Is East Africa an Optimum Currency Area?

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Keywords: Optimum Currency Area, Cointegration, Purchasing Power Parity, East Africa, Kenya, Tanzania, Uganda.

JEL-Codes: C32; F15; O55.

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Abstract

The paper investigates whether the East African Community, comprising of Kenya, Tanzania, and Uganda, constitutes an optimum currency area or not. The East African Community has been revived, and one of the long-term objectives of the Community is to have a common currency. The paper employs the Generalised Purchasing Power Parity method, and various criteria suggested by the theory of Optimum Currency Areas to investigate the optimality of the Community as a currency area. While the various indices that we calculated based on the theory of Optimum Currency Areas gave mixed verdicts, the Generalised Purchasing Power Parity (*G-PPP*) method supports the formation of a currency union in the region. Using the *G-PPP* method, we were able to establish cointegration between the real exchange rates in East Africa for the period 1981 to 1998, and even for the period 1990 to 1998. This finding suggests that the three countries tend to be affected by similar shocks.

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1 Introduction

The Treaty to revive the East African Community (*EAC*) was signed in 1999.[1] The Community comprises of three countries; Kenya, Tanzania and Uganda. Among the long-term objectives of the Community is to establish a monetary union. Article 94 of the Treaty states that the partner states will "co-operate in monetary and financial matters and maintain the convertibility of their currencies as a basis for the establishment of a monetary union" *(EAC, n.d.)*.[2] Further, Article 97 states that "there shall be a unit of account of the Community to be known as the East African Currency Unit *(EACU)*". The natural question is; is the formation of a monetary union for the three countries a good idea? In particular, do the three countries of East Africa constitute an optimum currency area?

In this paper, we attempt to use the theory of optimum currency areas (*OCAs*) to assess the suitability of the East African countries of Kenya, Tanzania, and Uganda of forming a monetary union. The empirical method used is the Generalised Purchasing Power Parity (*G-PPP*) developed by Enders and Hurn (1994). This method is supplemented by several indices that are used as criteria for the optimality of a currency area.

An important observation needs to be made at the outset. This is that the traditional theory of optimum currency areas defines the ideal *economic* conditions for introducing a single currency into a region. In reality, economic conditions may not be the only decisive reasons for the formation of a monetary union. Other factors, for example, historical, cultural and political, may also play a part in influencing the decision. Although we acknowledge the importance of other factors, our main focus will remain on the economic suitability of forming a

[1] By July 7th 2000, the Treaty had been ratified by each parliament in the three countries. The *EAC* was officially inaugurated on January 15th 2001.

[2] *n.d.* means the document quoted is not dated.

monetary union in the region. Despite the signing of the Treaty, the debate on the matter still goes on, and whether indeed a monetary union will be formed remains moot. Given the economic backwardness of these three countries, the economic significance of a monetary union is likely to be quite important in the debate.

The rest of the paper is organised as follows. The second section discusses the theory of optimum currency areas and reviews selected empirical studies. The third section gives a background to the *EAC* by firstly examining the characteristics of the three economies. Secondly, the old *EAC* is discussed, before the final sub-section discusses the revived *EAC*. The fourth section is an empirical part, which examines whether East Africa constitutes an optimum currency area. The fifth and final section concludes the paper.

2 The Theory of Optimum Currency Areas and a Selective Review of Empirical Literature

Mundell's seminal article in 1961 set out the theoretical foundation that gave the framework for the debate about optimum currency areas.[3] Other researchers, for example, McKinnon (1963) and Kenen (1969), explored the issue of optimum currency areas following Mundell's work.

Over the years, due to developments in macroeconomic theory, the theory of optimum currency areas has been extended and modified.[4] However, in spite of the refinements, the basic literature on optimum currency areas still addresses two issues, namely, the advantages and disadvantages of adopting a common currency,

[3]Mundell is regarded as the father of the theory of optimum currency areas (see Bayoumi and Eichengreen, 1998). His work in this area, and indeed in exchange rate economics earned him a Nobel Prize in economics in 1999.

[4]See for example Tavlas (1993) and De Grauwe (1997).

and the characteristics that are desirable for countries to consider monetary integration (Tavlas, 1993; Tjirongo, 1995). We discuss these two issues in turn.

The advantages and disadvantages of joining a currency union may arise at the micro or macro level. The advantages of a common currency accrue mostly at the microeconomic level. A common currency leads to gains in economic efficiency emanating from two sources. The first one is that a common currency can eliminate the transactions costs that are incurred when converting currencies. Secondly, a common currency can help to eliminate risk from uncertainty in the movements of the exchange rates (De Grauwe, 1997). A further advantage of a common currency is that it provides potential for reinforcing the discipline and credibility of monetary policy (Dupasquier and Jacob, 1997).

The disadvantages of a common currency are the loss of independence over monetary and exchange rate policy. When a country relinquishes the exchange rate as an instrument, it loses a mechanism for protecting itself from economic shocks. However, the costs are less severe if the shocks affect all the members of the currency union similarly (symmetric), as a common policy response would be appropriate. But if the shocks affect the members differently (asymmetric) due to, for example, different industrial structures, then a common policy might not be appropriate, in which case the inability to use the exchange rate to make the needed adjustments could result in greater volatility in output and employment. The disadvantages of a common monetary and exchange rate policy are, however, reduced if prices and wages are flexible, and also, if labour is sufficiently mobile (De Grauwe, 1997; Dupasquier and Jacob, 1997). The flexibility of prices and wages, and the mobility of labour allow adjustment to a shock to occur more promptly.

The other issue considered in the theory of optimum currency areas regards the characteristics that are relevant for choosing likely candidates for a currency union. The literature identifies the following factors as key in deciding whether to join a currency union or not; factor mobility, openness, degree of product diversification, flexibility of prices and wages, similarity in industrial structures, high covariation in economic activities, similar economic policy preferences, and political factors (see Mundell, 1961; McKinnon, 1963; Kenen, 1969; Ishiyama, 1975; Jonung and Sjöholm, 1998; and Tavlas, 1993). We discuss each of these factors in turn.

Factor mobility

If the degree of factor mobility between the potential members is high, then they would be better candidates for a currency union. This is because the mobility of factors provides a substitute for exchange rate flexibility in undertaking adjustment when a disturbance occurs (Mundell, 1961).

Openness

An optimum currency area between a group of countries means that individual countries maintain an irrevocably fixed exchange rate between each other. Therefore, an individual country within the union cannot unilaterally devalue her currency. In fact, with the introduction of a single currency within a currency area, individual countries completely surrender their right to unilaterally alter the exchange rate. For an individual country therefore, the nominal exchange rate becomes redundant as a policy instrument.

McKinnon (1963) maintained that the more open an economy is, the less effective is the nominal exchange rate as a policy instrument for adjustment. Thus, if an economy is more open, it makes it easier for it to enter into a currency union arrangement in that the nominal exchange rate is already redundant as a policy instrument. Frankel and Rose (1996) also noted that a small open economy will

find it gainful to enter into a currency union with her trading partners who are equally open. This is because it reduces transaction costs and exchange rate risk that would be suffered if a flexible exchange rate were to be maintained against each other. Also, such a currency union would provide a credible nominal anchor for monetary policy in the individual countries. They further argue that to the extent that such open economies are integrated in terms of capital flows, labour mobility, or similar economic behaviour, the need to maintain the exchange rate as a policy instrument in individual countries becomes less.

Degree of product diversification

If an economy is more diversified in the goods it produces, it can forgo the need to frequently change its nominal exchange rate in case of an external shock. This is because an economy producing a wider variety of products would also export a wider variety. In that case, if a fall in the demand occurred for some of its products, the effect of such a shock would not create a large fall in employment. However, if an economy is less diversified, a shock that can affect one sector would necessarily have a bigger total effect on the economy. Moreover, in a more diversified economy, if independent shocks affected each of the products, the law of averages would ensure that the economy remained stable. Thus, a more diversified economy is more suitable for a currency union than a less diversified one (Kenen, 1969). This is more so if sufficient occupational mobility exists to re-absorb labour and capital that is made idle by the shocks.

Flexibility of prices and wages

If prices and wages are flexible between and among the regions, the need of using the exchange rate for adjustment is diminished. This is because the transition toward adjustment between regions is not likely to be associated with unemployment in one region and inflation in another.

Similarity in industrial structures

Countries that have similar industrial structures are better candidates for a currency area because they are affected in a similar way by sector specific shocks. As such, it negates the need for undertaking a unilateral adjustment in the exchange rate in response to terms of trade shocks (Bayoumi and Ostry, 1995; Jonung and Sjöholm, 1998).

High covariation in economic activities

Countries may have different industrial structures but if they exhibit a high covariation in their economic activities, they will still be candidates for a currency union because it means that they are likely to experience similar economic shocks. This reduces the significance of exchange rate policy autonomy for making necessary adjustments (Bayoumi and Ostry, 1995; Jonung and Sjöholm, 1998).

Similar inflation rates

If countries have different inflation rates, it indicates that there are differences in the way they conduct their economic policies, and also that there are differences in the structure of the economies. Thus, if countries are to be good candidates for a currency union, the patterns of inflation should be similar as this can make the convergence in inflation rates easier once they belong to a currency area (Jonung and Sjöholm, 1998).

Political factors

In the formation of a currency area, political factors are important. That is to say, a strong political will by the leaders in government is needed, and also, there has to be strong public support (Jonung and Sjöholm, 1998). Without political will and public support, the commitment to the currency union would be lacking, which in turn can lead to the demise of the union. Political will among leaders is important because belonging to a currency union must involve agreeing to, for example, co-

ordination of policies with members. This may not be popular to the public, but in order to convince the public, the leaders have to be committed and determined, so that they can convey the benefits to be had from the currency union.

An empirical study by Cohen (1993) has supported the importance of political factors. In his study of six currency unions, Cohen found that political factors dominated economic criteria in successful currency areas. The dissolution of the East African Currency Board in 1966 is an example of lack of political will to sacrifice domestic policy needs for the sake of the currency union. However, we now turn to empirical studies on the economic optimality of currency areas.

A number of empirical studies have been done to assess the optimality of potential or actual currency areas. These include, among others, Enders and Hurn (1994), Jonung and Sjöholm (1998), Tjirongo (1995), Bergman (1999), De Grauwe and Vanhaverbeke (1993), Horvárth and Grabowski (1997), Jenkins and Thomas (1997), and Frankel and Rose (1996). We briefly review some of these studies.

Jonung and Sjöholm (1998) studied whether Finland and Sweden should form a monetary union with each other, and with the rest of Europe. In their evaluation, they calculated indices on the degree of wage flexibility and product diversification, the degree of factor mobility, the similarity of production structures, the covariation in economic activities, the similarity of economic policies, and political and other factors. They concluded that Finland and Sweden could constitute an optimum currency area, while they are not "obvious" candidates for membership in a European monetary union.

Another study that used the theory of optimum currency areas as a framework is the one by Tjirongo (1995). His study not only evaluated Namibia's suitability of

being a member of the Common Monetary Area (*CMA*),[5] but it also examined the costs and benefits of its membership and the instruments that could be used to address asymmetric shocks. The criteria that were used in the study are factor mobility, openness of the economy and the degree of diversification. Tjirongo (1995) concluded that given the relative size of the Namibian economy versus South Africa, the degree of openness to foreign trade and the high degree of capital mobility, the use of the nominal exchange rate as an instrument of economic policy would have limited effects. Regarding the benefits and costs of Namibia's membership to the *CMA*, his conclusion was that membership to the *CMA* could bring about positive net benefits due to the long-term benefits of price stability, and also, it helps to enhance the reputation of economic policy management. These could in turn promote macroeconomic stability. It was thus beneficial for Namibia to remain within the *CMA*.

Bergman (1999) also used the theory of optimum currency areas to examine whether the countries which formed the Scandinavian Currency Union (*SCU*), namely Denmark, Norway and Sweden, constituted an optimum currency area. First of all, he investigated the macroeconomic series of the three countries during the time of the union by employing statistical tests. He further estimated a structural *VAR* model to examine the symmetry of country-specific structural shocks in each of the three countries. For purposes of comparison, a model was estimated for Belgium, which belonged to the gold standard and was a member of the Latin Union. He found that country-specific structural shocks in the *SCU* members were not highly symmetric during the union period. He further found that the differences between the pattern of structural shocks in Belgium and those in the *SCU* member countries were not clear-cut. Given these findings, he concluded that the three Scandinavian countries did not form an optimum currency union.

[5]The *CMA* consists of South Africa, Namibia, Lesotho, and Swaziland (Tjirongo, 1995).

3 The Background

In this section, we present a brief synopsis of the economies of Kenya, Tanzania and Uganda. The purpose is to provide the reader with background information on the three countries constituting the *EAC*. We provide basic macroeconomic indicators, and also, some historical and political facts.

3.1 Brief Economic Background of Kenya, Tanzania and Uganda[6]

Table 1 provides selected macroeconomic indicators on the three countries, and Table A1 in the appendix gives the sectoral contribution to *GDP*. All the three countries attained their independence in the early 1960s. Although all the countries are currently pursuing market-oriented economic policies, this was not the case a couple of years after attaining independence. In particular, Tanzania, under the leadership of the late Mwalimu Julius Nyerere, pursued a socialist-oriented development strategy, where previously privately owned companies were nationalised after the Arusha Declaration in 1967. Nyerere voluntarily handed over power to Ali Hassan Mwinyi in 1985, and the slow reform towards a market economy ensued. Mwinyi completed his tenure in 1995 and a new administration under Benjamin Mkapa took over with even more commitment to economic reforms. Uganda, on the other hand, went through a brief period of flirtation with socialism under Obote, and then was under a brutal and totally chaotic dictatorship of Idi Amin. Amin was toppled in 1979 with the help of Tanzania. Uganda was then under the leadership of Professor Lule and then a couple of other leaders before Obote took over again. Thereafter, Museveni started a protracted guerrilla

[6]This sub-section draws on, among others, various publications by the Economist Intelligence Unit.

Table 1: Macroeconomic Indicators

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*
KENYA								
GDP at market prices (constant 1995 US$bn)	8.37	8.49	8.42	8.45	8.67	9.05	9.43	9.63
GDP per capita, *PPP* (current international $)	1090	1100	1100	1090	1110	1160	1190	1190
Gross domestic fixed investment (% of *GDP*)	20.74	19.29	17.13	16.94	18.87	21.37	19.79	18.24
Resource balance (% of *GDP*)	-5.22	-1.27	0.10	4.78	3.14	-5.91	-4.10	-7.74
Total debt service (% of *GNP*)	9.71	9.42	8.80	11.74	12.97	10.29	9.35	6.46
Official exchange rate (*LCU* per US$)	22.92	27.51	32.22	58.00	56.05	51.43	57.12	58.73
Inflation, consumer prices (annual %)	15.59	19.82	29.55	45.80	29.01	0.79	8.82	12.02
Agriculture, value added (% of *GDP*)	29.14	27.02	26.79	31.52	33.32	31.11	29.47	28.83
Manufacturing, value added (% of *GDP*)	11.79	12.24	11.20	10.01	10.70	9.87	10.17	10.07
Labor force in agriculture (% of total)	79.52	*na*	*na*	*na*	*na*	*na*	*na*	*na*
Population, total (million)	23.55	24.30	25.05	25.78	26.51	27.22	27.92	28.61
TANZANIA								
GDP at market prices (constant 1995 US$bn)	4.17	4.35	3.97	4.45	4.51	4.63	4.82	5.01
GDP per capita, *PPP* (current international $)	540	580	510	570	570	520	550	580
Gross domestic fixed investment (% of *GDP*)	22.27	25.90	26.54	25.81	24.63	21.69	17.86	*na*
Resource balance (% of *GDP*)	-22.3	-26.8	-28.4	-28.9	-26.9	-21.9	-14.7	*na*
Total debt service (% of *GNP*)	4.46	4.76	5.04	4.85	4.51	4.40	4.13	2.18
Official exchange rate (*LCU* per US$)	195	219	298	405	510	575	580	612
Inflation, consumer prices (annual %)	35.83	28.70	21.85	25.28	33.09	29.80	19.66	16.09
Agriculture, value added (% of *GDP*)	48.00	47.19	48.06	48.06	46.33	46.21	47.63	47.35
Manufacturing, value added (% of *GDP*)	8.92	9.10	8.53	7.80	7.44	7.27	7.28	*na*
Labor force in agriculture (% of total)	84.40	*na*	*na*	*na*	*na*	*na*	*na*	*na*
Population, total (million)	25.47	26.28	27.10	27.94	28.79	29.65	30.49	31.32
UGANDA								
GDP at market prices (constant 1995 US$bn)	4.10	4.33	4.48	4.85	5.16	5.75	6.28	6.62
GDP per capita, *PPP* (current international $)	770	810	850	910	960	1060	1140	1160
Gross domestic fixed investment (% of *GDP*)	12.70	15.17	15.91	15.21	14.56	15.43	16.63	15.51
Resource balance (% of *GDP*)	-12.1	-14.5	-15.5	-14.1	-10.4	-9.1	-11.3	-7.7
Total debt service (% of *GNP*)	3.49	4.54	4.11	4.94	3.82	2.40	2.46	2.91
Official exchange rate (*LCU* per US$)	429	734	1134	1195	979	969	1046	1083
Inflation, consumer prices (annual %)	33.12	28.07	52.44	6.08	9.73	8.55	7.15	7.03
Agriculture, value added (% of *GDP*)	56.58	52.84	51.14	51.56	50.00	49.45	45.50	43.80
Manufacturing, value added (% of *GDP*)	5.67	5.82	6.17	5.97	6.52	6.80	7.76	8.17
Labor force in agriculture (% of total)	84.53	*na*	*na*	*na*	*na*	*na*	*na*	*na*
Population, total (million)	16.33	16.89	17.46	18.03	18.60	19.17	19.74	20.32

Note: na - not available; bn – billion; mn – million; LCU – local currency unit.
Source: World Development (1999), World Development Indicators CD-ROM.

war that ended with him taking power in 1986. Under the leadership of Museveni, Uganda has been at the forefront in economic reforms. As for Kenya, a more

market-oriented economy has been maintained all along, both under the presidency of Jomo Kenyatta and later under Daniel arap Moi.

The sectoral contribution of *GDP* indicates that agriculture contributes a larger share of Uganda's *GDP*, followed by Tanzania. The average contribution of manufacturing to *GDP* between 1990 and 1996 is highest in Kenya, followed by Tanzania. In the tertiary sector, Kenya dominates the group (see Table A1 in the appendix). In terms of commodities exported and imported, all the countries export primary commodities, with coffee being one of the main export crops. Other primary export commodities include tea and cotton. The goods imported include machinery and transport equipment, consumer goods, crude oil and petroleum products. Tables A2 and A3 in the appendix show the main trading partners of the East African countries in 1994 and 1996, and the extent of intra-regional trade between 1990 and 1996, respectively.

All the countries have pursued structural adjustment reforms with the help of the *IMF* and the World Bank. In Kenya, the programme of liberalisation and reforms has included the removal of import licensing and price controls, removal of exchange controls, fiscal and monetary restraint, and reduction in the public sector. In Tanzania, the programme of reforms was announced in mid 1986, and it has involved the following measures, implemented over the years; trade liberalisation, privatisation, civil reforms, price decontrols, and exchange adjustments. In Uganda, the reforms started in 1987, and they have included public sector reforms, market and price reforms, exchange rate reforms, and trade liberalisation (Bigsten and Kayizzi-Mugerwa, 1999).

3.2 The Rise and Fall of the "Old" East African Community

The Treaty that established the Community was signed in June 1967 by the heads of state of the three partner countries. Although the *EAC* was formalised in 1967, the conditions for its establishment were developed during the colonial era. As early as 1917, a customs union was established between Kenya and Uganda. Ten years later, Tanganyika became part of the customs union. In the union, the three countries jointly administered customs, excise and income tax, and other services such as, medical and industrial research, education, transport and communication, and agriculture. Besides the services that were jointly run, a monetary union and a high degree of fiscal integration existed. Labour was also fairly mobile within the region.

A common legislative body and administrative organisation for East Africa was established in 1948. It was called the East Africa High Commission (*EAHC*). The Commission was made up of the three governors of the three territories, and its policy decisions were effected through its Secretariat in Nairobi. There was also a Central Legislative Assembly (*CLA*), which considered and enacted legislation relating to aspects of the common services.

In 1961, Tanganyika attained her independence, and later, Kenya and Uganda gained their independence too. With the attainment of independence, a number of changes were effected in the machinery of co-operation. The High Commission was transformed into the East African Common Services Organisation (*EASCO*), which consisted of chief executives of the three governments. The *CLA* was enlarged, and also, the authority operated through various committees composed of three ministers from each country. The operations of the common market, however, continued without any formal enactment, until 1967 when the Treaty was signed. The Treaty founded the East African Community, and as an integral part of

it, a common market. The Treaty also established the East African Council, which consisted of the three presidents and five councils, each assigned to the following areas; common market, communications, economics and planning, finance and research, and social affairs. The aims of the Community were stated as;

> to strengthen and regulate the industrial, commercial and other relations of the Partner States to the end that there shall be accelerated, harmonious and balanced development and sustained expansion of economic activities the benefits whereof shall equitably shared (Hazlewood, 1975:71).

Besides a common market and services, the East African countries also belonged to a monetary union, whose conditions were set up during the colonial period. In 1919, the East African Currency Board was established, and a single currency was in use until 1966. The Currency Board, among other things, was responsible for issuing and redeeming local currency for sterling. The East African countries belonged to the Sterling Exchange System, whereby the external reserves were held in sterling securities. There was a high degree of monetary integration, such that there were no restrictions on the movement of capital between the countries.

However, by 1967, separate central banks were created in each of the countries. This was done because the countries felt that a monetary union limited their discretion in relation to monetary policy (Robson, 1968). Although separate central banks had been created in the Treaty that established the *EAC*, the three states agreed to harmonise their monetary policies "to the extent required for the proper functioning of the Common Market and the fulfilment of the aims of the Community" (Hazlewood, 1975:81). As one of the requirements for harmonising their monetary policies, the three governors of the central banks were required to meet regularly. The three countries now had separate currencies, but although this was the case, the currencies were identical as they could be used in other states for

transactions, and the notes could be exchanged freely. Transfers between the three states could also be done without difficulties.

Some problems emerged in the monetary union soon after the Treaty was signed. The first problem was the nationalisation of banks in Tanzania in 1967, in the wake of the Arusha Declaration, and the ensuing exchange controls that were imposed against Kenya and Uganda to restrict capital flight. Also, the free circulation and redemption of Tanzanian notes were suspended in the other states. The exchange controls put a temporary break in the union, and it lasted from February to June. In November, following the devaluation of the Sterling, the countries agreed to maintain the par values of their currencies, and the link to the Sterling was severed.

A major disruption in the union occurred in 1970. There was a heavy outflow of capital from Uganda after a nationalisation policy was announced. Exchange controls against Kenya and Tanzania were imposed, and the export and import of the Ugandan currency was banned. The exchange controls triggered retaliatory measures by the others states. The restrictions were directed at capital, and not goods and services. When the exchange controls were in place, the countries pursued divergent policies regarding pegging for their currencies. This created suspensions in transactions for a couple of days, until it was agreed that all currencies were to be pegged to the dollar. The three currencies were pegged to the dollar until the *EAC* collapsed in 1977. The *EAC* was officially dissolved in 1983.

There are several reasons that may explain the collapse of the *EAC*. Firstly, there was a feeling that the benefits of the common market were accruing more to Kenya than to Tanzania and Uganda. The differences in the benefits arose due to the differences in the level of industrialisation of the three countries (Musonda *et al*, 1997). This disparity in the level of industrialisation was rooted in colonial times,

where Kenya was taken to be a permanent colony of Britain, and hence invited more investment, while Uganda and Tanganyika were more of temporary colonies.

The fact that Kenya's industrial sector was more developed than in the other member states meant that the relatively less developed countries were buying more goods from Kenya than the amount Kenya was buying from them. A trade imbalance in favour of Kenya thus ensued, with Tanzania and Uganda remaining deficit countries in East African trade (see Musonda *et al,* 1997; and Rothchild, 1974).

The other factor that contributed to the collapse of the *EAC* and perhaps the most important one, is the ideological differences between the three countries. Mugomba (1978) argues that the ideological distance between the partner states exacerbated the tensions that were already there in the *EAC.* While Tanzania pursued a socialist-oriented path of development and was slowly drifting its attention southwards in its bid to help with the liberation movement together with other frontline states, Kenya, on the other hand, was committed to the capitalist path of development, becoming increasingly isolated in a region that was predominantly socialist. Uganda, however, had witnessed several ideological shifts. In the late 1960s, Uganda had closer ideological affinity to Tanzania. Presidents Obote, Nyerere and Kaunda (of Zambia) teamed up in what was called the Mulungushi Club[7] to spearhead the liberation of the Southern African countries of Mozambique, Zimbabwe, Angola, Namibia, and South Africa, from colonial rule and racial supremacists. Zambia, Tanzania and Uganda were then pursuing some

[7]The Mulungushi Club was later turned into a group of frontline states that included Tanzania, Zambia, and Botswana, and later joined by Mozambique, Angola, Zimbabwe and Namibia. The frontline states' objectives were to co-ordinate military, diplomatic and economic support to the liberation movements. The group dissolved when apartheid collapsed in South Africa but as an outcrop, the Southern African Development Co-operation Conference, *SADCC* (later renamed, Southern African Development Co-ordination, *SADC)*, emerged as an organisation co-ordinating economic co-operation and integration among the former frontline states, including South Africa and a few other countries.

form of African Socialism (Humanism in Zambia, Ujamaa in Tanzania, and Common man's charter in Uganda). Western countries had refused to support the liberation movements militarily, thus the communists countries filled in the void. The Mulungushi Club countries had no problem hosting Soviet and Chinese-trained guerrilla armies for liberation movements. In this score, Kenya was isolated from Tanzania and Uganda.

In the same connection, Tanzania and Zambia invited the Communist Chinese Republic to build a railway line to connect the two countries in a bid to reduce Zambia's dependence on colonial Rhodesia and apartheid South Africa. This did not augur well with Kenya both because of the involvement of Communist China, but also because the Tanzania-Zambia railway line was independent of the *EAC*-run East African Railway.

In 1971, Idi Amin overthrew the government of Obote in Uganda and established a military dictatorship. This did not go well with Nyerere, both because of the affinity that he had developed with Obote (Obote took refuge in Tanzania), and because of the utterly chaotic and brutal nature of Idi Amin's dictatorship. Tanzania hosted military groups opposed to Idi Amin (that included a group headed by Yoweri Museveni) and refused to recognise Idi Amin's leadership. This meant that the summit meetings of the three leaders of East Africa could not be held at the time when ideological and economic disparities were crippling the *EAC*. Inevitably, the *EAC* collapsed in 1977.

3.3 The Revival of the East African Community

When the *EAC* collapsed, the heads of state of the partner countries signed a Mediation Agreement to divide the assets and liabilities of the defunct co-

operation. However, a provision in the agreement enabled the partners to revive their co-operation some time in the future. Following a number of meetings, the leaders signed an agreement to establish the Permanent Tripartite Commission for East African Co-operation, in November 1993. The operations of the *EAC*, however, did not commence until the Secretariat was launched in March 1996, at its headquarters in Arusha, Tanzania. Meanwhile, the agreement that revived the *EAC* came under parliamentary and public debate before it could be updated and signed as a Treaty. It was finally updated to a Treaty, and was signed in November 1999.

The *EAC* has several institutions to ensure that the objectives that are set out are achieved. These institutions are; the Summit, the Council, the Co-ordination Committee, the Sectoral Committees, the *EAC* Court, the *EAC* Assembly, and the Secretariat. The Summit consists of the three heads of state of the partner countries, and their role is to give direction to the development and achievement of the objectives of the co-operation. The Council is composed of ministers from the member states, and it has important executive and administrative powers. The Co-ordination Committee consists of permanent secretaries responsible for regional co-operation, and their main duty is to co-ordinate the activities of the various sectoral committees. The Co-ordination Committee recommends the Sectoral Committees' composition and functions. The *EAC* Court is a judicial body that ensures that the law is adhered to in the interpretation and application of the Treaty. The Summit appoints the judges of the Court. The *EAC* Assembly consists of twenty-seven elected members (nine from each partner state), and three ex-officio members, namely, the Chairman of the Council, the Secretary General, and the Legal Counsel of the Community. Finally, the Secretariat, which is the principal executing organ of the *EAC,* is headed by the Secretary General of the Community.

The objectives of the *EAC* are stated in Article 4 of the Treaty. Essentially, it aims at promoting and developing programmes that will strengthen and deepen co-operation among its partner states, with a goal of promoting "a people-centred economic, political, social and cultural development on the basis of balance, equity and mutual benefit of the three states" (*EAC, n.d*). In order to achieve its stated objectives, the *EAC* hopes to establish a common market and customs union. The *EAC* further envisages co-operation in other areas too, such as, fiscal and monetary policies, transport and communication, immigration, security, energy, promotion of investment in the region, trade and industry, agriculture and animal husbandry, tourism and wildlife conservation, environment and natural resources, social and cultural activities, legal and judicial, political, health, labour and employment, education and training, and development of information systems.

Since its inception, the new *EAC* has achieved a number of its objectives. Some of these include;

- The introduction of an East African passport. This is in line with its objective of easing the movement of people within the Community.
- Full convertibility of the three currencies, and agreement to liberalise capital accounts.
- Holding of pre- and post-budget consultations by Finance Ministers, synchronisation of the budget day, and development of a macroeconomic framework for the region in order to guide the three states towards economic convergence. This is in line with its objective of strengthening and consolidating co-operation.
- Signing of memoranda of understanding on defence and foreign policy, in line with it objective of maintaining peace and security within the region.
- Reduction in border delays, harmonisation of customs documentation, and execution of a tripartite agreement on avoidance of double taxation. These are all aimed at achieving a single market.

- Establishment of bodies for facilitating the setting up of an East African Stock Exchange and promoting cross border trade and investment. These are aimed at establishing a conducive environment for trade and investment.
- Establishment of an *EAC* digital transmission telecommunication, completion of study on common oil and gas pipelines, and introduction of *COMESA* standards on motor vehicles. These are in line with the objective of developing an integrated transport and communication network.

There is some optimism about the revived *EAC*. This is because, first of all, the three countries are pursuing similar programmes to restructure their economies. Unlike in the old pact when the economic policies of the three countries were divergent, in the new one, they are all pursuing market-oriented economic policies. Connected to this is the fact the private sector is now being involved in the running of businesses and in participating in regional organisations. The private sector and civil society are being involved by participating in regional activities through regional bodies that have been set up. For example, the East African Business Council has been set up to promote cross border trade and investment, and to lobby for business-friendly policies in the member states. In the old *EAC*, the public corporations proved to be inefficient and were mismanaged. The involvement of the private sector in the new *EAC* will help to improve the performance of the various bodies. The Tanzanian Minister put it that in the new *EAC*,

> "there is no joint East African ownership of assets … the private sector is the motor for development … our job is to promote cross border trade and investment" (Kikwete, 1998).

Another aspect of economic policy that is bringing the three countries closer together is the synchronisation of the budget day. All the three countries present

their budgets on July 1st. This is in line with one of their objectives of harmonising fiscal and monetary policies.

The second reason for optimism is in the political arena. There are indications that there is a lot of political will among the leaders, to the extent that a future political union is envisaged, as Kikwete (1999:3) notes,

> Ultimately, the future co-operation in East Africa aspires to accomplish the long-standing dream of creating a political federation ... There is greater harmony now at the ideological and political level and greater mutual understanding.

The commitment of the three governments to economic integration in general can be seen by their participation in a conference that was organised by the Financial Times, and the visits to the western capitals undertaken by the co-operation ministers to drum up support for financial assistance, and for general information. There is also the feeling that a united East Africa can help to resolve tribal and political conflicts in the Great Lakes region (Mkapa, 1999).[8]

The third reason is that the region is receiving some incentives from donors. For example, the European Union has given financial support to improve the road network, and also to improve the running of the Secretariat. It has also pledged some money to cushion the effects of the loss in revenue due to the proposed zero tariff (*Daily News*, 1998; *Financial Times*, 1999).

The last factor that may help in the success of the union is the use of common languages. In all the countries, Kiswahili and English are widely used. The use of similar languages enables ease of communication.

[8]For example, Burundi and Rwanda have indicated an interest in joining the Community (*BBC News*, 1999). The two tiny countries have unresolved ethnic problems, which may be better handled in a larger setting of a regional community.

The objective of forming a currency union among the East African countries may sound lofty, but apart from the political will and historical and cultural ties, the economic optimality of such a union may surely count as an important factor. In the next section, we delve on the empirical aspects of the optimality of East Africa as a currency area.

4 Empirical Analysis

The main focus of the empirical analysis is the estimation of the *G-PPP* model. This is carried out in sub-section 4.2. However, preliminary indicators of the optimality of the East African Community as a currency area are reported first in sub-section 4.1.

4.1 Optimum Currency Area Criteria

Section 2 has provided a discussion on the factors that are important in assessing whether a group of countries or a region could form a currency union. We now provide empirical evidence on some of these factors as they pertain to the *EAC*.

Degree of product diversification

This refers to the extent to which the industrial structure is diversified in terms of production of goods. A more diversified industrial structure would enable countries in the currency union to absorb some shocks affecting a particular sector. We constructed a Herfindahl Index for the three East African countries (see Jonung and Sjöholm, 1998). The Herfindahl Index is given by

$$\langle 1 \rangle \quad Product\ Diversification_i = 100 * \sum_{j=1}^{n} s_j^2$$

where, s_j is the fraction occupied by sector j in manufacturing value added in country i. A higher value indicates a smaller degree of product diversification. The value of the index can vary from 0 to 100. The data we used is from *UNIDO*'s International Yearbook of Industrial Statistics. The data is on manufacturing industries classified at three-digit level of *ISIC*. Table 2 shows the computed Herfindahl indices for the degree of product diversification in the three East African countries for the years for which data was available.

Table 2: Degree of Product Diversification, 1989-1997

	1989	1990	1991	1994	1995	1996	1997
Kenya	*na*	11.4	11.9	13.9	16.6	*na*	*na*
Tanzania	*na*	11.1	20.1	*na*	*na*	*na*	*na*
Uganda	22.2	*na*	*na*	13.0	12.4	13.5	13.5

Note: na - not available.
Source: Calculated from UNIDO, International Yearbook of Industrial Statistics, various issues.

Table 2 shows that in 1989 and 1991, the industrial structure in Uganda and Tanzania respectively, was not very diversified. On average, the two countries had a value of about 21, compared to only 11 for Kenya in 1990 and 1991. Thus Kenya was more diversified than the other two partner countries. Tanzania moved from having a value similar to Kenya in 1990 to being less diversified in 1991. A closer look at the composition of the industrial structure showed that it could be explained by the increase in value added of a few industries, namely, paper and products, rubber products, and transport equipment, mainly motor vehicles, this being due to the liberalisation of passenger transport. The drop in value added in textiles also explains the reduction in diversification.

In 1994 and 1995, Kenya's degree of diversification fell from what it was in 1991. The value stood at 16.6 in 1995. Uganda, however, improved its degree of diversification from its 1989 value. In 1997, its value was 13.5. Given that the data for Kenya and Tanzania is not available for later years, we cannot make a conclusive remark regarding the degree of diversification and its implications for the suitability of the three countries to form a currency union.

Degree of Openness

In order to evaluate the degree of openness, we calculated two measures; namely, the share of intra-regional trade in each of the countries' *GDP,* and also, the share of total trade in *GDP.* These measures are given in Tables 3 and 4 respectively. Table 3 shows that the extent of intra-regional trade among the East African countries is low (see also Table A3 in the appendix). This suggests that the degree of openness with each other is small, and thus the basis for a currency union is challenged.

The figures in Table 3 are calculated from official trade statistics, and as such, they do not include statistics on unofficial cross-border trade among the East African countries. Data on the extent of unofficial cross-border trade is not consistently available. However, some surveys that were done in the 1994/95 and 1995/96 periods for Kenya and Uganda, and for Tanzania respectively, indicated that in the 1994/95 period, unofficial cross-border trade between Kenya and Uganda was about 49 percent of official trade. Between Tanzania and Kenya, cross-border trade as a percentage of official trade in the 1995/96 period was about 12 percent, while between Tanzania and Uganda, it was 45 percent (see Ackello-Ogutu, 1997; and Ackello-Ogutu and Echessah, 1998). When we included the figures on unofficial cross-border trade to the official figures to calculate the degree of openness, unofficial trade had only a marginal effect on the degree of openness, to the order of 0.3 percent and 0.1 percent to the calculated indices for Tanzania's total trade

Table 3: Intra-regional Trade as a Share of GDP (%), 1991-1996

		1991	1992	1993	1994	1995	1996
KENYA							
Exports to:	Tanzania	0.4	0.6	1.6	1.6	1.5	1.8
	Uganda	0.6	0.9	1.9	2	1.9	2.2
Imports from:	Tanzania	0.1	0.1	0.1	0.1	0.1	0.2
	Uganda	0	0.1	0.1	0.1	0.1	0.1
Total Trade with:							
	Tanzania	0.5	0.7	1.7	1.7	1.7	1.9
	Uganda	0.6	1	2	2.1	2	2.3
TANZANIA							
Exports to:	Kenya	0.1	0.2	0.2	0.2	0.2	0.2
	Uganda	0.1	0.1	0.1	0.2	0.2	0.2
Imports from:	Kenya	0.8	1	2.1	3.1	3	2.9
	Uganda	0	0	0	0	0	0
Total Trade with:							
	Kenya	0.9	1.1	2.2	3.3	3.2	3.2
	Uganda	0.1	0.1	0.1	0.2	0.2	0.2
UGANDA							
Exports to:	Kenya	0	0.1	0.2	0.2	0.1	0.2
	Tanzania	0	0	0	0	0	0
Imports from:	Kenya	1.7	2.6	4.2	3.8	3.1	3.6
	Tanzania	0.2	0.2	0.2	0.2	0.2	0.2
Total Trade with:							
	Kenya	1.7	2.8	4.4	3.9	3.2	3.8
	Tanzania	0.2	0.2	0.2	0.2	0.2	0.2

Source: Calculated from Direction of Trade Statistics, IMF.

with Kenya and Uganda, respectively. For the degree of openness between Kenya and Uganda, when we included unofficial cross-border trade, the openness index increased by 2 percent.

Thus, the degree of openness between the three countries is still low even with the inclusion of unofficial cross-border trade for the years for which data is available. However, cross-border trade is still important to the East African countries. Among the constraints facing informal traders are poor infrastructure, lengthy procedures in receiving licenses, harassment by government officers, corruption at

borders, limited credit facilities and high tax rates (Ackello-Ogutu, 1997). It is hoped that with the support that the Community is receiving from donors for improving the infrastructure and the procedures that are being put in place to establish a single market, the volume of trade will improve.

Table 4 shows the extent of openness with respect to the rest of the world. It shows that Kenya is a more open economy of the three, followed by Tanzania. Uganda is the least open economy. In general, the indices of openness indicated in Tables 3 and 4 do not favour the formation of a currency union in East Africa.

Table 4: Trade as a Share of GDP (%)

	KENYA			TANZANIA		UGANDA		
	1975-80	1980-90	1990-97	1988-90	1990-96	1975-80	1980-90	1990-97
Exports/GDP	29.98	24.86	31.61	12.54	15.10	13.62	11.17	10.78
Imports/GDP	34.54	29.29	33.64	31.14	39.37	15.13	17.92	24.31
Total Trade/GDP	64.51	54.14	65.25	43.68	54.47	28.75	29.09	35.08

Source: World Bank, World Development Indicators CD-ROM, 1999.

Cyclical covariation in economic activity

In order to assess whether the three countries' economic activities move together, we examined the behaviour of four macroeconomic variables. The variables are; growth of output and money, and the nominal and real interest rates. Table 5 gives some descriptive statistics of the variables, that is, the correlation of the variables, the mean, and the standard deviation of each of the variables.

Starting with the growth of output and money, the correlation among the three countries is very low and insignificant. The most significant correlation coefficient

Table 5: Correlation Matrix

	Output Growth, 1982-1998					*Money Growth, 1977-1998*				
	Kenya	Tanzania	Uganda	Mean	SD	Kenya	Tanzania	Uganda	Mean	SD
Kenya	1.00			0.32	6.92	1.00			18.89	11.59
Tanzania	0.11	1.00		3.49	18.31	0.12	1.00		26.69	11.40
Uganda	-0.18	-0.11	1.00	7.21	15.26	-0.16	0.13	1.00	61.48	46.66
	Nominal Interest Rate, 1981-1990					*Real Interest Rate, 1981-1990*				
	Kenya	Tanzania	Uganda	Mean	SD	Kenya	Tanzania	Uganda	Mean	SD
Kenya	1.00			14.20	1.80	1.00			77.4	17.83
Tanzania	0.54**	1.00		18.04	8.11	0.86***	1.00		279.6	142.12
Uganda	0.61**	0.89***	1.00	24.29	10.75	0.86***	0.95***	1.00	5710	5952.0

*Note: Significant at; *** 1%, ** 5%, *10%; SD stands for Standard Deviation.*
Source: Calculated from IFS Data, IMF-CD ROM, 1999.

is in the nominal and real interest rates. The correlation coefficients for interest rates suggest a very high correlation among the countries, with the correlation coefficients for all the countries being significant at 1 percent. Overall, the low correlations of output and money growth suggests that the three countries' economic activities do not move together, suggesting that they are not suitable to form a currency union.

Similarity of the industry structure

The other factor used for examining the suitability of countries to form a currency union is the similarity in industry structure. We used the contribution of industries to value added to analyse the extent of similarities in the industrial structures of the three countries. The percentage contributions are given in Table 6. The percentage contributions show that food products and beverages dominate Kenya's industrial value added, which together contribute about two-fifth of valued added. This is followed by other chemicals and fabricated metal products.

In Tanzania, paper and products, food products, beverages, other non-metallic products, and transport sector dominate industrial value added. The contribution of the first three sectors to value added is more than 50 percent. In Uganda, food products, beverages, tobacco and textiles dominate the industrial structure. Although Uganda's industrial structure is similar to that of Kenya in that food products and beverages are the top two industries, however, in Uganda, their contribution to value added is much larger, accounting for approximately 55 percent.

Table 6: Percentage Contribution of Industrial Sectors to Value Added[a]

	KENYA	TANZANIA	UGANDA
Food products	28.77	20.43	42.83
Beverages	10.21	12.19	11.86
Tobacco	1.38	8.47	8.93
Textiles	5.83	-22.66	8.00
Wearing apparel, except footwear	1.70	0.43	1.34
Leather and fur products	0.49	0.46	0.17
Footwear, except rubber or plastic	0.89	0.08	1.34
Wood products, except furniture	1.78	1.06	0.09
Furniture and fixtures, excluding metal	1.22	1.44	4.03
Paper and products	4.38	22.65	0.94
Printing and publishing	3.00	3.19	1.39
Industrial chemicals	1.86	3.38	0.25
Other chemicals	7.13	4.25	5.78
Petroleum refineries	0.81	3.69	0.00
Misc. petroleum and coal products	0.00	0.00	0.00
Rubber products	3.57	4.57	0.22
Plastic products	2.84	-0.18	0.00
Pottery, china, earthenware	0.08	0.01	0.02
Glass and products	0.49	0.77	0.00
Other non-metallic mineral products	4.54	10.42	2.49
Iron and steel	0.24	0.58	3.02
Non-ferrous metals	0.00	4.38	0.03
Fabricated metal products	6.89	3.53	4.66
Non-electrical machinery	0.57	1.20	0.73
Electrical machinery	5.19	4.82	1.81
Transport equipment	4.21	9.97	0.07
Professional and scientific equipment	1.94	0.09	0.00
Other manufacturing industries	0.00	0.79	0.00
	100	100	100

Note: [a]*The figures for Kenya and Tanzania are for 1991, while those for Uganda are for 1989.*
Source: *Calculated from UNIDO, International Yearbook of Industrial Statistics, various issues.*

The percentage contributions of the various sectors to industrial value added show that the three countries' industrial structures are similar in that food products and beverages account for a large share of the countries' value added. While food products account for the largest share of value added in Kenya and Uganda, it is the second largest sector in Tanzania. This reflects the dominance of the agricultural sectors in all the three countries (see Table A1 in the appendix).

Given that the three countries' economies are dominated by the agriculture sector, we further examined the structure of the agriculture sector. Owing to lack of data on value added in the agriculture sector, we made use of macroeconomic data, given in Table 7.

Table 7 gives data on the structure of agricultural exports. Between 1992 and 1996, the percentage contribution of agricultural exports to total exports in Kenya, Tanzania and Uganda averaged 47, 59, and 70 respectively. The crops that contributed the highest percentage to total exports are tea and coffee for Kenya, coffee and cotton for Tanzania and coffee and tea for Uganda.

Table 7 shows that by and large, the three countries' agricultural sectors are similar. Besides contributing the largest share to *GDP*, the agriculture sector is the largest export income earner, with the contribution of tea and coffee, and other agricultural products dominating their export earnings. The similarity of the agriculture sector in the three countries implies that if a shock in the price of one of the crops occurred in the world market, the three countries would be affected in the same way.

Table 7: Contribution of Agriculture Sector to GDP and Exports, 1992-1996

	1992	*1993*	*1994*	*1995*	*1996*	*Average, 1992-96*	
						Value	*Percent*
Kenya							
Agriculture value added/*GDP* (%)	27	32	33	31	29		30.4
Total exports (million US$), *of which:*	1013	1102.9	1484	1875	1969	1488.7	
Coffee	128	176.5	233.3	282	286.7	221.3	14.9
Tea	294.7	298.6	301.1	330.6	396.3	324.26	21.8
Horticulture	70.3	67.8	83.7	119.2	136.7	95.54	6.4
Processed fruits & vegetables.	46	44.7	44	94.4	87.1	63.24	4.2
Subtotal, agricultural exports	539	587.6	662.1	826.2	906.8	704.34	47.3
Tanzania							
Agriculture value added/*GDP* (%)	48	48	46	46	48		47.2
Total exports (millions US$), *of which:*	397	367.2	519.3	661.2	768	542.54	
Coffee	59.5	87.6	115.4	142.6	136.1	108.24	20.0
Cotton	97.6	65.3	105.1	120.2	125.3	102.7	18.9
Sisal	1.3	2.1	5.1	6.3	5.3	4.02	0.7
Tea	22.4	23.1	39.5	23.4	22.5	26.18	4.8
Tobacco	27.2	15.9	20.6	27.1	49.2	28	5.2
Cashew nuts	23.5	22.4	51.2	64	97.8	51.78	9.5
Subtotal, agricultural exports	231.5	216.4	336.9	383.6	436.2	320.92	59.2
Uganda							
Agriculture value added/*GDP* (%)	51	52	50	49	45		49.4
Total exports (million US$), *of which:*	157	253.8	595.3	590.3	670.8	453.44	
Coffee	99.1	172.3	456.6	404.4	365.6	299.6	66.1
Cotton	5.3	4.3	3.3	13.2	15	8.22	1.8
Tea	6.5	8.9	11.8	12.5	13.5	10.64	2.3
Subtotal, agricultural exports	110.9	185.5	471.7	430.1	394.1	318.46	70.2

Source: IMF (1998), Kenya: Selected Issues and Statistical Appendix, IMF (1998), Uganda: Selected Issues and Statistical Appendix; IMF (1998), Tanzania: Statistical Appendix, World Bank (1999), World Development Indicators CD-ROM.

The fact that the three East African countries may face symmetric shocks is further supported by the correlation of their real commodity export price indices.[9] Figure 1 plots quarterly data of the commodity prices for the period between 1957(q1) and

[9]The indices for each country were calculated as a geometric weighted average of the commodities it exported, excluding manufactures. That is, $R_j = \prod_i P_i^{w_i}$ where, R_j is the index for country j, P_i is the dollar international commodity price for commodity i, W_i is the weighting item, which is the value of commodity i in the total value of all commodities, n.

1997(q4). It shows that the three countries' price indices have moved very closely together.

Figure 1: Evolution of Real Commodity Export Prices, 1957(q1)-1997(q4)

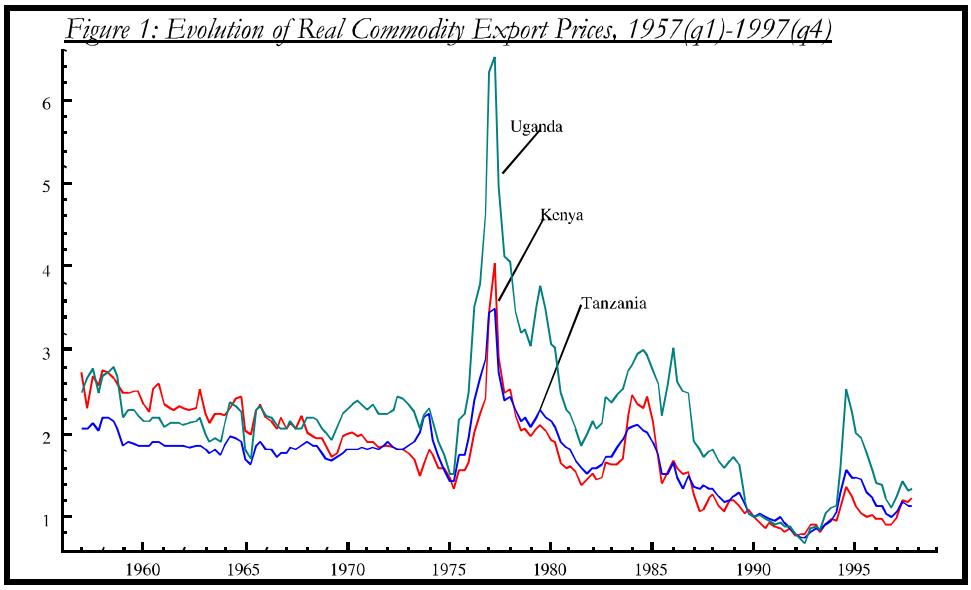


Table 8 gives the correlation matrix and the *t*-statistics for the correlations. The correlation coefficients are all significant at one percent. However, the movement of prices is more closely correlated between Tanzania and Uganda, followed by the correlation between Tanzania and Kenya. The close movement of the commodity prices implies that the three countries are affected by shocks in a similar way, and thus would be form a currency union.

Table 8: Correlation Matrix of Commodity Export Prices, 1957-97

	Kenya	Tanzania	Uganda
Kenya	1.0000		
Tanzania	0.8817 (23.7842***)	1.0000	
Uganda	0.7585 (17.2204***)	0.9217 (28.9301***)	1.0000

*Note: The figures in parentheses are t-statistics; ***denotes significant at 1%.*

Similarity in inflation

Table 9 shows that between 1981 and 1991, the average rates of inflation in the three countries were different. Uganda had the highest average rate of inflation, followed by Tanzania. Kenya had the lowest average rate of inflation. However, between 1991 and 1997, Uganda's average rate of inflation was the lowest, followed by Kenya and then Tanzania. The average rates of inflation between 1991 and 1997 in the three countries appear to be similar compared to the period between 1981 and 1991.

Table 9: Inflation – Average Percentage, 1981-97

Country	1981-1997	1981-1991	1991-1997
Kenya	15.58	12.63	20.83
Tanzania	28.28	30.46	24.92
Uganda	67.84	96.56	17.01

Source: Calculated from World Development Indicators CD-ROM, World Bank (1999).

The similarity in the average rates of inflation in the three countries reflects some similarities in the way they have been conducting their economic policies. The aspects of economic policies that are similar are that all the three countries are undertaking *IMF*/World Bank-supported adjustment reforms. The reforms entail among other things, liberalising the goods and foreign exchange markets, fiscal discipline, trade liberalisation, privatisation of previously state-owned companies, and other wide-ranging reforms. These economic policies can help to make the inflation rates converge, and hence making it easier for them to form a currency union.

4.2 Shock Absorption: Generalised Purchasing Power Parity Approach

The Generalised Purchasing Power Parity (*G-PPP*) approach for assessing the suitability of forming a currency union was developed by Enders and Hurn (1994). The approach works as follows. Empirically, it has been established that real exchange rates are non-stationary. It is postulated that real exchange rates are influenced by some macroeconomic variables. These are known as fundamental variables and may include income, terms of trade, government consumption and so on.[10] It has been found that most macroeconomic variables are non-stationary. Thus, it is not surprising that *PPP*-defined real exchange rates exhibit non-stationarity.

If two countries qualify for creation of a currency union, then they must experience symmetrical shocks to their macroeconomic variables. The fundamentals in the two countries must thus, on average, move together. Therefore, *G-PPP* postulates that the real exchange rates between the two countries comprising the domain of a currency area should be cointegrated (Enders, 1995).

G-PPP is also relevant in a multi-country setting. In such a setting, a currency area is such that the fundamentals that drive the real exchange rates will exhibit common stochastic trends. Thus the real exchange rates in the currency area will share common trends. Within the currency area therefore, there should be at least one linear combination of the various bilateral real exchange rates that is stationary. In other words, the real exchange rates will be cointegrated.

[10]See Paper II for an attempt to find the main determinants of the real exchange rate in Zambia.

Enders and Hurn (1994) summarise the basic tenets of *G-PPP* as follows;

> 1. The real fundamental macroeconomic variables determining real exchange rates (i.e., the forcing variables) tend to be non-stationary, so that, in general, the real rates themselves will be non-stationary.
> 2. Within a currency area, the real fundamentals themselves will share common trends. In an appropriately defined currency area, the forcing variables will be sufficiently interrelated for the real exchange rates to share a reduced number of common trends. Given that a vector of bilateral real rates share common trends, there exists (at least one) linear combination of the real rates which is stationary; thus the real rates will be cointegrated (p.180).

The *G-PPP* test thus involves establishing whether there is cointegration in the following equation;

$$\langle 2 \rangle \quad r_{12t} = b_0 + b_{13} r_{13t} + b_{14} r_{14t} + \ldots + b_{1m} r_{1mt} + e_t$$

where,

r_{1it} are the bilateral real exchange rates between country *1* (the base country), and country *i* in period *t,*

b_0 is an intercept term,

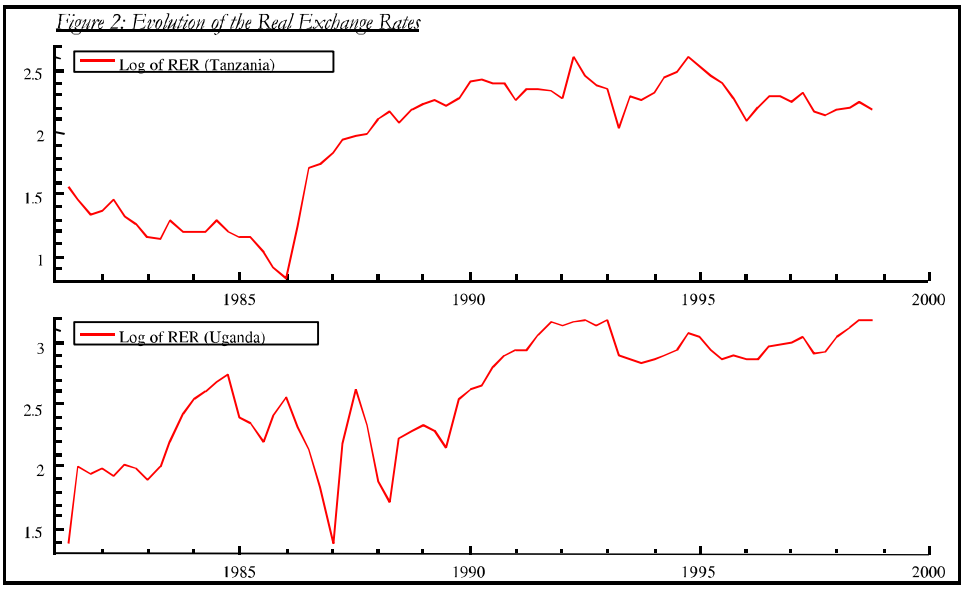
b_{1i} are the parameters of the cointegrating vector, and

e_t is a stationary stochastic disturbance term.

Enders and Hurn (1994) applied their theory of *G-PPP* to countries in the Pacific Rim, and India. We now employ this approach to determine the optimality of the *EAC*. We used quarterly data on price indices and nominal exchange rates for Kenya, Uganda and Tanzania, covering the period from 1981(q2) to 1998(q4). The data was obtained from the *IFS CD-ROM*, and was used to construct the bilateral real exchange rates as follows;

$$\langle 3 \rangle \quad r_{1_{it}} = S_{1_{it}} \frac{P_{it}^{*}}{P_{it}}$$

where, r_{1it} is the bilateral real exchange rate index between country 1 (the base country) and country *i*. We used Kenya as the base country because, of the three countries, it trades more with the other East African countries than either Tanzania or Uganda (see Table A3 in the appendix). S_{1it} is the nominal exchange rate between the base country and country *i* at time *t*, and P_{it}^{*} is the base country's price index. Here, we used the consumer price index for Kenya, and P_{it} is the domestic price level for country *i*, proxied by the consumer price index for each country *i*. The resulting real exchange rates (for Uganda and Tanzania) are graphed in Figure 2. By visual inspection of the graph, we can see that neither variable is stationary.



Formal tests for unit roots was conducted using the Augmented Dickey Fuller (*ADF*) test and the results are reported in Table 10. The real exchange rate for

Uganda for the sample 1990 to 1998 is barely stationary. We will however still include this variable in the cointegration test (see Harris, 1995, for justification of occasional inclusion of a stationary variable in a vector of non-stationary variables for the purpose of conducting cointegration).

Table 10: Unit Root Tests for the Full Sample and Sub-Samples

Sample	*Variable*	*Trend*	*Lags*	*ADF*	*LM Test for Serial Correlation*	*Order of Integration*
Full sample: 1981-1998						
	Ltrer	No	0	-1.126	F(5, 63) = 0.3454 [0.8833]	I(1)
	ΔLtrer	No	0	-7.492**	F(5, 62) = 0.4484 [0.8129]	I(0)
	Lurer	No	3	-1.399	F(5, 57) = 1.3908 [0.2415]	I(1)
	ΔLurer	No	2	-7.299**	F(5, 58) = 1.3277 [0.2653]	I(0)
1981-1990						
	Ltrer	Yes	1	-2.321	F(3,30) = 0.778 [0.5156]	I(1)
	ΔLtrer	No	0	-4.277**	F(3,32) = 1.004 [0.4037]	I(0)
	Lurer	No	1	-2.599	F(3,31) = 1.470 [0.2419]	I(1)
	ΔLurer	No	1	-5.753**	F(3,30) = 1.312 [0.2889]	I(0)
1990-1998						
	Ltrer	No	0	-2.814	F(3,30) = 0.474 [0.7030]	I(1)
	ΔLtrer	No	3	-3.912**	F(3,24) = 1.304 [0.2961]	I(0)
	Lurer	No	1	-3.111*	F(3,28) = 0.142 [0.9337]	I(0)

Note: Ltrer – log of the real exchange for Tanzania; Lurer – log of the real exchange rate for Uganda; D - difference operator.

Next, we conducted cointegration analysis. This was conducted over the entire sample of the data (1981 to 1998). We also conducted cointegration over the periods 1981 to 1990, and 1990 to 1998 separately. The former period represents the time that the three East African countries had divergent policy regimes. Tanzania was on a very slow and reluctant reform track, from a highly regulated economy with a predominance of government-run businesses to a more market-oriented and privately run economy. In 1985, Nyerere, the socialist president, handed over power to Mwinyi, a pragmatic and reform-minded president, whose

reform pace was however, very slow and marred with mounting corruption.[11] In 1995, Benjamin Mkapa won the presidential election and continued with reforms initiated by Mwinyi with more vigour. Uganda was ushering in a post-Idi Amin era in 1980, and went through a period of prolonged civil war that brought a pragmatic and reform-minded government of Museveni to power in 1986. Uganda, under Museveni, embarked on an earnest economic reform programme. Kenya was all along a more market-oriented economy of all the East African countries, but it became increasingly corrupt and despotic under the ageing presidency of Daniel arap Moi. In early 1990, Moi succumbed to pressure and allowed a multiparty system. Economic shocks and mismanagement also forced the Kenyan government to embark on a structural adjustment program. By 1990, all three countries were becoming more and more similar in their macroeconomic regimes. The period from 1990 to 1998 can thus be analysed separately and contrasted to the 1981 to 1990 period. This will shed light on whether, as expected, the three countries are moving towards more convergent macroeconomic policies.

In the *VAR* estimation of the full sample, 8 lags were used, while 3 lags and 4 lags were used for the 1981-1990 and 1990-1998 periods, respectively. Both the information criteria and the need to have satisfactory diagnostic test results guided the choice of the number of lags.

The cointegration results for the full sample are reported in Table 11. It seems that one cointegration vector exists between the real exchange rates, suggesting that in the long-run, the real exchange rates move together. This result suggests that the

[11]Towards the end of his tenure in office, Mwinyi's government had become too weak and corrupt. As a result of this, the Nordic countries, except Denmark, suspended aid to Tanzania. The pace of reforms and the credibility of the government to donors was restored by the presidency of Mkapa, who took office in 1995 (Bigsten *et al*, 1999).

real variables that affect the real exchange rates in East Africa are inter-related. Using this criterion therefore, one can conclude that the region constitutes an optimum currency area.

Table 11: Cointegration Results: Full Sample

Ho:rank=p	λ_i	λ_{max}	*Adj. for df.*	*95% CV*	λ_{trace}	*Adj. for df.*	*95% CV*
p == 0	-	20.86**	16.15*	15.7	21.47*	16.62	20.0
p <= 1	0.286	0.6136	0.475	9.2	0.6136	0.475	9.2
p <= 2	0.010						

Note: The column denoted by λ_i reports the eigenvalues.

Table 12 reports the coefficients of the cointegrating vector, b', together with the adjustment coefficients, a. Of particular interest are the coefficients of the speed of adjustment, which suggest that the real exchange rate for Uganda has a faster speed of adjusting to equilibrium than that of Tanzania. This is as should be expected. As noted above, Uganda started its economic liberalisation policies in 1986, while Tanzania started the same effort about the same time but with a slow pace and notable reluctance. The devaluation of the Tanzanian Shilling, for example, was for a long time a politically controversial issue, and was only undertaken haltingly and in piecemeal.

Table 12: Cointegration; Parameter Estimates: Full Sample

Full sample			
b'			
Ltrer		Lurer	Constant
1.0000		-1.9878	3.5852
a			
Ltrer	0.04203		
Lurer	0.18058		

No cointegration was found between the real exchange rates in the period 1981-1990 (see Table 13). This is not surprising. Between 1980 and 1986, Uganda was not only tasting a new lease of life after the chaotic regime of Idi Amin, but had to endure a period of political uncertainty[12] prior to Museveni's take over. Kenya, on the other hand, maintained its stability and continuity throughout the 1980's. Tanzania entered the decade with an economy bedevilled by serious problems, partly as a result of her efforts to repel and later topple Idi Amin, but also due to a highly regulated economy with substantially entrenched government ownership. Under Julius Nyerere, Tanzania refused economic reforms suggested by the Bretton Woods institutions. In 1986, a deal with these institutions was finally reached but the pace of reforms was slow. So, for a larger part of the 1980's, the three countries had different macroeconomic policies. The reforms that started after the mid 1980s in both Uganda and Tanzania, while leading to a converging policy, had different paces.

Table 13: Cointegration Results: 1981-1990

Ho:rank=p	λ_i	λ_{max}	*Adj. for df.*	*95% CV*	λ_{trace}	*Adj. for df.*	*95% CV*
P == 0	-	9.701	8.038	15.7	10.84	8.983	20.0
P <= 1	0.242	1.141	0.9452	9.2	1.141	0.9452	9.2
P <= 2	0.032						

In the period between 1990 to 1998, cointegration was established between the real exchange rates (see Table 14). It is notable that on entering the 1990s, all the three

[12]Notable is the quick succession of power from Prof. Lule to Binaisa, from Binaisa to Muwanga, from Muwanga to Obote, from Obote to Tito Okello and finally, after a protracted guerrilla war, Museveni took over in January 1986. All this happened in a span of six years, from 1980 to 1986 (Museveni, 1997).

governments in East Africa had been implementing structural adjustment programmes for some time, and one may conclude that a convergence in macroeconomic policies was taking place.

Table 14: Cointegration Results: 1990-1998

Ho:rank=p	λ_i	λ_{max}	*Adj. for df.*	*95% CV*	λ_{trace}	*Adj. for df.*	*95% CV*
p == 0	-	18.02*	14.02	15.7	20.43*	15.89	20.0
p <= 1	0.394	2.409	1.874	9.2	2.409	1.874	9.2
p <= 2	0.065						

It is also notable that while cointegration was also established for the full sample of 1981 to 1998, the coefficients of the speeds of adjustment for the full sample are lower than for the 1990-1998 sample (see Table 12 and 15). It seems therefore that more market-oriented macroeconomic policies were dominating East Africa in the 1990s, and hence the faster speeds of adjustment to equilibrium in the real exchange rates.

Table 15: Cointegration; Parameter Estimates: 1990-1998

Full sample			
b'			
Ltrer		Lurer	Constant
1.0000		0.48344	-3.7833
a			
Ltrer	-0.51164		
Lurer	-0.36214		

In this sub-section, it has been shown that there was cointegration between the real exchange rates in East Africa for the period 1981-1998 and 1990-1998. Of the two periods, the speed of adjustment to equilibrium is higher in the 1990-1998 period. No cointegration could be established between the real exchange rates for the

period 1981-1990. The conclusion is that as per the *G-PPP* theory, the East African countries constitute an optimum currency area; they seem to suffer the same type of shocks. This is probably so because the three countries are predominantly agricultural, and heavily rely on the export of cash crops and importation of oil and manufactured goods. The convergence in macroeconomic policies enhanced by the implementation of similar macroeconomic adjustment programmes seems to account for the optimality of the currency area in the region, and this is more so in the 1990s than in the period 1981 to 1990.

It is of course true that the three economies are still changing. New sectors are assuming prominence; for example, mineral exploitation and tourism in Tanzania are two sectors that are poised to overtake other major cash crops as the main foreign exchange earners. The future may still have some surprises in store. The results reported here are thus tentative.

5 Conclusion

The revival of the *EAC* seems promising. The ideological differences that contributed to the failure of the "old *EAC*" seem to have vanished. All three countries are actively pursuing market-oriented economic policies under the tutelage of the Bretton Woods institutions and the donor community. The ambition of the *EAC* includes formation of a monetary union. This paper examined whether the three countries constitute an optimum currency area. Standard indices were used, together with the *G-PPP* approach, for the purpose. The results in this paper are not necessarily conclusive. However, one major feature of these countries is the heavy reliance on agriculture. The export of agricultural crops constitutes the main source of export earnings. It is likely therefore that these countries tend to experience similar external shocks. This seems to be confirmed

by the *G-PPP* approach, which shows that the real exchange rates of these countries are cointegrated.

Whereas in the past, these countries might have enjoyed different growth rates and suffered different levels of inflation, the tendency seems to be one of convergence. This is mainly because of the *IMF*/World Bank sponsored structural adjustment programmes. The future is therefore more promising for the monetary union.

In the final analysis, the formation of a monetary union relies on the political will and cultural ties of the countries concerned. There seems to be political enthusiasm for more economic union in East Africa. Indeed, more countries are showing interest in joining the *EAC*. Should political stability endure in the three countries, the prospects for more integration are good. Culturally, the people of East Africa share two languages of Kiswahili and English. These factors may prove decisive in the formation of a monetary union despite the verdict from an optimum currency area study like this one.

Appendix

Table A1: Sectoral Contribution to GDP (%), 1988-1997

	KENYA					TANZANIA					UGANDA				
	1988	1990	1992	1994	1997	1988	1990	1992	1994	1996	1988	1990	1992	1994	1997
Agriculture	31.46	29.14	26.79	33.32	28.83	53.07	48.00	48.06	46.33	47.63	56.71	56.58	51.14	50.00	43.80
Industry	19.17	19.14	19.07	17.25	15.53	19.98	21.54	21.03	21.25	21.15	10.19	11.06	13.21	13.82	17.33
Manufacturing	11.62	11.79	11.20	10.69	10.06	8.14	8.92	8.53	7.44	7.28	5.78	5.67	6.17	6.52	8.17
Services	49.37	51.72	54.14	49.43	55.65	26.95	30.45	30.91	32.42	31.22	33.10	32.36	35.66	36.18	38.88

Source: World Bank, World Development Indicators CD-ROM, 1999.

Table A2: Trading Partners, 1994 and 1996

	KENYA		TANZANIA		UGANDA	
	1994	1996	1994	1996	1994	1996
EXPORTS	United Kingdom, Germany, Uganda, Tanzania, United States, Netherlands, Pakistan, France, Somalia, Italy	United Kingdom, Uganda, Germany, Tanzania, Netherlands, United States, Pakistan, Egypt, Somalia, France	India, Germany, Japan, United Kingdom, Rwanda, Netherlands, Portugal, United Arab Emirates, Belgium-Luxembourg, United States	India, Germany, Japan, Malaysia, Rwanda, United Kingdom, Netherlands, United Arab Emirates, Taiwan, Portugal	Spain, France, Germany, United States, Italy, United Kingdom, Poland, Chile, Portugal, Belgium-Luxembourg	Spain, France, Germany, Belgium-Luxembourg, Italy, Hungary, United Kingdom, Canada, Portugal, Switzerland
IMPORTS	United Kingdom, United Arab Emirates, South Africa, Japan, United States, Germany, India, Italy, France, Belgium-Luxembourg	United Kingdom, South Africa, United Arab Emirates, India, Japan, Germany, France, Italy, Netherlands, United States	United States, Kenya, Saudi Arabia, Japan, Germany, India, China, Italy, South Africa, United States	South Africa, Kenya, United Kingdom, Saudi Arabia, India, Japan, China, United Arab Emirates, Thailand, United States	Kenya, United Kingdom, Japan, India, United States, Germany, Italy, Hong Kong, France, Netherlands	Kenya, United Kingdom, India, Japan, Germany, France, South Africa, Hong Kong, Italy, United States

Source: IMF, Direction of Trade, various issues.

Table A3: Intra-Regional Trade (percentage of total trade in US$ mn), 1990-1996

	1990	1991	1992	1993	1994	1995	1996
KENYA							
Exports to: Tanzania	2.13	3.07	3.29	6.96	6.90	7.29	7.79
Uganda	18.43	4.16	5.38	8.61	8.52	8.99	9.63
Imports from: Tanzania	.47	.45	.53	.47	.46	.41	.48
Uganda	-	.06	.29	.35	.33	.27	.31
TANZANIA							
Exports to: Kenya	2.89	2.05	1.92	1.78	1.73	1.72	1.71
Uganda	.96	1.17	1.20	1.33	1.35	1.25	1.32
Imports from: Kenya	1.75	2.48	3.25	6.88	8.11	9.97	12.63
Uganda	.09	.07	.07	.07	.07	.13	.14
UGANDA							
Exports to: Kenya	-	.5	2.82	2.79	1.42	1.52	1.61
Tanzania	.68	.5	.70	.56	.24	.43	.36
Imports from: Kenya	35.91	12.69	19.79	27.79	17.36	17.58	29.36
Tanzania	.68	1.24	1.25	1.31	.92	.86	1.49

Note: Calculated from the IMF's Direction of Trade.

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