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The Future of Monetary Unification in the East African Community: What are the Costs and Benefits of Forming the EAMU?

Author: Sahaj Mishra[1]

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Abstract

In the backdrop of a global economic slowdown, major conflicts and COVID-19, the shaky growth of many developing countries makes the goals of development and stability appear all the more distant. Especially in sub-Saharan Africa, attracting investment and safeguarding against the volatility of global markets are necessary steps towards these goals, and organisations aiming to facilitate regional integration may be the key to taking these steps.

One such organisation is the East African Community (EAC), which has thus far managed to establish a Customs Union and a Common Market, and has its sights set on forming a Monetary Union next. However, the failure of several member states to meet the convergence criteria has forced a pushback in the monetary union deadline from 2024 to 2031.

This report therefore aims to assess the costs and benefits of a monetary union, aiming to use structural vector autoregressive models to determine business cycle synchronisation and the structural similarity of the economies and therefore the scale of costs, as well as conducting analysis of trade to measure the key benefits.

The report finds that due to severe data limitations in countries forming the EAC, reliable identification of structural demand and supply shocks in these countries is challenging, which impedes the usefulness of the SVAR methodology in determining the costs of monetary union. However, further analysis conveys that the economies are not structurally similar in terms of output growth and inflation, and therefore may not be suitable for uniform monetary and exchange rate policy, suggesting that the costs reaped would be high.

Furthermore, trade in the EAC faces many obstacles, such as high export concentration - which leaves many countries vulnerable to global price fluctuations – as well as underdevelopment of high-value-added sectors such as manufacturing and services. This indicates that the scope for further trade integration is currently limited, which reduces the potential benefits of monetary integration. However, as the EAC has taken steps towards resolving these problems in its development strategy reports, the East African Monetary Union could potentially yield sizeable benefits in the future.

Finally, the political situation in the EAC is also concerning, owing to disagreements between member states over involvement in conflicts and over plans for infrastructure, as well as varying degrees of commitment to integration. All this creates an additional layer of difficulties which – if unresolved - make the success of the monetary union doubtful.

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Introduction

The present East African Community was created in 1999 as a regional intergovernmental organisation aimed at "accelerated, harmonious and balanced development and sustained expansion of economic activities", with eight members so far (Kenya, Uganda, Tanzania, Rwanda, Burundi, South Sudan, the Democratic Republic of the Congo and Somalia).

There are four main pillars of integration identified in the EAC treaty: a customs union, a common market, a monetary union and "ultimately" a political federation. As of August 2024, despite full adoption of a customs union and common market, these institutions are still works in progress as they have been hindered by non-tariff barriers, as well as political friction between countries.

The focus of this paper is on the concerted but unsuccessful effort to form the East African Monetary Union by 2024. Due to member states failing to meet the convergence criteria, the deadline has been changed to 2031. The reasons suggested for this monetary union forming include reduction in (transaction and transport) costs leading to more efficient resource allocation and higher intraregional trade, while a uniform policy encouraging price stability and fiscal responsibility would make the EAC more appealing to external investment. Furthermore, it would bring them closer to a political federation, and thereby closer to becoming a major continental power.

Though much inspiration for monetary integration is derived from the Eurozone, the debt crisis left many sceptical of its permanence, while highlighting the potential costs of union. This is primarily the loss of autonomy over monetary and exchange rate policy, as it could hinder countries' abilities to respond to shocks specific to their economy. After all, a key factor in the European debt crisis was members diverging in macroeconomic conditions combined with uniform policy preventing devaluation and changes in interest rates.

This report aims to determine whether the benefits outweigh the costs, determined through the estimation of the frequency of asymmetric shocks as well as the correlation of disturbances in output and price levels, primarily by using SVAR models to evaluate business cycle synchronisation across the EAC countries.

The structure of the report is as follows. It first provides a literature review, followed by an analysis of GDP and inflation from the lens of convergence and correlation. The main part of the paper follows, with a detailed explanation of the SVAR method used. After this, an analysis of trade benefits is conducted, followed by the conclusion.

Literature Review

OCA Theory

Research on monetary unions is founded on the Optimum Currency Area (OCA) Theory, best described in Mundell's 1961 seminal paper, which details the criteria for countries to be considered a "region" and therefore suitable for shared policy.

Mundell explains that a region suitable for a common currency is defined by similar economic structures and high levels of economic integration - not national borders – leading to a low frequency of asymmetric shocks. Asymmetric shocks are especially damaging to real variables such as output and employment under a union, as adjustment to asymmetric shocks via exchange or interest rate is impossible while uniform policy is difficult to implement due to disparate effects on structurally different countries. [2]

Further criteria for the OCA include the strength of alternative adjustment mechanisms, such as high internal factor mobility. This is because free movement of labour allows for adjustments in employment and output to absorb asymmetric shocks while free movement of capital allows for risk sharing and improved resource allocation.

EAC reports point to progress on free movement of capital via the Common Market, with liberalisation of capital accounts in all states. Furthermore, an IOM paper by Oucho et al. (2023) reports that there is visa-free travel for migrants from within the EAC, community passports and ID cards, as well as the right of residence & right of establishment. By protecting fundamental worker's rights (though the degree of enforcement has been questioned[3]) and facilitating economic migration, internal labour mobility is likely to be high.

However, the endogenous OCA theory developed by Frankel & Rose (1998) poses a silver lining if this report's results are pessimistic, suggesting that monetary integration improves trade links leading to higher business cycle correlation (though if members instead specialise production based on comparative advantage, integration will cause "more idiosyncratic business cycles").

Overall, the two key aspects of OCA analysis should be structural similarity and availability of alternative adjustment mechanisms.

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[2] For example, take a region comprised of an export-reliant economy A and a tourism-based economy B. If there is a fall in demand for Economy A's exports leading to economic downturn in A, the central bank may find it difficult to lower interest rates to tackle this, as lower interest rates could lead to overheating in B's economy. This problem has been somewhat visible in the Euro area in the last few years, as stubbornly high inflation had prevented rate cuts despite falling industrial output in large economies like Germany (partially due to "weak foreign demand for capital and intermediate goods", reduced investment and sluggish private consumption).

[3] As recently as 2018, Rwanda has accused Uganda of arbitrarily arresting and torturing Rwandans (who Uganda argues are on espionage missions), while Uganda accused Rwanda of segregating Ugandan workers, "with reports that some have lost their jobs without tangible explanations, disregarding the EAC Common Market Protocol" (Masiko, 2022).

Empirical Literature Review

Multiple techniques have been used for analysing the feasibility of a monetary union, including cointegration analysis (measuring long-term relationships in long-run time series) developed by Johansen (1988), the Generalised Purchasing Power Parity (GPPP) framework developed by Enders & Hurn (1994), and the use of structural VARs with long-run restrictions as pioneered by Bayoumi & Eichengreen's 1992 seminal paper using the Blanchard-Quah (1989) decomposition.

Results from reports on the feasibility of the EAMU have been mixed and, though the techniques used are well-established, a small data set often leads to unreliable conclusions.

The UNECA report (SRO-EA, 2018) provides a detailed analysis of the EAMU's feasibility, from progress on the convergence criteria to a three-step autoregressive estimation procedure - calculating the correlation of residuals from a two-lag regression on log real GDP to estimate business cycle synchronisations via real output fluctuations.

Masiko (2022) presents a detailed multidimensional account of the history of the EAC, and the current obstacles it faces from both economic and political angles, displaying the need to look beyond statistics to draw a meaningful conclusion on the EAMU's future.

Redda & Muzindutsi (2021) use the GPPP model to carry out cointegration and panel root tests, also forming a vector error correction model (VECM) to evaluate the EAMU's feasibility. VECMs could be useful in analysing long-run relationships and adjustment speed between key variables (such as inflation and exchange rates) for the EAC, primarily because they work for non-stationary time series – such as many EAC states' variables for longer annual data sets.

Buigut & Valev (2005) utilize SVAR models, as does this Laidlaw report. The defining feature of SVAR is the ability to identify and decompose underlying demand and supply shocks to output and price levels, subject to restrictions set by the Blanchard-Quah technique (discussed later). Results are then drawn from correlation tests on these demand & supply shocks across the various member states.

An IMF paper by Drummond et al. (2015) uses a more elaborate SVAR model to determine whether the exchange rate absorbs or generates shocks among EAC countries. Though not discussed in this report, this is a crucial question as the monetary union leads to a fixed exchange rate between EAC states, so the role of the exchange rate determines whether a fixed exchange rate is a cost or benefit.

While existing research on the EAMU has been extensive, most lack breadth in their evaluation of monetary integration – failing to notice the unique economic and political conditions in East Africa. This report aims to instead adopt a multidimensional approach to evaluate the costs and benefits of an East African monetary union.

Methodology

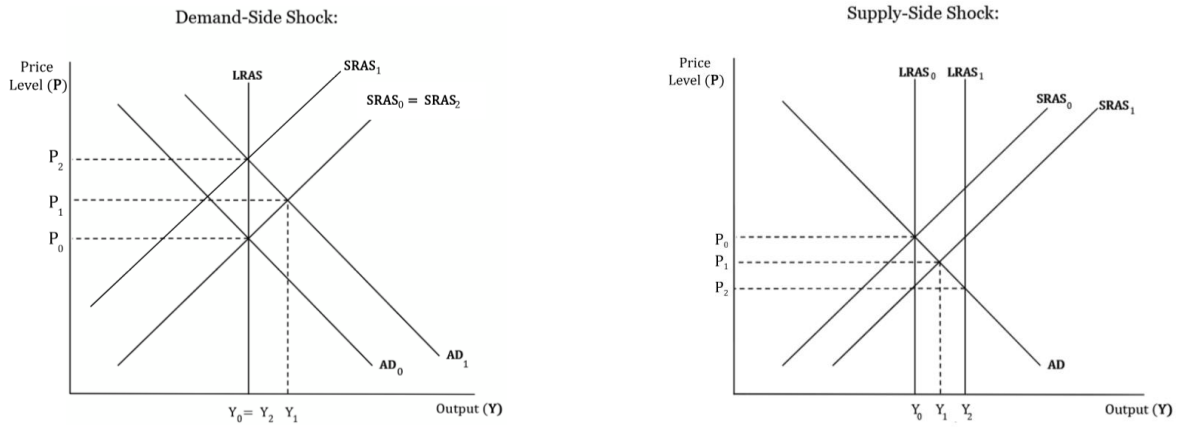
The SVAR model utilises annual data from 1996 to 2023 for the GDP Deflator and real GDP from the IFS Database, as this is the only period without major changes in regime or economic structure; a longer period would see structural breaks (such as the 1994 Rwandan Genocide and Tanzania's transition from *Ujamaa* state socialism to a mixed economy in the 1980s) undermine the robustness of the results.

Furthermore, an absence of reliable data for Somalia and South Sudan makes their inclusion in this report difficult, so the remaining six states make up the sample and no conclusion can be drawn on the effects of integration for the omitted countries.

Background on SVAR

VARs are dynamic models which can be represented by an "infinite moving average representation of a (vector) of variable, x_t, and an equal number of shocks, ϵ_t" where t is the present time period (Bayoumi & Eichengreen, 1992). This means the present value of each variable is a vector of the past values of all variables.

Structural VARs apply restrictions on these VARs; in our case, we apply a long-run restriction on the effect of demand shocks on output (known as long-run output neutrality of demand shocks). The theoretical foundation for this restriction is the AD-AS model, where a supply shock has a long-run effect on both price and output while a demand shock sees only price change permanently (due to the assumption of sticky wages in the short-run), as seen below:



Following the Blanchard-Quah (1989) technique for decomposition of demand and supply disturbances, there are two more assumptions aside from the long-run output neutrality of demand shocks:

1. The growth and inflation time series can be accurately represented as a linear combination of current and past disturbances.
2. Supply-side shocks and demand-side shocks are "uncorrelated at all leads and lags" (Blanchard & Quah, 1989) – in turn implying orthogonality.

Results

Before creating the SVAR model, tests are conducted on the time series for price and output to ensure stationarity. This implies constant statistical properties in the long run, in turn allowing for more accurate modelling.

The Augmented Dickey-Fuller (ADF) test is used to investigate the stationarity of the time series. The number of lags used for the ADF test is determined via the SBIC (Schwartz-Bayesian information criteria) over other information criteria, primarily because a small dataset of 28 years means an information criterion which is harsher in penalising extra lags and prevents overfitting is ideal[4]. To prevent overfitting with this limited sample size (as shocks have an impact over a shorter time horizon than many years), the maximum lag length is 2 even when SBIC suggests otherwise. The results are below:

t-statistic values from ADF tests for variables by country						
	Burundi	**DRC**	**Kenya**	**Rwanda**	**Tanzania**	**Uganda**
Real GDP	- 0.230	1.930	3.860	4.678	2.656	2.587
GDP deflator	- 0.746	- 1.387	- 1.112	- 1.676	- 0.732	- 1.041
CPI	2.532	0.281	1.450	1.492	3.032	1.302
Log-diff real GDP	- 4.713***	- 1.919	- 4.833***	- 6.829***	- 2.437	- 2.587
Log-diff GDP deflator	- 4.832***	- 4.374***	- 2.181	- 2.185	- 4.256***	- 3.974***
Log-diff CPI	- 5.716***	- 3.193**	- 7.045***	- 5.429***	- 7.036***	- 6.262***
* significant at 10% sig. level ** significant at 5% sig. level *** significant at 1% sig. level						

Note that CPI quarterly data was used as a sensitivity check – as the sample size is much larger so overfitting is less likely. However, the ADF tests at the respective optimal lags for each country found that all raw data indicators were non-stationary[5]. This justifies transforming the data, by taking logs and then differencing these log variables, to stabilise the properties of the data.

The frequency of stationary time series is much higher for log-differenced data than the raw data (as is expected, as inflation and output growth both tend to be positive for most years, so price and output levels are expected to have an upward trend).

Unlike all other indicators, the log-differenced CPI series is stationary at a 5% level for all countries, suggesting that mean-reverting behaviour may be seen in quarterly data but is not visible in annual data due to a small sample size, leading to inaccurate results.

Secondly, after all countries' VAR models were formed, another stationarity test was conducted to ensure the stability of the VAR models. The test checks that the eigenvalues of the companion matrix lie within the unit circle, in which case it meets the eigenvalue stability condition, and the VAR model is stable. For all countries, the stability condition is met.

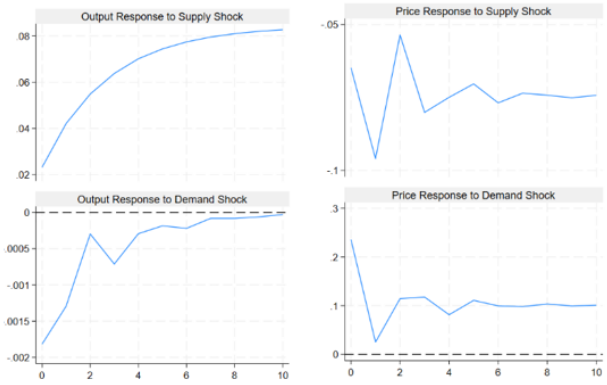
[4] However, the risk of autocorrelation is lower with the Akaike information criterion, so there are pros and cons to the different criteria. Nevertheless, the optimal number of lags for all but one observation for AIC and SBIC.
[5] Note that increasing the timespan yields significant t-statistics for some time series that were previously non-stationary. Tanzania and Uganda are significant at the 5% and 1% level respectively for log-differenced real GDP when the time series is extended to 1993, while Kenya's log-differenced GDP deflator is significant at the 1% level when the time series is extended back to 1985.

IRFs

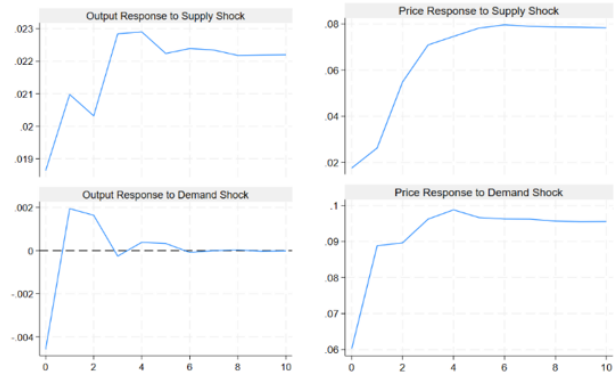
Applying the long-run restriction on output for demand shocks gives the SVAR models, from which we obtain the impulse response functions, which predicts the response of indicators to demand and supply shocks (i.e. impulses) over time:

Burundi

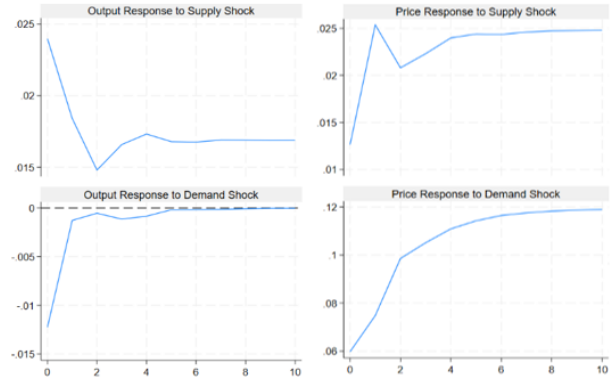
DRC



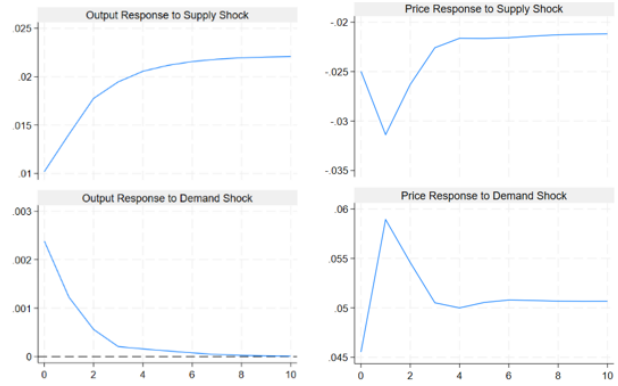
Kenya



Rwanda



Tanzania



Uganda

Discussion

The IRFs above present an immediate issue which prevents further analysis. While the AD-AS theory suggests that there should be a positive correlation between the effect on output & the effect on inflation by demand shocks and a negative correlation between the effect on output and on inflation by supply shocks, the IRFs show that for all countries but the DRC and Tanzania, both shocks' correlations are incorrect - with a positive correlation for the supply shock and negative for the demand shock. For the DRC, the supply shock aligns with theory, yet the demand shock has a negative correlation between output & inflation. Only Tanzania's IRFs align entirely with theory.

As further analysis isn't possible, the next step is to identify why the IRFs are almost entirely contradictory to the expected results.

The first reason is likely the quality and size of the data set. The use of annual data has several problems when analysing the behaviour of indicators in response to shocks. The response of variables to structural shocks fluctuates substantially throughout a year, but these shorter-run fluctuations and dynamics are lost in annual data, leading to IRFs which don't accurately reflect the immediate and longer-run effects of a shock.[6]

Therefore, as annual data prevents accurate decomposition of structural shocks – in turn preventing correlation of these shocks between countries - a useful conclusion can't be drawn as to the costs of a uniform monetary policy. Without uncovering the frequency and amplitude of asymmetric shocks, the effectiveness of country-specific monetary policy cannot be properly determined.

The second reason may be the Blanchard-Quah technique's identification restrictions, which may be unrealistic, thereby weakening the reliability of the results. The main restriction which may be problematic is the assumption of orthogonality (i.e. the demand and supply shocks are independent of each other).

The shocks are likely to affect one another; for instance, a drought (supply shock) could trigger a rise in government spending (demand shock). This leads to misidentification of shocks and therefore incorrect IRFs, which could explain the correlations failing to match the theory. This is particularly problematic with annual data as, supply shocks and demand shocks are far more likely to interact over the course of a year than over a month or a quarter, leading to a much higher chance of correlation between the two types of shocks. This renders the assumption of orthogonality less justifiable. This causal relationship between demand and supply shocks is discussed in detail by Cover, Enders & Hueng (2006), who explain why the restriction of zero contemporaneous correlation between the structural shocks is highly unlikely.

[6] For instance, in a situation where a demand shock occurred in the first quarter of a year – causing a fall in both price and output – followed by a positive supply shock triggering larger inflationary pressures in the last quarter of the year, IRFs using annual data may incorrectly imply that a negative demand shock leads to a rise in inflation.

Supply shocks are likely to cause unexpected changes in aggregate demand through at least two potential channels:

1. The life-cycle permanent income hypothesis (LC-PIH), which argues that a supply shock with a permanent (for the sake of example, positive) effect on output will lead to an increase in the "present value of future income", causing a rise in aggregate demand by roughly the same amount as the increase in output supplied.
2. The response of monetary authorities aiming to stabilise or reduce inflation, with supply shocks being met by shifts in demand via monetary policy in the same direction (e.g. a positive supply shock may lead the central bank to increase money supply or lower interest rates to stimulate AD).

Demand shocks are also likely to affect supply shocks. If the Keynesian view is adopted, 'sticky prices' in the economy should lead to a non-vertical slope of the short-run aggregate supply curve. This in turn means that a demand shock will not only affect price but also the output supplied (though the reasoning behind why this happens depends on the SRAS "story" which takes precedence"). As a result, there is likely to be bidirectional causality between structural demand and supply shocks.

For all the above reasons a SVAR analysis of structural shocks in the EAC countries based on the Blanchard-Quah identification scheme might not yield meaningful results. A promising direction for further research might be to apply the method proposed by Cover, Enders and Hueng (2006) to identify the structural demand and supply shocks. This method uses an AD-AS model to introduce several restrictions and is notable for its "absence of a restriction forcing the demand and supply shocks to be contemporaneously uncorrelated". The use of two recursive orderings (AS shocks are "causally prior to" AD shocks, and vice versa) allows for non-zero covariance between shocks while still distinguishing between the impact of demand shocks and of supply shocks.

Sensitivity Checks

Sensitivity checks are then carried out to see if the results are more promising if the parameters or techniques used are adjusted.

Attempts at decomposing the data into trend and cyclical components via the Hodrick-Prescott Filter don't yield better results, as the small sample size leads to overfitting (with the cyclical component being nearly identical to the total output).

Lag lengths are also changed to test whether the results above hold under different model specifications. Decreasing the lag length to 1 produces the same correlations as with 2 lags, but the DRC saw the price response to the supply shock failing to converge within 10 steps - which suggests one lag is insufficient to capture the influence of past values of variables on the current value of price.

Increasing the lag length to 3 or 4, however, leads us to question the validity of the results discussed above. Most countries do not see the results change, but Tanzania and Uganda experience the exact opposite correlations compared to with 1 or 2 lags - so Tanzania now entirely contradicts theory while Uganda is now aligned with theory.

As discussed previously, this is likely due to the short time series leading to overfitting; it is unlikely that output and price values three years ago would have a substantial role in the present response of variables to structural shocks, so models with more than 2 lags are likely to be misidentifying relationships between variables.

The GDP deflator time series was also replaced with the CPI time series, which was log differenced and subjected to the same Augmented Dickey-Fuller tests (yielding similar results, with most countries having highly significant test statistic values but two had insufficiently significant values). However, the results of the decomposition were also largely contradictory to theory, with all countries but the DRC and Uganda seeing positive correlations between price and output for supply shocks and negative correlations for demand shocks. This reinforces the idea that the issue with the derived IRFs stems from the use of annual data.

Therefore, the sensitivity checks support the conclusion that the dataset is unsatisfactory, leading to unconvincing results.

Further Cost Analysis

Turning to additional methods of analysis, we first inspect the correlation of member states with the anchor area (Kenya) for both output growth and inflation, as was conducted in Bayoumi & Eichengreen's 1992 Euro area study:

Correlation Coefficients with Anchor Area (Kenya):

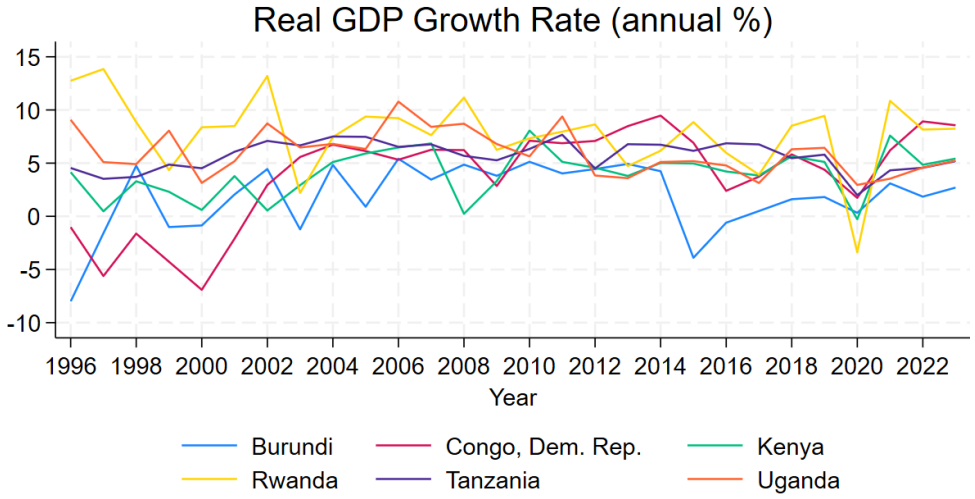
	Inflation		Growth	
	1996-2009	2010-2023	1996-2009	2010-2023
Kenya	1.000	1.000	1.000	1.000
Burundi	0.2607	0.1795	0.1366	0.3346
DRC	0.4866*	0.3114	0.5192	0.5017
Rwanda	0.3125	-0.0060	-0.2660	0.8556
Tanzania	0.3589	0.5117	0.4893	0.4245
Uganda	0.3267	-0.1377	0.3411	0.3690

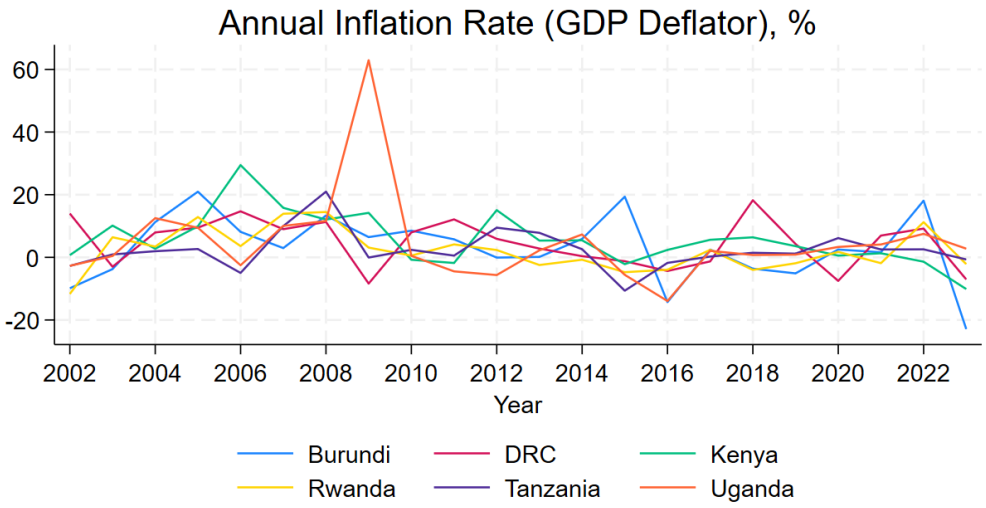
* excluding outlier years 2000-2001. Including these years, the coefficient is 0.0099.

Looking at growth first, there are moderate to strong positive correlations for the DRC, Rwanda, and Tanzania, while Burundi and Uganda have weaker correlations; the negative correlation in the earlier period for Rwanda's growth is explained by the 1994 genocide and subsequent recovery. The EAC's growth correlations are weaker than the 11 Euro area countries in 1992, where only 1 state had a coefficient below 0.50.

However, inflation correlations are much weaker, which presents a more pessimistic view of the structural similarities. Only Tanzania had a strong positive correlation in either period, while two countries even had negative correlations.

This is illustrated below with the graphs of changes in output growth and inflation over time for these countries:





As the output and inflation fluctuations do not appear to be synchronised across the EAC (except for the effects caused by COVID-19), the frequency of asymmetric shocks will likely be high.

Though annual data once again makes it difficult to track short-term fluctuations and therefore reduces the accuracy of our analysis here, it can at least be said that Kenya might be well positioned to be in a monetary union alongside the DRC and potentially Tanzania. Improving growth correlations for Rwanda is a good sign too, but inflation correlations remain poor. The EAC can potentially resolve this through stricter monitoring of convergence criteria achievement, as the flexible integration process could be responsible for the correlations being a far cry from the strong positive correlations with the Euro anchor area (Germany) as seen in the 1992 study on the Euro countries.

It is important to keep in mind that these correlation coefficients may not present an accurate picture of cyclical synchronisation between countries; as mentioned previously in the criticism of the orthogonality assumption, authorities are likely to use monetary and fiscal policy as tools to smooth the business cycle and stabilise inflation. As correlations only capture the movement of countries' inflation or output indicators, but do not differentiate between movement caused by the underlying asymmetric shocks and movement caused by the policy responses to them, the correlation coefficients are likely to incorrectly present the synchronisation of cycles between countries. As a monetary union has not formed yet, the countries have independent central banks and fiscal policy frameworks which means that the policy responses themselves are likely to be asymmetric, causing further issues as the effects of the underlying shocks on inflation and output are more difficult to distinguish from the effects of policy. If this could be separated, the correlation could be calculated and should be a more accurate representation of cyclical synchronisation.

Political Difficulties

Looking at the political background could help explain why the economies appear structurally different and therefore unsuitable for uniform monetary policy at present.

One feature is the differing levels of political stability across the union. Countries such as Kenya and Tanzania have been relatively stable since 1996, while Burundi and the DRC continue to be plagued by conflict and even coup attempts. Not only does this lead to a higher frequency of localised shocks but is especially problematic when these conflicts may be exacerbated by other EAC members.[7]

Secondly, the differing attitudes towards integration are problematic. While Rwanda, Uganda and Kenya have collaborated on various integrationist projects, including the East Africa Tourist Visa and the Kenya-Uganda-Rwanda Petroleum Products Pipeline. In contrast, Tanzania has shut off its tourism sector, thereby preventing tourism operator vehicles from the 3 countries from entering Tanzania (Masiko, 2022). Furthermore, Masiko points out that despite the commitment to free movement of labour as part of the EAC Common Market Protocol, "Tanzania and Burundi still maintain work permit requirements and fees".

Finally, as briefly mentioned in the OCA literature review, there are heightened tensions between several EAC members for various reasons – ranging from involvement in coups to rivalries on infrastructure plans. Rwanda's involvement with rebels in the DR Congo caused friction with Tanzania as well, who had been supporting the DRC militarily in suppressing these rebellions. As for infrastructure plans, Masiko notes that there has been "no NCIP summit or activity since April 2016", explained by Uganda's abrupt change of mind, choosing to export oil through Tanzania instead of Kenya (due to it being safer, less destructive to the environment and more cost-effective, despite its diplomatic closeness with Kenya). This suggests that tensions linked to both politics and infrastructure have slowed progress in infrastructural projects and improving the trade environment.

Overall, statistics don't necessarily reflect the political tensions and difficulties, which may be responsible for both structural differences and an unwillingness to cooperate on policy, preventing progress in integration.

[7] A recent example is the alleged "collusion between the Uganda army, M23, and Rwandan military" in the eastern part of the DR Congo, with M23 being a rebel military group in the DRC ((Fleming & Bikorimana, 2024). This is responsible for heightened tensions between Rwanda and the DRC too, removing cooperation over regional policy and the goal of integration.

Trade

The likely rise in intra-EAC is the main expected benefit of monetary integration, as a monetary union leading to the adoption of a common currency with a fixed internal exchange rate creates two main channels through which trade within the region is likely to grow.

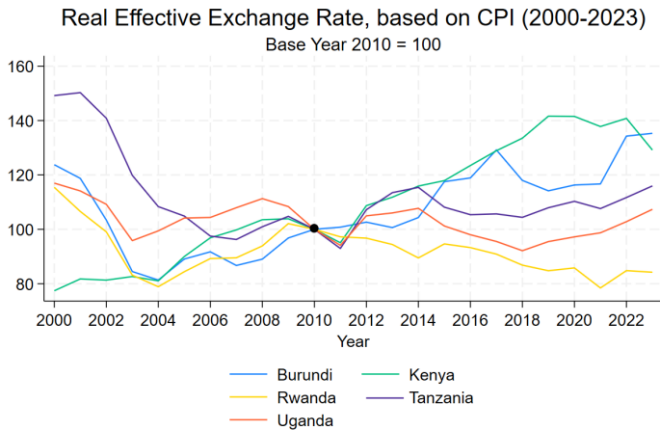
Firstly, the elimination of exchange rate risk creates a more stable trading environment, encouraging a rise in trade. Uncertainty is created by exchange rate volatility (which can normally cause unexpected changes in the cost of trade), leading to reduced business confidence and therefore low levels of cross-border trade. The elimination of exchange rate risk due to a fixed internal exchange rate creates a more stable trading environment, in turn boosting trade.

Secondly, the elimination of transaction costs following the adoption of a single currency reduces the cost of trade, thereby boosting consumer demand for imports and business incentives to export to other member states. These costs can be separated into two groups, as detailed in the 2004 NBP report, which are firstly financial costs (such as "bid-ask spreads, fees accompanying foreign exchange operations and costs of hedging against exchange rate risk") and secondly administrative costs paid by firms (such as "costs of exchange rate risk management" and costs of financial reporting among other in-house costs). The elimination of these transaction costs makes trade more cost-effective, which is expected to increase intra-regional trade.

Therefore, as the elimination of exchange rate volatility and transaction costs means that monetary integration should boost trade between EAC countries, intra-EAC trade should be analysed in detail as well.

Real Effective Exchange Rate

Firstly, the real effective exchange rate (a measure of a currency against the weighted average of its trading partners' currencies according to their importance to the home country) is inspected for convergence trends, because it should reflect a country's relative competitiveness. Divergence in REER implies divergence in competitiveness, and therefore trade imbalances in the union.

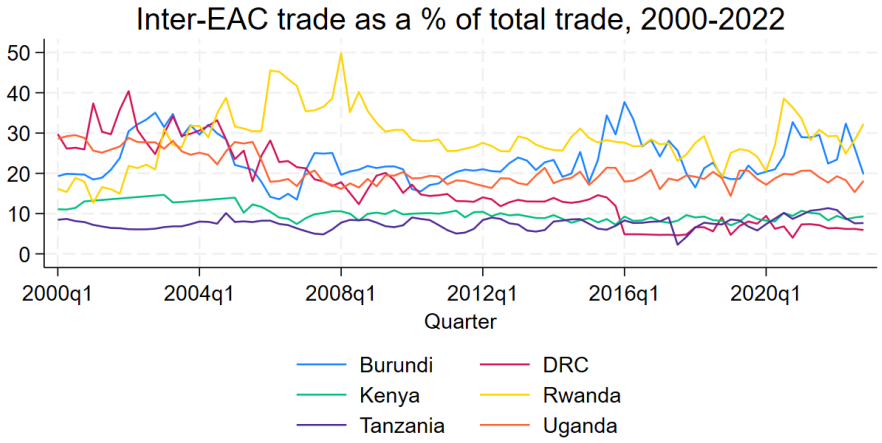


There is a substantial appreciation (~75% from 2000-2022) in Kenya's REER, while Burundi has recovered from a major depreciation in the early 2000s to reach over 30% of its 2010 REER value, but with major volatility across the series.[8] On the other hand, Rwanda saw a depreciation of around 27% over the period, while Tanzania and Uganda were the only countries with similar movements in the REER.

Overall, the REER - adjusted for CPI - has diverging trends, demonstrating structural differences between the countries, which is a threat to monetary integration.

It must be mentioned however, that REER-CPI is not especially useful as a reflection of structural issues, as it tracks a cost-of-living basket instead of measuring domestic production – failing to reflect a country's relative competitiveness or production costs. This measure may not be very helpful in measuring benefits as a result. Ideally, the REER-ULC would have been used but the data is unavailable[9].

Intra-Regional Trade



The above graph, showing the proportion of total trade conducted by EAC member states where both trade partners are EAC members, does not paint a hopeful image either. Most countries have seen either a decrease or no change in intraregional trade since 2000. For the DRC, little changes despite a rise in stability (following recovery from the Congo Wars) where total trade has grown sevenfold.

Despite some countries seeing regional trade skyrocket in value (Tanzania's import value grew by almost 4600% since 2000), this was dwarfed by the growth of extra-regional trade.

[8] Likely due to the shocks of Burundi's civil war combined with a dependence on coffee exports and "persistent weakness of coffee export prices" (International Monetary Fund, 2002). This leads to volatile export revenues and foreign exchange earnings, in turn impacting the REER.

[9]ULC is unit labour costs, so REER-ULC tracks trends in wage growth relative to productivity gains. If REER-ULC converges such that wages reflect productivity for all member states, competitiveness should grow proportionately throughout the EAMU. Furthermore, there is evidence of a strong negative relationship between REER-ULC and external balance, but not for CPI and GDP Deflator, which is important because persistent external imbalances for some countries can lead to diverging trends in competitiveness and inflation for the various member states, rendering a uniform macroeconomic policy unsuitable (Ahn J. et al., 2017).

Only Rwanda has seen a noticeable increase in intra-EAC trade, likely due to its status as a land-locked country making maritime trade more costly and therefore not as attractive as regional trade. This is supported by the political difficulties mentioned above, as Rwanda is more active in EAC integration projects and infrastructure projects (such as the regional road projects of the "Corridors").

Barriers to Trade

Poor transport infrastructure has contributed to the failure of intra-EAC trade to keep up with global trade. An EAC report points out that the "inefficient rail system pushes goods onto roads" leading to traffic and higher "unit cost of transport" (EAC Secretariat, 2021). Even if monetary integration were to lead to the removal of exchange rate volatility, thereby boosting business confidence as their forecasts would be more accurate and this would allow for long-term planning of production and trade, poor road and rail networks are likely to prevent this from leading to a substantial rise in trade within the EAC. High logistics costs and delays can drive up the opportunity cost of trading between member states, offsetting the benefits of reduced exchange rate risk.

However, progress is being made on inter-state road projects to facilitate intraregional trade by reducing the costs of transport (in terms of both money and time).

Also focusing on obstructions to trade, non-tariff barriers (such as product standards) increase the cost and time taken to trade in the region. This is a major issue, exemplified by the fact that all member states aside from Rwanda ranked below 100 in the Trading Across Borders (2019) ranking of countries – with Rwanda ranking 88th.

However, an EAC press statement highlighted "the EAC's progress in border efficiency", through the resolution of 274 NTBs since 2007 and the introduction of "One-Stop Border Posts (OSBPs), which have led to a 70% reduction in border crossing times and generated annual savings of over USD63 million", among other policies introduced to increase ease of trade across borders. Therefore, there is considerable evidence to suggest that a concerted effort is being made to maximise trade benefits by increasing the cost-effectiveness of intra-regional trade.

Diversification

However, an issue that requires a more long-term effective change in industrial policy is the structural composition of these economies' exports. Trade theory highlights that for intraregional trade to benefit from monetary union, the economies should ideally be diversified – sufficiently enough to reap the benefits of comparative advantage in a monetary union, but not so much that asymmetric shocks will prevail. This is supported by Kasekende (2021), who points out that the structure of the region's economies is currently such that a large part of consumption and capital investment requires imports from outside of the region, implying that diversification could allow the EAC to tap into their region's demand for imported goods.

Finally, the structures of the economies can be analysed through the WDI's 'Structure of value added' measure. Agriculture as a percentage of GDP has been falling for all member states over time but is still at least 20% of GDP for all countries except the DRC. At the same time, industry is dominant in the DRC at 46% of GDP. Most countries are seeing large increases in the value added by the services sector, at over 40% of GDP for Burundi, Kenya, and Rwanda. While most countries appear to be diversifying their economies with growth in higher value-added sectors such as services and industry, dependence on either agriculture or industry is risky as these countries are vulnerable to the price volatility of global markets. The services sector is more resilient to such changes, so services growth should lead to reduced volatility and lower frequency of asymmetric shocks.

Breaking down the main exports within these economies highlights the issue of poor export diversification – which Masiko (2022) partially blames for low mutual gains to trade in the regional integration process. According to the OEC, the export patterns of the member states are quite similar:

- Burundi's main exports are gold (~29% of exports) and coffee & tea (over 30% of exports together).
- Both Tanzania and Rwanda's main export is also gold at over 30% of exports.
- Kenya's main exports of tea, cut flowers and coffee make up over 30% of its exports together.
- Uganda's main exports are gold (48.1%) and coffee (18.9%).
- The DRC has an extreme dependence on its mining and metals industries, which comprise over 90% of its total exports by value (ITA, 2024). This is also responsible for its dramatic price fluctuations, as the slump in metal prices in 2016 and fall in demand for metals in 2009 led to idiosyncratic shocks which didn't affect other EAC members nearly as much.

This issue is recognised by the EAC in its 2021 Regional Trade Policy report, where it is noted that exports are concentrated on a “small range of traditional products which are exported either in raw or semi-processed form”, with the low value added to such exports (coffee, tea, gold, etc.) leading to “low export earnings and high trade deficits for all EAC countries”.

It’s in the EAC’s best interest to promote specialisation based on comparative advantage in higher value-added sectors, to remove the overlap in commodity exports, and improve regional competitiveness of non-primary sector goods. So a combination of specialisation and diversifying the sectoral composition of the economies should lead to trade creation as import demand will be met from within the union instead.

A policy being implemented by the EAC to tackle this issue is the introduction of Special Economic Zones (SEZs), which are designated areas with more liberal regulatory and tax regimes aimed at promoting economic growth. SEZs are intended to boost FDI through fiscal and non-fiscal incentives, in turn assisting in industrialisation and “promotion of industrial cluster development”. This should help in diversification of the economy and therefore boost the benefits to trade.

Overall, the major overlap in exports combined with undeveloped infrastructure is responsible for poor economic linkages, which greatly diminishes the mutual gains to trade. While there are some positive aspects, such as the surge in the value of intra-EAC trade, and the fact that similar sectoral composition leaves them less prone to asymmetric shocks, the economies would require an overhaul in their production structures to reap the benefits of trade. The EAC’s development strategy of promoting manufacturing and services industries as well as the introduction of SEZs could resolve this major issue over time, and lead to net benefits from monetary integration. While the present situation is unlikely to yield major trade gains for the EAC, the recognition of the issue and the steps taken towards it are promising.

Conclusion

The main conclusions from the analysis are two-fold.

Firstly, in the absence of reliable, quarterly data on key macroeconomic indicators in the EAC countries over an extended period of time, the main costs of monetary union in the form of the frequency of asymmetric shocks are difficult to measure. The core of our cost analysis has been based on the SVAR models and the IRFs produced from these models do not give a clear economic interpretation. The relatively short data sample covering a period of relatively high economic and political instability, as well as the use of annual rather than quarterly data, make the estimates unreliable and the long-term restrictions imposed in the Blanchard-Quah decomposition less likely to hold, leading to results inconsistent with economic theory. Applying an alternative, less restrictive identification method for structural shocks such as the AD-AS method proposed by Cover, Enders, and Hueng (2006) would be interesting for further research, but an accurate evaluation of business cycle synchronisation between the EAC countries will ultimately require longer time series of higher frequency and quality than the data currently available. While, according to the correlation tables, some countries such as Kenya, the DRC, and Tanzania appear better-suited to integration than others, it is difficult to draw definitive conclusions concerning the costs of monetary integration from the analysis, due to the issues mentioned.

As for the potential benefits, there is some support for the expected increase in trade following monetary integration but much more evidence points to obstacles suggesting benefits could be minimal. The absolute value of trade within the EAC rose with increased integration via the Common Market, and the shared export patterns (with most countries dependent on coffee, tea, and gold) point to a lower frequency of asymmetric shocks and therefore reduced costs from the adoption of uniform monetary policy. However, divergence in the real effective exchange rate implies structural differences among member states which suggests uniform monetary and exchange rate policy could be harmful. Furthermore, poor transport infrastructure could prevent a single currency - through the channels of reduced exchange rate risk and transaction costs - from bearing fruit.

Nevertheless, the EAC has taken note of the above issues and is making progress to resolve the high costs of trade, with the introduction of SEZs to encourage cross-border investment in high value-added sectors, the reduction in NTBs to streamline the trade process and the investment in transport infrastructure to reduce the unit cost of transport. This presents a more hopeful view of intra-regional East African trade in the long term, as obstacles to trade are being identified and policies are being implemented swiftly to remove them.

Overall, problems with data prevent this report from presenting a definitive answer as to whether the costs of monetary integration outweigh the benefits in this case. The limited evidence points towards high costs for the EAMU, but a quarterly or monthly data set is required to draw reliable results. As for trade, the lack of structural similarity combined with poor product complexity suggests benefits would not be high at present, but these benefits

may be far greater if industrial policy is adjusted to move away from commodity dependence and promote complementary trade through specialisation.

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