# AFRICA'S EXPERIENCE OF FINANCIAL CRISES AND MACROPRUDENTIAL POLICIES

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This study summarizes the frequency and size of financial crises and subsequent macroprudential policy making in Africa. The analysis draws on data on financial crises (Laeven and Valencia 2020), macroprudential policies (Alam *et al.* 2025), financial openness (Chinn and Ito 2006) and capital controls (Fernandez *et al.* 2016). Africa is the continent most affected by currency crises, while the frequency of banking and sovereign crises is in line with the average for EMDEs. During financial crises, the continent experiences relatively small GDP losses and small increases in public debt. At the regional level, there are significant disparities.

Middle Africa shows the highest risk of any type of financial crisis, although Southern Africa experienced the largest GDP losses during banking crises. Africa was the continent with the lowest macroprudential policy tightening since 1990, perhaps because its regulations were already tight at the start. Africa's financial openness is the lowest of all continents, while its regulation of capital flows, particularly outflows, is the strictest. Eastern Africa has significantly opened its economy since the early 1980s, and Western Africa eased its capital inflow regulations after 1996. Northern, Southern and Eastern Africa implemented a significant macroprudential easing during the pandemic. However, the regulatory loan to value (LTV) is particularly lax in Africa, with African countries maintaining an LTV of 100%, far above the values in other continents, which tightened their LTVs significantly after the Great Financial Crisis (GFC).

Keywords: Economic development; Financial crises; Banking crises; Macroprudential policy; Financial openness; Capital controls.

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The views in this paper are exclusively those of the author and do not necessarily reflect the position of the Central Bank of Chile or its board members. All errors are my own.
**Data availability:** All data used in this article are publicly available. The codes necessary to replicate the analysis are also available through a Mendeley Data link:
https://data.mendeley.com/datasets/fpy5p4p256/1

## 1. Introduction

This paper summarizes the experiences of financial crises and changes in financial policy across Africa and compares them with the rest of the world. Financial crises are especially significant events because of their strong effects on economic activity (Laeven and Valencia 2020). After the Great Financial Crisis (GFC), many countries started tightening their financial regulations and macroprudential policies in order to prevent future financial crises (Alam *et al.* 2025). Macroprudential policies are especially relevant for economies more reliant on bank credit, such as emerging markets (Chan *et al.* 2024, Ybrayev *et al.* 2024). Furthermore, prudential policies can help to correct externalities that lead agents to create too much credit (Korinek 2011).

I start by comparing the frequency of financial crises across Africa and other continents, using data between 1980 and 2019 (Laeven and Valencia 2020, Nguyen *et al.* 2022). Africa is the continent most affected by currency crises. In line with the average for EMDEs, Africa experiences a large number of financial crises of every type, including banking, currency and sovereign debt crises. Africa experiences almost as many banking crises as Europe and almost as many sovereign debt crises as the Americas (with Latin American countries showing a long history of sovereign debt default).

Middle Africa is the African region with the highest frequency of financial crises, with the average country having experienced 4 financial crises (much higher than the average of 0.5 financial crises experienced by advanced economies). However, African countries experience a small loss in GDP during financial crises relative to other continents, perhaps due to the low weight of their financial sector in the economy. African countries also show a small increase in public debt during financial crises. This suggests that an improvement in their fiscal outlook could help African economies better smooth the economic shocks of financial crises. This is particularly true in Middle Africa where governments cut fiscal spending severely during crises.

I then run a set of logit and linear panel regressions with several controls: i) exchange-rate regime measures; ii) fiscal variables; iii) macroeconomic controls; and iv) measures of the institutional framework, such as country fixed effects or World Governance Indicators. The results are model dependent. Both logit and linear models show

that sovereign debt crises are negatively associated with higher sovereign debt ratings (as expected). Logit models show that higher GDP per capita and currency unions decrease the probability of banking, currency and all financial crises. However, this result is not robust to the linear model estimates. Linear model estimates, after accounting for country and year fixed effects, show that banking crises are associated with lower regulatory quality and higher government effectiveness.

I then summarize how financial policies have evolved since the 1990s across Africa and other continents. I use the integrated Macroprudential Policy (iMaPP) database of the International Monetary Fund (IMF) for 134 countries to compare the evolution of 17 different macroprudential policies. Africa was the continent with the smallest tightening in macroprudential policies since 1990. In particular, Africa did not follow the prudential tightening implemented by other countries after Basel III was announced in 2012. Africa and Oceania were the continents with the lowest tightening of any group of financial policies, whether loan-based prudential regulations, capital supply policies or other policies (such as systemic institution controls, taxes or stress tests). This could be because financial regulations in Africa were already tight. Furthermore, African countries have a low degree of financial openness and strict capital controls. However, regulatory loan to value (LTV) in Africa is particularly lax, being set at 100% and allowing for maximum leverage in real estate purchases. This appears to be a specific area where African countries could update their regulations towards a more conservative stance.

I complement the analysis by using datasets specific to capital flow management (CFM) policies, such as the Financial Openness Index (Chinn and Ito 2006) and the Capital Controls Index (Fernandez *et al.* 2016). All of these indexes are based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).[1] The Financial Openness Index (Chinn and Ito 2006) represents the normalization of 4 indicators available in the AREAER reports since 1970: multiple exchange rates, current account restrictions, capital flows restrictions, taxes or restrictions on exports. This index has little granularity because: i) it does not distinguish between restrictions on inflows and outflows; ii) it does not consider different asset classes. The Capital

1. The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) tracks the exchange rate and trade regimes of all members of the International Monetary Fund (currently 189 countries). The IMF has published the AREAER annually since 1950. Each country chapter is presented in an easy-to-read tabular format that tracks more than 250 categories.

Controls Index (Fernandez *et al.* 2016) addresses these two shortcomings and includes much more information from the AREAER, but this extra information is available for fewer countries and only for more recent periods. The advantage of the Financial Openness Index (Chinn and Ito 2006) is that it is available since 1970 for 182 countries, covering almost the entire world. The Capital Controls Index (Fernandez *et al.* 2016) is available for 100 countries since 1995.

The results show that Africa remains the least financially open continent, having missed the great increase in financial openness across the world between 1980 and 2005 (Madeira 2025b). Only Eastern and Northern Africa experienced significant liberalization periods. Eastern Africa experienced a significant opening of its economies between 1980 and the Asian crisis of 1998. Northern Africa started its liberalization only in 1985 but kept opening its economy until 2004. However, Northern Africa has since become financially closed again, having significantly closed its economy up to 2013. Middle, Southern and Western African economies have not changed their financial openness significantly since the early 1980s.

Africa also has the strictest capital controls of any continent. These regulations were somewhat eased between 1995 and 1997 but have remained similar since then. Africa has restrictions on capital inflows similar to those of Asia. However, Africa has tighter capital outflow controls than any other continent. Middle Africa has the strongest capital controls among African regions, particularly for capital inflows. Capital outflow restrictions are highest in Southern Africa but are also high in Middle and Western Africa. Eastern Africa is by far the African region with the lowest capital controls regulation, whether for inflows or outflows. This is consistent with the finding that Eastern Africa has been the most financially open region of Africa since 1996.

The literature shows that macroprudential policies help to control excessive credit growth and housing prices (Biljanovska *et al.* 2023), which should mitigate future financial crises (Benigno *et al.* 2013, Babecký *et al.* 2014, Madeira 2024). Previous research shows that macroprudential policies in Western Africa improve banking stability (Some and Sawadogo 2025), with capital requirements reducing the risk of runs in retail banks (Toure *et al.* 2025). Banking crises are especially concerning because these often precede other financial crises such as sovereign debt default, currency crises and sudden stops (Kaminsky and Reinhart 1999, Reinhart and Rogoff 2009, Bordo and Meissner 2016). The frequency of financial crises, particularly in

emerging markets and developing economies, has increased since the end of the Bretton Woods era (Bordo and Meissner 2016). Therefore, more research is needed on the policies required to shield economies from financial crises (Madeira 2024). Previous literature also compares the role of macroprudential policies in North Africa relative to other Middle East countries (Ben Naceur and Omran 2011, Madeira 2025b), showing that prudential restrictions protect manufacturing growth from financial crises at the cost of lower growth during normal periods (Madeira 2025a).

This paper is organized as follows. Section 2 reviews the frequency and size of financial crises in Africa. I show which factors are most significant for explaining the occurrence of financial crises across countries. Section 3 describes the evolution of macroprudential policies, financial openness and capital controls restrictions in Africa since the 1990s. Finally, Section 4 summarizes the main findings. The data and codes that replicate the entire empirical analysis in the article are available in Mendeley Data: https://data.mendeley.com/datasets/fpy5p4p256/1

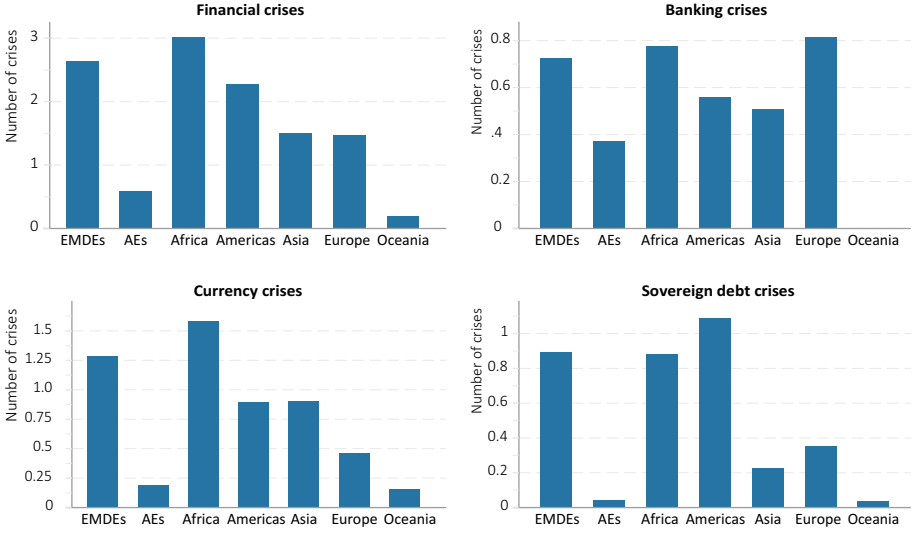
## 2. Financial crises across Africa

### 2.1. Frequency and severity of financial crises across continents and across African regions

This article uses the financial crisis dataset published by Laeven and Valencia 2020. This dataset includes the dates of the financial crises for each country. The data also includes estimates of the increase in public debt and the GDP losses implied by each banking crisis, which are estimated using the GDP trend growth before the financial crisis occurred. The financial crisis dates of this dataset were extended until 2019 by Nguyen *et al.* 2022. Note that there are 22, 41 and 65 countries with zero banking, currency and sovereign debt crises over the sample period (1980-2019), respectively. Therefore, the average frequency of financial crises can be below one, especially for some country groups such as the AEs. Oceania, in particular, is a continent that has faced almost no financial crises, perhaps because its economies have been booming for more than two decades. Figure 1 shows the average frequency of each type of financial crisis (all financial crises, banking, currency and sovereign debt crises) across the five continents and development levels (advanced economies (AEs), emerging markets and developing economies (EMDEs)). Note that some crises may fall into

multiple categories. For instance, a crisis can be a dual banking and currency crisis or a banking and sovereign debt crisis simultaneously. Therefore, the number of all financial crises is smaller than the sum of each type of crisis. The average African country has experienced financial crises, more than the average of any other continent. Roughly half of the financial crises in Africa were currency crises, while banking and sovereign debt crises each represent a quarter of the African crises. This pattern is similar to the other EMDEs, but differs markedly from AEs, where banking crises are the most common type of crisis.

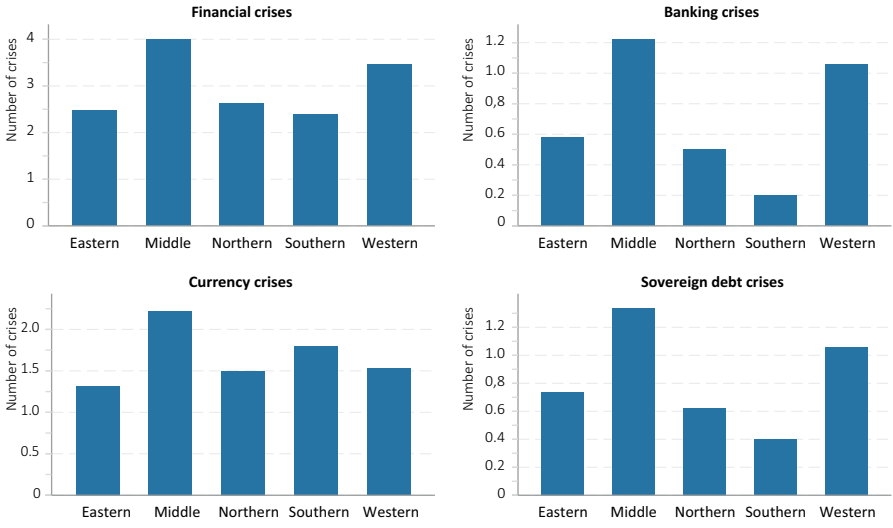
Figure 1. **Average frequency of financial crises per country across continents: 1980-2019**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 2 shows the average frequency of financial crises within regions of Africa. Middle and Western Africa are the regions with the highest number of financial crises. The average Middle African country has experienced 4 financial crises since 1980, which is roughly one financial crisis every decade. Again, roughly half of the financial crises in Middle Africa are currency crises, while banking and sovereign debt crises represent a quarter each.

Figure 2. **Average frequency of financial crises per country across African regions: 1980-2019**

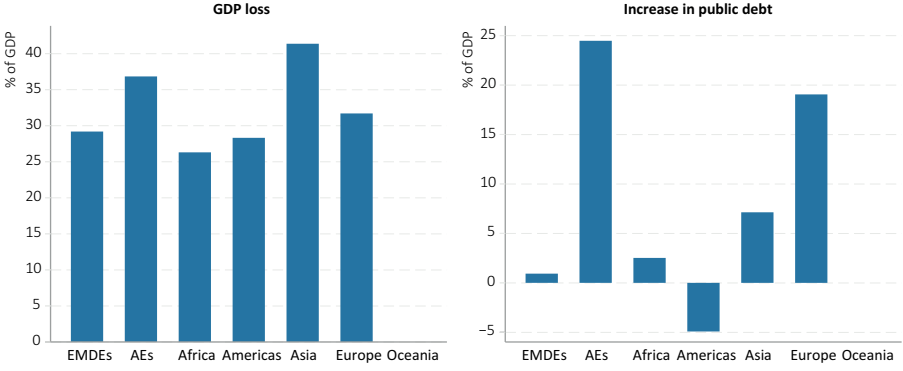



*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 3 summarizes the average GDP loss and increase in public debt for the banking crises in the average country (estimates from Laeven and Valencia 2020). Note that these results are for the period between 1980 and 2017, since these variables were not updated afterwards. Perhaps one reason is that both variables depend on the estimated trend for the GDP and public debt. Trend estimates tend to be sensitive to the last periods of the sample, which explains why estimates are not available for the most recent years. Interestingly, Africa experiences lower average GDP losses from a financial crisis than other continents and country groups, perhaps due to its lower financial development. Africa, like other EMDEs, changes its public debt little during financial crises, perhaps due to lower fiscal space available for expansions. This lack of fiscal expansion during crises in Africa may be due to a lack of fiscal space (Kose *et al.* 2022), expensive sovereign debt and risks to credit rating (Kose *et al.* 2022) or maybe due to the inefficiency of public spending prior to the crises. This could explain why African economies differ from AEs regarding the use of public debt during crises.

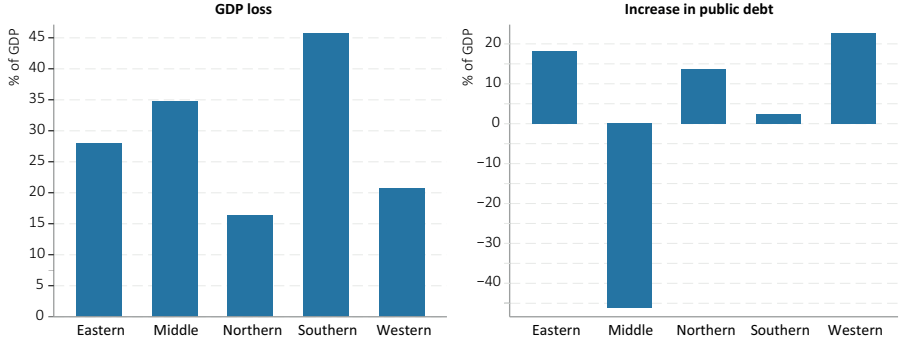
Figure 4 shows the average GDP losses and changes in public debt during financial crises across African regions. Average GDP losses during crises are highest in Southern Africa and lowest in Northern and Western Africa. Public debt during crises contracts more in Middle Africa, while it expands more in Western and Eastern Africa.

Figure 3. **Average GDP loss and increase in public debt during banking crises across continents**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 4. **Average GDP loss and increase in public debt during banking crises across African regions**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Finally, Table 1 summarizes the experience with financial crises for each African country. The Congo Democratic Republic, Nigeria and Zambia are the countries with the highest number of financial crises, having experienced 7 crises each since 1980, roughly one crisis every 6 years. The Congo Democratic Republic experienced the largest number of currency (6) and banking crises

(3). Cote d'Ivoire experienced the largest number of sovereign debt crises (4). Western Sahara, Mauritius, Mayotte, Reunion, St. Helena and Somalia experienced zero financial crises, which could be due to the low financial development of some of these countries. In some small coun-

tries, limited size and activity may make supervision easier. Burundi, Congo Democratic Republic and Namibia experienced extremely large financial crises, wiping out more than two-thirds of GDP.

Table 1. **Financial crises experienced by the African countries (1980 until 2019)**

| | Number of financial crises | | | | Average changes in banking crises | |
|---|---|---|---|---|---|---|
| Country | All crises | Banking crises | Currency crises | Sove-reign debt crises | GDP loss (% of GDP) | Increase in public debt (% of GDP) |
| **Angola** | 6 | 0 | 4 | 3 | | |
| **Burundi** | 1 | 1 | 0 | 0 | 121 | 11 |
| **Benin** | 2 | 1 | 1 | 0 | 15 | 6 |
| **Burkina Faso** | 2 | 1 | 1 | 0 | | 9 |
| **Botswana** | 1 | 0 | 1 | 0 | | |
| **Central African Rep** | 2 | 1 | 1 | 0 | 9 | -16 |
| **Cote d'Ivoire** | 6 | 1 | 1 | 4 | 45 | 14 |
| **Cameroon** | 5 | 2 | 1 | 2 | 57 | 8 |
| **Congo, Dem. Rep.** | 7 | 3 | 6 | 1 | 70 | 40 |
| **Congo, Rep.** | 3 | 1 | 1 | 2 | 47 | 103 |
| **Comoros** | 1 | 0 | 1 | 0 | | |
| **Cabo Verde** | 1 | 1 | 0 | 0 | 0 | 18 |
| **Djibouti** | 1 | 1 | 0 | 0 | 43 | |
| **Algeria** | 3 | 1 | 2 | 0 | 41 | 19 |
| **Egypt** | 5 | 1 | 2 | 2 | 1 | -4 |
| **Eritrea** | 1 | 1 | 0 | 0 | | |
| **Western Sahara** | 0 | 0 | 0 | 0 | | |
| **Ethiopia** | 1 | 0 | 1 | 0 | | |
| **Gabon** | 3 | 0 | 1 | 3 | | |
| **Ghana** | 6 | 1 | 5 | 0 | 45 | 16 |
| **Guinea** | 5 | 2 | 2 | 2 | 0 | 7 |
| **Gambia** | 5 | 0 | 2 | 3 | | |
| **Guinea-Bissau** | 4 | 2 | 2 | 0 | 15 | 56 |
| **Equatorial Guinea** | 3 | 1 | 2 | 0 | 0 | |
| **Kenya** | 3 | 2 | 1 | 0 | 37 | 12 |
| **Liberia** | 2 | 1 | 0 | 1 | | |
| **Libya** | 1 | 0 | 1 | 0 | | |
| **Lesotho** | 2 | 0 | 2 | 0 | | |
| **Morocco** | 4 | 1 | 1 | 2 | 22 | 36 |
| **Madagascar** | 6 | 1 | 3 | 2 | 0 | -26 |
| **Mali** | 2 | 1 | 1 | 0 | 0 | -11 |

Table 1. **Financial crises experienced by the African countries (1980 until 2019)**

| | Number of financial crises | | | | Average changes in banking crises | |
|---|---|---|---|---|---|---|
| Country | All crises | Banking crises | Currency crises | Sove-reign debt crises | GDP loss (% of GDP) | Increase in public debt (% of GDP) |
| Mozambique | 4 | 1 | 2 | 2 | 0 | 61 |
| Mauritania | 2 | 1 | 1 | 0 | 8 | |
| Mauritius | 0 | 0 | 0 | 0 | | |
| Malawi | 4 | 0 | 2 | 2 | | |
| Mayotte | 0 | 0 | 0 | 0 | | |
| Namibia | 2 | 0 | 2 | 0 | | |
| Niger | 3 | 1 | 1 | 2 | 97 | 26 |
| Nigeria | 7 | 2 | 4 | 2 | 7 | 36 |
| Reunion | 0 | 0 | 0 | 0 | | |
| Rwanda | 1 | 0 | 1 | 0 | | |
| Sudan | 6 | 0 | 5 | 1 | | |
| Senegal | 4 | 1 | 1 | 2 | 6 | •14 |
| St. Helena | 0 | 0 | 0 | 0 | | |
| Sierra Leone | 5 | 1 | 3 | 1 | 34 | 63 |
| Somalia | 0 | 0 | 0 | 0 | | |
| South Sudan | 1 | 0 | 1 | 0 | | |
| S. Tomé & Príncipe | 3 | 1 | 3 | 0 | 2 | -706 |
| Eswatini | 3 | 1 | 2 | 0 | 46 | 3 |
| Seychelles | 2 | 0 | 1 | 2 | | |
| Chad | 4 | 2 | 1 | 1 | 0 | 10 |
| Togo | 3 | 1 | 1 | 1 | 39 | 24 |
| Tunisia | 1 | 1 | 0 | 0 | 1 | 4 |
| Tanzania | 5 | 1 | 2 | 2 | 0 | 65 |
| Uganda | 5 | 1 | 2 | 2 | 0 | -27 |
| South Africa | 4 | 0 | 2 | 2 | | |
| Zambia | 7 | 1 | 5 | 2 | 31 | 36 |
| Zimbabwe | 5 | 1 | 4 | 0 | 10 | 21 |

*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Overall, this section shows that African countries face more financial crises than other continents, including other EMDEs. In particular, African countries experience more currency crises than other EMDEs. Currency crises are the most frequent type of financial crisis experienced by African countries.

African countries face lower GDP losses during crises, perhaps due to their lower financial development. African policies could improve by abandoning badly designed currency pegs and letting overvalued currencies float freely. Economic research has emphasized the dangers of exchange-rate pegs, since fixed exchange rates may create inflation for growing economies with high rates of investment and stimulate financial speculation and currency crises (Krugman *et al.* 1999, Blanchard *et al.* 2010). Fixed exchange-rate regimes were widely blamed for the economic crises of the 1980s and 1990s (Krugman *et al.* 1999, Rose 2011). However, some recent studies conclude that it is not clear whether the performance of currency pegs differs much from that of floating regimes (Rose 2011). It is possible that other factors besides exchange-rate regimes can affect the frequency and severity of financial crises in Africa. Other factors could be specialization in commodities, lack of financial depth, lower asset liquidity, inertia of public spending and institutional framework (such as the quality of the overall government institutions).

### 2.2. **Factors causing financial crises**

In terms of empirical analysis, Babecký *et al.* 2014 find that growth in domestic private credit is the most robust indicator of financial crises. Frankel and Saravelos 2012 find that only the level of reserves and recent real exchange rate appreciation are significant predictors of crises. Rose and Spiegel 2012, however, find that none of the most popular economic indicators helps to predict financial crises. Finally, a recent machine learning approach from Fouliard *et al.* 2023 uses around 67 variables to predict systemic financial crises twelve quarters ahead out-of-sample with a high signal-to-noise ratio. However, the methodology of these previous empirical papers is unable to test for causality (Fouliard *et al.* 2023). Greenwood *et al.* 2022 also find that rapid growth in asset prices and credit is a strong predictor of financial crises. Overall, there is a strong need to develop more empirical studies of financial crises, especially studies with a causal approach based on micro data (Dell'Ariccia *et al.* 2008, Madeira 2026).

This section provides a brief empirical analysis of which macroeconomic factors are related to financial crises. For this I include a set of controls, related to fiscal, economic and exchange regime variables. Since financial crises are dummy variables, I first estimate a logit model of whether a country *c* is in a financial crisis in year *t*:

$$1) \quad Pr(F_{c,t} = 1) = \Lambda(\beta X_{c,t})$$

where $\Lambda$ is the logit function $\Lambda(\alpha) = \frac{exp\ (\alpha)}{1 + exp\ (\alpha)}$.

$F_{c,t}$ denotes the dependent variable, which can be Banking, Currency, Sovereign Debt or All types of financial crises. The explanatory variables vector $X_{c,t}$ include: i) exchange-rate regime measures such as a currency union dummy (equal to 1 if the country is in a currency union or a fixed peg regime) and the exchange rate regime classification (1 to 14, with higher values denoting a more flexible exchange rate) from Harms and Knaze 2021; ii) fiscal variables such as general government gross debt (% of GDP) and the sovereign debt rating (1 to 21, with higher values denoting countries with better ratings) from Kose *et al.* 2022; iii) macroeconomic controls such as the lagged log of the annual GDP per capita in 2017 PPP USD, lagged GDP growth rate, and the size of the natural resource rents (% of GDP), sectors of agriculture, forestry and fishing (% of GDP) and manufacturing (% of GDP) from the World Bank; and iv) measures of the institutional framework such as the Regulatory Quality and Government Effectiveness indicators (available from the World Governance Indicators of the World Bank). Since the institutional variables of the World Bank are only available since 1996, I include regressions with and without such governance indicators. Furthermore, the vector X includes dummy variables for all the 22 sub-continental regions considered by the United Nations.[2]

I also use conditional logit regressions with country fixed effects ($\alpha_c$):

$$2) \quad Pr(F_{c,t} = 1) = \Lambda(\alpha_c + \beta X_{c,t})$$

The estimation uses the conditional logit model, which avoids the incidental parameters problem that is common in non-linear models (Wooldridge 2010).

Since financial crises have a strong international component and tend to spread contagiously across trade and financial partners, it is also useful to control for year fixed effects. This helps to better isolate the national components that may explain financial crises. However, due to the incidental parameter problem, the conditional logit model is not robust when controlling for fixed effects across more than one

2. For Africa, this includes 5 sub-continental areas: Eastern Africa, Middle Africa, Northern Africa, Southern Africa, Western Africa. For the Americas, there are 4 sub-continental areas: Caribbean, Central America, Northern America, South America. For Asia, there are 5 sub-continental areas: Central Asia, Eastern Asia, South-Eastern Asia, Southern Asia, Western Asia. For Europe, there are 4 sub-continental areas: Eastern Europe, Northern Europe, Southern Europe, Western Europe. For Oceania, there are 4 sub-continental areas: Australia and New Zealand, Melanesia, Micronesia, Polynesia.

dimension. Therefore, I also estimate linear panel data regressions, which can be understood as linear probability models:

3) $F_{c,t} = \alpha_c + \alpha_t + \beta X_{c,t} + \varepsilon_{c,t}$,

with $\alpha_t$ being year fixed effects. For robustness, I also show the linear results without country fixed-effects ($\alpha_c$), therefore including just sub-continent and year fixed effects.

The logit regressions in Table 2 show that, after accounting for country fixed effects, banking crises are positively associated with better sovereign debt ratings and natural resources, while being negatively associated with GDP per capita, manufacturing activity and currency unions. Currency crises are negatively associated with GDP per capita and currency unions or pegs. Sovereign debt crises are negatively associated with higher sovereign debt ratings. Finally, financial crises (of any kind) are positively associated with better sovereign debt ratings, while being negatively associated with GDP per capita and currency unions.

Table 2. **Logit regressions of financial crises on fiscal, economic and exchange regime variables**

| | With sub-continental region fixed effects | | | | With country fixed effects | | | |
|---|---|---|---|---|---|---|---|---|
| **Control variables** | **Banking** | **Currency** | **Debt** | **All** | **Banking** | **Currency** | **Debt** | **All** |
| **General government gross debt$_{c,t}$ (% of GDP)** | -0.000739 | 0.00445 | 0.0141 | 0.00140 | -0.0246 | 0.0106 | -0.0573 | -0.0193 |
| | *(0.00902)* | *(0.00794)* | *(0.00980)* | *(0.00474)* | *(0.0157)* | *(0.00885)* | *(0.0426)* | *(0.0156)* |
| **Sovereign debt rating$_{c,t}$** | 0.421*** | -0.0971 | -0.750*** | -0.116** | 0.705** | 0.202 | -1.892** | 0.234* |
| | *(0.122)* | *(0.0702)* | *(0.190)* | *(0.0549)* | *(0.293)* | *(0.157)* | *(0.824)* | *(0.141)* |
| **ln(GDPpcPPP$_{c,t-1}$)** | -2.216** | -0.228 | -0.272 | -0.146 | -11.03*** | -5.103** | -12.34 | -15.06*** |
| | *(0.877)* | *(0.573)* | *(0.900)* | *(0.389)* | *(4.179)* | *(2.535)* | *(7.839)* | *(4.458)* |
| **Growth GDP$_{c,t-1}$** | 0.212** | 0.0143 | 0.00566 | 0.0175 | 0.154 | 0.133 | 0.111 | 0.0658 |
| | *(0.107)* | *(0.0686)* | *(0.0786)* | *(0.0485)* | *(0.135)* | *(0.115)* | *(0.147)* | *(0.131)* |
| **Natural Resource Rents$_{c,t}$ (% of GDP)** | 0.0595 | 0.0466* | -0.0593 | 0.0350 | 0.498* | -0.0988 | -0.101 | -0.00644 |
| | *(0.0455)* | *(0.0271)* | *(0.0751)* | *(0.0215)* | *(0.302)* | *(0.0692)* | *(0.177)* | *(0.0810)* |
| **Agriculture, Forestry, Fishing$_{c,t}$ (% of GDP)** | 0.0834 | -0.0210 | -0.0530 | 0.0211 | -0.120 | 0.0238 | -0.469 | 0.396 |
| | *(0.0663)* | *(0.0569)* | *(0.0801)* | *(0.0393)* | *(0.273)* | *(0.110)* | *(0.747)* | *(0.364)* |
| **Manufacturing$_{c,t}$ (% of GDP)** | 0.0582 | 0.163*** | 0.110 | 0.0618** | -0.263** | -0.0394 | -0.0558 | 0.173 |
| | *(0.0386)* | *(0.0525)* | *(0.0864)* | *(0.0276)* | *(0.113)* | *(0.0759)* | *(0.140)* | *(0.167)* |
| **Currency union or peg dummy$_{c,t}$** | -0.299 | 0 | 0.415 | 0.353 | -15.75*** | -10.57*** | 0 | -11.45*** |
| | *(0.775)* | *(0)* | *(1.725)* | *(0.511)* | *(2.767)* | *(2.642)* | *(0)* | *(3.083)* |
| **Exchange rate regime$_{c,t}$** | 0.0447 | 0.314*** | -0.0211 | 0.142*** | -0.161 | 0.373 | -0.124 | 0.111 |
| | *(0.0805)* | *(0.0713)* | *(0.103)* | *(0.0419)* | *(0.270)* | *(0.239)* | *(0.283)* | *(0.187)* |
| **Observations** | 311 | 248 | 215 | 361 | 162 | 123 | 73 | 233 |

Robust standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.
*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

The results of the linear panel regressions in Table 3 show that, after accounting for country and year fixed effects, higher sovereign debt ratings are positively associated with banking and currency crises and negatively associated with sovereign debt crises.

Note that the fixed effects for each country and the log of the GDP per capita are already measures of the institutional quality in each country. The analysis in Table 4 additionally controls for the indexes of Regulatory Quality and Government Effectiveness (from the World Bank). The results of Table 4 are similar to Table 3. After accounting for country and year fixed effects, higher sovereign debt ratings are positively associated with banking and currency crises and negatively associated with sovereign debt crises. Furthermore, banking crises are associated with lower regulatory quality and higher government effectiveness.

Table 3. **Linear regressions of financial crises on fiscal, economic and exchange regime variables**

| | With sub-continent and year fixed effects | | | | With country and year fixed effects | | | |
|---|---|---|---|---|---|---|---|---|
| **Control variables** | **Banking** | **Currency** | **Debt** | **All** | **Banking** | **Currency** | **Debt** | **All** |
| **General government gross debt (% GDP)** | 0.000153 | 0.000633 | 0.000189 | 0.000448 | -0.000817 | 0.00609*** | -0.00149 | 0.000769 |
| | *(0.000374)* | *(0.000577)* | *(0.000529)* | *(0.000379)* | *(0.00135)* | *(0.00185)* | *(0.00169)* | *(0.000617)* |
| **Sovereign debt rating$_{c,t}$** | 0.0164*** | 0.00117 | -0.0251*** | -0.00635* | 0.0484*** | 0.0721*** | -0.0756*** | 0.00410 |
| | (0.00485) | (0.00655) | (0.00587) | (0.00328) | (0.0163) | (0.0228) | (0.0220) | (0.00887) |
| **ln(GDPpcPPP$_{c,t-1}$)** | -0.0664*** | 0.0243 | 0.0739** | 0.0245* | -0.392 | 0.0176 | -0.0101 | -0.134 |
| | (0.0235) | (0.0359) | (0.0316) | (0.0144) | (0.285) | (0.342) | (0.366) | (0.214) |
| **Growth GDP$_{c,t-1}$** | -0.00133 | 0.00858 | -0.00581 | 0.00312 | -0.00621 | 0.00567 | -0.000260 | 0.00603 |
| | (0.00520) | (0.00825) | (0.00704) | (0.00205) | (0.00724) | (0.0101) | (0.0101) | (0.00427) |
| **Natural Resource Rents$_{c,t}$ (% of GDP)** | -0.00291 | 0.00342* | -0.00121 | -8.52e-05 | -0.00734 | 0.00577 | 0.00441 | 0.00603 |
| | (0.00181) | (0.00200) | (0.00168) | (0.00116) | (0.00795) | (0.00859) | (0.0103) | (0.00663) |
| **Agriculture, Forestry, Fishing$_{c,t}$ (% of GDP)** | 0.00131 | -0.00139 | -0.000972 | 3.80e-05 | 0.00460 | -0.0158 | -0.00494 | -0.00729 |
| | (0.00287) | (0.00401) | (0.00340) | (0.000909) | (0.0155) | (0.0229) | (0.0188) | (0.00757) |
| **Manufacturing$_{c,t}$ (% of GDP)** | -0.00286 | 0.00358 | 0.000260 | -0.000332 | 0.00371 | 0.000755 | 0.0241 | -0.00225 |
| | (0.00183) | (0.00249) | (0.00226) | (0.00126) | (0.00891) | (0.0136) | (0.0158) | (0.00282) |
| **Currency union or peg dummy$_{c,t}$** | -0.0266 | 0.0109 | -0.00463 | 0.0135 | -0.281 | 0.114 | 0.184 | 0.0427 |
| | (0.0272) | (0.0379) | (0.0355) | (0.0251) | (0.204) | (0.289) | (0.163) | (0.0930) |
| **Exchange rate regime$_{c,t}$** | -0.00240 | 0.0148*** | -0.00637* | 0.00509 | -0.00553 | 0.0225 | -0.0128 | 0.00703 |
| | *(0.00324)* | *(0.00458)* | *(0.00385)* | *(0.00342)* | *(0.0140)* | *(0.0182)* | *(0.0138)* | *(0.0111)* |
| **Observations** | 369 | 369 | 369 | 369 | 369 | 369 | 369 | 369 |
| **R-squared** | 0.770 | 0.582 | 0.547 | 0.945 | 0.849 | 0.734 | 0.723 | 0.961 |

Robust standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.
*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Table 4. **Linear regressions of financial crises on fiscal, institutional quality and exchange regime variables**

| Control variables | With sub-continent and year fixed effects | | | | With country and year fixed effects | | | |
|---|---|---|---|---|---|---|---|---|
| | Banking | Currency | Debt | All | Banking | Currency | Debt | All |
| General government gross debt (% GDP) | 0.000236 | 0.000683 | 0.000207 | 0.000465 | -0.000998 | 0.00655*** | -0.000248 | 0.00136 |
| | *(0.000378)* | *(0.000545)* | *(0.000524)* | *(0.000405)* | *(0.00175)* | *(0.00238)* | *(0.00218)* | *(0.00102)* |
| Sovereign debt rating$_{c,t}$ | 0.0177*** | 0.00788 | -0.0313*** | -0.00708* | 0.0602*** | 0.0811*** | -0.0758*** | 0.00616 |
| | *(0.00573)* | *(0.00729)* | *(0.00688)* | *(0.00424)* | *(0.0173)* | *(0.0260)* | *(0.0274)* | *(0.00829)* |
| ln(GDPpcPPP$_{c,t-1}$) | -0.0432* | 0.0587* | 0.0195 | 0.0295* | -0.229 | -0.460 | -0.388 | -0.254 |
| | *(0.0256)* | *(0.0349)* | *(0.0299)* | *(0.0176)* | *(0.310)* | *(0.401)* | *(0.485)* | *(0.295)* |
| Growth GDP$_{c,t-1}$ | -0.000395 | 0.0114 | -0.00794 | 0.00323 | -0.00277 | 0.00993 | -0.00141 | 0.00786 |
| | *(0.00522)* | *(0.00799)* | *(0.00667)* | *(0.00228)* | *(0.00622)* | *(0.0101)* | *(0.0105)* | *(0.00519)* |
| Natural Resource Rents$_{c,t}$ (% of GDP) | -0.00392** | 0.000755 | 0.00212 | 5.95e-05 | -0.00151 | 0.000866 | 0.00496 | 0.00530 |
| | *(0.00188)* | *(0.00226)* | *(0.00187)* | *(0.00140)* | *(0.00720)* | *(0.00916)* | *(0.00991)* | *(0.00698)* |
| Agriculture, Forestry, Fishing$_{c,t}$ (% of GDP) | 0.000245 | -0.00326 | 0.00212 | 0.000175 | -0.0127 | -0.0311 | 0.00287 | -0.00917 |
| | *(0.00281)* | *(0.00397)* | *(0.00311)* | *(0.000923)* | *(0.0187)* | *(0.0297)* | *(0.0205)* | *(0.00951)* |
| Manufacturing$_{c,t}$ (% of GDP) | -0.00323* | 0.00228 | 0.00153 | -0.000135 | 0.00791 | 0.00365 | 0.0281 | -0.00129 |
| | *(0.00182)* | *(0.00238)* | *(0.00206)* | *(0.00120)* | *(0.00787)* | *(0.0145)* | *(0.0185)* | *(0.00267)* |
| Currency union or peg dummy$_{c,t}$ | -0.0154 | 0.00919 | 0.00388 | 0.0133 | -0.335** | 0.283 | 0.237 | 0.0951 |
| | *(0.0243)* | *(0.0360)* | *(0.0354)* | *(0.0274)* | *(0.163)* | *(0.333)* | *(0.189)* | *(0.0951)* |
| Exchange rate regime$_{c,t}$ | 0.000882 | 0.0114** | -0.00319 | 0.00533 | 0.0128 | -0.000440 | -0.000763 | 0.00727 |
| | *(0.00272)* | *(0.00446)* | *(0.00364)* | *(0.00364)* | *(0.0150)* | *(0.0197)* | *(0.0146)* | *(0.00869)* |
| Regulatory Quality$_{c,t}$ | 0.0144 | -0.0546 | 0.0313 | 0.0238 | -0.316** | -0.111 | 0.252 | 0.0715 |
| | *(0.0383)* | *(0.0507)* | *(0.0473)* | *(0.0265)* | *(0.138)* | *(0.208)* | *(0.171)* | *(0.0895)* |
| Government Effectiveness$_{c,t}$ | -0.0619 | -0.0592 | 0.111** | -0.0215 | 0.406*** | -0.0939 | 0.0377 | -0.0326 |
| | *(0.0402)* | *(0.0525)* | *(0.0456)* | *(0.0186)* | *(0.112)* | *(0.170)* | *(0.148)* | *(0.0642)* |
| Observations | 351 | 351 | 351 | 351 | 351 | 351 | 351 | 351 |
| R-squared | 0.760 | 0.602 | 0.572 | 0.938 | 0.867 | 0.759 | 0.746 | 0.958 |

Robust standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.
*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Overall, this subsection shows that identifying reliable determinants of financial crises is difficult and the results depend on the model (whether logit or linear). Both logit and linear models show that sovereign debt crises are negatively associated with higher sovereign debt ratings (as expected). Logit models show that higher GDP per capita and currency unions decrease the probability of banking, currency and all financial crises. However, this result is not robust to the linear model estimates. Linear model estimates, after accounting for country and

year fixed effects, show a positive relationship of higher sovereign debt ratings on banking and currency crises and a negative relationship with sovereign debt crises. Furthermore, banking crises are associated with lower regulatory quality and higher government effectiveness. Some of these results are counterintuitive. For instance, it would be logical to expect that better fiscal space (as measured by sovereign debt rating) would be related to a lower frequency of financial crises, but this does not appear to be the case apart from sovereign debt crises. The positive correlation between sovereign ratings and banking and currency crises is probably due to a missing control variable, such as higher private credit. It is also puzzling that the currency union or peg variable is not more strongly related to currency crises. Perhaps the reason is related to the dynamics of the variable (countries change their currency union status once a currency crisis happens) and maybe some reverse causality, with more stable countries being more likely to adopt currency unions or pegs.

## 3. Financial policy framework

### 3.1. Macroprudential policies

I now summarize how financial policies have evolved since the 1990s across Africa and other continents. For this I use the integrated Macroprudential Policy (iMaPP) database of the International Monetary Fund (IMF) for 134 countries to compare the evolution of 17 different macroprudential policies (Alam *et al.* 2025). This database aggregates information on the countries' prudential policies from the IMF, BIS, FSB and national authorities. The iMaPP dataset has a set of 17 macroprudential categorical indicators (+1, 0, •1 for tightening, no change and easing, respectively) for each country since 1990. The 17 prudential policies include: Loan-to-value (LTV), Debt Service to Income (DSTI), Limits on Credit Growth (LCG), Loan Loss Provisions (LLP), Loan restrictions (LoanR), Limits and penalties to the loan-to-deposit (LTD), Limits on foreign currency lending (LFC), Reserve Requirements (RR), Liquidity, Limits on foreign exchange exposure (LFX), Leverage limits or unweighted Leverage Ratio (LVR), Countercyclical buffers (CCB), Conservation buffer, Capital requirements, Tax measures, Systemically Important Financial Institutions (SIFI) risk mitigation measures, Other measures (such as stress testing, restrictions on profit distribution and limits on exposures between financial institutions). The iMaPP data

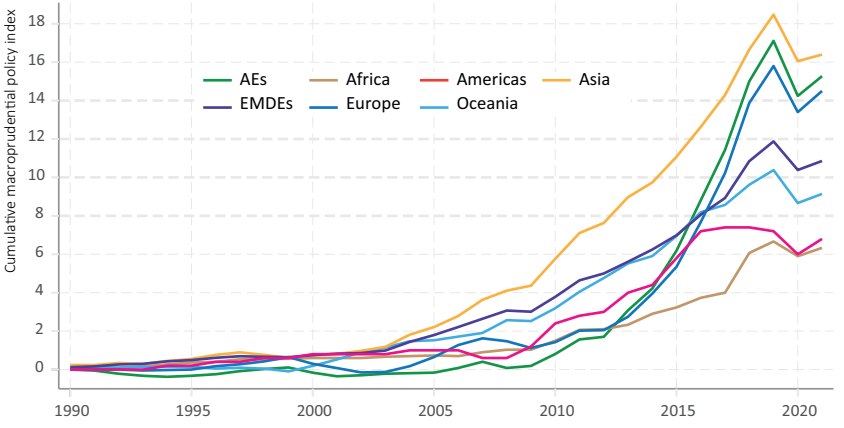
reports a Total Prudential Policy index, which is the sum of the 17 macroprudential policies for a given period. I then build the cumulative policy tightening that each country has implemented since 1990, as proposed by Akinci and Olmstead-Rumsey 2018.

Furthermore, I also separate the Total Prudential Policy Index into 3 subsets of policies: i) loan policy restrictions (the net sum of LTV, DSTI, LCG, LLP, LoanR, LTD, LFC); ii) capital supply requirements (the net sum of RR, Liquidity, LFX, LVR, CCB, Conservation, Capital); and iii) other macroprudential policies (the net sum of SIFI, Tax, Other). The idea of the first policy subset is to test the different effects of policies that affect only loans or borrowers. The policy subset of capital supply requirements includes policies that restrict banks' activities, such as liquidity restrictions, reserve requirements, limits to foreign exchange exposures, minimum requirements for bank capital or leverage limits. Other prudential policies include SIFI mitigation measures or additional capital, taxes on financial activity, and requirements such as stress testing, restrictions on dividends and limits to inter-bank exposures.

The iMaPP-IMF dataset is based on source documents and evaluations from the Financial Stability Board (FSB), International Monetary Fund (IMF), academic papers, national sources and IMF surveys sent to the national regulators (Alam *et al.* 2025). One problem with this dataset is that there is a substantial degree of subjective judgement influencing the answers given by the employees of the national regulators, such as whether a given policy change constitutes a tightening or an easing and when such a change was implemented (if it was when the legislation was announced or when the policy was put in actual use). A second problem is that the iMaPP dataset only reports whether policy was tightened or eased, not the intensity of the tightening or easing. Therefore, in a given country, a single tightening action may have more than offset two or more easing actions, but this cannot be accounted for in the analysis. Finally, a third problem is that policy tightening and easing are measured relative to each country's situation in 1990. Therefore, some countries may have started that period with policies that were too conservative or liberal relative to their peers. The first problem of the iMaPP dataset cannot be solved, because all the international datasets of macroprudential policies must depend on the inputs given by experts of each country's legislation, and experts sometimes disagree on whether or when a policy was implemented. The second and third problems, however, can be attenuated by the use of the Loan-to-Value (LTV) information in the iMaPP dataset, because

that policy can be more precisely quantified, therefore researchers have the measure of the policy's intensity and also do not need a comparison point such as 1990 or another year. Furthermore, I also use other datasets such as the Financial Openness Index (Chinn-Ito 2006) and the Capital Controls Index (Fernandez *et al.* 2016), which also include a measure of the policy's intensity and do not require an initial year base.

Figure 5. **Macroprudential net tightening index (cumulative sum of 17 policies) since 1990 across continents**

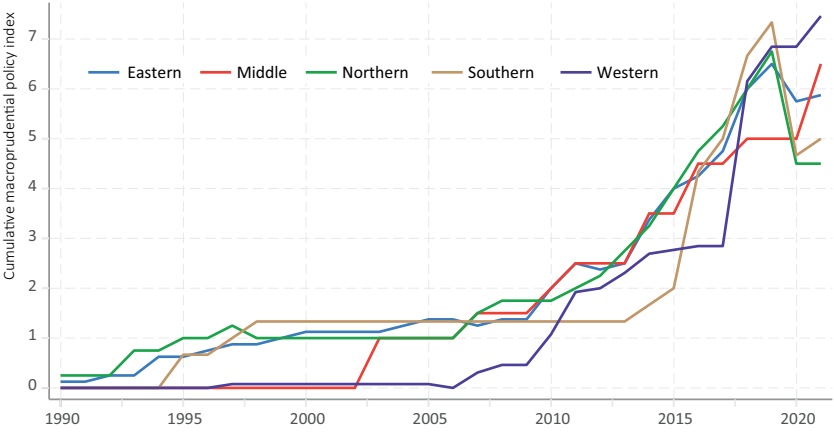



*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 5 shows that between 1990 and 2021, Africa tightened its macroprudential policies less than any other continent. This is especially true after 2012, when other countries, especially AEs, steadily implemented a significant macroprudential tightening as a result of adopting the Basel III framework. Africa and Oceania were the continents with the lowest prudential tightening after 2012. The average African and Oceanian country implemented just 6 net tightening actions since 1990, much less than the 11 and 15 net tightening actions implemented by EMDEs and AEs, respectively. In the case of Africa, perhaps this is because regulatory restrictions were already tight.

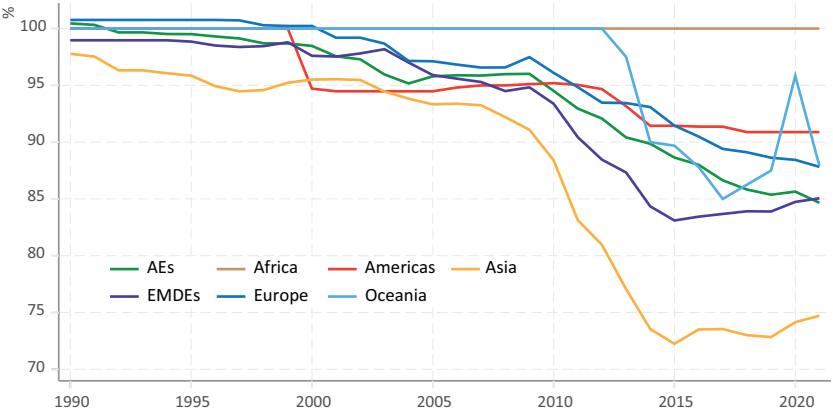
Figure 6 shows the evolution of macroprudential policies in African regions. All African regions implemented similar levels of low net prudential tightening, with net tightening going from 4.5 in Northern Africa to 8 in Western Africa. The evolution was similar across all regions until 2018. However, Northern and Southern Africa implemented significant policy easing in 2019 and 2020. Eastern Africa also implemented some prudential easing in 2020 at the start of the pandemic.

Figure 6. **Macroprudential net tightening index (cumulative sum of 17 policies) since 1990 across African regions**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 7. **Average mortgage LTV limit (in %)**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

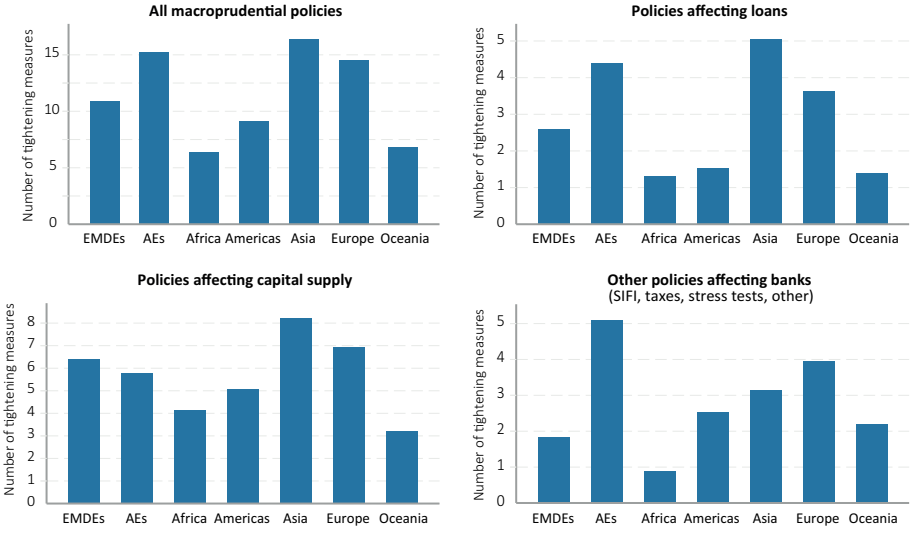
In the case of loan-to-value (LTV) limits for mortgages, a reduction of the value corresponds to a stronger policy tightening. Figure 7 shows that Africa kept its average LTV at 100%. This means that all African countries in the sample allow for mortgage loans to reach the entire value of the real estate. Other continents, by contrast, tightened their regulatory LTVs after the Great Financial Crisis (GFC) of 2008. By 2021, this had created a marked difference. Africa is the only continent that currently maintains an LTV of 100%, while other continents have LTVs between 75% and 91%.

Figure 8 shows the macroprudential net tightening in 2021 across all continents and for different policy components: all macroprudential policies, loan-based policies, capital supply-based policies, and other policies (such as SIFI, taxes or stress tests). Africa is the continent with the lowest prudential policy tightening in 2021, having implemented just 6 net tightening measures since 1990. Oceania, however, is quite close to Africa in terms of low net prudential policy tightening since 1990. Africa adopted few loan-based policies, with just 1.3 net tightening measures, well below the 2.5 and 4.4 net tightening for EMDEs and AEs, respectively. The average African country implemented 4 net tightening measures in terms of capital supply, which is also lower than the 6.5 net measures of other EMDEs. In terms of other prudential policies, the average African implemented less than 1 net tightening action, while EMDEs and AEs implemented 2 and 5 net tightening measures, respectively.

Figure 9 shows how different African regions evolved in terms of different types of prudential policies. Western Africa implemented the strongest tightening of all prudential policies, around 7.5 net measures. Western Africa was particularly active in implementing capital supply based policies, with 5 net measures. Eastern and Middle Africa implemented the strongest loan-based policies, with around 2 net measures. Southern Africa was the most active in other prudential policies, with around 1.3 net measures.

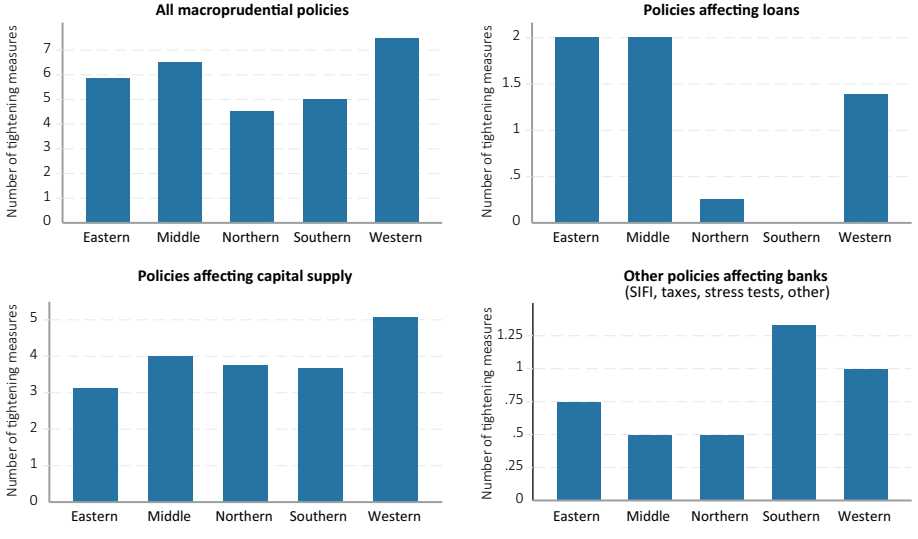
Table 5 summarizes the net tightening policy measures adopted by each African country until 2021. There are strong disparities in prudential policy tightening across the continent, even within its regions. In Eastern Africa, Mauritius adopted the strongest prudential policy stance, with 19 net measures, while Ethiopia was the least active. In Middle Africa, Angola adopted 11 net measures, while the Congo Democratic Republic adopted just 2 net measures. In Northern Africa, Tunisia adopted 10 net measures, while Sudan adopted just one. In Southern Africa, South Africa adopted 9 net measures, while Lesotho adopted just one. In Western Africa, Nigeria and Mali adopted 19 and 10 net measures each, while Gambia and Ghana adopted none. Overall, in Africa, Mauritius and Nigeria were the most active countries with 19 net measures each. Ethiopia, Sudan, Lesotho, Gambia and Ghana were the least active, adopting zero or just one net measures.

Figure 8. **Macroprudential net tightening index in 2021 (cumulative sum of all tightening policies since 1990) across continents**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 9. **Macroprudential net tightening index in 2021 (cumulative sum of all tightening policies since 1990) across African regions**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Table 5. **Macroprudential policy net tightening measures implemented by African countries in 2021**

| Country | All policies | Loan policies | Capital supply policies | Other policies |
|---|---|---|---|---|
| **Eastern Africa** | | | | |
| Burundi | 2 | 1 | 1 | 0 |
| Ethiopia | 1 | 0 | 1 | 0 |
| Kenya | 4 | 1 | 3 | 0 |
| Mauritius | 19 | 1 | 14 | 4 |
| Mozambique | 5 | 4 | 1 | 0 |
| Tanzania | 5 | 5 | 0 | 0 |
| Uganda | 9 | 4 | 3 | 2 |
| Zambia | 2 | 0 | 2 | 0 |
| **Middle Africa** | | | | |
| Angola | 11 | 4 | 6 | 1 |
| Congo, Dem. Rep. | 2 | 0 | 2 | 0 |
| **Northern Africa** | | | | |
| Algeria | 3 | 2 | 1 | 0 |
| Morocco | 4 | 0 | 4 | 0 |
| Sudan | 1 | 0 | 1 | 0 |
| **Tunisia** | 10 | -1 | 9 | 2 |
| **Southern Africa** | | | | |
| Botswana | 5 | 2 | 2 | 1 |
| Lesotho | 1 | 0 | 0 | 1 |
| South Africa | 9 | -2 | 9 | 2 |
| **Western Africa** | | | | |
| Benin | 8 | 1 | 6 | 1 |
| Burkina Faso | 8 | 1 | 6 | 1 |
| Cabo Verde | 4 | 2 | 1 | 1 |
| Côte d'Ivoire | 8 | 1 | 6 | 1 |
| Gambia | 0 | 0 | 1 | -1 |
| Ghana | 0 | 1 | -2 | 1 |
| Guinea-Bissau | 8 | 1 | 6 | 1 |
| Mali | 10 | 1 | 8 | 1 |
| Mauritania | 8 | 2 | 5 | 1 |
| Niger | 8 | 1 | 6 | 1 |
| Nigeria | 19 | 5 | 11 | 3 |
| Senegal | 8 | 1 | 6 | 1 |
| Togo | 8 | 1 | 6 | 1 |

*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

### 3.2. **Financial conditions across Africa before the Great Financial Crisis**

I also summarize the financial conditions faced by AEs, EMDEs, each of the five continents and each African region before the Great Financial Crisis (GFC). Since data on market instruments are scarce or unavailable for most African economies, I only analyze domestic private credit (whether from banks or non-bank financial institutions) across these economies. The results show that the median AE in 2006 had far more credit (as a % of GDP) than most EMDEs, being above the 90th percentile of EMDEs. Africa is the continent with the lowest amount of firm debt (as a % of GDP), with each of its percentiles being below the other continents' percentiles. The 75th percentile of debt in Africa is below the 25th percentile of other continents.

Table 6. **Distribution of domestic private credit (% of GDP) in 2006, before the Great Financial Crisis (GFC)**

**Unweighted minimum, maximum, mean and percentiles across countries**

| Region | Min | p10 | p25 | p50 | Mean | p75 | p90 | Max |
|---|---|---|---|---|---|---|---|---|
| **Across AEs and EMDEs** | | | | | | | | |
| EMDEs | 0.0 | 4.8 | 10.9 | 22.8 | 32.2 | 42.4 | 64.9 | 436.0 |
| AEs | 33.8 | 51.7 | 73.1 | 99.6 | 107.9 | 140.7 | 166.6 | 304.6 |
| **Across continents** | | | | | | | | |
| Africa | 0.0 | 2.3 | 6.0 | 10.9 | 17.5 | 20.2 | 44.9 | 139.0 |
| Americas | 8.5 | 17.0 | 21.8 | 36.6 | 44.7 | 53.9 | 73.7 | 198.3 |
| Asia | 2.3 | 5.9 | 22.8 | 34.7 | 47.0 | 65.4 | 109.2 | 166.6 |
| Europe | 26.0 | 31.2 | 47.2 | 76.3 | 102.1 | 133.4 | 162.9 | 436.0 |
| Oceania | 18.5 | 18.5 | 20.7 | 45.3 | 53.8 | 79.1 | 113.6 | 113.6 |
| **African regions** | | | | | | | | |
| Eastern Africa | 3.5 | 4.9 | 9.8 | 15.4 | 18.5 | 21.4 | 26.0 | 68.7 |
| Middle Africa | 2.0 | 2.0 | 2.1 | 4.5 | 7.4 | 8.8 | 26.1 | 26.1 |
| Northern Africa | 6.0 | 6.0 | 11.0 | 12.1 | 27.2 | 49.3 | 57.3 | 57.3 |
| Southern Africa | 7.4 | 7.4 | 13.2 | 20.0 | 46.6 | 80.0 | 139.0 | 139.0 |
| Western Africa | 0.0 | 2.3 | 4.7 | 10.2 | 11.5 | 15.1 | 15.9 | 44.9 |

*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

However, there is a lot of heterogeneity across countries in each continent. Private credit to GDP in Africa ranges from a minimum 0% to a maximum of 139%, with an interdecile range between 2.3% and 44.9% and an interquartile range between 6% and 20.2%. The presence of credit is also highly heterogeneous across African regions.

Southern African countries are the most indebted with median of 20.%, 75th percentile of 90% and 90th percentile reaching 139% of GDP. Middle Africa is the least indebted region, with a median country value of 4.5%, a 75$^{th}$ percentile of 8.8% and a 90th percentile of just 26.1% of GDP. Eastern, Northern and Western Africa have moderate values of indebtedness with median values of just 15.4%, 12.1% and 10.2% of GDP, respectively.

It is worth noting, however, that all African regions have low debt values relative to the other continents, with the median country of each African region being well below the median value of any other continent. Even the 25th percentile of debt in any other continent is above the median value of any of the African regions.

### 3.3. **Mortgage use across Africa**

There is little information on household debt, such as mortgages or consumer debt, across African countries. There are no household finance surveys in Africa, which would allow a complete view of both formal and informal loan use (Madeira 2022). Recent international surveys such as the Findex 2025 database have a lot of information on means of payment used by respondents, but no information on household debt (Klapper *et al.* 2025). Furthermore, there are currently no datasets with mortgages as a share of GDP which cover African countries. However, Badev *et al.* 2014 show the Housing Loan Penetration (the percentage of adult population with an outstanding loan to purchase a home), obtained for 147 economies from the Global Financial Inclusion (Findex) Database of 2011. Since future Findex surveys did not include this information, this section is limited to discussing the 2011 survey results.

Table 7 summarizes the information of housing loan penetration across different continents and African regions in 2011. The results show that mortgages are accessible to very few households in Africa. In the median African country, only 1.8% of the adults have a mortgage, much lower than in any other continent. In the median European and Oceanian countries, around 11.4% and 43.2% of adults, respectively, had a mortgage. Mortgage penetration in Africa ranges from a minimum of just 0.1% to a maximum of just 7.1%. Northern Africa has the highest rate of mortgages among the adult population, with a median value of 6.3% and a 90th percentile of 7.1%. Western Africa has the lowest rate of mortgages, with a median value of 0.8%, a 90th

percentile of only 3.6% and a minimum value of just 0.1%. These results show, therefore, that mortgages in Africa are barely accessible for the general population and restricted to a small elite. More up-to-date data are needed, however, to better assess this problem.

Table 7. **Distribution of housing loan penetration (% of adults with an outstanding mortgage) in 2011**

**Unweighted minimum, maximum, mean and percentiles across countries**

| Region | Min | p10 | p25 | p50 | Mean | p75 | p90 | Max |
|---|---|---|---|---|---|---|---|---|
| **Across AEs and EMDEs** | | | | | | | | |
| EMDEs | 0.0 | 0.6 | 1.1 | 2.3 | 4.2 | 5.4 | 10.2 | 23.5 |
| AEs | 6.7 | 9.1 | 15.6 | 27.5 | 27.5 | 38.0 | 43.8 | 59.7 |
| **Across continents** | | | | | | | | |
| Africa | 0.1 | 0.3 | 0.7 | 1.8 | 2.7 | 5.4 | 6.4 | 7.1 |
| Americas | 0.4 | 0.6 | 1.6 | 2.1 | 5.6 | 4.2 | 12.2 | 36.7 |
| Asia | 0.0 | 0.6 | 1.6 | 5.2 | 8.2 | 16.1 | 20.4 | 25.6 |
| Europe | 0.7 | 1.8 | 4.3 | 11.4 | 18.1 | 31.1 | 41.5 | 59.7 |
| Oceania | 42.6 | 42.6 | 42.6 | 43.2 | 43.2 | 43.8 | 43.8 | 43.8 |
| **African regions** | | | | | | | | |
| Eastern Africa | 0.1 | 0.6 | 1.1 | 1.5 | 2.9 | 5.7 | 6.5 | 6.9 |
| Middle Africa | 0.3 | 0.3 | 0.6 | 1.1 | 2.1 | 4.3 | 6.3 | 6.3 |
| Northern Africa | 2.2 | 2.2 | 3.2 | 6.3 | 5.0 | 6.4 | 7.1 | 7.1 |
| Southern Africa | 0.8 | 0.8 | 1.3 | 3.6 | 3.7 | 6.0 | 6.6 | 6.6 |
| Western Africa | 0.1 | 0.2 | 0.4 | 0.8 | 1.6 | 2.5 | 3.6 | 6.1 |

*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

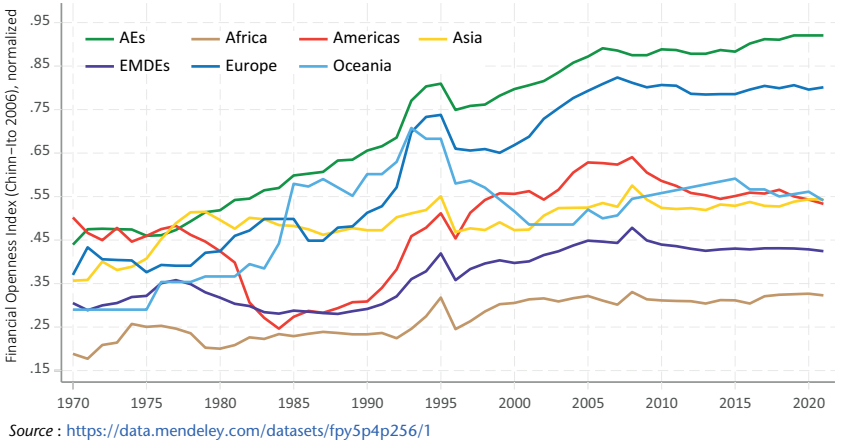
## 3.4. **Capital flow management policies**

I now use two datasets specific to capital flows policies: i) the Financial Openness Index (Chinn-Ito 2006), ii) the Capital Controls Index (Fernandez *et al.* 2016). The Financial Openness Index (Chinn and Ito 2006) takes the first principal component of the AREAER summary binary codings of controls relating to current account transactions, capital account transactions, the existence of multiple exchange rates, and the requirements of surrendering export proceeds. It is worth noting that the 1982 international sovereign debt crisis pushed the financial liberalization of African economies, as sovereign syndicated Euro-loans (which were then the primary source of external financing), dried up by the end of the previous decade.

The Capital Controls Index (Fernandez *et al.* 2016) distinguishes between: i) outflows and inflows restrictions; ii) 10 asset classes; iii) restrictions on residents and non-residents. Note that all of the capital flow management (CFM) indexes are based on the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), which has more than 250 categories for each country regarding their capital account policies. The Financial Openness Index (Chinn and Ito 2006) and the Capital Controls Index (Fernandez *et al.* 2016) are based on different aggregations of the 250 categories available in the AREAER. There are many ways in which these categories can be aggregated, therefore it is not clear which factor explains the differences between the indexes.

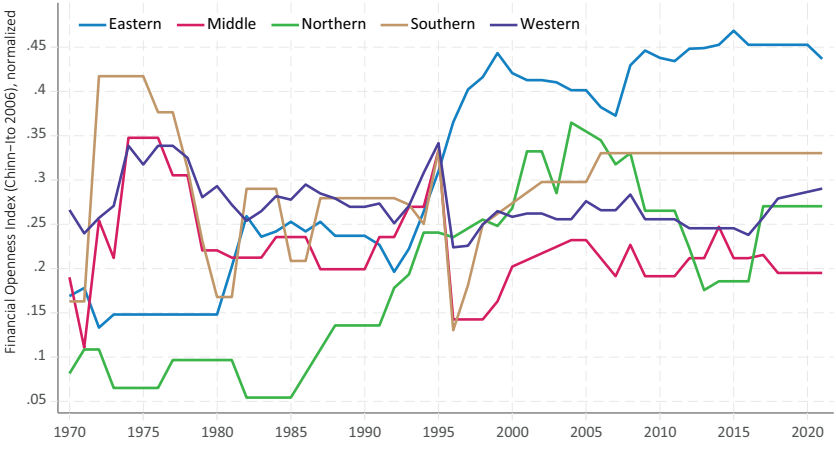
Figure 10 shows that all the other continents became significantly more financially open during the 1980s and 1990s (Chinn and Ito 2006), but Africa was an exception. The Financial Openness Index of Africa was less than 0.20 in 1970 and by 2021 it was still less than 0.35. These are very low levels of financial openness. For instance, Asia, Europe, the Americas and AEs already had levels of financial openness above 0.35 in 1970, well before the general liberalization movement after the end of Bretton Woods in 1973.

Figure 10. **Financial Openness Index (Chinn-Ito 2006, normalized) since 1970 across continents**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 11. **Financial Openness Index (Chinn-Ito 2006, normalized) since 1970 across African regions**

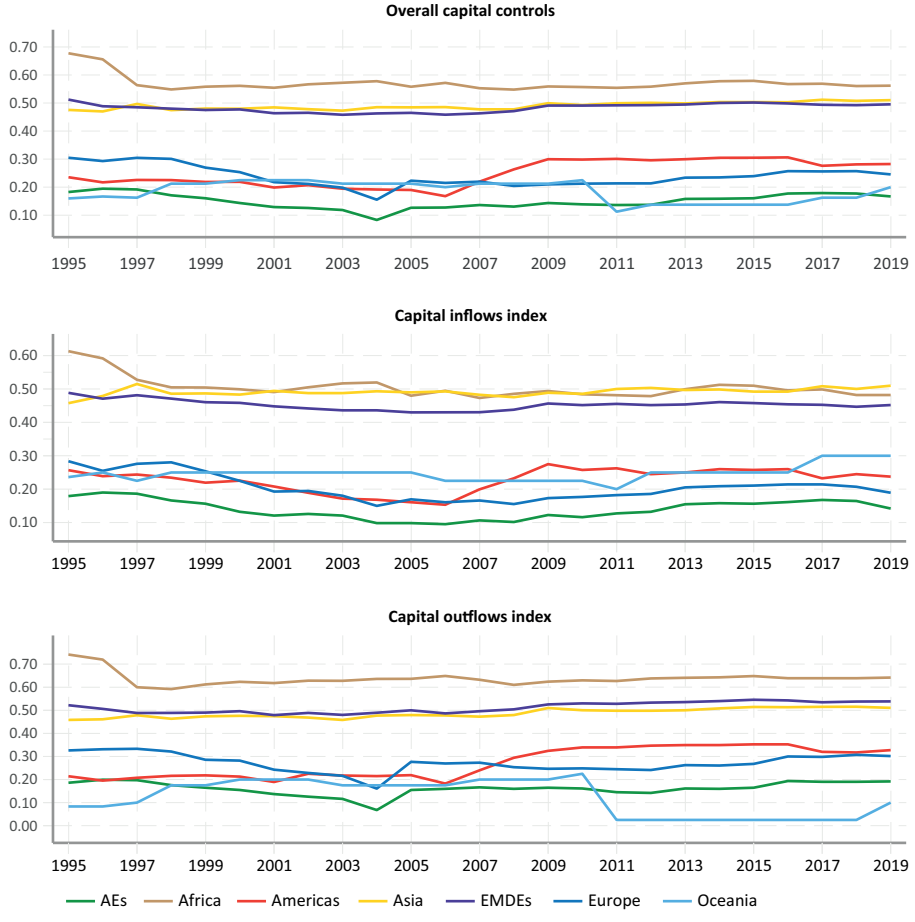



*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Figure 11 shows the changes in financial openness across African regions. It shows that Southern and Middle Africa closed their economies after the mid 1970s. Eastern Africa significantly opened its economy between 1980 and 1982 and again from 1991 until the Asian crisis in 1999, and has remained the most financially open region of Africa since 1996. Northern Africa also became significantly more financially open between 1985 and 2004. However, Northern Africa reversed this liberalization between 2005 and 2012. In 2004, Northern Africa was almost as financially open as Eastern Africa, but now it is more closed than Eastern, Southern and Western Africa. Middle Africa is the most financially closed region of Africa since 2016.

Figure 12 shows the capital controls index across continents since 1995 (Fernandez *et al.* 2016). Africa reduced its capital controls regulations significantly between 1995 and 1997. However, it remains the continent with the strictest capital controls. Africa has a similar level of capital inflows restrictions as Asia. However, in terms of capital outflows restrictions, Africa has much stronger regulations, significantly above both Asia and other EMDEs.

Figure 12. **Capital controls indexes since 1995 across continents: overall, inflows and outflows restrictions**

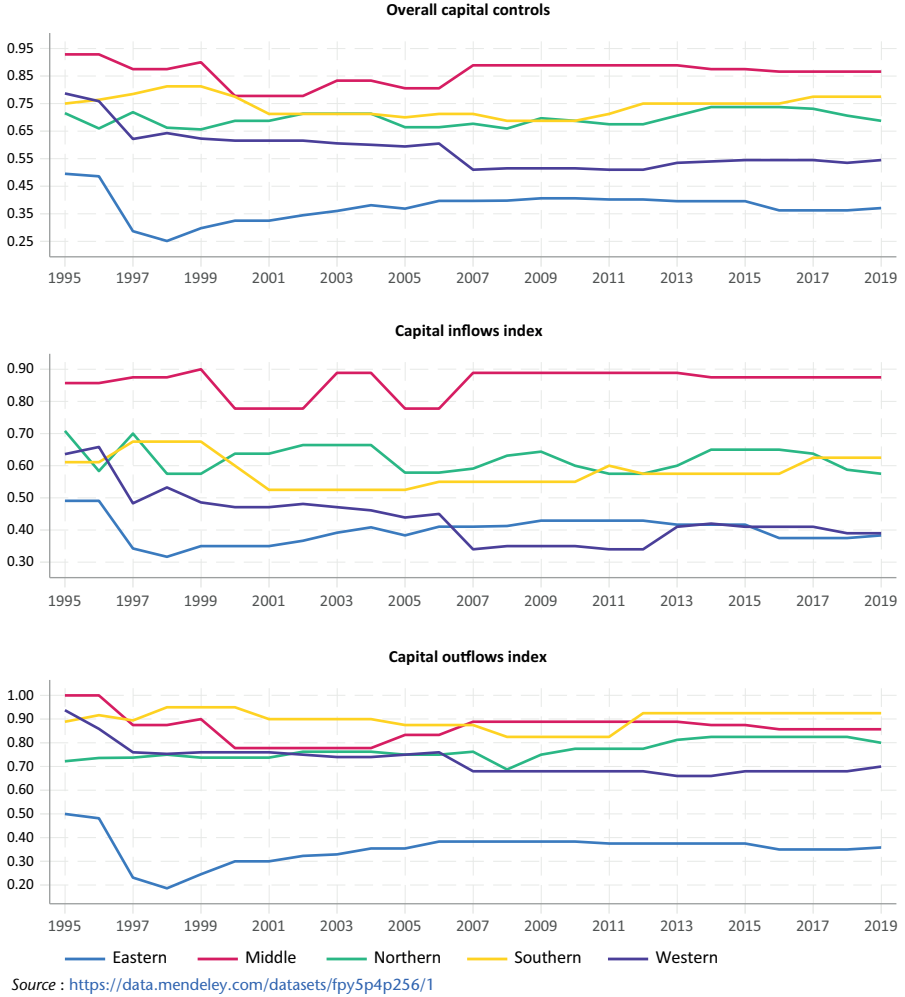



*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

Finally, Figure 13 shows the capital controls restrictions across different African regions. Middle Africa is the region with the strongest capital controls regulation, both for overall flows and for inflows. In terms of outflows, Middle, Southern and Northern Africa all show strong capital controls regulation. Eastern Africa is the region with the lowest degree of capital controls, whether for overall capital flows, outflows or inflows. In terms of capital inflows regulation, both Eastern and Western Africa have low degrees of regulation, being substantially more open than the other African regions. Eastern Africa implemented a strong liberalization of capital controls between 1996 and 1998, and

has gradually tightened controls since then. Western Africa liberalized its capital controls significantly between 1996 and 2007, keeping its regulation steady since then. Southern and Northern Africa did not change their capital controls regulation substantially between 1995 and 2019, while Middle Africa significantly liberalized its controls between 1996 and 2006 and tightened them again after the Great Financial Crisis (GFC) of 2007.

Figure 13. **Capital controls indexes across African regions: overall, inflows and outflows restrictions**




*Source* : https://data.mendeley.com/datasets/fpy5p4p256/1

## 4. Conclusions

This work studies the frequency of financial crises and evolution of macroprudential policies across Africa in the last 32 years. Africa is the continent with the highest number of financial crises, with the average African country having experienced 3 crises since 1980, roughly one crisis every 14 years. Currency crises are the most frequent type of financial crisis experienced by African countries, perhaps due to badly designed pegs and overvalued exchange rates. Economic research documents the negative effects of fixed exchange rate regimes on financial crises during the 1980s and 1990s (Krugman *et al.* 1999, Blanchard *et al.* 2010), but some recent research shows that some countries also manage well with fixed exchange rate regimes and therefore the issue is worthy of study (Rose 2011). Around one half of the financial crises in Africa are currency crises, while banking and sovereign debt crises represent around a quarter each.

African countries experience on average lower GDP losses during financial crises than other continents, perhaps due to their lower financial development. African countries change their public debt little during financial crises, which could either be due to low fiscal space or perhaps because fiscal spending cannot easily be increased efficiently.

Results about the causes of financial crises across continents are ambiguous. Logit models show that higher GDP per capita and currency unions decrease the probability of banking, currency and all financial crises. Linear model estimates, after accounting for country and year fixed effects, show that banking crises are associated with lower regulatory quality and higher government effectiveness. In terms of the initial financial fragility before the Great Financial Crisis (GFC), I show that African countries had low levels of domestic private credit to GDP compared with other continents. Mortgage loans are barely accessible in Africa. Using 2011 data, only 1.8% of the adults have a mortgage in the median African country, much lower than the median of any other continent. Mortgage penetration in Africa ranges from a minimum of just 0.1% to a maximum of just 7.1%. Northern Africa has the highest rate of mortgages among the adult population, with a median value of 6.3% and a 90th percentile of 7.1%. Western Africa has the lowest rate of mortgages, with a median value of 0.8%, a 90th percentile of only 3.6% and a minimum value of just 0.1%.

I then summarize how financial policies have evolved since the 1990s across Africa. It is worth noting that the 1982 international

sovereign debt crisis pushed the financial liberalization of African economies. Africa was the continent with the lowest macroprudential policy tightening since 1990, perhaps because its regulations were already tight. The average African country implemented just 6 net tightening measures since 1990, far below the 11 and 15 net measures in EMDEs and AEs, respectively. Africa adopted very few loan-based and other prudential policies such as stress tests, financial taxes or SIFI regulations. The average African country did implement 4 net tightening measures in terms of capital supply. This is still lower than the 6 and 6.5 net measures adopted by AEs and EMDEs.

Capital flow management policies are often used to protect financial stability. Africa's financial openness is the lowest of all continents, while its regulation of capital flows, particularly outflows, is the strictest.

Regulatory loan to value (LTV) is particularly lax in Africa, with African countries maintaining an LTV of 100%. In particular, Africa did not follow the movement in other continents towards lowering the LTV to more conservative levels after the Great Financial Crisis (GFC). Currently, all other continents have an average LTV between 75% and 91%, far tighter than Africa. Perhaps African countries have a lax LTV in order to stimulate activity in incipient real estate markets. However, this may be an aspect where African regulators could try to assess whether a more conservative stance is appropriate.

Finally, Africa is a highly heterogeneous continent. Middle Africa is the African region with the highest number of financial crises of any type, whether banking, currency or sovereign debt crises. The Congo Democratic Republic, Nigeria and Zambia are the countries with the highest number of financial crises, having experienced 7 crises each since 1980, roughly one crisis every 6 years. The Congo Democratic Republic experienced the largest number of currency (6) and banking crises

(3). Cote d'Ivoire experienced the largest number of sovereign debt crises (4). Western Sahara, Mauritius, Mayotte, Reunion, St. Helena and Somalia experienced zero financial crises.

Net macroprudential policy measures ranged from zero in Gambia and Ghana to 19 in Mauritius and Nigeria. Northern, Southern and Eastern Africa were able to ease their macroprudential policies during the Covid pandemic. Eastern Africa has significantly opened its economy since the early 1980s and Western Africa eased its capital

inflow regulations after 1996. Eastern Africa is now by far the African region with the highest degree of financial openness, having achieved that peak position since 1996. Eastern Africa is also the region with the lowest capital controls, whether for overall, inflows or outflows. Middle Africa has the tightest capital controls regulation, particularly for overall flows and inflows. Southern and Northern Africa also have tight capital outflows regulations.

Overall, much research remains to be done on what justifies African macroprudential policies and whether their regulations are optimal or might be improved. For instance, there is little information on household debt, such as mortgages or consumer debt, across African countries.

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## APPENDIX: list of countries across African regions

**Eastern Africa**

- Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mayotte, Mozambique, Reunion, Rwanda, Seychelles, Somalia, Tanzania, Uganda, Zambia, Zimbabwe.

**Middle Africa**

- Angola, Cameroon, Central African Republic, Chad, Congo, Dem. Rep., Congo, Rep., Equatorial Guinea, Gabon, São Tomé and Príncipe.

**Northern Africa**

- Algeria, Egypt, Libya, Morocco, South Sudan, Sudan, Tunisia, Western Sahara.
- Southern Africa: Botswana, Eswatini, Lesotho, Namibia, South Africa.

**Western Africa**

- Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, St. Helena, Togo.

*Note*: the article considers areas that are autonomous in terms of financial policies. These areas may be part of another sovereign state. The list of these zones therefore does not correspond to any statement about political sovereignty.