Institution: University of Nottingham		
Unit of Assessment: UoA22 Anthropology & Development Studies		
Title of case study: Informing Macroeconomic Policy Management in Sub-Saharan Africa		
Period when the underpinning research was undertaken: 2010-19		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Oliver Morrissey Atsuyoshi Morozumi	**Role(s) (e.g. job title):** Professor of Development Economics Assistant Professor Economics	**Period(s) employed by submitting HEI:** Sept 1989 – Present Sept 2009 – Present
Period when the claimed impact occurred: 2016-20		
Is this case study continued from a case study submitted in 2014? N		

1. Summary of the impact

The research in Sub-Saharan Africa (SSA) addressed management of the foreign exchange inflows associated with aid, implementation of inflation targeting policy, and the effect of commodity prices on inflation and macroeconomic variables. Important findings were: i) aid has not had the adverse effects on the real exchange rate often assumed in the literature; ii) fiscal restraint and Central Bank independence are important for effective inflation targeting policy; and iii) a mixture of policy responses is required to manage commodity price shocks in countries with high export dependence on one or a few commodities. The research achieved impact by contributing to policy analysis and research capacity for staff in Central Banks in Ghana, Uganda and Zambia. The work in Zambia helped *'the World Bank country team deepen their understanding of the Zambian economy'* [A]; the Bank of Uganda confirmed that the *'research contributed to policy discussions on oil in two important respects'* managing price shocks and revenue [C]; while the Bank of Ghana noted that the research *'strengthened the capacity of BoG staff'* and contributed to *'the ongoing policy dialogue'* [D].

2. Underpinning research

Three areas of research by staff in the **Centre for Research in Economic Development and International Trade** (CREDIT) at the University of Nottingham involved engagement with Central Bank and macroeconomic policymakers in Sub-Saharan Africa (SSA). The first concerned macroeconomic management of foreign aid inflows to prevent adverse effects on the real exchange rate (the so-called Dutch Disease effect) and involved analysis for ten SSA countries [4]. The second assessed the effectiveness of monetary policy, specifically inflation targeting in low-income countries (mostly SSA) including a detailed study of Ghana ([5], [7]). The third was on the effects of commodity prices (especially for exports) on the exchange rate and (via exchange rate pass through to domestic prices) inflation ([6], [8]). Country studies included monetary policy (Ghana [5]), the effect of shocks to oil import prices (Uganda [8]) and the management of commodity export price shocks (oil in Ghana [8] and copper in Zambia [6]).

One of Morrissey's main areas of research has been on aid policy and effectiveness, and specifically the fiscal effects of aid ([1], [2], [3]). Two findings from that research have been of interest to fiscal policymakers in Africa (in particular Ministries of Finance): showing that aid does not reduce tax effort but does reduce domestic borrowing and supports public expenditure planning and reforms to improve budgetary management ([1], [2]); and highlighting the importance of using local official data on aid receipts to study the effects on policy ([3]). The former established engagement with policymakers and the latter insight motivated a research project on the effect of aid inflows on the exchange rate in SSA as part of the ESRC-DFID Research Programme on 'Delivering Inclusive Financial Development and Growth' 2016-2020 (Grant Reference: ES/N013344/1).

Just as [3] advocated the need of using Ministry of Finance data on aid received to analyse the effect on budget behaviour, this project used Central Bank aid data to analyse the effect on monetary policy (inflation and exchange rates). Two University of Nottingham researchers were employed for six months each to assist: Dr Lionel Roger (2018) and Mr Lars Spreng (2018 and 2019).

The specific aim was to test if aid inflows generated Dutch Disease effects in SSA. Most macroeconomic models (such as those used by the International Monetary Fund) predict that aid inflows, especially if large and/or unanticipated (shocks), will lead to an appreciation of the real exchange rate and undermine the competitiveness of the economy (commonly referred to as Dutch Disease). Thus, a common presumption is that aid has (adverse) Dutch Disease effects in SSA. However, empirical evidence is inconclusive, largely because studies rely on annual data of aid reported by donors (which overstates the amount received in the country) and few include data since the mid-2000s.

The research [4] had two innovations. First, as annual data are inadequate to capture the frequency of policy responses, the CREDIT researchers use monthly data for ten countries over 2001 to 2017 to estimate the macroeconomic effects of aid employing advanced time series methods. Second, the monthly data are reported by the Central Bank hence capture the information available to policymakers. The findings [4] suggest that aid has no or a minimal effect on the real exchange rate in most countries; there is evidence of a significant real appreciation in only two countries. Additional analysis shows that commodity export prices are a more important determinant of the real exchange rate, with an effect on average twice that of aid. The implications were discussed with Central Bank officials (see section 4 below).

Emeritus Professor Bleaney (CREDIT) has decades of research experience on macroeconomics in SSA. Although retired he remains active and supported Morozumi in co-supervising Dr Mumuni, then a PhD student from the Bank of Ghana (BoG), between 2016 and 2019. Their cross-country analysis [7] showed that inflation targeting (IT) has not been as effective in reducing inflation in low-income countries (LICs) as in emerging market economies although only when relatively poor institutions fail to hold governments accountable to the general public are fiscal deficits inflationary in LICs. This prompted case study analysis of Ghana, one of the first SSA countries to adopt inflation targeting (in 2007, after South Africa). In Ghana, inflation was 13% per annum on average between 2007–2017, remaining well above the relatively high 8-10% per annum target. However, [5] shows that the BoG implemented appropriate monetary policies under IT, similar to those in other IT counties where inflation has been successfully controlled. They highlighted the apparent inability of the BoG to reduce inflation *expectations*, suggesting that high expectations were due to fiscal dominance (the subordination of monetary policy to fiscal requirements). The policy implications are being considered within the BoG (see Section 4 below).

A well-known feature of SSA economies is their high dependence on primary commodity (rather than manufactured) exports, and their relatively high import needs. In most countries one or two commodities account for most export earnings so they are very exposed to volatile world prices of commodities. A shock to the world price affects export revenue and the exchange rate; depending on the pass through of the exchange rate to domestic prices, this affects inflation. Zambia is a good example where copper accounts for about 75% of export earnings; following a large decline in the world price over 2014-15, during 2015 the Zambian Kwacha lost almost half of its value against the US dollar and consumer prices rose by 21%. The research reported in [6] suggests that exchange rate pass-through was lower than previously estimated so the Bank of Zambia placed too much emphasis on the exchange rate over monetary policy instruments to control inflation. The policy implications were discussed in Zambia. Further research [8] responding to issues raised by policymakers in other countries addressed the effect of oil prices on Uganda (as an importer) and Ghana when it became an exporter after 2010 (see Section 4 below).

3. References to the research

[1] Morrissey, O. (2015), Aid and Fiscal Behaviour: What does the Evidence Show?, *World Development*, **69**, 98-105 https://doi.org/10.1016/j.worlddev.2013.12.008

[2] Morrissey, O. (2015), Aid and Domestic Resource Mobilisation with a focus on sub-Saharan Africa, *Oxford Review of Economic Policy*, **31**(3-4): 447-461 https://doi.org/10.1093/oxrep/grv029

[3] Bwire, T., T. Lloyd & **O. Morrissey** (2017), Fiscal Reforms and the Fiscal Effects of Aid in Uganda, *Journal of Development Studies*, **53** (7), 1019-1036 https://doi.org/10.1080/00220388.2017.1303677

[4] **Morrissey, O**., L. Roger & L. Spreng (2019), Aid and Exchange Rates in sub-Saharan Africa: No More Dutch Disease? School of Economics, University of Nottingham: *CREDIT Research Paper 19/07* www.nottingham.ac.uk/credit/news/papers/1907.aspx (funded by the project in ESRC-DFID Grant ES/N013344/1)

[5] Bleaney, M., **A. Morozumi** and Z. Mumuni (2020), Inflation Targeting and Monetary Policy in Ghana, *Journal of African Economies*, **29** (2): 121-145 https://doi.org/10.1093/jae/ejz021

[6] Roger, L., **O. Morrissey** & G. Smith (2019), Exchange Rate and Inflation Dynamics in a Resource Rich Setting: the Case of Zambia, *South African Journal of Economics*, **87** (4), 490-514 https://doi.org/10.1111/saje.12236

[7] Bleaney, M., **A. Morozumi** and Z. Mumuni (2020), When are fiscal deficits inflationary in low-income countries?, School of Economics, University of Nottingham: *CREDIT Research Paper 20/02* www.nottingham.ac.uk/credit/documents/papers/2020/20-02.pdf, forthcoming in *Review of Development Economics*

[8] **Morrissey**, O., & L. Spreng (2020), Macroeconomic Management on Becoming an African Oil Exporter, School of Economics, University of Nottingham: *CREDIT Research Paper 20/03* www.nottingham.ac.uk/credit/news/papers/2003.aspx (funded by the project in ESRC-DFID Grant ES/N013344/1)

4. Details of the impact

The direct beneficiaries of the research were Central Bank policymakers in Ghana, Uganda and Zambia, and the World Bank in Zambia. The research addressed concerns of Ministry of Finance officials on macroeconomic policy (see [C]) and of operational and research staff in the African Development Bank, the International Monetary Fund and the World Bank. The CREDIT researchers engaged with local officials throughout the research to ensure their priorities were addressed.

In 2016, Professor Morrissey was contacted by the World Bank Chief Economist in Lusaka (Zambia) '*on account of his expertise in the field*' [A]. After years of falling copper prices, by 2015 Zambia faced a macroeconomic crisis with a collapse in the exchange rate, a balance of payments deficit and rising inflation. There was disagreement between the Bank of Zambia (BoZ) and the local World Bank office on the appropriate policy response. Morrissey was invited to conduct research, which he did with Roger (then a PhD student). The analysis [6] suggested a lower pass-through from the exchange rate to consumer prices than the studies the BoZ based its decisions on and recommended greater emphasis on monetary policy instruments rather than the exchange rate to constrain inflation. The research was discussed with policymakers through seminars in 2017 at the BoZ and the World Bank office in Lusaka [A] and a World Bank Policy Research Paper [B] that '*was used in discussions and cited in other World Bank publications*' [A]. The World Bank Chief Economist in Lusaka was informed by the research in co-authoring the 2017 *Zambia Economic Brief* in which the research is cited ([F], p13 Box 1), while the research is cited regarding the costs imposed on firms by the high interest rates required to stabilize the exchange rate and get inflation under control in the World Bank 2018 *Zambia Systematic Country Diagnostic* ([G], p91). A revised and updated version of [B] was published as [6].

To engage Central Bank officials in the design of the research for ESRC-DFID Grant ES/N013344/1 on aid and the exchange rate Morrissey visited the Banks of Kenya, Tanzania and Uganda in May 2017. These meetings were to determine the policy issues of interest in each country, especially areas in which external validation of policy is valued. The meetings also provided access to existing research in each Central Bank and, importantly for the analysis, discussion of how aid is measured and reported (and other data issues) with statisticians in the Central Bank. Aid transpired to be peripheral to concerns at the time in Kenya and Tanzania (both are nevertheless included in [4]), so the country focus shifted to Uganda.

The Bank of Uganda (BoU) was particularly interested and Morrissey visited again in April 2018, presenting results showing that aid inflows had been managed in Uganda to ensure macroeconomic stability and avoid Dutch Disease effects. From this and other engagement the BoU Executive Director of Research and Policy noted the research showed '*that aid inflows are now managed well in a manner that is consistent with exchange rate stability and supports budget planning*' and thanked Morrissey *'for the contribution to the macroeconomic policy discussions in Uganda'* [C]. Uganda was anticipating future oil production at that time and '*Ugandan policy makers were particularly interested in knowing the macroeconomic implications of Uganda switching from a net oil importer to a net oil exporter*' [C]. This prompted Morrissey to undertake research on the effect of becoming an oil exporter, studying the case of Ghana and deriving implications for Uganda [8].

Morrissey visited Uganda in November 2019 to present results from the work on macroeconomic effects of oil [8] to policy experts from the BoU, the Ministries of Finance and of Energy, and the Petroleum Investment Advisory Committee. Morrissey provided the BoU with a framework it could adapt to analyse the effects of oil shocks on the economy. As the BoU confirmed, Morrissey's research '*contributed to policy discussions on oil in two important respects'*, affirming '*macroeconomic management ability'* that '*BoU inflation targeting is effective in managing the effects of oil price shocks'* and informing policymakers on how the revenues from oil should be managed [C]. This gave the BoU '*confidence to manage'* the effects of oil price shocks (given performance as an oil importer) and to use the revenue generated from oil [C]. The Covid-19 pandemic has obviously altered current priorities and discussion of oil production is on hold in Uganda at the moment.

Morrissey and Morozumi had planned a visit to Bank of Ghana (BoG) in April 2020 to present and discuss the research but due to Covid 19 instead two webinars were presented: Morrissey presented [8] on 23/10/20 and Morozumi presented [5] and [7] on 30/10/20. The webinars attracted over '*90 policymakers from the region, including staff from BoG, the Ministry of Finance, local IMF office, the West African Monetary Institute, UN Economic Commission for Africa and the University of Ghana*' [E]. The BoG webinar series has the aim of presenting analytical research on topical issues to generate discussion and support policy analysis and BoG considers the presentations to be an important element of their communication [D].

The first webinar discussed the macroeconomic management implications of Ghana becoming an exporter of oil after 2010. As [8] used monthly data over 2001 to 2019 to estimate the response to oil shocks as an importer and as an exporter the discussion was able to address how the impact of oil price shocks changed. When Ghana was an importer, oil price shocks generated exchange rate appreciation and mild inflation, but interest rate reductions could be used to offset adverse impacts. The analysis of managing price volatility since becoming an exporter (although refined petroleum is still imported) showed how inflation targeting in conjunction with improved macroeconomic monitoring by BoG could mitigate the effects of oil price shocks. This informed policy analysis, as observed by the Director of the BoG Research Department: '*Understanding the macroeconomic effects of switching from an oil importer to an oil exporter is very important to BoG since it has implications for monetary policy implementation*' [D]. The research [8] showed that the analytical results are consistent with predictions from the macroeconomic model developed and providing the structure and applications of a tested macroeconomic model for Ghana will support the capacity of '*BoG staff engaged in developing DSGE models for policy analysis in Ghana*' [D].

The second webinar discussed how inflation targeting could be improved. Cross-country analysis [7] shows that inflation targeting has been ineffective in reducing inflation in low-income countries and that relatively low *de facto* Central Bank independence (so that fiscal concerns and government spending needs dominate monetary policy), associated with weak restrictions limiting Central Bank lending to the government, helps explain the result. This emphasis on the presence of fiscally driven inflationary pressure as a possible failure of inflation targeting is observed in Ghana [5]. The key policy implication, relevant for Central Bank operations in SSA, is that effective inflation targeting requires not only ensuring a proper monetary policy response to inflation shocks, but also developing institutions which provide legal Central Bank independence with a *de facto* bite; only in the absence of inflationary pressure of a fiscal origin can inflation targeting help reduce inflation rates [7]. The research ([5], [7]) informed and supported efforts by the BoG to manage inflation: the Director of the BoG Research Department praised Morrissey and Morozumi's *'contribution to the macroeconomic policy discourse in Ghana'* that *'shed light* [with] *empirical evidence'*, noting that the research will *'contribute greatly to the ongoing policy dialogue about the need to end fiscal dominance in Ghana',* and *'inspire further work'* in Ghana to *'improve the inflation targeting monetary framework*' [D]. Morrissey and Morozumi have established a relationship and intend to continue research with staff in the Bank of Ghana.

5. Sources to corroborate the impact

[A] Confirmation of work in Zambia by the former World Bank Chief Economist in Lusaka

[B] Roger, L., G. Smith & O. **Morrissey** (2017), Exchange Rate and Inflation Dynamics in Zambia, Washington DC: World Bank, *World Bank Policy Research Working Paper 8128*, http://documents.worldbank.org/curated/en/393871498656454681/pdf/WPS8128.pdf

[C] Testimonial letter from the Executive Director Research and Policy, Bank of Uganda

[D] Testimonial letter from the Director Research Department, Bank of Ghana (following webinars in 2020)

[E] Annex A by Bank of Ghana giving brief detail on the Bank of Ghana Webinars

[F] Smith, G., Z. Chinzara & L. Jessen (2017), Zambia Economic Brief: how Zambia can borrow without sorrow (English), *Zambia Economic Brief no.10*, Washington, DC: World Bank Group http://documents.worldbank.org/curated/en/782221512459934813/Zambia-economic-brief-how-Zambia-can-borrow-withoutsorrow

[G] World Bank (2018), *Zambia - Systematic Country Diagnostic* (English). Washington, DC: World Bank Group http://documents.worldbank.org/curated/en/290011522954283481/Zambia-Systematic-Country-Diagnostic