère (2005) shows that the countries of the UEMOA and the CEMAC trade more within each union that with other countries, all things equal in addition, and that these effects are significant (Julie Lochard 2005). One deduces from then, that the use of a common currency affects strongly the foreign trade of UEMOA zone than CEMAC zone.

The size of the economy measured by the GDP is the second variable which has a significantly positive effect on supply of exports. The distance which separates two countries has a negative effect on the bilateral exchanges. The results obtained are in conformity with the literature even if the coefficients found in our estimate differ.

As one notes it in under periods, the oil-producing countries trade more between them comparatively of the cotton producer countries. This is explained by the fact that the major part of the cotton producer countries is wedged.

IV-2 Structural VAR model estimation

IV-2-1 Analysis by structural correlation shocks in UEMOA zone

a- Commercial policies shocks

The analysis of the correlations into the real shocks of request shows a relative symmetry of the recorded shocks. Indeed the majority of the significant correlation has an average value of 0.5 and is all of the same sign except for the shock on the Benin which presents a mixed character (a positive sign and negative). We note also that a shock of commercial policy in an unspecified country of the UEMOA generally affects two other countries of the zone and most of the time they are border countries or countries having very strong commercial relationship between them.

We can expect this kind of results, as the countries of zone UEMOA have almost the same structure on the level of exports. In general, it is countries specialized in monocultures of export. With the exception of the Ivory Coast which presents a diversified economy, with a little denser industrial structure, the majority of the other countries are reduced to the export of the raw materials (cotton, coffee, phosphate).

The explanation can also come owing to the fact that the bilateral trade between the Member States of zone UEMOA is based on practically the same products. There is thus a striking similarity marked here by the symmetry of shocks on the level of the commercial policies. We can thus conclude that the shocks of commercial policies thus have a symmetrical effect in zone UEMOA.

b- Price shocks

The observation of the table above shows without no doubt hat the shocks of price on the level of zone UEMOA are strongly asymmetrical. The proof is given by the different signs observed at the level from the shocks observed in the countries like Burkina or Ivory Coast. In addition we note the existence of two groups within the countries of UEMOA zone. Those in which the shocks of price are rather symmetrical (Benin, Burkina, Niger, Senegal, Togo) and those in which these shocks are asymmetrical (Ivory Coast, Mali). We concluded that the shocks of price in zone UEMOA are asymmetrical much more marked.

c- Supply shocks

The shocks of global supply are very disparate. It's observed that the values of the amplitudes of the correlations inter UEMOA obtained are as well rather different on the side of the signs obtained as their intrinsic values. In this fact, it is manifest that the asymmetry of the shocks of global supply is an obviousness.

III-2-2 Analysis by structural correlation shocks in CEMAC zone

a- Commercial policies shocks

It is noted that there is not any significant coefficient of correlation to the level of the countries of zone CEMAC. This confirms the results found on the level of the gravitational model which showed a weakness of the level of the bilateral trade in the CEMAC. Thus, these results highlight the difficulty for the authorities of economic policies to make optimal, decisions in the commercial field in the countries of the CEMAC.

b- Price shocks

The results are identical to those found previously on the level of the pricing policy. The inexistence of significant correlation clarifies an asymmetry more marked and obvious in this zone.

c- Supply shocks

We observe, that only the correlation between Cameroon and Congo presents a significativity. Thus, this translate the fact that in this zone, the coordination of the economic policies emanating from the global supply can pose problems with the authorities charged to set up of the strategies of economic policies.

IV-3 Variance decomposition and simulations

IV-3-1 Sources of variation of intra zone trade

The table (18 -19) in appendix highlights the contribution of each shock to the fluctuations of the level of the intra zone trade. We observe overall a prevalence of the shocks of real demand, for the majority of the countries of the sample. This prevalence is much more uniform when emanating from CEMAC zone with approximately more than 65% of bilateral contribution of the intra zone trade supply, whereas it is a little erratic in UEMOA zone. This prevalence is maintained in general after the first five years and in general explains 60% of the variability of the intra zone trade supply. However for the countries like Benin, Burkina and Niger, we observe a contribution much more significant for the GDP per capita to the variations of the supply of the bilateral trade. Indeed for the Benin and Burkina, in the long term, it is rather the level of the GDP per capita which contributes more to the fluctuations of the bilateral trade, while for Niger, it appears that there are contributions of the price which prevails in the long term.

In general, we observe for the responses of the shocks that the changes in the supply of bilateral intra zone trade are balanced in the short term by a negative effect on the consumer price index and a mixed effect on the level of the GDP per capita. In the long term, we observe a negative impact marked on the prices while the level of bilateral intra zone supply records an upward trend. We also observe a depression tendency of the level of the GDP per capita in long-term.

IV-3-2 Source of variation of price

The observation of the **table (20 - 21)** in appendix highlights the contribution of each shock to the fluctuations in prices. We observe in general three groups of countries which are similar by the identity on the contribution to the price shocks. In the first group, we observe countries in which the contribution of the shocks of bilateral supply explains the essence of the variability of the prices. It is about, in fact, of Cameroon, the Ivory Coast, Chad, Togo, and the Central African Republic. The contribution of these various shocks is approximately 45% on average per country.

The second group includes the countries where the contribution of the prices mainly explains the variability of the consumer price index. It is about Gabon, Congo, Senegal, Niger, and Mali. The average of the contribution of these shocks is 65% per country.

Finally, the last group including Benin and Burkina, which are characterized by a strong contribution of the GDP per capita to the fluctuations in prices to consumption. we note, on average, a contribution by country near 67%.

The analysis of the responses of the shocks highlights a significant impact of the GDP per capita on the variation of the Prices. The estimates show that a shock of nominal demand materializing a rising up of prices shows a short-term increase in the level of the GDP per capita and the level of the consumer price index, a fall of the bilateral trade supply. While in the long term, we observe a rather negative reaction of the bilateral supply trade and GDP per capita.

IV-3-3 Source of variation of economic activity

The sources of variation of the fluctuations of the level of the GDP per capita are explained in the short term mainly by the shocks of economic policies, the shocks of commercial policies, and a very tiny way by the shocks of price. The shocks of economic policy contribute for 52% on average, those of commercial policies for 29% and the price shocks policies for 19%.

It arises a prevalence of the shocks of supply in the explanation of the fluctuations of the GDP per capita.

The functions of response to the shocks highlight different effects on the target variables.

Then, in the short term, a shock of supply has a positive impact on the level of the GDP per capita and the prices like on the supply of bilateral trade for the countries like Benin, Mali, Niger, Senegal, Togo and Gabon. The impact is overall negative on the price level and the level of the trade in the countries like Ivory Coast, Congo, and Central Africa. In addition we observe in the other countries a mitigated effect on certain countries characterized by an increase of the level of the GDP per capita, a mitigated impact on the trade and the prices.

IV-4 Kalman filter estimation

Countries possessing the strongest percentages constitute the most symmetrical group in an economically way. Thus, for the set of the shocks, we recover some countries as the Ivory Coast, Gabon and Cameroon. We observe a bigger symmetry otherwise to the level of the real demand shocks. This result confirms those already observed while using the structural interrelationships, and puts thus, in evidence the conception that we had the weak gain, that would generate the commercial asymmetry disappearance.

The evaluation of the shocks when applying the state space model gives the following results:

The countries having the strongest percentages economically set up to some extent the most symmetrical group. Thus, for the whole of the shocks, we find countries such as Ivory Coast, Gabon and Cameroon. In addition we observe a larger symmetry on the level of the shocks of real demand. This result confirms those already observed by using the structural correlations, and thus highlights the conception which we had of the weak profit that the disappearance of commercial asymmetries would generate.

The estimate of the shocks by applying the model of state space specification gives the following results:

a- Commercial policies shocks

Only the structural shocks affecting the Ivory Coast (35,5%), Benin (15%), Cameroon, (22.7%), Gabon(22.9%) and Mali(7.6%) have a significant effect on the common component.

b- Prices policies shocks

Only the shocks affecting the Ivory Coast are associated to the common component. The shocks emanating of the other countries have a quasi null effect on the final component.

c- Supply policies shocks

We record for the whole of the countries a common component of the structural shocks significant for the Benin, Burkina Faso, Ivory Coast and Gabon.

V- GLOBAL RESULTS INTERPRETATIONS

The theory of the real cycle affirms that fluctuations are the result of the only real factor interaction to know the preferences of the agents, the technological possibilities, the endowments in factors and possibly of the institutional constraints. In the case of countries of the zone franc it is mainly the endowments in factors that explain the fluctuations of the levels of the economic activity and the flux of the bilateral trade.

We can interpret the predominance of the commercial policy shocks by the weakness of the level of the trade between country in relation to the global trade of these countries, as well as by an unsuitability of the commercial policy implemented in these countries.

One of the fundamental reasons of this weakness of the intra zone trade is naturally the similarity of the structures of production and consumption in these countries to which the persistence of the tariff barriers is added, and of the underground trade in the different ones under zones. Indeed, the similarity of the structures of production makes that the countries, end up proposing on the markets the same lines of goods. What causes to weaken the trade between close countries, since the consumers with range of identical product will choose to get a stock on the local market. Thus, on making the assumption that the snobbery effect is very marginal.

In addition a relatively significant contribution of the commercial shocks on the common component translates the vulnerability of the countries of the zone to specificities of their economy mainly dominated by raw material exports. The strong contribution of agriculture in general and the agriculture of revenue in particular in these countries, weakens the installation of reliable commercial policies insofar as this sector is dependent on the climatic risks and in particular of pluviometry. A very significant pluviometry for incipient food-processing industries, since the climatic risks directly cause immediate damage on the supply out of raw materials essential to these companies for their working.

A noticed weakness of the shocks of price to the common component highlights a control of the inflationary tensions, constituting one of the prime objectives in the multilateral monitoring of the country of the free zone, but also emanating from an old tradition rising from the monetary discipline observed since the advent of the programs of structural adjustments. This objective explains the paths of evolution controlled by the authorities in each country and in general in way concerted by the central banks, and the prevalence of the impulses printed by the shocks of economic policies on the fluctuations in prices in the countries of zone CFA. The weak contribution of the shocks of supply to the fluctuations in prices is also explained by the monetary policy fixed by the central banks which fixes the money supply according to the economic growth rate, as well as supplementary measures taken to stabilize inflation in the event of inflationary overheating. Indeed, any unfavourable impact of the external shocks on the prices is to even inhibit to cancel by the interventions of the authorities. These interventions of the authorities appears by subsidies of the products of first need or energy-generating products for example, and in general aim the improvement of the purchasing power of the consumers and of against performances in the manufacturing units.

Finally the shocks of supply are not very significant. This emanates on the one hand for the same reasons stated higher on the level of the analysis of the commercial shocks.

In addition, this weakness of shock of supply can be explained by the structure of the elements which make it up. Indeed the structure is largely dominated by the debt and administrative expenditures which in fact have a weak capacity of stimulation on the level of the total activity. The investment which has a very powerful catalyst capacity on the level of the economic activity is often relegated to the second plan and sometimes is falling in some countries.

VI- ECONOMICS POLICIES RECOMMANDATIONS

The results which we had found highlight a manifest asymmetry of the response of the countries to the various shocks. Moreover, the price and supply shock are asymmetrical according to results' of our investigations.

The implications in terms of economic policies of our study are multiple.

In first the empirical results of the gravitational models highlight:

- a bilateral increase of 120% trade coming from the border effect ;
- a reduction of the distances effect in the time which makes that the gains coming from this reduction make win 62.4% supplementary intra zone trade flux ;
- a stressing of the institutional effects on the bilateral intra zone trade which amounts to 80%.

The prevalence of the shocks of commercial policies highlights the installation of policies allowing to redynamise the structure of industries of the countries of CFA zone these last years. However the close connection between the climatic conditions and the supply of raw materials announce problems of provisioning in the long term. It is thus, essential to envisage a diversification of industrial and economic fabric, to allow the emergence of new capable sectors in the long term to ensure a regular rate of growth of these economies.

Diversification must be followed of an agricultural and industrial optimal policy. It is a question of being directed towards sectors or even niches with high potential of value added and creation of labour, with the risk to see the emergent industry in these countries going down from the causes of a very hard competition on the international market.

The weak contributions of supply shocks challenge on the installation of a line of constant economic policy. It is known that the reach of the objectives of the millennium goals and in fact the reduction in the incidence of the poverty of half passes by obtaining the constant economic growth rates. It is thus essential, considering the weakness of the contributions of the supply shocks that measures are taken to reduce the government's rate of expenditure, by decreasing the administrative expenditures especially and while being focused on the investments and especially the infrastructures of bases which are cruelly lacking in these countries. If not how to understand that one speaks about economic integration or economic and monetary union whereas there are not transportation routes between the various countries which constitute the union. The installation of infrastructures would reduce in a very significant way the costs of transport, and the political decision makers must think of it.

CONCLUSION

By melting our analysis on the gravitational models, it distinctly appears the description of a significant effect of the monetary areas on the level of the intra zone bilateral trade. In addition approach by the criterion of symmetry of the shocks, which stipulates in filigree that the countries which have to win to be member of the monetary union are those which have shocks attached to the common component and symmetrical to this one. A profit which would come owing to the fact that if the shocks hitting the economies cause in their centre of the similar or symmetrical effects, the cost to belong to the monetary area would be weakened by it since the common monetary policy appears adapted to the desires of each one of these economies. However, the cost is high if the shocks are very specific. This study consisted in identifying the shocks of supply and demand and appreciating of their influence on the macro-economic variables through a structural auto regression vector (SVAR) model.

Our results show that, in a general way, the real shocks of request produce symmetrical effects on the macroeconomic variables for a group of country given. In addition, starting from the estimate of the state space models measures, it generally appears that only the shocks of commercial policies affecting the economies have a significant effect on the common component. These results indicate that the countries of CFA monetary area are closer by their commercial policies.

BIBLIOGRAPHY REFERENCE

-Anderson, J. 1979. "A theoretical Foundation for the gravity equation". American Economic Review 69, 106-116.
-Bamba, L. 2004 " Analyse du Processus de Convergence Dans la Zone UEMOA ". Research Paper No. 2004/18. Février.
-Bayoumi, T. et Eichengreen, B. 1996. "Operationalising the Theory of Optimum Currency Areas". Working paper, CEPR.
-Bergstrand, J.H. 1985. "The Gravity Equation in International Trade: some Microeconomic Foundations and Empirical Evidence". Review of Economics and Statistics, 67, 474-481, August.
-Bergstrand, Jeffrey H. 1989. "The Generalised Gravity Equation Monopolistic Competition, and the Factor-Proportions Theory in International Trade," Review of Economics and Statistics, 71, 143-153, February.
-Blanchard, O. et Quah, D. 1989. "The Dynamic Effects of Aggragate Demand and Supply Disturbances". American Economic Review, pp. 654-673, September.
-Bosco N'Goma, J -M. 2000. " Analyse des chocs d'offre et de demande dans la zone CFA : une méthode structurelle d'autorégression vectorielle ", CAHIER 13-2000 présenté au 40ème congrès de la Société canadienne de Sciences Economiques, 17-18 mai.
-Chamie, N. DeSerres, A. et Lalonde, R. 1994. " Optimum currency areas and shock asymmetry : A Comparison of Europe and the United States ". Document de travail 94-1, International Department, Banque du Canada, January.
-Combes, P. Mayer, T. et Thisse, J.F. 2005. " Gravitation et coûts de transfert ", Chapitre 5, Décembre.
-Evenett, J. et Keller, W. 1998. "On Theories Explaining the Success of the Gravity Equation". Working Paper N°.6529. NBER.
-Fontagné, L. Pajot, M. et J.M. Pasteels. 2001. Potentiels de commerce entre économies hétérogènes : un petit mode d'emploi des modèles de gravité. Document de recherche appliqué. Section de l'analyse des marchés. Centre du commerce international, CNUCE
-Frankel J. A. 1997. " Regional Trading Blocs in the World Economic System". Institute for International Economics, Washington DC.
-Garatti, A. 2002. " Implication des chocs communs et spécifiques pour le fédéralisme budgétaire européen ". LARE-efi, Université Montesquieu Bordeaux IV.
-Hédreville, M.W. La théorie des zones monétaires optimales et la thèse de l'endogénéité des critères d'optimalité : Les enseignements de l'Union Monétaire Scandinave (1873-1914)

-Hummels D. Levinsohn J. 1995. "Monopolistic Competition and International Trade:Reconsidering the Evidence", Quarterly Journal of Economics : 799-836.
-Leamer, E.E. et Levinsohn, J. 1994. International trade theory: the evidence. In G. Grossman et K. Rogoff (s.d.) Handbook of International Economics. Amsterdam, North Holland, 1339-1394.
-Linnemann H. 1966. An Econometric Study of International Trade Supply, Amsterdam, North-Holland.
-Lochard, J. 2005. " Les unions monétaires et leurs effets sur les échanges et les investissements internationaux ". Thèse de Doctorat ès Sciences Économiques, Université Paris I - Panthéon - Sorbonne U.F.R de Sciences Économiques.
-Mac Kinnon, R. 1963. Optimum currency areas. AER, vol. 53, pages pp. 717-724.
-N'galadjo Bamba, L. 2004. Analyse du processus de convergence dans la zone UEMOA. Research Paper No. 2004/18. World institute for development economics research, United Nations.
-Ngowattana, S. 2005. Effets gravitationnels de l'AFTA sur l'ASEAN : analyse de panel. Cahier de recherche n°2005 -10, EURISCO, Mai.
-Ravenstein, E.G. (1885) "The laws of migration. Journal of the Royal Statistical Society". 48, 167-227.
-Rose, A. 2000. One Money, One Market: Estimating the Effect of Common Currencies on Trade. Forthcoming, Economic Policy, Février.
-Rose, A. 2001. " Étude pratique des zones monétaires communes ".
-Rose, A. K., et C. Engel (2000). " Currency Unions and International Integration ". Document de travail no 7872, National Bureau of Economic Research.
-Tinbergen, J. (1962) Shaping the World Economy: Suggestions for an International Economic Policy. New York, Twentieth Century Fund.
-Young, E.C. (1924) "The movement of farm population. Cornell Agricultural Experimental Station". Bulletin 426, Ithaca, New York.
-Ziky, M. 2005. " Contribution des chocs internes et externes aux fluctuations macroéconomiques au Maroc : une approche structurelles des VAR ". Papier présenté au Forum pour la recherche économique, 12ième conférence annuelle, Grand Hyatt, Caire, Egypte,

TABLE LISTE

Table 1 : Sources and availability of variables

Abréviation	Description	Période	Source	Type
XIJ	Flux de commerce bilatéral	1980-2000	World Bank Data Base	Endogène
GDPi	Niveau du PIB du pays i	1980-2000	World Bank Data Base	Exogène
GDPj	Niveau du PIB du pays j	1980-2000	World Bank Data Base	Exogène
GDPTi	Niveau du PIB par tête du pays i	1980-2000	World Bank Data Base	Exogène
GDPTj	Niveau du PIB par tête du pays j	1980-2000	World Bank Data Base	Exogène
Dij	Distance entre les pays i et j	1980-2000	CEPII	Exogène
LAND	Frontière entre les pays i et j	1980-2000	World Bank Data Base	Exogène
UEMOA	Pays appartenant à l'UEMOA	1980-2000	World Bank Data Base	Exogène
CEMAC	Pays appartenant à la CEMAC	1980-2000	World Bank Data Base	Exogène
OIL	Côte d'Ivoire, Cameroun, Congo, Gabon	1980-2000	World Bank Data Base	Exogène
COTON	Bénin, Burkina-Faso, Centrafrique, Mali, Niger, Tchad, Togo	1980-2000	World Bank Data Base	Exogène

Table 2 : Bilateral trade in UEMOA AND CEMAC

UEMOA	Montant en Milliards de $	CEMAC	Montant en Milliards de $
MALI TO BENIN	5,58975854	TCDTOGAB	0,06157383
BENIN TO BURKINA	19,3504369	RCATOCGO	0,441544
MALI TO NIGER	30,13219398	GABTORCA	3,87506151
NIGER TO SENEGAL	37,02855788	CGOTORCA	6,9671015
TOGO TO SENENEGAL	103,9322312	TCDTOCGO	6,998766
NIGER TO BENIN	111,5991176	TCDTORCA	27,8211811
BENIN TO SENEGAL	189,2139994	GABTOCGO	56,578946
TOGO TO BURKINA	209,826437	RCATOCMR	298,391508
BENIN TO TOGO	239,489703	TCDTOCMR	329,730869
BENIN TO COTE D IVOIRE	591,040127	CMRTOCGO	436,63781
COTE D IVOIRE TO NIGER	853,7939	CMRTOGAB	659,557647
SENEGAL TO MALI	951,1990167	TOTAL	**1827,06201**
COTE D IVOIRE TO TOGO	1094,246716		
SENEGAL TO COTE D IVOIRE	1615,276527		
COTE DIVOIRE TO BURKINA	2788,337404		
MALI TO COTE D IVOIRE	3331,885322		
TOTAL	**12171,94145**		

Table 3 : Real demand shocks in UEMOA

Correlations								
		e01ben	e01bfa	e01civ	e01mli	e01ner	e01sen	e01tgo
e01ben	Pearson Correlation	1	,552(*)	0,128	0,299	-,586(*)	-0,032	-0,086
	Sig. (2-tailed)		0,017	0,614	0,244	0,011	0,899	0,733
e01bfa	Pearson Correlation	**,552(*)**	1	0,452	-0,011	-0,131	0,231	-0,222
	Sig. (2-tailed)	*0,017*		0,06	0,965	0,604	0,357	0,377
e01civ	Pearson Correlation	0,128	**0,452**	1	-0,005	0,416	,470(*)	0,228
	Sig. (2-tailed)	*0,614*	*0,06*		0,985	0,086	0,049	0,362
e01mli	Pearson Correlation	0,299	-0,011	-0,005	1	-0,261	0,201	,534(*)
	Sig. (2-tailed)	*0,244*	*0,965*	*0,985*		0,311	0,438	0,027
e01ner	Pearson Correlation	**-,586(*)**	-0,131	**0,416**	-0,261	1	,502(*)	0,379
	Sig. (2-tailed)	*0,011*	*0,604*	*0,086*	*0,311*		0,034	0,121
e01sen	Pearson Correlation	-0,032	0,231	**,470**(*)	0,201	**,502**(*)	1	0,265
	Sig. (2-tailed)	*0,899*	*0,357*	*0,049*	*0,438*	*0,034*		0,287
e01tgo	Pearson Correlation	-0,086	-0,222	0,228	**,534**(*)	0,379	0,265	1
	Sig. (2-tailed)	*0,733*	*0,377*	*0,362*	*0,027*	*0,121*	*0,287*	

* Correlation is significant at the 0.05 level (2-tailed).

Table 4: Share of the variance of macroeconomic shocks in CFA zone CFA explain by the common component

		EXPORTATIONS	PRIX	PIB
		CHOCS DE DEMANDE REEL	CHOCS DE DEMANDE NOMINAL	CHOCS D'OFFRE
UEMOA	BENIN	**15,031%**	0,000%	3,445%
	BURKINA	4,082%	1,912%	0,001%
	COTE D'IVOIRE	**35,480%**	16,986%	17,282%
	MALI	**7,565%**	0,038%	2,204%
	NIGER	0,028%	0,189%	0,019%
	SENEGAL	3,267%	0,000%	7,095%
	TOGO	1,147%	0,001%	9,230%
CEMAC	CAMEROUN	**22,772%**	0,001%	7,846%
	CENTRAFRIQUE	0,028%	0,189%	0,019%
	CONGO	0,109%	0,000%	0,183%
	GABON	**22,896**%	0,002%	13,600%
	TCHAD	3,272%	0,001%	1,085%

Table 5 : Shocks of price in UEMOA

Correlations								
		e02ben	e02bfa	e02civ	e02mli	e02ner	e02sen	e02tgo
e02ben	Pearson Correlation	1	0,038	0,098	-0,296	,565(*)	-0,025	0,051
	Sig. (2-tailed)		0,881	0,698	0,249	0,015	0,923	0,841
e02bfa	Pearson Correlation	0,038	1	-,72(**)	-,483(*)	-0,147	-0,198	-0,256
	Sig. (2-tailed)	*0,881*		0,001	0,05	0,56	0,431	0,305
e02civ	Pearson Correlation	0,098	-,720(**)	1	0,179	0,204	0,458	0,27
	Sig. (2-tailed)	*0,698*	*0,001*		0,491	0,417	0,056	0,279
e02mli	Pearson Correlation	-0,296	-,483(*)	0,179	1	-0,125	-0,078	0,464
	Sig. (2-tailed)	*0,249*	*0,05*	*0,491*		0,633	0,765	0,06
e02ner	Pearson Correlation	,565(*)	-0,147	0,204	-0,125	1	-0,277	0,206
	Sig. (2-tailed)	*0,015*	*0,56*	*0,417*	*0,633*		0,266	0,413
e02sen	Pearson Correlation	-0,025	-0,198	0,458	-0,078	-0,277	1	0,13
	Sig. (2-tailed)	*0,923*	*0,431*	*0,056*	*0,765*	*0,266*		0,606
e02tgo	Pearson Correlation	0,051	-0,256	0,27	0,464	0,206	0,13	1
	Sig. (2-tailed)	*0,841*	*0,305*	*0,279*	*0,06*	*0,413*	*0,606*	

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 6 : Real Supply Shocks in UEMOA

Correlations								
		e03ben	e03bfa	e03civ	e03mli	e03ner	e03sen	e03tgo
e03ben	Pearson Correlation	1	0,092	-0,176	0,214	-,526(*)	0,053	-0,085
	Sig. (2-tailed)		0,716	0,484	0,409	0,025	0,835	0,738
e03bfa	Pearson Correlation	0,092	1	,574(*)	0,091	-0,34	-0,206	-0,422
	Sig. (2-tailed)	*0,716*		0,013	0,729	0,168	0,413	0,081
e03civ	Pearson Correlation	-0,176	**,574(*)**	1	-0,028	-0,102	-0,407	-0,263
	Sig. (2-tailed)	*0,484*	***0,013***		0,915	0,687	0,094	0,292
e03mli	Pearson Correlation	0,214	0,091	-0,028	1	-0,25	0,171	,491(*)
	Sig. (2-tailed)	*0,409*	*0,729*	*0,915*		0,334	0,511	0,045
e03ner	Pearson Correlation	**-,526(*)**	-0,34	-0,102	-0,25	1	0,311	0,229
	Sig. (2-tailed)	***0,025***	*0,168*	*0,687*	*0,334*		0,209	0,36
e03sen	Pearson Correlation	0,053	-0,206	**-0,407**	0,171	0,311	1	0,303
	Sig. (2-tailed)	*0,835*	*0,413*	***0,094***	*0,511*	*0,209*		0,221
e03tgo	Pearson Correlation	-0,085	**-0,422**	-0,263	**,491(*)**	0,229	0,303	1
	Sig. (2-tailed)	*0,738*	***0,081***	*0,292*	***0,045***	*0,36*	*0,221*	

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 7 : Real demand shocks in CEMAC

Correlations						
		e01cmr	e01cog	e01gab	e01rca	e01tcd
e01cmr	**Pearson Correlation**	1	-0,078	-0,242	0,313	-0,07
	Sig. (2-tailed)		*0,759*	*0,334*	*0,206*	*0,784*
e01cog	**Pearson Correlation**	-0,078	1	-0,281	-0,19	0,157
	Sig. (2-tailed)	*0,759*		*0,259*	*0,45*	*0,534*
e01gab	**Pearson Correlation**	-0,242	-0,281	1	-0,298	-0,177
	Sig. (2-tailed)	*0,334*	*0,259*		*0,23*	*0,482*
e01rca	**Pearson Correlation**	0,313	-0,19	-0,298	1	0,183
	Sig. (2-tailed)	*0,206*	*0,45*	*0,23*		*0,468*
e01tcd	**Pearson Correlation**	-0,07	0,157	-0,177	0,183	1
	Sig. (2-tailed)	*0,784*	*0,534*	*0,482*	*0,468*	
* Correlation is significant at the 0.05 level (2-tailed).						

Table 8 : Price Shocks in CEMAC

Correlations						
		e02cmr	e02cog	e02gab	e02rca	e02tcd
e02cmr	**Pearson Correlation**	1	-0,288	0,379	-0,218	0,148
	Sig. (2-tailed)		0,246	0,121	0,385	0,557
e02cog	**Pearson Correlation**	-0,288	1	-0,291	0,061	-0,178
	Sig. (2-tailed)	*0,246*		0,241	0,809	0,48
e02gab	**Pearson Correlation**	0,379	-0,291	1	-0,245	0,189
	Sig. (2-tailed)	*0,121*	*0,241*		0,328	0,451
e02rca	**Pearson Correlation**	-0,218	0,061	-0,245	1	-0,195
	Sig. (2-tailed)	*0,385*	*0,809*	*0,328*		0,439
e02tcd	**Pearson Correlation**	0,148	-0,178	0,189	-0,195	1
	Sig. (2-tailed)	*0,557*	*0,48*	*0,451*	*0,439*	
* Correlation is significant at the 0.05 level (2-tailed).						
** Correlation is significant at the 0.01 level (2-tailed).						

Table 9 : Supply shocks in CEMAC

Correlations						
		e03cmr	e03cog	e03gab	e03rca	e03tcd
e03cmr	**Pearson Correlation**	1	,667(**)	-0,206	-0,086	0,153
	Sig. (2-tailed)		0,002	0,411	0,736	0,544
e03cog	**Pearson Correlation**	,667(**)	1	-0,26	-0,151	0,329
	Sig. (2-tailed)	*0,002*		0,298	0,549	0,182
e03gab	**Pearson Correlation**	-0,206	-0,26	1	-0,341	-0,197
	Sig. (2-tailed)	*0,411*	*0,298*		0,165	0,434
e03rca	**Pearson Correlation**	-0,086	-0,151	-0,341	1	0,116
	Sig. (2-tailed)	*0,736*	*0,549*	*0,165*		0,648
e03tcd	**Pearson Correlation**	0,153	0,329	-0,197	0,116	1
	Sig. (2-tailed)	*0,544*	*0,182*	*0,434*	*0,648*	
* Correlation is significant at the 0.05 level (2-tailed).						
** Correlation is significant at the 0.01 level (2-tailed).						

Table 10 : Real demand shocks in CFA ZONE

Correlations													
		e01ben	e01bfa	e01civ	e01mli	e01ner	e01sen	e01tgo	e01cmr	e01cog	e01gab	e01rca	e01tcd
e01ben	Pearson Correlation	1	,552(*)	0,128	0,299	-,586(*)	-0,032	-0,086	-0,297	0,362	0,122	-0,404	-0,216
	Sig. (2-tailed)		0,017	0,614	0,244	0,011	0,899	0,733	0,231	0,14	0,629	0,096	0,39
e01bfa	Pearson Correlation	,552(*)	1	0,452	-0,011	-0,131	0,231	-0,222	-0,362	0,262	-0,171	0,113	0,25
	Sig. (2-tailed)	0,017		0,06	0,965	0,604	0,357	0,377	0,14	0,293	0,496	0,654	0,317
e01civ	Pearson Correlation	0,128	0,452	1	-0,005	0,416	,470(*)	0,228	-0,359	-0,166	0,388	0,118	-0,026
	Sig. (2-tailed)	0,614	0,06		0,985	0,086	0,049	0,362	0,144	0,51	0,112	0,641	0,918
e01mli	Pearson Correlation	0,299	-0,011	-0,005	1	-0,261	0,201	,534(*)	0,398	0,195	-0,3	-0,245	-0,234
	Sig. (2-tailed)	0,244	0,965	0,985		0,311	0,438	0,027	0,114	0,454	0,242	0,344	0,367
e01ner	Pearson Correlation	-,586(*)	-0,131	0,416	-0,261	1	,502(*)	0,379	-0,06	-0,409	0,258	0,209	0,07
	Sig. (2-tailed)	0,011	0,604	0,086	0,311		0,034	0,121	0,813	0,092	0,301	0,404	0,781
e01sen	Pearson Correlation	-0,032	0,231	,470(*)	0,201	,502(*)	1	0,265	0,269	-0,236	0,1	0,168	-0,164
	Sig. (2-tailed)	0,899	0,357	0,049	0,438	0,034		0,287	0,28	0,345	0,693	0,506	0,515
e01tgo	Pearson Correlation	-0,086	-0,222	0,228	,534(*)	0,379	0,265	1	0,027	0,034	0,002	-0,094	-0,175
	Sig. (2-tailed)	0,733	0,377	0,362	0,027	0,121	0,287		0,915	0,894	0,993	0,711	0,487
e01cmr	Pearson Correlation	-0,297	-0,362	-0,359	0,398	-0,06	0,269	0,027	1	-0,078	-0,242	0,313	-0,07
	Sig. (2-tailed)	0,231	0,14	0,144	0,114	0,813	0,28	0,915		0,759	0,334	0,206	0,784
e01cog	Pearson Correlation	0,362	0,262	-0,166	0,195	-0,409	-0,236	0,034	-0,078	1	-0,281	-0,19	0,157
	Sig. (2-tailed)	0,14	0,293	0,51	0,454	0,092	0,345	0,894	0,759		0,259	0,45	0,534
e01gab	Pearson Correlation	0,122	-0,171	0,388	-0,3	0,258	0,1	0,002	-0,242	-0,281	1	-0,298	-0,177
	Sig. (2-tailed)	0,629	0,496	0,112	0,242	0,301	0,693	0,993	0,334	0,259		0,23	0,482
e01rca	Pearson Correlation	-0,404	0,113	0,118	-0,245	0,209	0,168	-0,094	0,313	-0,19	-0,298	1	0,183
	Sig. (2-tailed)	0,096	0,654	0,641	0,344	0,404	0,506	0,711	0,206	0,45	0,23		0,468
e01tcd	Pearson Correlation	-0,216	0,25	-0,026	-0,234	0,07	-0,164	-0,175	-0,07	0,157	-0,177	0,183	1
	Sig. (2-tailed)	0,39	0,317	0,918	0,367	0,781	0,515	0,487	0,784	0,534	0,482	0,468	

* Correlation is significant at the 0.05 level (2-tailed).

Table 11 : Price shocks in CFA ZONE

Correlations													
		e02ben	e02bfa	e02civ	e02mli	e02ner	e02sen	e02tgo	e02cmr	e02cog	e02gab	e02rca	e02tcd
e02ben	Pearson Correlation	1	0,038	0,098	-0,296	,565(*)	-0,025	0,051	-0,021	-0,411	-0,092	0,029	-0,152
	Sig. (2-tailed)		0,881	0,698	0,249	0,015	0,923	0,841	0,935	0,091	0,718	0,909	0,548
e02bfa	Pearson Correlation	0,038	1	-,720(**)	-,483(*)	-0,147	-0,198	-0,256	,591(**)	-0,328	0,229	0,159	-0,149
	Sig. (2-tailed)	*0,881*		0,001	0,05	0,56	0,431	0,305	0,01	0,185	0,36	0,529	0,554
e02civ	Pearson Correlation	0,098	**-,720(**)**	1	0,179	0,204	0,458	0,27	-0,155	0,121	-0,293	-0,202	-0,019
	Sig. (2-tailed)	*0,698*	***0,001***		0,491	0,417	0,056	0,279	0,539	0,632	0,237	0,421	0,94
e02mli	Pearson Correlation	-0,296	**-,483(*)**	0,179	1	-0,125	-0,078	0,464	-,643(**)	0,35	-0,217	0,014	-0,002
	Sig. (2-tailed)	*0,249*	***0,05***	*0,491*		0,633	0,765	0,06	0,005	0,168	0,403	0,956	0,993
e02ner	Pearson Correlation	**,565(*)**	-0,147	0,204	-0,125	1	-0,277	0,206	-0,088	-0,443	0,298	0,018	-0,056
	Sig. (2-tailed)	***0,015***	*0,56*	*0,417*	*0,633*		0,266	0,413	0,729	0,066	0,229	0,945	0,825
e02sen	Pearson Correlation	-0,025	-0,198	**0,458**	-0,078	-0,277	1	0,13	0,224	0,232	-0,104	-0,04	-0,18
	Sig. (2-tailed)	*0,923*	*0,431*	***0,056***	*0,765*	*0,266*		0,606	0,371	0,354	0,681	0,875	0,474
e02tgo	Pearson Correlation	0,051	-0,256	0,27	**0,464**	0,206	0,13	1	-0,036	-0,004	0,05	-0,119	0,402
	Sig. (2-tailed)	*0,841*	*0,305*	*0,279*	***0,06***	*0,413*	*0,606*		0,887	0,986	0,842	0,637	0,098
e02cmr	Pearson Correlation	-0,021	**,591(**)**	-0,155	**-,643(**)**	-0,088	0,224	-0,036	1	-0,288	0,379	-0,218	0,148
	Sig. (2-tailed)	*0,935*	***0,01***	*0,539*	***0,005***	*0,729*	*0,371*	*0,887*		0,246	0,121	0,385	0,557
e02cog	Pearson Correlation	**-0,411**	-0,328	0,121	0,35	-0,443	0,232	-0,004	-0,288	1	-0,291	0,061	-0,178
	Sig. (2-tailed)	***0,091***	*0,185*	*0,632*	*0,168*	***0,066***	*0,354*	*0,986*	*0,246*		0,241	0,809	0,48
e02gab	Pearson Correlation	-0,092	0,229	-0,293	-0,217	0,298	-0,104	0,05	**0,379**	-0,291	1	-0,245	0,189
	Sig. (2-tailed)	*0,718*	*0,36*	*0,237*	*0,403*	*0,229*	*0,681*	*0,842*	***0,121***	*0,241*		0,328	0,451
e02rca	Pearson Correlation	0,029	0,159	-0,202	0,014	0,018	-0,04	-0,119	-0,218	0,061	-0,245	1	-0,195
	Sig. (2-tailed)	*0,909*	*0,529*	*0,421*	*0,956*	*0,945*	*0,875*	*0,637*	*0,385*	*0,809*	*0,328*		0,439
e02tcd	Pearson Correlation	-0,152	-0,149	-0,019	-0,002	-0,056	-0,18	**0,402**	0,148	-0,178	0,189	-0,195	1
	Sig. (2-tailed)	*0,548*	*0,554*	*0,94*	*0,993*	*0,825*	*0,474*	***0,098***	*0,557*	*0,48*	*0,451*	*0,439*	

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 12 : Supply shocks in CFA zone

Correlations

		e03ben	e03bfa	e03civ	e03mli	e03ner	e03sen	e03tgo	e03cmr	e03cog	e03gab	e03rca	e03tcd
e03ben	Pearson Correlation	1	0,092	-0,176	0,214	-,526(*)	0,053	-0,085	-,555(*)	-0,13	-0,301	0,437	0,387
	Sig. (2-tailed)		0,716	0,484	0,409	0,025	0,835	0,738	0,017	0,607	0,225	0,069	0,113
e03bfa	Pearson Correlation	0,092	1	,574(*)	0,091	-0,34	-0,206	-0,422	-0,382	-0,38	0,264	0,034	-0,025
	Sig. (2-tailed)	0,716		0,013	0,729	0,168	0,413	0,081	0,118	0,12	0,29	0,894	0,923
e03civ	Pearson Correlation	-0,176	,574(*)	1	-0,028	-0,102	-0,407	-0,263	0,009	-0,132	0,223	0,149	-0,177
	Sig. (2-tailed)	0,484	0,013		0,915	0,687	0,094	0,292	0,972	0,601	0,375	0,555	0,482
e03mli	Pearson Correlation	0,214	0,091	-0,028	1	-0,25	0,171	,491(*)	-0,192	-0,194	0,326	0,16	0,12
	Sig. (2-tailed)	0,409	0,729	0,915		0,334	0,511	0,045	0,461	0,455	0,201	0,539	0,647
e03ner	Pearson Correlation	-,526(*)	-0,34	-0,102	-0,25	1	0,311	0,229	,809(**)	,517(*)	-0,281	-0,123	0,076
	Sig. (2-tailed)	0,025	0,168	0,687	0,334		0,209	0,36	0	0,028	0,259	0,626	0,764
e03sen	Pearson Correlation	0,053	-0,206	-0,407	0,171	0,311	1	0,303	0,404	0,345	-0,186	-0,022	0,31
	Sig. (2-tailed)	0,835	0,413	0,094	0,511	0,209		0,221	0,097	0,161	0,461	0,931	0,211
e03tgo	Pearson Correlation	-0,085	-0,422	-0,263	,491(*)	0,229	0,303	1	0,073	-0,044	-0,026	0,076	-0,052
	Sig. (2-tailed)	0,738	0,081	0,292	0,045	0,36	0,221		0,775	0,864	0,919	0,764	0,837
e03cmr	Pearson Correlation	-,555(*)	-0,382	0,009	-0,192	,809(**)	0,404	0,073	1	,667(**)	-0,206	-0,086	0,153
	Sig. (2-tailed)	0,017	0,118	0,972	0,461	0	0,097	0,775		0,002	0,411	0,736	0,544
e03cog	Pearson Correlation	-0,13	-0,38	-0,132	-0,194	,517(*)	0,345	-0,044	,667(**)	1	-0,26	-0,151	0,329
	Sig. (2-tailed)	0,607	0,12	0,601	0,455	0,028	0,161	0,864	0,002		0,298	0,549	0,182
e03gab	Pearson Correlation	-0,301	0,264	0,223	0,326	-0,281	-0,186	-0,026	-0,206	-0,26	1	-0,341	-0,197
	Sig. (2-tailed)	0,225	0,29	0,375	0,201	0,259	0,461	0,919	0,411	0,298		0,165	0,434
e03rca	Pearson Correlation	0,437	0,034	0,149	0,16	-0,123	-0,022	0,076	-0,086	-0,151	-0,341	1	0,116
	Sig. (2-tailed)	0,069	0,894	0,555	0,539	0,626	0,931	0,764	0,736	0,549	0,165		0,648
e03tcd	Pearson Correlation	0,387	-0,025	-0,177	0,12	0,076	0,31	-0,052	0,153	0,329	-0,197	0,116	1
	Sig. (2-tailed)	0,113	0,923	0,482	0,647	0,764	0,211	0,837	0,544	0,182	0,434	0,648	

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 13: Lag to introduce in VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
Endogenous variables: LOG(XIJGLOCIV) LOG(PIJCIVTOBEN) LOG(GDPTCIVTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	43.51649	NA	2.23e-06	-4.501832	-4.353437	-4.481371
2	101.6581	18.97228	2.93e-08	-8.962011	-7.923244	-8.818779
3	122.2224	18.27941	1.09e-08	-10.24694	-8.762984	-10.04232
4	154.6015	17.98837*	1.66e-09*	-12.84461*	-10.91547*	-12.57861*
Endogenous variables : LOG(XIJGLOCMR) LOG(PIJCMRTOBEN) LOG(GDPTCMRTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	23.97988	NA	1.95e-05	-2.331098	-2.182703	-2.310636
1	57.67634	52.41671	1.28e-06	-5.075149	-4.481568	-4.993302
3	89.75435	10.39420	4.02e-07	-6.639372	-5.155419	-6.434755
4	123.8742	18.95547*	5.04e-08*	-9.430466*	-7.501327*	-9.164464*
Endogenous variables : LOG(XIJGLOCGO) LOG(PIJCGOTOBEN) LOG(GDPTCGOTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	30.56712	NA	9.39e-06	-3.063013	-2.914618	-3.042552
1	67.01003	56.68897	4.55e-07	-6.112226	-5.518644	-6.030379
2	86.10682	23.34052	1.65e-07	-7.234091	-6.195324	-7.090859
3	105.3282	17.08567	7.11e-08	-8.369800	-6.885847	-8.165183
4	139.0876	18.75523*	9.29e-09*	-11.12085*	-9.191708*	-10.85485*
Endogenous variables : LOG(XIJGLOBEN) LOG(PIJBENTOBFA) LOG(GDPTBENTOBFA)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	38.97828	NA	3.69e-06	-3.997587	-3.849192	-3.977125
1	91.45367	81.62837	3.01e-08	-8.828185	-8.234604	-8.746338
2	98.37525	8.459719	4.22e-08	-8.597250	-7.558483	-8.454018
3	111.9958	12.10714	3.39e-08	-9.110643	-7.626690	-8.906026
4	148.8068	20.45055*	3.16e-09*	-12.20075*	-10.27161*	-11.93475*
Endogenous variables : LOG(XIJGLOBFA) LOG(PIJBFATOBEN) LOG(GDPTBFATOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	40.58097	NA	3.09e-06	-4.175663	-4.027268	-4.155202
1	68.65602	43.67231*	3.79e-07*	-6.295114	-5.701533*	-6.213267
2	70.40858	2.142015	9.43e-07	-5.489842	-4.451075	-5.346610
3	85.46855	13.38664	6.46e-07	-6.163173	-4.679220	-5.958556
4	100.0155	8.081614	7.14e-07	-6.779496*	-4.850357	-6.513493*
Endogenous variables : LOG(XIJGLOGAB) LOG(PIJGABTOBEN) LOG(GDPTGABTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	34.22539	NA	6.25e-06	-3.469488	-3.321093	-3.449026
1	60.20145	40.40719*	9.69e-07	-5.355716	-4.762135	-5.273870
2	69.97930	11.95071	9.89e-07	-5.442144	-4.403377	-5.298912
3	84.06947	12.52460	7.55e-07	-6.007719	-4.523766	-5.803102
4	102.8605	10.43944	5.20e-07*	-7.095607*	-5.166469*	-6.829605*
Endogenous variables : LOG(XIJGLOMLI) LOG(PIJMLITOBEN) LOG(GDPTMLITOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	29.51819	NA	8.87e-06	-3.119787	-2.972749	-3.105171
1	62.46093	50.38302	5.45e-07	-5.936580	-5.348429	-5.878116
2	81.31364	22.17966*	1.94e-07	-7.095722	-6.066459	-6.993411
3	91.58697	8.460390	2.41e-07	-7.245526	-5.775149	-7.099367
4	120.2300	13.47906	6.09e-08*	-9.556467*	-7.644978*	-9.366462*

Table 14: Lag to introduce in VAR model (followed)

Endogenous variables: LOG(XIJGLONER) LOG(PIJNERTOBEN) LOG(GDPTNERTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	59.03225	NA	3.97e-07	-6.225805	-6.077410	-6.205343
1	99.62431	63.14322*	1.21e-08	-9.736035	-9.142454*	-9.654188
2	106.6008	8.526779	1.69e-08	-9.511196	-8.472429	-9.367964
3	117.0346	9.274518	1.94e-08	-9.670511	-8.186558	-9.465894
4	137.9132	11.59924	1.06e-08*	-10.99036*	-9.061221	-10.72436*
Endogenous variables: LOG(XIJGLORCA) LOG(PIJRCATOBEN) LOG(GDPTRCATOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	30.88513	NA	9.06e-06	-3.098348	-2.949953	-3.077887
1	69.21418	59.62296	3.56e-07	-6.357131	-5.763550	-6.275284
2	83.87355	17.91701*	2.11e-07	-6.985950	-5.947183	-6.842718
3	91.05694	6.385236	3.47e-07	-6.784105	-5.300152	-6.579488
4	111.4627	11.33656	2.00e-07*	-8.051416*	-6.122277*	-7.785414*
Endogenous variables: LOG(XIJGLOSEN) LOG(PIJSENTOBEN) LOG(GDPTSENTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	36.44494	NA	4.88e-06	-3.716105	-3.567710	-3.695643
1	86.07032	77.19503	5.47e-08	-8.230036	-7.636455	-8.148189
2	96.68967	12.97920	5.09e-08	-8.409963	-7.371196	-8.266731
3	108.8634	10.82110	4.80e-08	-8.762600	-7.278648	-8.557983
4	148.3380	21.93032*	3.32e-09*	-12.14866*	-10.21952*	-11.88266*
Endogenous variables: LOG(XIJGLOTCD) LOG(PIJTCDTOBEN) LOG(GDPTTCDTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	13.92510	NA	5.96e-05	-1.213900	-1.065505	-1.193439
1	51.08469	57.80381*	2.67e-06	-4.342744	-3.749163	-4.260897
2	64.75701	16.71061	1.77e-06	-4.861890	-3.823123	-4.718658
3	73.96937	8.188767	2.32e-06	-4.885486	-3.401533	-4.680869
4	92.52886	10.31083	1.64e-06*	-5.947651*	-4.018512*	-5.681649*
Endogenous variables: LOG(XIJGLOTGO) LOG(PIJTGOTOBEN) LOG(GDPTTGOTOBEN)						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	33.88071	NA	6.50e-06	-3.431190	-3.282794	-3.410728
1	70.61118	57.13629*	3.05e-07*	-6.512354	-5.918772*	-6.430507
2	76.87780	7.659201	4.60e-07	-6.208645	-5.169878	-6.065413
3	89.79942	11.48588	3.99e-07	-6.644380	-5.160427	-6.439763
4	101.3832	6.435418	6.13e-07	-6.931463*	-5.002325	-6.665461*

Table 15 : Gravity model estimation on the period 1980 to 1993

Dependent Variable: LOG(XIJCOR) Method: Pooled Least Squares Cross-sections included: 128 Total pool (unbalanced) observations: 1370 Cross-section weights (PCSE) standard errors & covariance (no d.f. correction)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPT*GDPTJ)	0.207686	0.069756	2.977328	0.0030
LOG(GDP*GDPJ)	1.448331	0.076834	18.85014	0.0000
LOG(DIJ)	-0.731473	0.088971	-8.221519	0.0000
CEMAC	1.183862	0.216003	5.480755	0.0000
UEMOA	2.409001	0.188690	12.76701	0.0000
LAND	1.733832	0.124030	13.97914	0.0000
OIL	-0.078258	0.151495	-0.516575	0.6055
COTON	-0.262619	0.143998	-1.823772	0.0684
C	-61.85656	2.968835	-20.83530	0.0000
R-squared	0.530282	Mean dependent var		0.445526
Adjusted R-squared	0.527521	S.D. dependent var		2.613245
S.E. of regression	1.796270	Akaike info criterion		4.015849
Sum squared resid	4391.381	Schwarz criterion		4.050158
Log likelihood	-2741.856	F-statistic		192.0603
Durbin-Watson stat	0.555481	Prob(F-statistic)		0.000000

Table 16 : Gravity model estimation on the period 1980 to 2002

Dependent Variable: LOG(XIJCOR) Method: Pooled Least Squares Cross-section weights (PCSE) standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPT*GDPTJ)	0.170420	0.051261	3.324580	0.0009
LOG(GDP*GDPJ)	1.447824	0.056311	25.71145	0.0000
LOG(DIJ)	-0.882771	0.073021	-12.08926	0.0000
CEMAC	0.723787	0.164341	4.404166	0.0000
UEMOA	2.265839	0.142170	15.93758	0.0000
LAND	1.820104	0.099564	18.28072	0.0000
OIL	0.072098	0.125590	0.574077	0.5660
COTON	-0.293737	0.117559	-2.498640	0.0125
C	-60.43375	2.267599	-26.65098	0.0000
R-squared	0.532605	Mean dependent var		0.228292
Adjusted R-squared	0.531013	S.D. dependent var		2.825332
S.E. of regression	1.934861	Akaike info criterion		4.161758
Sum squared resid	8793.921	Schwarz criterion		4.183764
Log likelihood	-4897.712	F-statistic		334.5911
Durbin-Watson stat	0.540723	Prob(F-statistic)		0.000000

Table 17 : Gravity model estimation on the period 1994 to 2002

Dependent Variable: LOG(XIJCOR) Method: Pooled Least Squares Cross-section weights (PCSE) standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPT*GDPTJ)	-0.113437	0.076359	-1.485562	0.1377
LOG(GDP*GDPJ)	1.835279	0.094102	19.50314	0.0000
LOG(DIJ)	-1.096349	0.121231	-9.043446	0.0000
CEMAC	0.632623	0.246601	2.565368	0.0105
UEMOA	2.003077	0.217760	9.198561	0.0000
LAND	1.748616	0.165209	10.58430	0.0000
OIL	0.061734	0.202441	0.304949	0.7605
COTON	-0.184597	0.187797	-0.982960	0.3259
C	-72.57090	3.840808	-18.89470	0.0000
R-squared	0.576734	Mean dependent var		-0.072932
Adjusted R-squared	0.573276	S.D. dependent var		3.071503
S.E. of regression	2.006433	Akaike info criterion		4.239662
Sum squared resid	3941.232	Schwarz criterion		4.284258
Log likelihood	-2085.393	F-statistic		166.7461
Durbin-Watson stat	0.350361	Prob(F-statistic)		0.000000

Table 18 : Bilateral trade variance decomposition i**n UEMOA zone**

Période	*S.E.*	Shock1	Shock2	Shock3
Variance Decomposition of LOG(XIJGLOBEN):				
1	*0.150135*	100.0000	0.000000	0.000000
5	***0.264290***	**83.26353**	**5.871962**	**10.86451**
10	*0.388755*	59.21958	15.65540	25.12502
15	*0.676868*	45.95006	23.90523	30.14471
20	*0.756678*	36.98204	33.05826	29.95970
30	*2.042641*	**40.65920**	**22.61947**	**36.72134**
50	*11.66852*	38.07505	24.11810	37.80685
Variance Decomposition of LOG(XIJGLOBFA):				
1	*0.148011*	100.0000	0.000000	0.000000
5	*0.214853*	62.80076	17.17616	20.02308
10	*0.237330*	**57.26020**	**18.59257**	**24.14723**
15	*0.260015*	48.04890	16.51545	35.43565
20	*0.292538*	38.04508	13.57061	48.38431
30	*0.414557*	18.96404	7.998349	73.03761
50	*1.097745*	**2.704634**	**3.314477**	**93.98089**
Variance Decomposition of LOG(XIJGLOCIV):				
1	*0.152230*	100.0000	0.000000	0.000000
5	*0.196317*	79.51969	3.284235	17.19608
10	*0.222349*	67.87737	5.744821	26.37781
15	*0.228050*	66.95500	6.782640	26.26236
20	*0.232076*	66.09657	7.330528	26.57290
30	*0.235348*	65.48506	7.789820	26.72512
50	*0.236742*	65.22974	7.977647	26.79261
Variance Decomposition of LOG(XIJGLOMLI):				
1	*0.264095*	100.0000	0.000000	0.000000
5	*0.310394*	85.76544	9.529945	4.704612
10	*0.348940*	70.01906	22.39737	7.583572
15	*0.361056*	67.92771	23.57415	8.498145
20	*0.365663*	67.42608	24.19259	8.381332
30	*0.372533*	65.37970	25.88191	8.738390
50	*0.374580*	64.95906	26.26790	8.773038
Variance Decomposition of LOG(XIJGLONER):				
1	*0.081684*	100.0000	0.000000	0.000000
5	*0.125655*	73.59116	25.08560	1.323242
10	*0.196232*	37.57666	59.38742	3.035920
15	*0.210067*	33.42748	63.24821	3.324312
20	*0.211398*	33.01436	63.60329	3.382349
30	*0.226363*	29.12857	67.10142	3.770017
50	*0.233716*	27.47909	68.58772	3.933192
Variance Decomposition of LOG(XIJGLOSEN):				
1	*0.235835*	100.0000	0.000000	0.000000
5	*0.278254*	87.85902	4.455023	7.685955
10	*0.311052*	80.10167	4.208153	15.69017
15	*0.322974*	79.58445	4.834985	15.58056
20	*0.325114*	79.47270	5.094785	15.43252
30	*0.340262*	77.90317	7.911669	14.18516
50	*0.341061*	77.71148	8.120250	14.16827
Variance Decomposition of LOG(XIJGLOTGO):				
1	*0.323775*	100.0000	0.000000	0.000000
5	*0.449873*	85.44850	11.53520	3.016294
10	*0.473732*	82.36414	13.60695	4.028909
15	*0.493894*	82.12449	12.92214	4.953370
20	*0.508637*	81.72973	12.70828	5.561984
30	*0.529351*	81.30437	12.36312	6.332507
50	*0.550319*	80.91558	12.05892	7.025493

Table 19 : Bilateral trade variance decomposition i**nCEMAC zone**

Variance Decomposition of LOG(XIJGLOCMR):				
1	0.265559	100.0000	0.000000	0.000000
5	0.382932	61.47391	13.34300	25.18309
10	0.386512	60.72643	13.35645	25.91712
15	0.392081	60.58629	13.31590	26.09781
20	0.392731	60.56628	13.32086	26.11286
30	0.392836	60.56012	13.31719	26.12269
50	0.392841	60.56023	13.31716	26.12261
Variance Decomposition of LOG(XIJGLOCGO):				
1	0.365043	100.0000	0.000000	0.000000
5	0.484099	67.34091	8.959159	23.69993
10	0.508291	64.82309	12.49694	22.67997
15	0.509284	64.68606	12.60180	22.71214
20	0.509353	64.68193	12.60619	22.71188
30	0.509377	64.67996	12.60804	22.71200
50	0.509377	64.67995	12.60805	22.71200
Variance Decomposition of LOG(XIJGLOGAB):				
1	0.435950	100.0000	0.000000	0.000000
5	0.560006	86.80790	4.482065	8.710033
10	0.586560	86.60740	4.634192	8.758406
15	0.589345	86.46321	4.704050	8.832743
20	0.589828	86.40083	4.727282	8.871886
30	0.590081	86.34451	4.752239	8.903247
50	0.590252	86.30068	4.776391	8.922927
Variance Decomposition of LOG(XIJGLORCA):				
1	0.336661	100.0000	0.000000	0.000000
5	0.518613	77.27749	15.49281	7.229700
10	0.530955	74.22960	17.18369	8.586705
15	0.549204	73.53611	16.57054	9.893355
20	0.555076	72.61060	17.44449	9.944912
30	0.563540	72.02884	17.48837	10.48279
50	0.567595	71.71595	17.52691	10.75713
Variance Decomposition of LOG(XIJGLOTCD):				
1	0.650816	100.0000	0.000000	0.000000
5	0.765565	78.70514	5.613487	15.68137
10	0.828345	77.99689	5.574630	16.42848
15	0.851158	78.23846	5.481121	16.28042
20	0.856500	78.30335	5.469369	16.22728
30	0.859236	78.21523	5.499038	16.28573
50	0.859557	78.21696	5.497437	16.28561

Table 20 : Price variance decomposition i**n UEMOA zone**

Period	S.E.	Shock1	Shock2	Shock3
Variance Decomposition of LOG(PIJBEN):				
1	0.015141	34.96025	65.03975	0.000000
5	**0.085359**	**72.49811**	**11.60116**	**15.90072**
10	0.166751	44.33165	21.63675	34.03160
15	0.262292	31.95195	32.08956	35.95849
20	0.291445	28.95290	37.73132	33.31579
30	0.964903	36.79808	25.31170	37.89022
50	5.518462	35.68853	26.20653	38.10494
Variance Decomposition of LOG(PIJBFA):				
1	0.090208	1.721550	98.27845	0.000000
5	0.173699	19.22585	33.96102	46.81313
10	0.220048	16.44884	25.59911	57.95205
15	0.270408	11.73887	18.83369	69.42744
20	0.340846	7.415007	12.92783	79.65716
30	0.565148	2.699821	6.276326	91.02385
50	1.661992	0.312242	2.965482	96.72228
Variance Decomposition of LOG(PIJCIV):				
Period	**S.E.**	**Shock1**	**Shock2**	**Shock3**
1	0.040949	6.517578	93.48242	0.000000
5	**0.091891**	**45.77023**	**43.52624**	**10.70353**
10	0.124623	41.60001	34.66251	23.73748
15	0.138698	42.46519	32.60469	24.93012
20	0.146384	42.52234	31.68743	25.79023
30	0.152809	42.63079	31.03829	26.33092
50	0.155470	42.66810	30.79197	26.53993
Variance Decomposition of LOG(PIJMLI):				
1	0.057066	3.268906	96.73109	0.000000
5	0.151555	20.50232	74.06584	5.431849
10	0.204392	13.29964	74.96200	11.73836
15	0.216605	18.05022	69.39932	12.55046
20	0.225058	18.53382	69.37484	12.09134
30	0.233617	18.39609	68.96790	12.63601
50	0.236590	18.43114	68.92728	12.64158
Variance Decomposition of LOG(PIJNER):				
1	0.036806	0.335635	99.66437	0.000000
5	0.084189	10.45402	86.73915	2.806837
9	0.093411	8.514581	87.46705	4.018371
14	0.104821	7.654303	88.01085	4.334849
19	0.111662	6.956405	88.40821	4.635389
29	0.120758	6.331179	88.78785	4.880973
50	0.128596	5.879795	89.06002	5.060181
Variance Decomposition of LOG(PIJSEN):				
1	0.036753	6.017192	93.98281	0.000000
5	0.139953	26.81872	67.52993	5.651344
9	0.200249	24.96535	64.73418	10.30047
14	0.225564	21.95382	63.35472	14.69146
19	0.230772	21.44178	61.75541	16.80282
29	0.237633	24.01113	59.47195	16.51691
50	0.241066	24.78903	59.09058	16.12039
Variance Decomposition of LOG(PIJTGO):				
1	0.033863	1.786772	98.21323	0.000000
5	0.080177	33.37368	58.74939	7.876930
10	0.102028	51.91215	37.49706	10.59079
15	0.115383	56.82553	31.50592	11.66854
20	0.125140	59.76339	27.97570	12.26091
30	0.137988	62.65837	24.48768	12.85394
50	0.150344	64.77684	21.93595	13.28721

Table 21 : Price variance decomposition i**n CEMAC zone**

Variance Decomposition of LOG(PIJCMR):				
1	0.073367	20.71891	79.28109	0.000000
5	0.136479	34.87535	36.15394	28.97071
10	0.156258	43.59884	32.60426	23.79690
15	0.157490	43.27213	32.23531	24.49257
20	0.157634	43.31004	32.19240	24.49756
30	0.157694	43.30985	32.17374	24.51641
50	0.157696	43.31006	32.17316	24.51678
Variance Decomposition of LOG(PIJCGO):				
1	0.030290	6.997299	93.00270	0.000000
5	0.077730	32.00424	57.88572	10.11004
10	0.089749	33.39198	55.35406	11.25396
15	0.090574	33.75717	55.00011	11.24271
20	0.090586	33.75291	54.99967	11.24742
30	0.090601	33.75434	54.99815	11.24751
50	0.090601	33.75435	54.99813	11.24751
Variance Decomposition of LOG(PIJGAB):				
1	0.027667	2.032734	97.96727	0.000000
5	0.054066	12.17226	75.11917	12.70857
10	0.069674	8.801775	71.02762	20.17060
15	0.080796	8.751349	66.20555	25.04311
20	0.088548	8.968334	63.24227	27.78940
30	0.097831	9.255066	60.37369	30.37125
50	0.105119	9.459194	58.60151	31.93929
Variance Decomposition of LOG(PIJRCA):				
1	0.031613	9.894766	90.10523	0.000000
5	0.053842	19.52082	59.61567	20.86352
10	0.075005	40.50719	34.56005	24.93276
15	0.080888	38.75045	37.89793	23.35162
20	0.086523	41.22657	33.87774	24.89568
30	0.090498	41.56866	33.74554	24.68581
50	0.092573	41.90095	33.55593	24.54313
Variance Decomposition of LOG(PIJTCD):				
1	0.021669	49.52620	50.47380	0.000000
5	0.096010	80.04493	10.46268	9.492393
10	0.107252	79.75298	10.14111	10.10591
15	0.108206	78.82135	10.27697	10.90168
20	0.110083	79.22128	10.16051	10.61821
30	0.110890	79.38385	10.07888	10.53727
50	0.111012	79.39812	10.07155	10.53032

Table 22 : GDP per capita variance decomposition **in UEMOA zone**

Variance Decomposition of LOG(GDPTBEN):				
1	0.018274	5.514257	39.44606	55.03968
5	0.049802	44.05747	23.52654	32.41599
10	0.068417	35.68405	32.08482	32.23113
15	0.072489	34.91496	34.15734	30.92769
20	0.146745	45.56109	20.11552	34.32339
30	0.355211	26.31169	37.13998	36.54833
50	1.935898	25.37781	38.04313	36.57905
Variance Decomposition of LOG(GDPTBFA):				
1	0.030793	2.885768	0.236103	96.87813
5	0.051090	6.553887	4.441496	89.00462
10	0.071882	3.613310	3.787102	92.59959
15	0.099679	1.907076	3.191321	94.90160
20	0.134419	1.051919	2.860716	96.08737
30	0.238069	0.335619	2.638322	97.02606
50	0.722031	0.036516	2.544327	97.41916
Variance Decomposition of LOG(GDPTCIV):				
Period	S.E.	Shock1	Shock2	Shock3
1	0.023719	0.297069	21.65082	78.05211
5	0.058608	14.42696	14.12946	71.44358
10	0.062818	20.76636	15.51587	63.71777
15	0.066083	22.44239	16.11643	61.44118
20	0.067568	23.44410	16.47792	60.07798
30	0.068930	24.22706	16.75877	59.01417
50	0.069499	24.54420	16.87286	58.58294
Variance Decomposition of LOG(GDPTMLI):				
1	0.026931	2.912750	0.000359	97.08689
5	0.050972	58.37393	7.902888	33.72318
10	0.065687	48.60565	28.81492	22.57943
15	0.073964	39.50490	38.19150	22.30361
20	0.076013	40.76799	37.22359	22.00843
30	0.078807	38.90707	39.70029	21.39263
50	0.079627	38.84461	39.90076	21.25463
Variance Decomposition of LOG(GDPTNER):				
1	0.036752	17.03798	34.52645	48.43557
5	0.066105	29.98188	51.45336	18.56476
14	0.071987	29.45353	54.00086	16.54561
19	0.072918	28.77139	54.87929	16.34931
24	0.074237	27.90488	56.12655	15.96857
34	0.075611	26.98542	57.38473	15.62985
50	0.076718	26.28351	58.35051	15.36598
Variance Decomposition of LOG(GDPTSEN):				
1	0.030249	20.91119	5.623764	73.46505
5	0.064002	17.97425	27.78519	54.24056
14	0.089212	24.90342	21.22168	53.87490
19	0.097848	32.84963	20.52173	46.62863
24	0.104406	36.78987	22.14243	41.06770
34	0.109259	38.23042	24.13961	37.62997
50	0.109645	38.19124	24.34242	37.46634
Variance Decomposition of LOG(GDPTTGO):				
1	0.057547	14.47485	0.422740	85.10241
5	0.075451	20.48361	8.710766	70.80563
10	0.082416	30.01356	7.872796	62.11364
15	0.086784	34.36004	8.107757	57.53221
20	0.090232	37.52284	8.091485	54.38567
30	0.094959	41.26360	8.115536	50.62086
50	0.099699	44.49751	8.132435	47.37005

Table 23 :GDP per capita variance decomposition i**n CEMAC zone**

Période	S.E.	Shock1	Shock2	Shock3
Variance Decomposition of LOG(GDPTCMR):				
1	0.022080	0.071383	0.195864	99.73275
5	0.124031	29.41060	14.18513	56.40427
10	0.165151	46.04432	14.91460	39.04108
15	0.168115	45.61310	14.77150	39.61540
20	0.168511	45.70899	14.74533	39.54568
30	0.168630	45.69333	14.73291	39.57376
50	0.168634	45.69317	14.73249	39.57434
Variance Decomposition of LOG(GDPTGAB):				
1	0.052503	0.222141	2.446503	97.33136
5	0.079986	43.70974	7.074635	49.21563
10	0.082901	44.07103	7.297163	48.63180
15	0.083155	44.12112	7.356178	48.52270
20	0.083189	44.13417	7.370871	48.49496
30	0.083201	44.13269	7.378440	48.48887
50	0.083208	44.12686	7.385165	48.48798
Variance Decomposition of LOG(GDPTRCA):				
1	0.036662	8.210299	3.276735	88.51297
5	0.052288	19.93060	22.61886	57.45054
10	0.062134	31.53118	24.34736	44.12146
15	0.065498	31.61704	24.58891	43.79406
20	0.068547	34.29193	24.06932	41.63875
30	0.070682	34.89611	24.23586	40.86803
50	0.071720	35.14211	24.43204	40.42585
Variance Decomposition of LOG(GDPTTCD):				
1	0.061109	3.031421	11.33993	85.62865
5	0.091401	42.69060	9.748800	47.56060
10	0.095740	43.08658	10.95771	45.95570
15	0.098410	44.89009	10.66872	44.44119
20	0.098884	45.05546	10.70535	44.23920
30	0.099045	45.11775	10.69255	44.18970
50	0.099076	45.13900	10.69021	44.17079

Table 24 : Bilateral trade **Response in UEMOA zone**

Period	Shock1	Shock2	Shock3
Accumulated Response of LOG(XIJBEN):			
1	**0.150135**	**0.000000**	**0.000000**
5	**0.418826**	**-0.031712**	**-0.144233**
10	0.623058	-0.295377	-0.501618
15	1.322530	-0.948401	-1.204874
20	1.364742	-1.578387	-1.599638
30	-2.008901	0.390433	1.486529
50	**14.63220**	**-5.170841**	**-11.46310**
Accumulated Response of LOG(XIJBFA):			
1	**0.148011**	**0.000000**	**0.000000**
5	**0.118052**	**-0.012273**	**0.129153**
10	0.140931	0.054850	0.267531
15	0.113178	0.097697	0.494204
20	0.125205	0.141403	0.789195
30	0.119255	0.285221	1.695710
50	**0.117038**	**0.976048**	**5.977036**
Accumulated Response of LOG(XIJCIV):			
1	**0.149288**	**0.000000**	**0.000000**
5	**0.127432**	**-0.052769**	**0.099774**
10	0.322512	-0.033684	-0.037408
15	0.398153	-0.012991	-0.188552
20	0.412244	-0.000689	-0.229218
30	0.483220	0.004709	-0.257457
50	**0.486555**	**0.008284**	**-0.276484**
Accumulated Response of LOG(XIJMLI):			
5	**0.367253**	**-0.160249**	**0.010758**
10	0.378087	-0.459312	-0.137726
15	0.251891	-0.572486	-0.229875
20	0.165110	-0.491023	-0.222712
30	0.214183	-0.324798	-0.130244
50	**0.213837**	**-0.411444**	**-0.169755**
Accumulated Response of LOG(XIJNER):			
1	**0.081684**	**0.000000**	**0.000000**
5	**0.115297**	**-0.017444**	**0.005606**
10	0.041499	-0.293393	-0.055433
15	0.027667	-0.410241	-0.089955
20	0.003432	-0.556553	-0.127952
30	-0.032457	-0.772327	-0.185331
50	**-0.080971**	**-1.064096**	**-0.262673**
Accumulated Response of LOG(XIJSEN):			
1	**0.235835**	**0.000000**	**0.000000**
5	**0.447543**	**-0.040363**	**0.108972**
10	0.606546	0.006181	0.288347
15	0.771349	-0.006835	0.410750
20	0.934908	-0.084523	0.470696
30	1.167563	-0.263437	0.479146
50	**1.249424**	**-0.359937**	**0.440173**
Accumulated Response of LOG(XIJTGO):			
1	**0.323775**	**0.000000**	**0.000000**
5	**0.770552**	**0.256021**	**-0.083358**
10	1.006932	0.072743	-0.203852
15	1.284278	0.003120	-0.326939
20	1.520004	-0.079111	-0.434295
30	1.923876	-0.211759	-0.617083
50	**2.506147**	**-0.403982**	**-0.880735**

Table 25 : Bilateral trade **Response in CEMAC zone**

Période	Shock1	Shock2	Shock3
Accumulated Response of LOG(XIJCMR):			
1	**0.191679**	**0.000000**	**0.000000**
5	**0.093976**	**-0.429263**	**0.402413**
10	0.104789	-0.279496	0.197124
15	0.216625	-0.501505	0.105986
20	0.167769	-0.428066	0.128401
30	0.135524	-0.350622	0.198299
50	**0.147381**	**-0.375676**	**0.177408**
Accumulated Response of LOG(XIJCGO):			
1	**0.365043**	**0.000000**	**0.000000**
5	**0.487820**	**-0.191956**	**-0.362481**
10	0.694026	-0.400514	-0.409153
15	0.717584	-0.441948	-0.418243
20	0.719187	-0.434112	-0.421317
30	0.711222	-0.426357	-0.416077
50	**0.711446**	**-0.426505**	**-0.416320**
Accumulated Response of LOG(XIJGAB):			
1	**0.436902**	**0.000000**	**0.000000**
5	**0.434287**	**-0.094586**	**-0.496137**
10	0.629063	-0.117288	-0.539872
15	0.746781	-0.133030	-0.504264
20	0.787746	-0.149420	-0.489600
30	0.758637	-0.173377	-0.535791
50	**0.768158**	**-0.183375**	**-0.569558**
Accumulated Response of LOG(XIJRCA):			
1	**0.336661**	**0.000000**	**0.000000**
5	**0.887692**	**0.337010**	**-0.181246**
10	0.845802	0.494848	-0.031077
15	0.596232	0.443902	0.132603
20	0.538480	0.308104	0.099176
30	0.739885	0.390366	-0.013657
50	**0.685697**	**0.364349**	**0.014457**
Accumulated Response of LOG(XIJTCD):			
1	**0.650816**	**0.000000**	**0.000000**
5	**0.881920**	**-0.269075**	**-0.541531**
10	0.435100	-0.169261	-0.352744
15	0.816141	-0.203130	-0.327353
20	0.700074	-0.211138	-0.377283
30	0.690147	-0.192328	-0.358195
50	**0.676236**	**-0.190625**	**-0.345477**

Table 26 : Price **Response in UEMOA zone**

Période	Shock1	Shock2	Shock3
Accumulated Response of LOG(PIJBEN):			
1	**-0.008952**	**0.012211**	**0.000000**
5	**0.094777**	**-0.017583**	**-0.064468**
10	0.276931	-0.174460	-0.266729
15	0.494299	-0.457559	-0.542758
20	**0.460013**	**-0.672228**	**-0.636131**
30	-1.199449	0.476835	0.966158
50	7.596190	-3.889013	-6.626231
Accumulated Response of LOG(PIJBFA):			
1	**-0.011836**	**0.089429**	**0.000000**
5	-0.098351	0.075624	0.230461
10	-0.061641	0.131034	0.468979
15	-0.059921	0.206339	0.803255
20	-0.069603	0.279487	1.259419
30	-0.068186	0.499614	2.650504
50	-0.071173	1.560819	9.233974
Accumulated Response of LOG(PIJCIV):			
1	**-0.016966**	**0.021912**	**0.000000**
5	-0.123359	0.025075	0.066709
10	-0.231245	0.003097	0.207033
15	-0.283383	-0.012156	0.271834
20	-0.325177	-0.018568	0.299225
30	-0.350303	-0.024391	0.338600
50	-0.359841	-0.026342	0.345719
Accumulated Response of LOG(PIJMLI):			
1	**-0.010318**	**0.056126**	**0.000000**
5	**-0.134232**	**0.291150**	**0.064096**
10	-0.087784	0.554164	0.199071
15	0.032750	0.599695	0.262412
20	0.095162	0.488230	0.233741
30	0.024064	0.367310	0.153647
50	0.039422	0.441892	0.192992
Accumulated Response of LOG(PIJNER):			
1	**0.002132**	**0.036744**	**0.000000**
5	0.051607	0.173394	0.027831
10	0.055088	0.266849	0.056828
15	0.075966	0.368050	0.082136
20	0.087632	0.447106	0.103633
30	0.110225	0.581677	0.139199
50	0.139859	0.760555	0.186623
Accumulated Response of LOG(PIJSEN):			
1	**-0.009015**	**0.035630**	**0.000000**
5	-0.150424	0.252692	0.057096
10	-0.310720	0.523390	0.195048
15	-0.355572	0.669219	0.316689
20	-0.313561	0.699105	0.391775
30	-0.167545	0.612730	0.431110
50	-0.078217	0.518248	0.403640
Accumulated Response of LOG(PIJTGO):			
1	**-0.004526**	**0.033559**	**0.000000**
5	-0.090213	0.125721	0.042778
10	-0.216696	0.148659	0.097252
15	-0.320648	0.186639	0.144725
20	-0.415285	0.217177	0.187514
30	-0.575332	0.270131	0.259994
50	-0.806308	0.346397	0.364581

Table 27 : Price **Response in CEMAC zone**

Période	Shock1	Shock2	Shock3
Accumulated Response of LOG(PIJCMR):			
1	**-0.012472**	**0.072518**	**0.000000**
5	-0.089173	0.209594	0.121453
10	-0.123318	0.297118	0.192467
15	-0.085231	0.228365	0.142543
20	-0.057585	0.164458	0.093650
30	-0.089044	0.221902	0.136463
50	-0.080259	0.204934	0.124551
Accumulated Response of LOG(PIJCGO):			
1	**0.008012**	**0.029211**	**0.000000**
5	-0.071425	0.130914	0.044837
10	-0.127758	0.198492	0.078092
15	-0.144331	0.211896	0.085777
20	-0.143089	0.210134	0.084071
30	-0.140300	0.206973	0.082573
50	-0.140342	0.207070	0.082619
Accumulated Response of LOG(PIJGAB):			
1	**-0.000341**	**0.018795**	**0.000000**
5	0.018150	0.051439	-0.022912
10	-0.027213	0.093361	0.016627
15	-0.070973	0.126037	0.054105
20	-0.104477	0.150670	0.083882
30	-0.143759	0.182230	0.125330
50	-0.175242	0.207347	0.160408
Accumulated Response of LOG(PIJRCA):			
1	**0.009944**	**0.030008**	**0.000000**
5	-0.001150	0.085508	0.045872
10	-0.093202	0.062658	0.106680
15	-0.111585	0.011666	0.091593
20	-0.059521	0.013611	0.051093
30	-0.063133	0.050976	0.075820
50	-0.060404	0.041361	0.068018
Accumulated Response of LOG(PIJTCD):			
1	**-0.015250**	**0.015395**	**0.000000**
5	-0.182780	0.067235	0.028813
10	-0.269308	0.089620	0.011019
15	-0.269508	0.076900	-0.011348
20	-0.226780	0.065215	-0.004293
30	-0.218844	0.068005	0.004307
50	-0.223449	0.068088	0.001326

Table 28 : GDP per capita **Response in UEMOA zone**

Période	Shock1	Shock2	Shock3
Accumulated Response of LOG(GDPTBEN):			
1	0.004291	0.011477	0.013558
5	-0.052045	0.052303	0.062754
10	-0.080949	0.118936	0.120157
15	-0.055657	0.152097	0.115371
20	0.134829	0.050596	-0.046030
30	0.605424	-0.591221	-0.663015
50	-3.120614	3.451069	3.685862
Accumulated Response of LOG(GDPTBFA):			
1	0.005231	-0.001496	0.030309
5	0.003305	0.013449	0.100220
10	0.005313	0.032694	0.210538
15	0.003430	0.056483	0.362618
20	0.004303	0.087942	0.561179
30	0.003690	0.185694	1.167135
50	0.002072	0.648576	4.038405
Accumulated Response of LOG(GDPTCIV):			
1	-0.006793	-0.002358	0.020633
5	-0.069939	-0.020657	0.106188
10	-0.083799	-0.027720	0.134417
15	-0.100754	-0.030154	0.137264
20	-0.113930	-0.031009	0.148033
30	-0.111730	-0.032695	0.155311
50	-0.115723	-0.032899	0.156581
Accumulated Response of LOG(GDPTMLI):			
1	0.004596	5.11E-05	0.026536
5	0.061921	0.013104	0.046437
10	0.104374	-0.058219	0.028838
15	0.090477	-0.121988	-0.006025
20	0.059382	-0.129609	-0.020253
30	0.051702	-0.074596	0.002088
50	0.061696	-0.095511	-0.003901
Accumulated Response of LOG(GDPTNER):			
1	0.015170	0.021595	0.025578
5	0.058119	0.099343	0.043715
10	0.045679	0.104537	0.050257
15	0.058449	0.152053	0.060283
20	0.061206	0.177298	0.067851
30	0.069789	0.227406	0.080953
50	0.080601	0.292951	0.098339
Accumulated Response of LOG(GDPTSEN):			
1	0.013832	0.007173	0.025927
5	0.055490	0.072745	0.104188
10	0.103914	0.121278	0.191083
15	0.174375	0.113396	0.245411
20	0.249868	0.072699	0.268573
30	0.352915	-0.011900	0.266487
50	0.382507	-0.050136	0.248164
Accumulated Response of LOG(GDPTTGO):			
1	0.021894	0.003742	0.053087
5	-0.003131	0.046526	0.090756
10	-0.068796	0.059096	0.121017
15	-0.121191	0.078534	0.144883
20	-0.169492	0.094046	0.166665
30	-0.250926	0.121004	0.203549
50	-0.368480	0.159821	0.256779

Table 29 : GDP per capita **Response in CEMAC zone**

Période	Shock1	Shock2	Shock3
Accumulated Response of LOG(GDPTCMR):			
1	-0.003683	0.000359	0.020816
5	-0.098108	0.130398	0.181144
10	-0.159267	0.288304	0.272398
15	-0.113095	0.205026	0.226464
20	-0.075287	0.123689	0.157627
30	-0.108613	0.186104	0.201358
50	-0.098876	0.168372	0.189017
Accumulated Response of LOG(GDPTCGO):			
1	-0.022369	-0.004899	0.031032
5	-0.084710	0.071693	0.097743
10	-0.168450	0.164777	0.142142
15	-0.187984	0.190915	0.150674
20	-0.189200	0.190037	0.151032
30	-0.185923	0.186113	0.148922
50	-0.185903	0.186115	0.148966
Accumulated Response of LOG(GDPTGAB):			
1	0.000622	0.000686	0.057394
5	-0.088356	0.007628	0.101866
10	-0.089871	0.004548	0.113311
15	-0.074039	0.001194	0.119253
20	-0.062680	-0.002584	0.121929
30	-0.058474	-0.008761	0.116360
50	-0.056626	-0.012974	0.106636
Accumulated Response of LOG(GDPTRCA):			
1	-0.010505	-0.006636	0.034492
5	-0.039156	0.022441	0.072314
10	-0.091254	-0.017536	0.090452
15	-0.070139	-0.037969	0.061288
20	-0.035339	-0.019608	0.044206
30	-0.062783	-0.010446	0.071505
50	-0.054476	-0.012188	0.063845
Accumulated Response of LOG(GDPTTCD):			
1	-0.010640	0.020578	0.056547
5	0.086774	0.010095	0.056933
10	0.059171	0.006664	0.031213
15	0.028528	0.013346	0.046439
20	0.044204	0.009623	0.037633
30	0.044190	0.009190	0.039909
50	0.041609	0.009457	0.038957

PERIODE 1994-2002

Dependent Variable: LOG(XIJCOR?)
Method: Pooled EGLS (Period weights)
Date: 04/18/06 Time: 16:00
Sample (adjusted): 1994 2001
Included observations: 8 after adjustments
Cross-sections included: 127
Total pool (unbalanced) observations: 988
Linear estimation after one-step weighting matrix
Cross-section weights (PCSE) standard errors & covariance (no d.f. correction)
Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPT?*GDPTJ?)	0.306791	0.081800	3.750511	0.0002
LOG(GDP?*GDPJ?)	0.177142	0.037060	4.779879	0.0000
LOG(DIJ?)	-1.722398	0.143974	-11.96325	0.0000
CEMAC?	-0.907120	0.263532	-3.442161	0.0006
UEMOA?	1.723006	0.221905	7.764623	0.0000
LAND?	1.431575	0.197897	7.233932	0.0000
OIL?	1.029275	0.224676	4.581159	0.0000
COTON?	-0.945737	0.205389	-4.604605	0.0000

Weighted Statistics

R-squared	0.432972	Mean dependent var	-0.061212
Adjusted R-squared	0.428922	S.D. dependent var	3.080335
S.E. of regression	2.327800	Sum squared resid	5310.281
F-statistic	106.9014	Durbin-Watson stat	0.272418
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.429585	Mean dependent var	-0.072932
Sum squared resid	5311.408	Durbin-Watson stat	0.270128

PERIODE 1980-1993

Dependent Variable: LOG(XIJCOR?)
Method: Pooled EGLS (Cross-section weights)
Date: 04/17/06 Time: 10:57
Sample: 1980 1993
Included observations: 14
Cross-sections included: 128
Total pool (unbalanced) observations: 1370
Iterate weights to convergence
Cross-section weights (PCSE) standard errors & covariance (no d.f. correction)
Estimation settings: tol= 0.00010
Convergence achieved after 47 weight iterations
Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPT?*GDPTJ?)	0.013992	0.035568	0.393402	0.6941
LOG(GDP?*GDPJ?)	1.615040	0.032530	49.64756	0.0000
LOG(DIJ?)	-0.313629	0.044400	-7.063712	0.0000
CEMAC?	1.189252	0.122967	9.671322	0.0000
UEMOA?	3.103593	0.107086	28.98220	0.0000
LAND?	1.126699	0.049398	22.80879	0.0000
OIL?	0.324932	0.051422	6.318905	0.0000
COTON?	-0.138655	0.053643	-2.584746	0.0098
C	-69.45806	1.264201	-54.94226	0.0000

Weighted Statistics

R-squared	0.943751	Mean dependent var	3.499024
Adjusted R-squared	0.943421	S.D. dependent var	8.368707
S.E. of regression	1.990615	Akaike info criterion	3.269740
Sum squared resid	5393.029	Schwarz criterion	3.304048
Log likelihood	-2230.772	F-statistic	2854.389
Durbin-Watson stat	0.779621	Prob(F-statistic)	0.000000

Unweighted Statistics

R-squared	0.423142	Mean dependent var	0.445526
Sum squared resid	5393.031	Durbin-Watson stat	0.509206

PERIODE DE 1980 A 2002

Dependent Variable: LOG(XIJCOR?)
Method: Pooled EGLS (Cross-section weights)
Date: 04/17/06 Time: 10:58
Sample (adjusted): 1980 2001
Included observations: 22 after adjustments
Cross-sections included: 130
Total pool (unbalanced) observations: 2358
Iterate weights to convergence
Cross-section weights (PCSE) standard errors & covariance (no d.f. correction)
Estimation settings: tol= 0.00010
Convergence achieved after 54 weight iterations
Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPT?*GDPTJ?)	0.077341	0.027570	2.805197	0.0051
LOG(GDP?*GDPJ?)	1.446936	0.025627	56.46141	0.0000
LOG(DIJ?)	-0.430591	0.036104	-11.92646	0.0000
CEMAC?	1.066667	0.097013	10.99506	0.0000
UEMOA?	3.031197	0.086999	34.84180	0.0000
LAND?	1.029130	0.040611	25.34100	0.0000
OIL?	0.620506	0.050805	12.21356	0.0000
COTON?	-0.035969	0.050574	-0.711225	0.4770
C	-62.23012	1.030805	-60.37040	0.0000

Weighted Statistics

R-squared	0.928660	Mean dependent var	3.244591
Adjusted R-squared	0.928417	S.D. dependent var	8.208067
S.E. of regression	2.196065	Akaike info criterion	3.510815
Sum squared resid	11328.53	Schwarz criterion	3.532821
Log likelihood	-4130.251	F-statistic	3822.238
Durbin-Watson stat	0.649611	Prob(F-statistic)	0.000000

Unweighted Statistics

R-squared	0.397891	Mean dependent var	0.228292
Sum squared resid	11328.53	Durbin-Watson stat	0.521836