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REPUBLIC OF MADAGASCAR

SELECTED ISSUES

January 9, 2020

Approved By
African Department

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TAX REVENUE MOBILIZATION POTENTIAL IN MADAGASCAR AND LESSONS FROM SUCCESSFUL EPISODES IN SSA[1]

Tax revenue mobilization improved in recent years in Madagascar but remains low compared to its peers and considering its large development needs. Under the Plan Emergence Madagascar, the authorities envision a sharp increase in tax revenue over the next five years—what are the possibilities? This paper takes stock of recent developments in revenue mobilization in Madagascar, estimates the country's tax potential based on its structural characteristics and other factors, and draws some lessons from successful revenue mobilization episodes in other sub-Saharan African (SSA) countries. The analysis shows that there is a significant tax potential including through a possible broadening of the tax base, notably for consumption taxation (VAT and excises); and underscores the importance of a comprehensive revenue strategy, including by combining reforms in tax policy and in tax and customs administrations.

A. The Need for Further Revenue Mobilization in Madagascar

1. Despite recent progress, tax revenue remains low (Figure 1)**.** The tax-to-GDP ratio is expected to increase for the seventh year in a row in 2019. Despite this encouraging finding, Madagascar's tax-to-GDP ratio remains one of the lowest in SSA. It is currently 10.4 percent of GDP, significantly lower than 15.5 percent of GDP in non-resource rich low-income and developing countries (LICDs) and 15 percent in all SSA countries.

2. Increasing revenue collection is essential for achieving development objectives while preserving fiscal sustainability. Substantial resources are needed in Madagascar to mitigate the country's fragilities and make significant progress towards the Sustainable Development Goals. While part of the needed financing for such needs can come from private investment or from official development assistance (ODA), increasing domestic resources is crucial to create additional fiscal space for much needed priority spending in infrastructure, education, and health. Mobilizing domestic resources for financing is also important for preserving medium-term fiscal sustainability. While Madagascar remains at low risk of external debt distress and moderate risk of overall public debt distress, shocks could create liquidity problems as the debt-service to revenue ratio is already high.

3. Madagascar experienced several episodes of tax revenue mobilization, but they were often followed by substantial declines reversing the gains achieved (Figure 1). Tax revenues increased by 3 percentage points of GDP during 1995-2000 before returning in 2002 at a level below the initial level. Similarly, during 2002-2008, the tax-to-GDP improved by 4 percentage points of GDP in 6 years before losing half of this gain in a single year. Although these reversals are mainly due to the country's fragilities and a series of socio-political crises, these

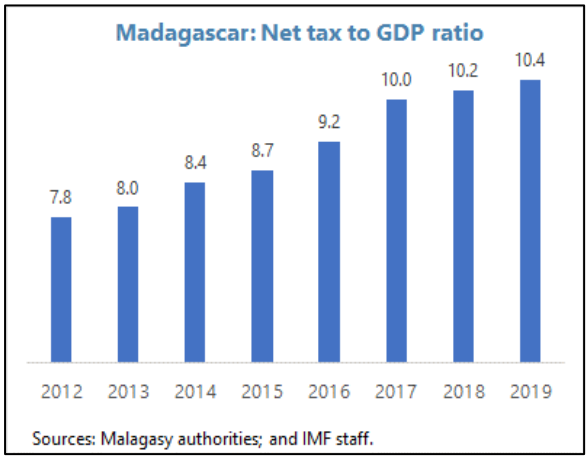
[1] Prepared by Gabriel Léost.

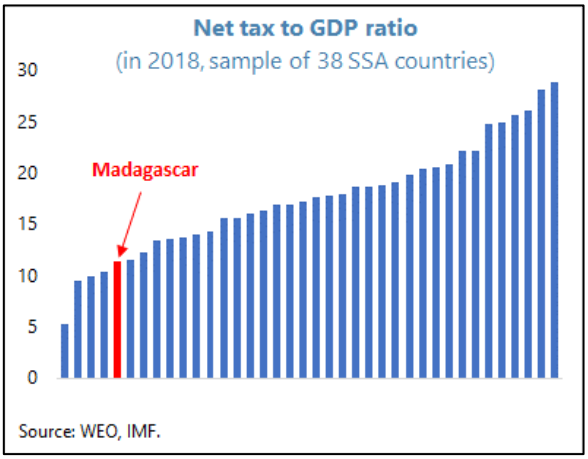
experiences underscore the need for a continued revenue mobilization effort over an extended period.

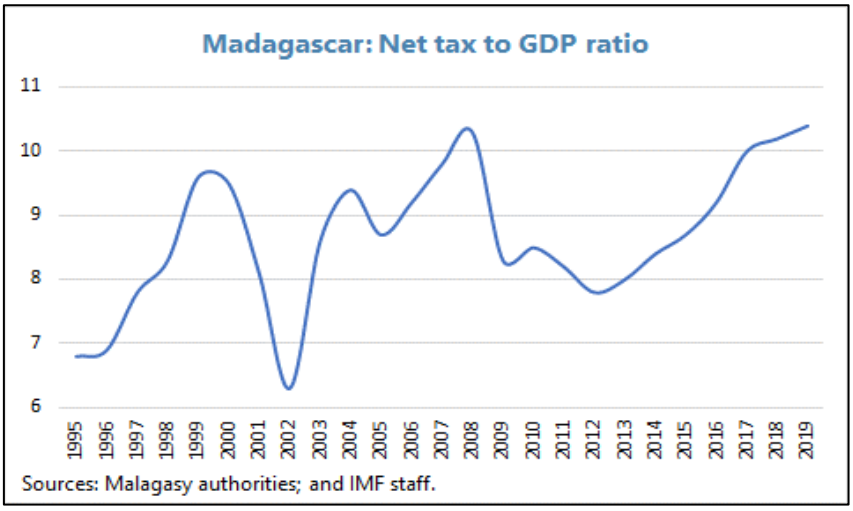
4. The authorities envision large increases in tax revenue in the coming years. Their objective is to increase the net tax-to-GDP ratio to 15 percent of GDP by 2023, which implies increases of more than 1 percentage point of GDP per year over this period. This is extremely ambitious considering that such an increase in a single year has been observed in Madagascar only once in the last twenty years. Over the 2012-2019 period, during which revenues increased each year, the average yearly increase was about 0.4 percentage point of GDP.

Figure 1. Tax Revenue

Despite recent progress, Madagascar has one of the lowest tax-to-GDP ratios among SSA countries. In the last 25 years, tax revenue collection has been volatile in Madagascar, with episodes of mobilization followed by substantial declines.



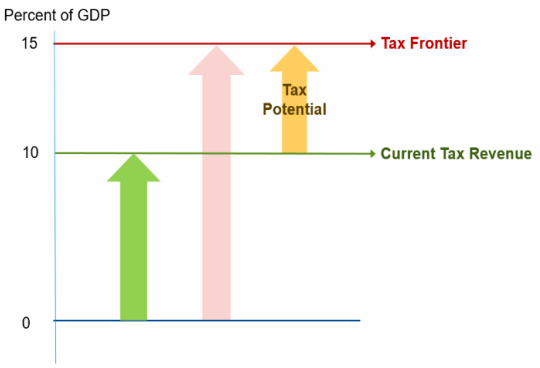




B. Estimating of Madagascar's Tax Potential

5. An empirical analysis can be used to estimate the tax revenue potential for Madagascar.[2] One way to assess the amount of additional taxes that Madagascar can potentially collect is to compare its tax-to-GDP ratio with that of other countries with similar characteristics, including the level of economic and institutional development. Such an analysis can define a tax frontier (or theorical tax capacity), that is, the highest level that a country can expect to achieve given underlying macroeconomic and institutional conditions. The distance between actual tax revenues and the tax frontier in a particular year measures the theorical tax potential, which reflects the tax revenue gains that a country could achieve through tax policy changes or improvement in the efficiency of collection.

Figure 2. Tax Potential



6. The tax frontier for SSA countries is estimated using a panel of 123 countries from 2000-2018 (Annex I)**.** The model uses a set of independent variables commonly found to be associated with the level of tax revenue, including GDP per capita, trade openness, the share of agriculture in GDP, income inequality and public spending on education. Variables measuring corruption and government effectiveness are also included to assess the impact of institutions.

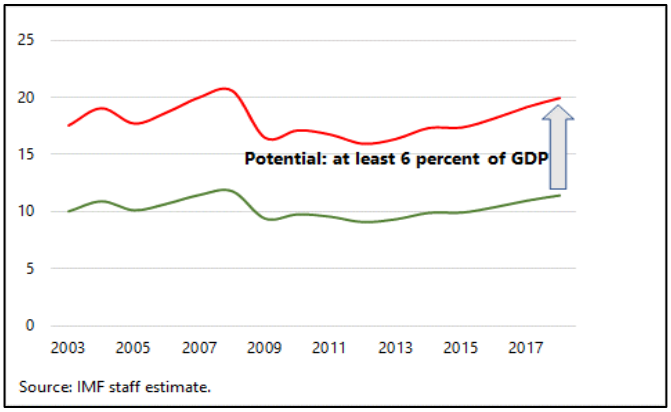
7. Results suggest that Madagascar's tax potential is greater than 6 percent of GDP (Figure 3)**.** The October 2017 REO chapter estimates a tax potential of about 6.5 percent of GDP for Madagascar. An updated estimation using data up to 2018 estimates a tax potential of about 7 percent of GDP, which could reflect structural improvements in recent years. The potential for Madagascar is larger than the average for SSA countries (about 4.8 to 5.5 percent of GDP) and other fragile states (about 3.9 to 5.0 percent of GDP). Since taxes on goods and services provide a substantial share of revenues in many countries, we repeat the estimation using the ratio of taxes on goods and services-to-GDP as dependent variable. Results suggest that the tax potential from taxes on goods and services in Madagascar is large, implying possible gains from value-added and excise taxes.

8. Tax potential estimates should be used with caution and always in line with priorities. First, estimates can be sensitive to modeling assumptions and estimations techniques. Second, the tax potential does not need to be the target: it reflects preferences, including accepting higher tax burdens to finance the delivery of public services, and tax policy choices (for example, about whether tax exemptions on basic consumer staples—essential for the most

[2] We follow the estimation approach in the October 2017 SSA regional Economic Outlook "The Impact of Fiscal Consolidation on Growth in Sub-Saharan Africa" and the April 2018 SSA Regional Economic Outlook ''Domestic Revenue Mobilization in SSA: What Are the Possibilities?''

vulnerable—should be removed to increase collection). Nevertheless, the tax frontier is not an absolute limit: it can be increased overtime by improving macroeconomic and institutional conditions.

Figure 3. Tax Potential Estimate



C. Experience from Successful Episodes in Other SSA Countries

9. Sustained revenue mobilization can be challenging. The analysis in the October 2017 SSA Regional Economic Outlook covering the 2000-2016 period found only six episodes of sustained revenue mobilization—defined as a total increase of 2 percentage points of non-resource GDP over a three-year period with no substantial declines in the revenue ratio within or immediately following the period.

10. Successful episodes share some common characteristics. There are successful episodes in countries at various income levels, and initial levels of tax revenue. These successful experiences share some commonalities:

- All cases point to the need for a broad range of tax policy and revenue administrative reforms prior to and during the mobilization episode.
- Each country embarked on a comprehensive and multiyear reform strategy, with some common elements, including a focus on basic institutions, measures to broaden the tax base, and modernization of tax administrations.
- A strong and sustained political commitment is needed. Progress on revenue mobilization can be slow or incremental, over a prolonged period. While a sound reform strategy that seeks to build effective and modern institutions is critical, political commitment to carry out reforms is also essential.
- Need to build consensus for reform. To ensure better tax compliance, a social contract between the state and the citizen—the state exercises its legitimate right to collect taxes in exchange for effective and transparent government spending—must be established. Credible commitment to better governance and transparency is essential.

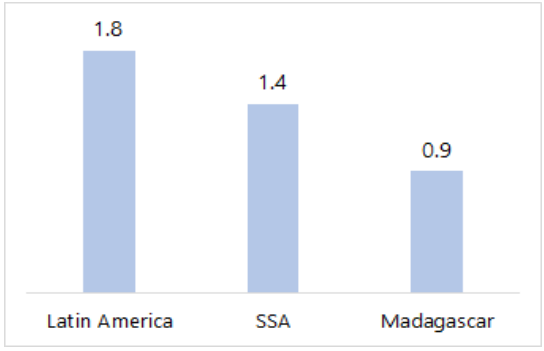
D. Lessons for Madagascar

11. The authorities' determination to enhance revenue collection is welcome, but may be too optimistic. Based on evidence from recent achievements in Madagascar as well as successful revenue mobilization episodes in other SSA countries, ambitious but credible annual increases of about 0.5 percentage point of GDP per year over the medium-term could be considered a success.

12. The potential for taxes on goods and services could be better exploited:

- *The yield from VAT can be improved*, notably by the rationalization of tax expenditures. The tax policy unit at the Ministry of Economy and Finance already undertaken an impact analysis of tax expenditures for 2016, 2017 and 2018 (annexed to the budget laws), and started to evaluate the many existing exemptions, their cost, and effectiveness. Some first measures on taxation of wheat and corn have been introduced in the 2020 budget law.
- *The yield from excise tax could also be improved*. Compared to peers, excises remain a relatively untapped source of revenue in Madagascar. Country experiences show that the elasticity of demand in relation of price is generally low for some goods subjects to excise duties (tobacco, alcohol, luxury goods). Some increases have been introduced in the 2020 budget law (on tobacco and beer), but there is also considerable room for maneuver to modernize and optimize the management and control of existing excise duties on alcohol, tobacco and telecommunications. In addition, the country could also consider introducing excise taxes on new goods.

Figure 4. Excise Taxes
(Percent of GDP)



Source: IMF staff.

13. Reforms initiated in 2015 at the Tax General Department must be continued and strengthened. Significant progress has been made in terms of organization, simplification of procedures, management (including with the establishment of performance contracts), and dialogue with the taxpayers (including the organization of tax controls). A recent FAD TA mission[3] stressed the following priorities:

- *Revive tax control operations* that have slowed down during the installation of the new government and new administrative teams. This enhancement of control activity should come with external and internal communication efforts, and tax audit performance should

[3] See the November 2019 mission on Progress in tax and customs administrations reforms (Clark, Montagnat-Rentier, de Santis, Wood and Lesprit).

be measured based on the proportion of active taxpayers (notably the big enterprises) controlled.

- *Optimize the management of human and budgetary resources,* proceeding without delay to the assignments of new agents, starting with those intended for tax control. Beyond the performance contracts by directions, establish systems for evaluating individual performance, and apply planned disciplinary measures when necessary.
- *Improve the collection of outstanding tax payments ("Restes à Recouvrer"),* with the stock estimated at about 1 percent of GDP.
- *Strengthen the reliability of taxpayer identification already initiated.* Efforts to better exploit the anomalies detected in the use of the Tax Identification Number (NIF) must be pursued.
- *Define an appropriate threshold for the application of VAT*. The current threshold is low (MGA 200 million, about US$ 50,000), and its application requires important resources for very limited results. A threshold of MGA 500 million could result in the elimination of less than 100 companies from the portfolio of the Large Enterprise Directorate, representing barely 0.01% of total VAT revenues, and would allow this Directorate to focus on more important cases.

14. The modernization of customs administration should continue. A customs administration reform plan for the 2020-2023 period is under finalization, and FAD TA recommendations include:

- *Target the organized fraud and reduce the irregularities in customs clearance*. Up to 70 per-cent of the import declarations remain non-compliant, but only 3 percent are notified by the customs offices.
- *Intensify the control of the companies benefitting from free zone- or other exemption-agreements*. While they account for 40 percent of total imports, no customs infringement has been officially recorded in 2018 and 2019 regarding exemptions and free enterprises.
- *Strengthen the fight against corruption,* including by improving internal ethics and implementing disciplinary measures.

15. Communication between the two tax administrations could be improved. The tax administrations should notify each other if a case of fraud. Also, the domestic tax administration should have access to customs import/export data: many importers are active and make customs declarations without being identified by the domestic tax administration.

16. Getting the buy-in of all stakeholders remains a challenge. Given the weaknesses in the provision of public services, social dialogue and consultation are important to explain the rationality of the tax system and the use of the tax revenue by the State. It is also important that an improvement in tax collection is accompanied by a facilitation of the administrative procedures for the taxpayers. In this regard, the development of on-line declaration and payment procedures, already successfully used by a growing number of large companies, is welcome.

Annex I. Estimating Tax Frontier and Tax Potential

Step 1: Estimate the tax frontier from a cross-country panel data set

$$y_{it} = \alpha_i + \beta' X_{it} + \vartheta_{it} - \mu_{it},$$

where
y_{it} is the log of the tax revenue-to-GDP ratio for country i at period year t
X_{it} is a vector of independent variables that affect y_{it}
μ_{it} is the inefficiency, which is correlated with X_{it}, but independent from ϑ_{it}, and
ϑ_{it} is the residual, and normal distribution with $N(0,1)$

Step 2: Determine the tax effort

$$TE_{it} = \frac{\exp(y_{it})}{\exp(y_{it|\mu_{it}=0})} = \frac{\exp(\alpha_i + \beta' X_{it} + \vartheta_{it} - \mu_{it})}{\exp(\alpha_i + \beta' X_{it} + \vartheta_{it})} = ex\,p(-\mu_{it}).$$

Step 3: Determine the tax frontier and tax potential

$$TP_{it} = TF_{it} - y_{it} = \frac{y_{it}}{TE_{it}} - y_{it}.$$

Data and Variables

Log of tax to GDP: *World Economic Outlook* (WEO)
Log of tax on goods and services to GDP: WEO
Lag of log of real GDP per capita: WEO
Lag of log of real GDP per capita squared: WEO
Trade openness—sum of imports and exports in percent of GDP: WEO
Agriculture: Value added of agriculture in percent of GDP: World Bank, World Development Indicators (WDI)
Gini coefficient: WDI
Oil: dummy for oil exporters
General Government: dummy for General Government tax revenues.
Corruption and Government Effectiveness: Worldwide Governance Indicators (WGI).

SCALING-UP PUBLIC INVESTMENT IN MADAGASCAR: CHALLENGES AND OPPORTUNITIES[1]

Madagascar faces challenges in financing and executing the scaling-up of public investment as well as getting the expected impact. This paper assesses the growth impact of the public investment scaling-up planned by the Malagasy authorities between 2019 and 2023. It finds that scaling-up public investment is crucial to increase economic growth and achieve sustainable development goals. Improving public investment management could significantly increase the growth impact of the investment scale-up.

A. Introduction

1. Public investment scale-up can raise economic growth. Boosting government spending on infrastructure can increase growth in the short-term by stimulating aggregate demand. It can also raise growth in the longer-term as better infrastructure promotes the economy's productivity, generating supply effects to expand output. Infrastructure supports the delivery of key public services and connects citizens and firms to economic opportunities.

2. The Malagasy government has an ambitious development plan that is anchored on a significant scale-up of infrastructure investment. The government's 2019–2023 Plan Emergence Madagascar (PEM) puts emphasis on infrastructure to address long-standing development problems, raise growth, and improve living standards. Preliminary estimates in the PEM suggest financing needs of investment of about USD 12 bn over 2020-2023, expected to be mobilized from domestic resources (about 13 percent of GDP) and private and international investors (about 19 percent of GDP).

3. The scaling up of public investment in Madagascar faces a number of challenges. The estimated needs of investment to realize the PEM are nearly twice as many as the projected investment financing for the next two years. Execution of public investment has been low due to poor performance of externally-financed investment. Public investment spending delivers less infrastructure benefits than it could potentially do, suggesting low public investment efficiency in Madagascar. The capacity to manage public investment is still weak. The planning, preparation, selection and the implementation of multiple investment projects require a large set of technical and managerial resources that are not yet available in Madagascar and take time to be developed.

4. The ambitious plan for scaling up public investment requires a careful assessment of the impact on debt sustainability and growth. It is important to assess the country's ability to implement the planned scaling up, effectively absorb much higher levels of aid, and efficiently use them to achieve the expected growth impact and development goals. This paper uses the IMF Debt-Investment-Growth (DIG) model to estimate the macroeconomic effects of public investment scale-up in low-income countries. The DIG considers the investment-growth linkages, public external and

[1] Prepared by Ha Vu, with inputs from Anja Baum and Luis-Felipe Zanna.

domestic debt accumulation, the fiscal policy reactions necessary to ensure debt-sustainability, and private sector reactions.

5. The magnitude of the growth impact from the public investment scale-up depends crucially on the efficiency of public investment. Efficiency refers to the rate at which spending on public investment translates into infrastructure. Countries that are more efficient in public investment get more growth impact from boosting infrastructure spending (IMF 2015). Large investment scaling up episodes do not necessarily translate into growth (Warner 2014) and the growth impact is reduced if management is weak leaving room for corruption and rent seeking.

6. Improvements in public investment management can significantly enhance the efficiency of public investment. Countries with stronger public investment management practices have more predictable, credible, efficient, and productive investments (IMF 2015). Strengthening these practices could significantly improve growth impact of public investment.

7. This paper assesses the growth impact of the public investment scaling up planned by the Malagasy authorities between 2019 and 2023. Following the introduction, Section B discusses the scaling up, highlights the importance of public investment scale-up in Madagascar, outlines the key challenges in boosting public investment, and discusses the underlying causes of the challenges. Section C estimates the growth impact of the planned scale-up and recommends how to get more growth impact from the investment boost. Section D concludes.

B. Public Investment Scaling-Up

Why does Madagascar Need it?

8. Infrastructure in Madagascar has lagged behind. Access to basic infrastructure such as treated water, schools, and hospitals is lower than the average of low-income countries and sub-Saharan Africa (Figure 1 panel 3). Similarly, the quality of infrastructure in Madagascar is perceived as decreasing in recent years, and relatively lower than the comparators (Figure 1 panel 4). A survey by the World Economic Forum suggests an infrastructure quality score of 2.7 out of 7 for Madagascar compared to 3.0 and 3.2 for low-income countries and sub-Saharan Africa, respectively.

9. General government investment has been low in Madagascar during the past two decades. General government investment as a percentage of GDP has been lower than the average of sub-Saharan Africa since 2009 (Figure 1 panel 1). It decreased from the peak of 12 percent in 2004 to below 3 percent in 2013, then slowly picked up but remained low, only about 5 percent in 2017. Total investment in Madagascar has been increasingly supported by private investment but declined sharply since 2009, as a result of the country's major political crisis (Figure 1 panel 2). Private investment was high in the late 2000s reaching almost 22 percent of GDP in 2008 but then declined sharply to only 14 percent in 2013 and has remained low since then. Infrastructure investment through public private partnerships (PPPs) has started recently but has not been enough

to compensate for the decrease in general government and private investment spending.[2]

10. The significant infrastructure shortfall calls for more investment in infrastructure, a key objective of the government. Increased and better-quality investment spending in Madagascar could also lead to higher GDP growth (Figure 1 panel 5).[3] Large investment spending is also needed to reach the SDGs. The PEM anchors on a significant scale-up of infrastructure investment including general government and private investment to achieve inclusive growth and sustainable development outcomes.

Challenges in Scaling-up Public Investment

11. Financing the needs of the planned public investment scale-up is challenging. The estimated needs of public investment to realize the PEM are nearly double the projected investment financing for the next two years: public investment needs are about 41 per-cent of GDP in 2020-21 while total investment is projected to be only about 23 percent in these years respectively, leaving a significant financing gap (Figure 2 panel 1). The PPP investment portfolio is currently small to fill this gap, but it is estimated that the construction of two upcoming hydroelectric PPP projects would provide an investment of about 1.3 percent of GDP each year for the next five years.

12. The pace of scaling up set by the government appears to be very ambitious given the country's absorptive capacity. In the draft PEM, public investment in 2020 and 2021 is expected to be more than double the level of public investment execution during 2016-2019. Cross-country evidence suggests that the pace of scaling-up depends on the institutional framework and management capacity. When the pace of investment scaling up is above the absorptive capacity, countries will not be able to deliver infrastructure results and reap the full benefit of additional public investment.

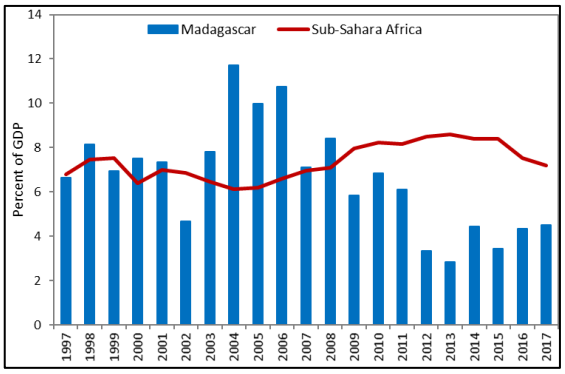
13. Execution of public investment has been low due to poor performance of externally-financed investment. The significant increase in the budget allocation for public investment has not been followed by an equivalent increase in execution (Figure 2 panel 3a). Total public investment allocated in the budget laws for 2017 and 2018 was about 8 percent of GDP, but executed public investment was only 5.4 and 6 percent of GDP in 2017 and 2018. The low execution reflects poor performance of externally-financed investment (about two thirds of total public investment): externally-financed investment was at 6.1 and 5.7 percent of GDP in the budget laws for 2017 and 2018, but its execution was only 3.5 and 3.7 percent of GDP for 2017 and 2018, respectively and lower than the 4 percent execution in 2016 (Figure 2 panel 3b). Execution of domestically-financed investment is generally in line with budget allocation (Figure 2 panel 3c).

[2] There has been one PPP contract signed and two PPP projects in negotiation in Madagascar since 2015. The concession of Ivato and Nosybe airport has almost completed construction and will start operating in 2020. Priority Hydroelectric Project Sahofika and Priority Hydroelectric Project Volobe are expected to start construction in 2020.

[3] IMF 2015 suggests that increased investment spending in countries with better infrastructure governance leads to higher output.

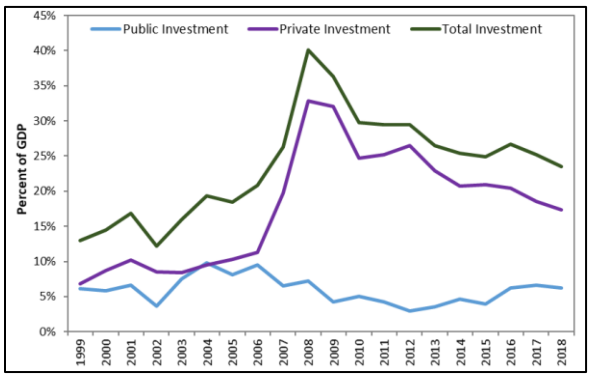
Figure 1. General Government Investment and Infrastructure

General Government Investment
(percent of GDP)



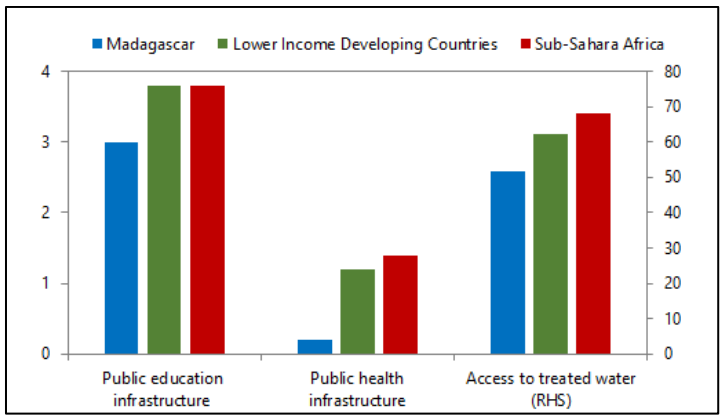
Source: World Economic Outlook 2019.

General Government and Private Investment
(percent of GDP)



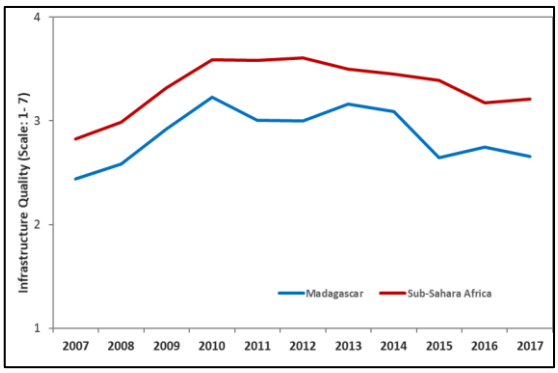
Source: IMF staff estimates.

Access to Physical Infrastructure



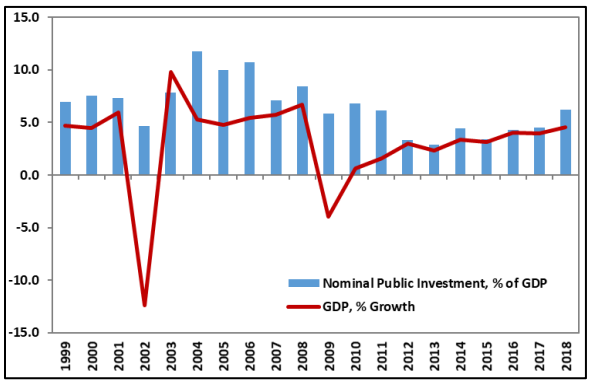
Source: World Economic Indicators 2019.
Note: Left hand axis: Education infrastructure (secondary teachers per 1,000 persons) and health infrastructure (hospital beds per 1,000 persons). Right hand axis: Access to treated water (percent of population).

Perception of Infrastructure Quality



Source: World Economic Forum 2019.

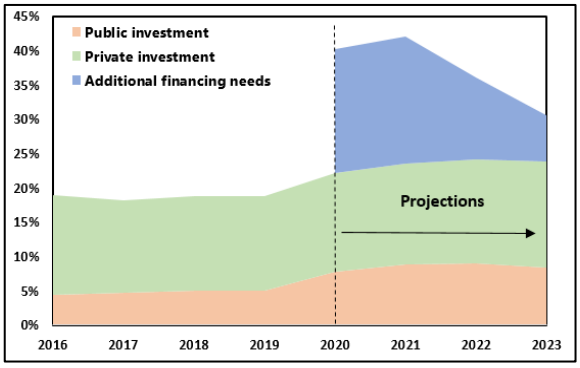
General Government Investment and Growth



Source: IMF staff estimates.

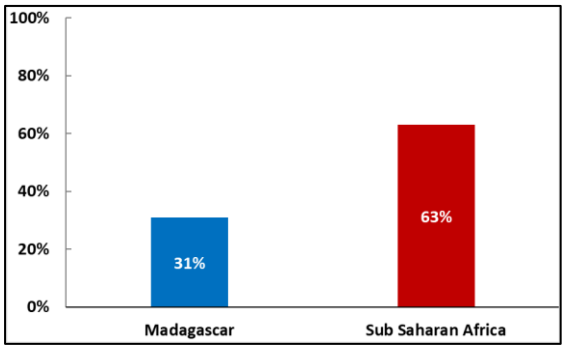
Figure 2. Public Investment Scale up Challenges

Financing of Investment Needs (percent of GDP)



Source: Financial Statements, IMF staff estimates, initial draft PEM.

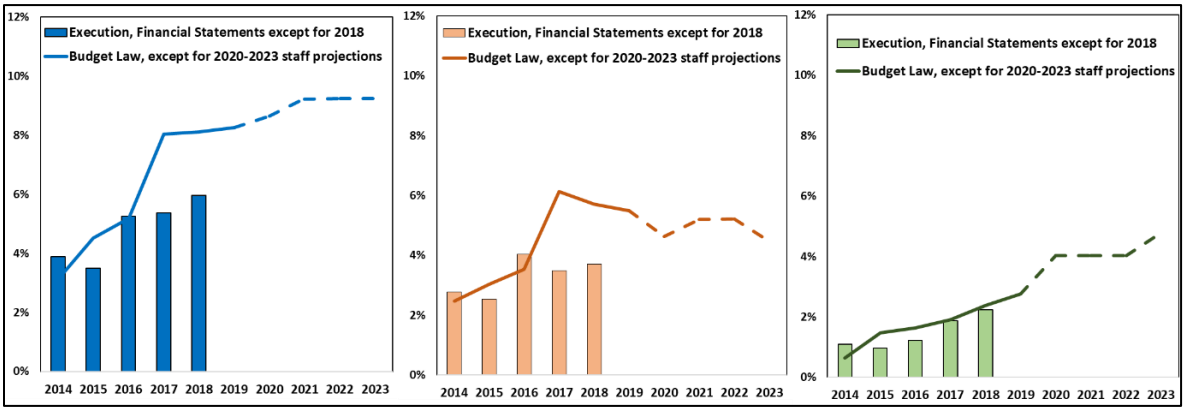
Public Investment Efficiency



Source: IMF staff estimates.

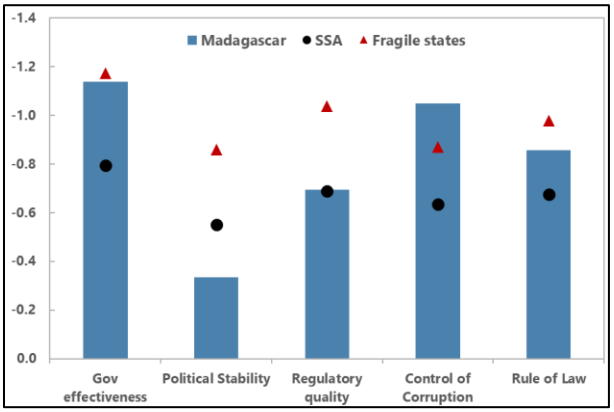
Public Investment Execution

a. Total public investment b. Externally-financed investment c. Domestically-financed investment



Source: Budget Laws, Financial Statements and IMF staff estimates.

Overall Governance and Corruption



Source: World Bank, Worldwide Governance Indicators.

14. The institutional framework and practices of public investment management are weak in Madagascar.[4] The planning, preparation, selection, and implementation of multiple investment projects require a large set of technical and managerial resources that are not yet available in Madagascar and take time to be developed. Public investment planning lacks prioritization among projects to ensure financing availability for the most important projects; the selection and ex ante evaluation of projects is still at an embryonic stage; in the allocation phase, the linkage between project financing, results and objectives is unclear; and project management systems, especially for large investment projects, are not yet in place. In addition, the coordination among key stakeholders including between international development partners and the government remains weak.

15. As a result, public investment spending in Madagascar delivers less infrastructure benefits than it could potentially do. For the same amount of public investment spending, Madagascar generates less infrastructure results than peers due to low public investment efficiency: public investment spending in Madagascar delivers only about 30 percent of the potential infrastructure benefits compared to the average of about 60 percent for sub-Saharan Africa (Figure 2 panel 2).

16. Other factors could also affect the public investment scale-up implementation. On the supply side, the construction sector faces challenges including the increasing costs of imported raw materials and equipment, low access to finance and operational difficulties. Recurring political volatility in Madagascar has led to changes in infrastructure priorities and delays in project implementation. For example, the government change has resulted in the delays and low execution in many projects in 2019. Corruption in Madagascar is perceived as high compared to peers (Figure 2 panel 4) which potentially affects the integrity of the public investment process and its efficiency.

C. Growth Impact of the Public Investment Scale-up

The DIG Model—Baseline

17. The ambitious plan for scaling up public investment requires a careful assessment of its impact on growth and debt sustainability. We apply the IMF's DIG model to estimate the growth and other macroeconomic impact of the planned public investment scale-up in Madagascar (Box 1).

18. The baseline scenario assumes a predetermined path of public infrastructure investment, grants, and concessional financing equivalent to levels under the DSA. Additional financing will be needed to cover the financing gap, which is covered predominantly by public external commercial debt. Two alternative financing options, faster tax mobilization and financing predominantly via public domestic debt are not discussed here. Other parameters are specified to follow either LIDC averages or are Madagascar specific (see Buffie et al. 2012 and IMF 2017b for comparison).

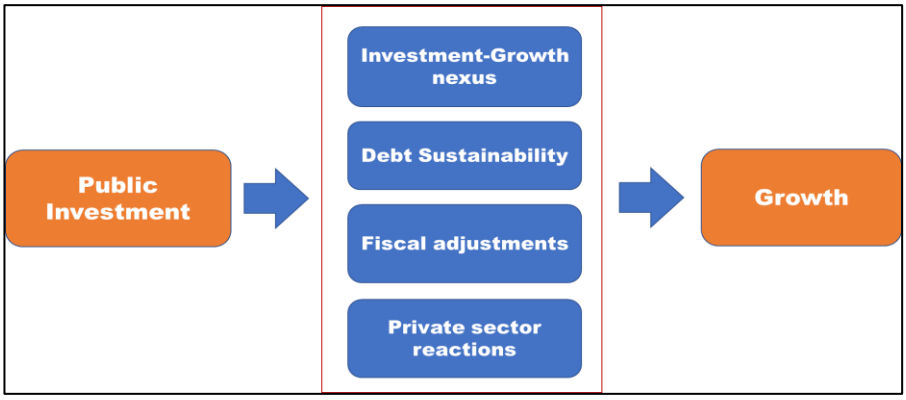
[4] IMF, Technical Assistance reports, 2016 PIMA and 2019 Public Investment Management in Madagascar.

19. The efficiency of public infrastructure investment is set to 31 percent, the estimated current efficiency of public investment in Madagascar. The initial return on infrastructure investment[5] stands at 30 percent, gradually declining over the forecast horizon. The real interest rates on public domestic and external commercial debt are set at 9 and 5 percent, respectively. The risk-free foreign real interest stands at 1 percent.

Box 1. The Debt – Investment – Growth (DIG) Model

The DIG model estimates the macroeconomic effects of public investment scale-up in low-income countries taking into account (i) the investment-growth linkages; (ii) public external and domestic debt accumulation; (iii) the fiscal policy reactions necessary to ensure debt-sustainability; and (iv) private sector reactions (Figure 1). The public investment, growth, and debt sustainability nexus is modelled by means of a quantitative macroeconomic equilibrium framework with LIDC-specific components.[1] The model emphasizes the fiscal reaction of governments to rising public debt stemming from borrowing for public investment financing, with options to recreate a realistic path of tax revenue mobilization. It also allows for an analysis of different financing options and impediments to public investment scaling up, such as absorptive capacity constraints, and it assumes that only a portion of each dollar spent in public investment is transformed into capital, owing to investment inefficiency.

Figure 1. Debt-Investment-Growth (DIG) Model



Source: Buffie et al. (2012)

[1] This model has been applied in more than 65 country cases. It was used in Chapter 3 of the October 2014 World Economic Outlook to simulate the macroeconomic impact of public investment in developing countries more broadly. Extended versions were developed in Melina et al. (2014) and Ghazanchyan et al. (2016). Some policy lessons from country applications of the DIG models are discussed in Gurara et al. (2019).

[5] Rate of return to effective public capital is the marginal product of public capital. "Efficiency" refers to the rate at which spending on public investment translates into public capital. See Appendix in Buffie et al. (2012).

20. The baseline scenario results shown in Figure 4 are summarized as follows:

- **Real GDP per capita growth accelerates from a steady state of 2.7 to 3.5 percent between 2019 and 2023 and stabilizes at 3.4 percent in the long-run**. With a population growth of about 2.5 percent per year, the model predicts a real GDP growth rate of 5.9 percent in 2023, and 5.6 percent in the long-run, which is similar to the macroeconomic framework's projections. In the model, these numbers are driven by public investment as well as private activities.

Figure 3. Macroeconomic Impact of Public Investment Scale-Up: DIG Model Estimates

Source: IMF staff estimates.

- **Private consumption and investment decrease in the short-run.** Higher VAT taxes lead to a decrease in private consumption. Higher income tax and more borrowing leading to higher interest rate crowd-out private investment. The creation of infrastructure helps promote private investment.[9]

- **Domestic public, commercial, and total debt closely follow the numbers projected in the macroeconomic framework.** The tax ratio would gradually increase from 20 percent in 2019 to 25 percent in 2023. The fiscal deficit increases to 3.9 percent of GDP in the medium term and stays between 3.4 and 4.9 percent in the long run as the public investment scale up continues. Current expenditures are projected to gradually decrease over time.

- **The current account deficit increases to 4.8 percent of GDP in the medium-term and gradually decreases to above 4 percent in the long-run.** Imports increase to provide materials for the public investment scale up for the whole period. The real exchange rate appreciates in the short and medium term due the increase in external loans and grants as well as the imports for construction of infrastructure at the beginning of the public investment scale up. The real exchange rate reverts to pre-investment scale up levels in the long run.

Alternative Scenario—Boosting Public Investment Efficiency

21. An alternative scenario assumes that public investment efficiency in Madagascar improves to the sub-Saharan Africa average efficiency level. Holding all else constant, public investment efficiency increases from 31 to 63 percent. This is in line with the follow-up of the 2016 PIMA, and the government's efforts to adopt the Public Investment Management Reform Strategy and an action plan in 2017 to strengthen the institutional framework (see MEFP).[10] It is expected that these improvements will be implemented in the next years and increase public investment efficiency.

22. Improvement in public investment efficiency could lead to a significant increase in real GDP per capita growth. Real GDP per capita growth increases by up to 0.7 percent in 2023 and 0.5 percent each year thereafter compared to the baseline, for a total increase real GDP per capita growth of 5 percent over 2019-2028.

23. Higher public investment efficiency could also promote private consumption and investment in the long-run. More efficiency in public investment leads to more pronounced crowding out of private investment in the short-run but promotes private investment in the long-run with more and better infrastructure. Since the capital account is assumed to be closed, the

[9] Strong complementarity is expected between private and public investment in Madagascar, as the main constraints on private sector involvement relate to poor infrastructure including unreliable electricity supply, and lack of access to roads and water.

[10] The institutional framework has been enforced in the area of budgeting and monitoring of projects. These include the adoption of an action plan to implement commitment authorization and appropriations, the creation of the Investment and Financing Coordination and Monitoring Unit (*Organe de Coordination et de Suivi des investissements et de leur financements*, OCSIF) and the development of a project database. In addition, the government is preparing a manual on selection of projects with the IMF technical assistance.

crowding-out of private investment makes reduces the contraction of private consumption in the short-run. More infrastructure created would enlarge the share of formal economic activities, leading to higher wages and thus higher consumption in the long-run.

24. Given the potential of additional increases in growth, Madagascar should focus on improving public investment efficiency. This can be achieved by strengthening public investment management can help improve public investment efficiency. Countries with stronger infrastructure governance have more predictable, credible, efficient, and productive investments (IMF 2015). Madagascar could improve infrastructure governance by focusing reform efforts on the following practices of public investment management.

- **Identify the highest priority projects among priority projects.** Funding availability would need to focus first and foremost on fully financing these projects to ensure their completion. The total cost of these projects would need to be presented in the budget documents together with existing information on the start year and estimated completion year.

- **Present financing progress against the total project cost and duration to ensure sufficient resource allocation.** For each major project, the budget documents should show the reference to specific engagement and priority in the PEM as well as specific targets in the SDGs. This would allow to better monitor progress in PEM and SDGs.

- **Allow enough time and resources to prepare projects to ensure they are ready for implementation.** This would help achieve the expected results and reduce inefficiency in the implementation of these projects including delays and cost overruns.

- **Proactively monitor the implementation of the major projects.** This would identify projects experiencing delays and action can be taken to expedite them. Experience from other countries suggests that establishing high-level committees to identify and remove implementation obstacles and to ensure projects are completed on schedule and within budget, is a good way to ensure the delivery of the expected outputs.[11]

- **Ensure enough funding to complete ongoing projects.** If projects already started do not receive enough funding to cover expenditures planned in the budget year will result in delays and likely increase total project costs. Such costs can be avoided if budget practices give priority to funding ongoing projects before starting new projects.[12]

[11] Examples include the Operational Bureau of Monitoring (*Bureau opérationnel de suivi*, BOS) in Senegal, Committee for Acceleration of Priority Infrastructure Delivery (KPPIP) in Indonesia, and the Performance Management Delivery Unit (PEMANDU) in Malaysia during 2009–2017.

[12] In the Philippines, a two-tier budgeting approach is adopted. Annual budget estimates for ongoing projects (Tier 1) are first prepared by the line agencies, discussed with the Department of Budget and Management, and then approved by the Development Budget Coordination Committee. The allocation of new spending is later discussed during new projects (Tier 2) hearings.

D. Conclusion

25. Scaling-up public investment in Madagascar has the potential to boost economic growth. How much growth impact can be obtained from the public investment scale up depends crucially on how the government manages it. There is significant scope to strengthen public investment management to maximize the growth impact from the scale up.

26. Boosting public investment in infrastructure is crucial to increase economic growth and achieve sustainable development goals in Madagascar. Infrastructure in Madagascar has lagged behind while general government investment has been low during the past two decades but the government has put infrastructure as a key to achieve inclusive growth and sustainable development. Large investment spending is also needed to reach the SDGs. The 2019-2023 PEM is expected to anchor on a significant scale-up of infrastructure investment including general government and private investment to achieve inclusive growth and sustainable development.

27. Improving public investment management could significantly increase the growth impact of the investment scale up. Scaling up of public investment in Madagascar could increase annual real GDP growth from a steady state of about 5 percent in 2019 to about 6 per-cent in 2023 and 5.6 percent in the longer term. Improving public investment management would significantly increase public investment efficiency which could lead to an additional increase of about 0.5 percent real GDP growth each year and additional 4.5 percent over ten years.

28. Madagascar should strengthen public investment management practices to realize the additional growth benefits. Madagascar could focus reform efforts on the highest priority projects and manage them well. Funding availability would need to focus on fully financing these projects to ensure their completion. Sufficient time and resources would be required to prepare these projects to ensure their quality and implementation readiness. Proactive implementation monitoring of the major projects would identify projects experiencing delays and action can be taken to expedite them.

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MONETARY POLICY UNDER EXCESS LIQUIDITY[1]

In a context of uncertain economic developments, the financial sector in Madagascar has been maintaining ample liquidity buffers. This has undermined the ability of the central bank to influence output and price developments by lowering the effectiveness of the interest rate channel of monetary policy transmission. At the same time, the priority given to foreign reserve accumulation implies that the exchange rate channel cannot be used for domestic price stabilization objectives. Over the last few years, the central bank has embarked on a reform program aimed at fostering money and capital market development, in the context of eventually transitioning to a policy of interest rate targeting. Further to continuously improving liquidity management capacities, strengthening the monetary policy framework would require stepping up efforts to enhance communication with market operators, as well as addressing challenges relating to low financial inclusion and a large degree of informality in the economy.

A. Introduction

1. While well-capitalized and healthy, the financial sector in Madagascar is characterized by excess liquidity, which hampers the transmission of monetary policy. The banking sector is concentrated, well capitalized and healthy (See Selected Issues Paper IV) but operates in a challenging economic environment, characterized by exogenous liquidity and terms of trade shocks typically stemming from the vanilla sector. Furthermore, money markets remain under-developed, placing liquidity management under the exclusive responsibility of the central bank, *Banky Foiben'i Madagasikara* (BFM). In the face of these constraints and associated uncertainty, banks have been maintaining ample liquidity buffers. To the extent that these buffers are over and above the amount required for precautionary reasons, this undermines the interest rate channel of monetary policy transmission.

2. The monetary authorities have embarked on an ambitious program of reforms to transition from monetary aggregates to interest rate targeting. To strengthen the effectiveness of monetary policy and incentivize banks to contribute to economic development, the BFM has been pursuing a multipronged reform strategy, backed by Fund technical assistance, to simultaneously improve the functioning of the foreign exchange market, build an effective interbank market, and implement a risk-based approach to financial supervision. These intertwined initiatives are expected to allow for the gradual transition of the monetary policy framework from relying on reserve money aggregates to directly targeting interest rates, before eventually switching to inflation targeting.

3. This paper assesses the effectiveness of ongoing reforms and discusses accompanying measures for a successful transition towards interest rates targeting. Section B reviews the financial constraints weighing on monetary policy implementation in Madagascar. Section C takes

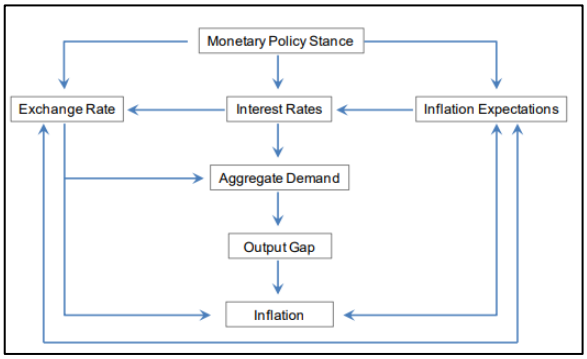
[1] Prepared by Mokhtar Benlamine and Marc Gérard. The authors would like to thank the authorities for their invaluable assistance in providing data and for constructive comments received during the presentation and discussions of this work.

stock of recent institutional initiatives aimed at developing the money and capital markets with a view to strengthen the interest rate channel of monetary policy transmission. Section D investigates empirically the effectiveness of alternative monetary policy instruments to influence output and inflation in recent years. Section E derives a few policy recommendations regarding possible accompanying measures for transitioning to interest rates targeting and concludes.

B. Assessing the Constraints on the Conduct of Monetary Policy

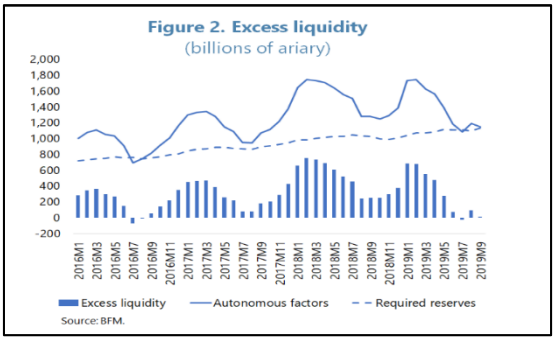
4. Monetary policy transmission to output and inflation could be expected to mostly take place through the interest and exchange rate channels in Madagascar (Figure 1)**.** In principle, monetary policy ought to be very efficient in a country operating flexible exchange rates in a context of limited capital mobility. To counteract a slowdown in growth, a decrease in lending rates engineered by the central bank would be expected to stimulate domestic investment without triggering capital outflows. Over time, the increase in imports associated with higher domestic demand would exert pressure on the exchange rate to depreciate, hence improving the price competitiveness of exports, further boosting economic activity. Likewise, exchange rate variations possibly triggered by interventions on the foreign exchange market would be expected to directly impact trade flows in a relatively non-diversified economy, characterized by the small value added of (mostly crop) exports and limited substitutability of imports due to inelastic domestic supply. However, constraints pertaining to the financial environment can potentially affect the effectiveness of both these channels. By contrast, other transmission mechanisms such as through asset prices or inflation expectations would be expected to play a smaller role in Madagascar given the financial sector's underdevelopment.

Figure 1. Monetary Transmission in Madagascar



5. Banks have been in a situation of excess liquidity for years, partly due to the impact of price fluctuations in the vanilla sector. While making up the bulk of the financial system, the banking sector is small, with total assets representing 27 percent of GDP in 2018, and heavily concentrated, with four banks, all foreign owned, holding about 80 percent of credit and deposit market shares. Despite being well capitalized and profitable, banks have been structurally maintaining excess liquidity buffers for years in the face of volatile economic conditions,

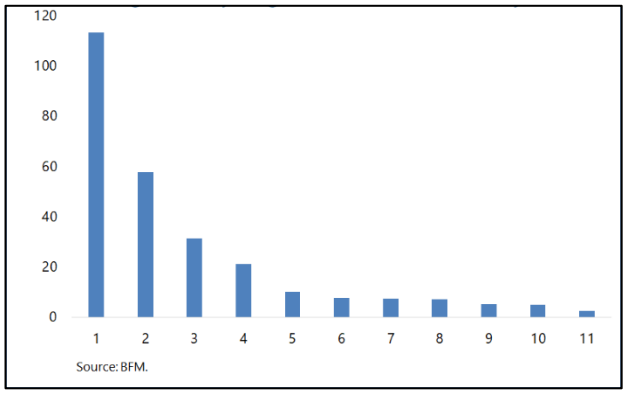
Figure 2. Excess Liquidity



not least stemming from developments on the main vanilla export market (Figure 2). In the summer of 2016, following some substantial foreign currency pre-financing of exporters in a context of spiking vanilla prices, bank reserves suddenly dried up under the effect of massive cash withdrawals to pay local producers, temporarily driving the reserve coverage ratio of banks below one and prompting the central bank to intervene to supply liquidity. Some hysteresis effects of this episode appear to have contributed to the buildup of structurally high precautionary bank liquidity buffers.

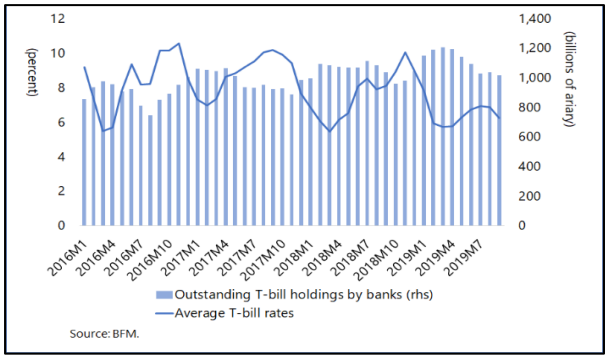
6. Money markets remain under-developed, reflecting the fragmentation of the banking system. The vanilla episode also exposed the absence of well-functioning money markets, leaving the central bank first in line to fend off tensions on liquidity. The fragmentation of the banking sector can be attributed to unequal holdings of reserves, with two banks responsible for excess liquidity buffers in the whole system, and reluctance of banks to lend to each other (Figure 3). In the absence of secured instruments to underpin liquidity circulation until recently, most interbank transactions have taken place on an uncollateralized basis, concluded at a price close to the fixed policy rate as per an implicit convention among the few participants. At times, some banks also resorted to the lending facility for refinancing purposes while the central bank was in parallel mopping up liquidity at much lower rates.

Figure 3. Breakdown on Bank Excess Reserves
(average January-August 2019, billions of ariary)



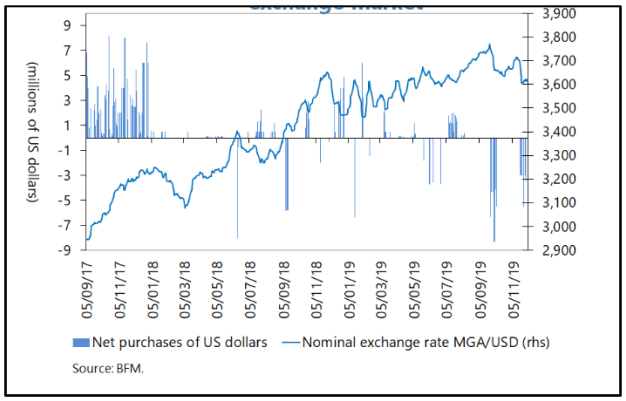
7. The market for government securities is too shallow for a yield curve to emerge. Banks significantly contribute to covering the financing needs of the government, holding about 2.5 percent of GDP of sovereign d ebt, 2/3 of which in the form of Treasury Bills (*Bons du Trésor par Adjudication – BTA*) of up to one-year maturity, and 1/3 in the form of Treasury bonds (*Bons du Trésor Fihary - BTF*) (Figure 4). Yet transactions on the secondary market have been scarce so far, and custodian issues on BTF holdings make it difficult for these instruments to support long-term liquidity operations, which prevents the emergence of a yield curve.

Figure 4. Treasury Bills Market



8. Foreign exchange interventions have been appropriately guided by an algorithm for intervening in the interbank market to smooth exchange rate fluctuations and meet foreign reserve targets. The foreign exchange market lacks transparency, reflecting significant volatility associated with commodity price developments and the large share of informality in the external sector. Within these constraints, the central bank has been successfully intervening on the foreign exchange market following a Fund TA-provided algorithm to steadily accumulate foreign exchange reserves, market conditions permitting, while smoothening exchange rate volatility (Figure 5).

Figure 5. Interventions on the Interbank Foreign Exchange Market

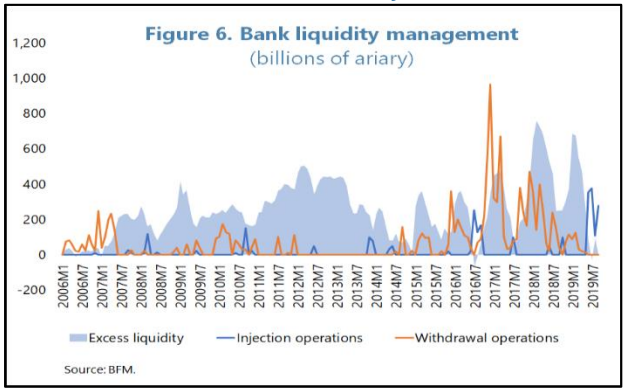


9. Overall, constraints pertaining to the financial environment complicate the transmission of monetary policy impulses to the economy. Taken together, structural excess bank liquidity, the fragmentation of the banking sector, and the absence of a yield curve have been contributing factors undermining the effectiveness of the interest rate channel for both short- and long-term maturities. Moreover, the priority given to foreign reserve accumulation implies that the exchange rate channel has not been used for domestic price stabilization objectives. Rather, bank liquidity management may have been complicated at times by conflicting objectives between monetary and exchange rate policies, insofar as any purchase on the foreign exchange market following the algorithm results in a supplementary release of liquidity, adding to the surplus that the central bank is structurally seeking to mop-up.

C. Strengthening the Interest Rate Channel of Monetary Policy

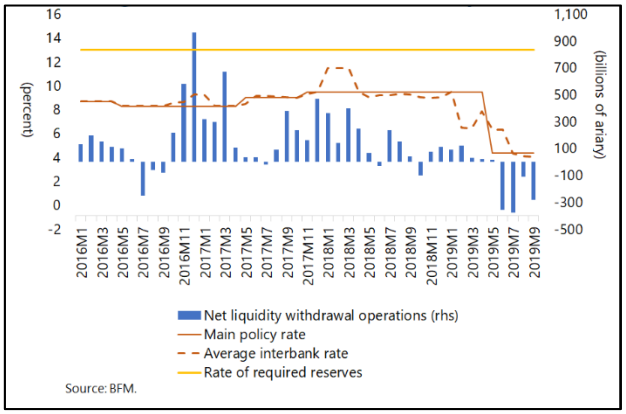
10. In recent years, BFM has been playing an increasingly active role in managing bank liquidity. Up until 2014, monetary policy was not very active. Substantial liquidity buffers appear to have been self-regulated by banks in practice, with stated policy instruments or targets used at best as very imperfect signaling devices, as demonstrated by the disconnect between interbank rates and the main policy rate. Since 2015, the central bank has been increasingly intervening in the money market, mostly to mop up the surplus of bank liquidity above required reserves, thus seeking to influence bank intermediation and credit conditions at large (Figure 6).

Figure 6. Bank Liquidity Management
(Billions of ariary)



11. Monetary policy uses the reserve money aggregate as the intermediary target to achieve its main objective of price stability. In a context of very low financial penetration and short investment horizons associated with insufficient financial intermediation, the central bank has been mainly using deposit auctions rather than interest rates, namely volume rather than price instruments, to mop up (in the case of negative auctions – "*appels d'offres négatifs*") or provide (positive auctions – "*appels d'offres positifs*") bank liquidity, typically at weekly maturities (Figure 7). By contrast, the main policy rate, referring to a one-year horizon irrespective of underlying operations on the money market, has been kept flat for years, akin to the rate of required reserves.

Figure 7. Interventions on the Money Market



Source: BFM.

12. Since early 2019, BFM has started expanding its toolbox for liquidity management in light of an eventual transition towards interest rate targeting. Following the announcement that an overnight policy rate set at 0.9 percent would complement the existing 9.5 percent annual policy rate, the monetary authorities established in May 2019 an interest rate corridor that includes an overnight deposit facility at zero percent interest rate and an overnight lending facility at 4.40 percent interest rate. These were subsequently adjusted in November to 0.9 percent and 5.3 percent, respectively. Since then, BFM has been seeking to conduct liquidity provision (mopping-up) operations at rates close to the upper (lower) band of the corridor, further to continuously improving its liquidity forecasting capacities. To better pilot liquidity developments in response to macroeconomic developments, the authorities plan to conduct fine-tuning operations on a routine basis at the end of the reserve maintenance periods, and to eventually conduct full allotment, i.e. fixed rate/unlimited volume, deposit auctions to better anchor market expectations around the targeted policy rate. In parallel, BFM has been working towards expanding its toolkit of monetary policy instruments to include outright foreign exchange purchases and foreign exchange swaps. Some thinking is also underway to issue central bank bills in complement to T-bills as support for liquidity operations, as well as to better attune reserve requirement ratios to structural liquidity conditions, both in local and foreign currencies.

13. These improvements in the institutional changes have facilitated intensified interbank market activity over the last few months. Thanks to improved communication towards bank trading desks, BFM successfully engineered a steady decline in interest rates on the interbank market even prior to the introduction of the interest rate corridor, from about 7-8 percent in early 2019 to 3.5-4 percent recently, against the backdrop of a tripling of exchanged volumes and counterparties compared to first six months of 2018 (Figure 8). Furthermore, the duration of interbank lending operations has started lengthening, with a few transactions concluded for six months to one-year maturities at interest rates in the 7.5-9 percent range.

14. The introduction of the repurchase operations (repos) regulatory framework is expected to further incentivize interbank lending at longer horizons and support the buildup of a yield curve. With the help of Fund TA, a draft law has been prepared and is awaiting submission to Parliament to introduce repurchase operations based on a strengthened collateral framework. Following some successful testing over the summer of 2019, operations could begin as of the first semester of 2020 and would represent a major step towards securing medium- to long-term interbank operations, hence allowing for the gradual buildup of a yield curve. In parallel, the clarification of custodian responsibilities on BTF holdings to make sure these securities can be effectively accessed and managed by the central bank could help foster the development of a secondary market for bonds.

D. Assessing the Effectiveness of Alternative Monetary Policy Instruments

15. We use an econometric approach to assess quantitatively the monetary policy transmission mechanism in Madagascar. The structural vector autoregression (SVAR) methodology allows for the systematic investigation of the relationship between monetary policy instruments and economic activity. For the estimation, we compile a dataset which includes the following variables, available on monthly basis over the period 2000-2018:

- *Exports of goods*, as an indicator of economic activity, selected to get around the shortcomings of the quarterly GDP series;
- *Core consumer price index;*[2]
- *Broad money aggregate M3*, aimed at measuring the demand for liquidity;
- *Central bank policy rate* as the main policy variable of interest, and;
- *Nominal effective exchange rate*.

16. The structure of the system is designed to reflect observed characteristics of the Malagasy financial environment. The reduced form of the SVAR is written as follows:

$$\begin{pmatrix} u_t^{\log(export\ of\ goods\ SA)} \\ u_t^{\log(CPI\ SA)} \\ u_t^{\log(M3\ SA)} \\ u_t^{CB\ Policy\ Rate} \\ u_t^{\log(NEER\ SA)} \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ s_{21} & 1 & 0 & 0 & 0 \\ s_{31} & s_{32} & 1 & s_{34} & 0 \\ 0 & 0 & s_{43} & 1 & s_{45} \\ s_{51} & s_{52} & s_{53} & s_{54} & 1 \end{pmatrix} \begin{pmatrix} e_t^{\log(export\ of\ goods\ SA)} \\ e_t^{\log(CPI\ SA)} \\ e_t^{\log(M3\ SA)} \\ e_t^{CB\ Policy\ Rate} \\ e_t^{\log(NEER\ SA)} \end{pmatrix}$$

where the ordering of the variables allows for the adequate identification of shocks. Complementing standard assumptions by insights derived from Sims and Zha (1998) and Kim and Roubini (2000) to properly capture some contemporaneous responses of money developments and better characterize the monetary policy reaction function, these conditions imply that:

[2] The correlation between inflation and core inflation reaches 92.6 percent between January 2001 and August 2019.

- The activity variable contemporaneously only responds to its own shocks;
- The price variable contemporaneously responds to its own shocks and to those affecting the activity variable;
- The money variable contemporaneously responds to its own shocks, as well as to shocks on the policy rate, on activity and on prices;
- The policy rate contemporaneously reacts to its own shocks, as well to money and exchange rate shocks, but only with a lag to activity and price shocks;
- The nominal effective exchange rate reacts contemporaneously to all shocks.

17. The SVAR model is estimated with variables in levels, assuming their joint co-movement over the long-run. All variables are expressed in logarithmic form and seasonally adjusted using the Census-X13 methodology except the policy rate, which is expressed in percent. The lag lengths used in the SVAR are defined by standard information criteria, and unit root tests assessed by both Augmented Dickey-Fuller and Phillips-Perron tests. All the variables are found to be integrated of order one in level, implying that they are I(0) in first difference.[3]

Table 1. Madagascar: Unit Root Tests

Variable	Level						1st difference						Result
	Augmented Dickey-Fuller[1]			Phillips-Perron[1]			Augmented Dickey-Fuller[1]			Phillips-Perron[1]			
	1[2]	2[3]	3[4]	1[2]	2[3]	3[4]	1[2]	2[3]	3[4]	1[2]	2[3]	3[4]	
L_export_SA	0.56	0.00	0.97	0.35	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	I(1)
L_CPI_X_SA	0.97	0.82	1.00	0.97	0.74	1.00	0.00	0.00	0.28	0.00	0.00	0.08	I(1)[5]
L_M3_SA	1.00	0.95	1.00	1.00	0.89	1.00	0.00	0.00	0.00	0.00	0.00	0.00	I(1)
Policy Rate	0.53	0.86	0.66	0.52	0.85	0.66	0.00	0.00	0.00	0.00	0.00	0.00	I(1)
L_NEER_SA	0.97	0.18	0.03	0.95	0.23	0.02	0.00	0.00	0.00	0.00	0.00	0.00	I(1)

[1] MacKinnon (1996) one-sided p-values; [2] Intercept; [3] Trend and Intercept; [4] None; I(1) at 10 percent using KPSS

Cointegration tests indicate the existence of at least two linear cointegration vectors.

Table 2. Selected (0.05 level*) Number of Cointegrating Relations by Model

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Trace	2	2	2	2	1
Max-Eig	2	2	2	2	1

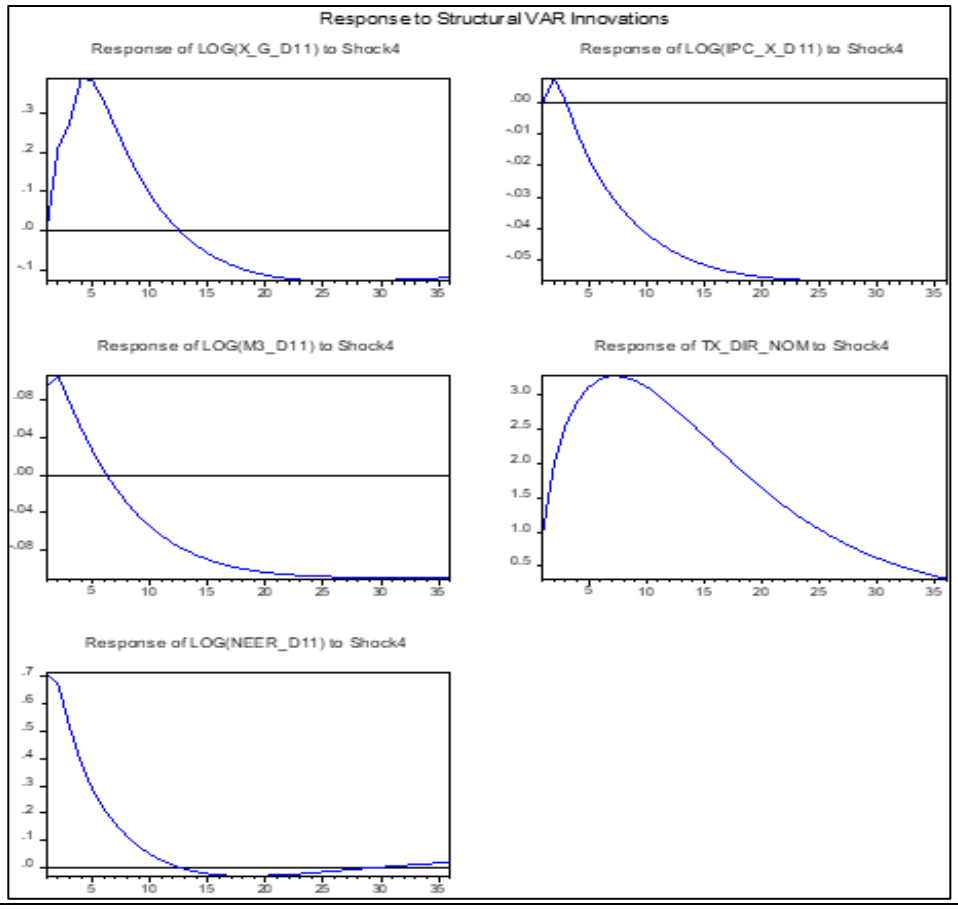
*Critical values based on MacKinnon-Haug-Michelis (1999)

[3] Using log-differenced variables would provide information on short-term relationships, which may be affected by short-term shocks. Our focus is on long-run relationships.

Given data limitations, above-discussed results and a short sample, this paper estimates the SVAR models with variables in level, assuming implicitly the existence of cointegration relations driving the long-run behavior of the economy.

18. Based on impulse responses of macroeconomic variables to a shock on the policy rate, the effectiveness of the monetary policy transmission mechanism is assessed to be limited in Madagascar. A monetary policy shock characterized as a one-standard deviation of an exogenous, unexpected, temporary rise of the policy rate, appears to have limited impacts on the evolution of the main macroeconomic aggregates. The variance decomposition following a shock on the policy rate explains a limited proportion of 0.35 percent of the goods *currently* export variation and only 0.1 percent of the consumer price index variation.

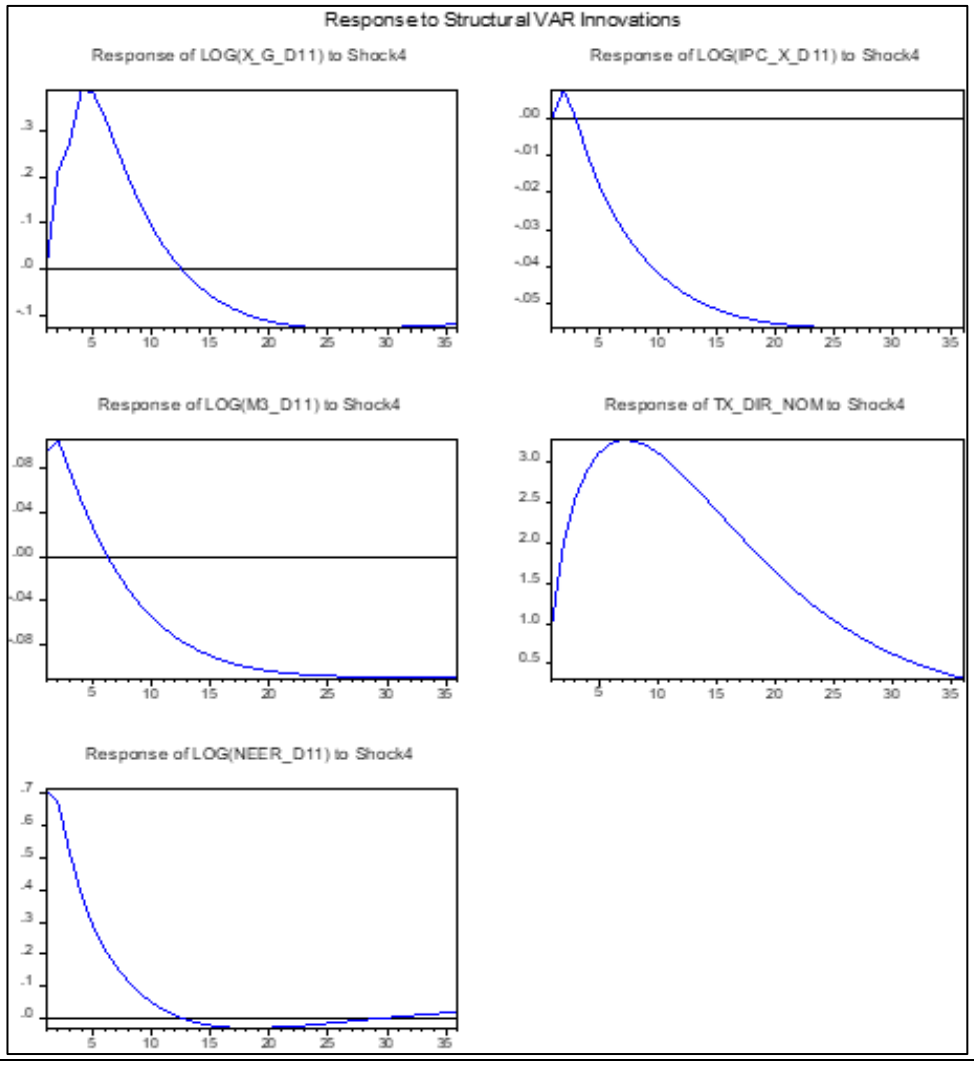
Figure 8. Effect of a Policy Rate Shock (estimation period: January 2010-December 2018



19. Simulations using alternative monetary policy instruments confirm that currently, there is a limited influence of monetary policy on output and price developments. We repeat the previous estimations replacing the policy rate by the volume of offered deposit auctions ("*appels d'offre négatifs*"), namely the main instrument used in practice by the central bank for liquidity management purposes. With unchanged structural restrictions, results highlight the limited impact

of monetary policy on macroeconomic aggregates. The variance decomposition following a one-standard deviation of an exogenous, unexpected, temporary rise of the volume of offered deposit auctions explains a limited proportion of 0.07 percent of the goods' exports variation and 0.02 percent of the consumer price index variation.

Figure 9: Effect of an Auction Deposit Shock (estimation period: January 2000-December 2018)



E. Policy Recommendations

20. The effectiveness of monetary policy transmission mechanism remains limited in Madagascar, calling for a gradual transition to the interest rate targeting framework, as currently pursued by BFM. Monetary policy transmission channels remain weak due to prevailing constraints in the economic and financial environment. The reform strategy pursued by BFM, aimed at more directly influencing credit conditions, should continue to build on ongoing efforts to

improve its operational framework and liquidity management capacities and be paced by reference to observed developments in the domestic money market.

21. BFM should also enhance the dialogue with the financial market and strengthen market intelligence to anchor expectations. To this end, the monetary authorities could ensure further transparency of monetary policy operations and decisions, making more intensive use of the central bank's website, and should seek to improve financial literacy in the financial press through dedicated technical training.

22. Broader economic and institutional constraints should be addressed to help improve the effectiveness of monetary policy. These include a large degree of informality, a low level of bank penetration, and a very uncertain legal environment.

- *Informal employment* exceeds 90 percent of total and nonagricultural employment in Madagascar. The literature highlights the critical role of informality in reducing the effectiveness of monetary transition channels at large by mitigating shocks on wages and inflationary pressures, and by weakening the credit cost channel more specifically since the informal sector is characterized by low access to finance.

- The *functioning* of the *judicial system*, and difficulties in enforcing property rights, have also been found to be major hindrances to financial deepening. Improving the effectiveness and integrity of the judicial system is crucial to the development of financial intermediation and financial stability, which is key to improve the monetary transmission mechanism.

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FINANCIAL SECTOR DEVELOPMENT AND ACCESS TO CREDIT[1]

Madagascar's financial system, largely dominated by the banking sector, has been robust, displaying some flexibility to support the economy. It has also shown some signs of deepening over the past few years but still lags peer countries, with access to credit particularly limited. Building on an updated review of financial sector performance, this paper takes stock of the sector's recent performance; examines the main impediments to access to finance in the country, both on the supply and demand sides; and explores potential measures to overcome them.

A. Introduction

1. Madagascar made progress towards macroeconomic stability over the past few years. Economic growth reached 5.2 percent in 2018 and inflation decelerated to 6.1 percent on an annual basis from a peak of 9 percent in 2017. Revenue mobilization continued to improve, and the country accumulated international reserves. In line with the improved macroeconomic environment, the financial sector deepened. Credit to the private sector is on an upward trend, albeit below the level of comparator countries.

2. Against this backdrop, the objectives of this paper are threefold. First, it aims to takes stock on the performance and efficiency of the financial sector as of end-2018. Second, it reviews the main factors hindering access to finance from both the supply and demand sides. Third, it explores potential solutions and best practices to improve access based on the country situation.

B. Financial Sector Performance and Efficiency

3. The Malagasy financial system is mildly diversified. The financial landscape comprises banks, microfinance, insurance companies, pension funds, savings institutions, non-deposits collecting financial entities and electronic money intermediaries (Table 1). Financial markets are limited to a foreign exchange and a bond markets where the state remains the sole issuer of securities.

4. The financial sector is shallow and largely dominated by banking activities. Financial assets only account for 34 percent of GDP in 2018, with the banking sector holding up to 79 percent of total assets. Mostly foreign-owned, the banking sector is concentrated around four banks which detain more than 80 percent of total outstanding loans and credits (Table 2 in Annex).

[1] Prepared by Ialy Rasoamanana. This paper has benefited from valuable guidance from Marc Gérard. The author would also like to thank the authorities for their valuable assistance in data collection as well as for comments received during the presentations and discussions of this work.

Table 1. Madagascar: Structure of the Financial System (as of end-December 2018)

	Number	Branches	Total Assets			Outstanding Deposits		Outstanding Loans	
			Amount in bn of MGA	% of total	% of GDP	Amount in bn of MGA	% of total	Amount in bn of MGA	% of total
Deposit-takers institutions									
Banks	11	366	10,672	79	26	8,259	91	5,516	94
Microfinance	25	710	664	5	2	414	5	356	6
*Others**	2		421	3	1	391	4	24	0
Other Finacial Institutions									
Insurance	5		910	7	2	-	-	-	-
Pension scheme	3		887	7	2	-	-	-	-
Public	2		n.a	n.a	n.a	-	-	-	-
Private	1		n.a	n.a	n.a	-	-	-	-
Credit Institutions	3	12	58	0	0	-	-	-	-
Total			**13,611**	**100**	**34**	**9,065**	**100**	**5,896**	**100**

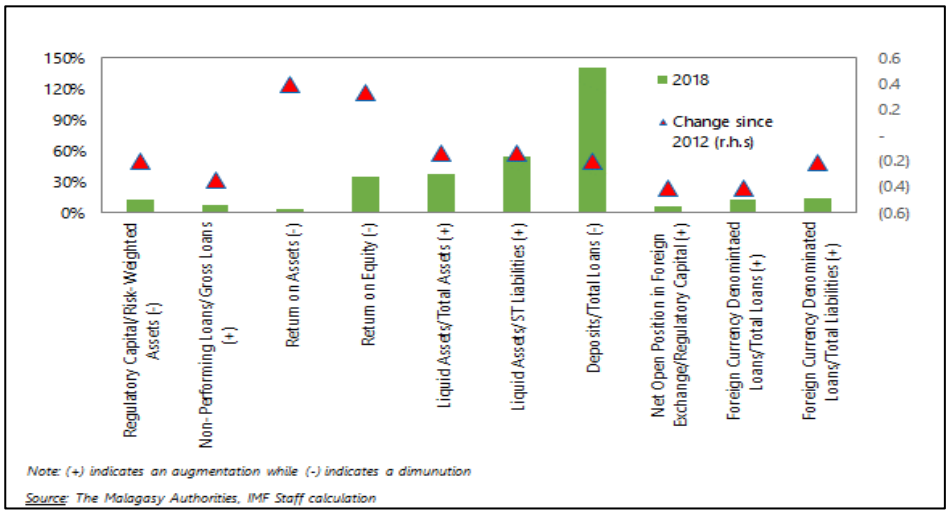
Source: The Malagasy Authorities, IMFs Staff calculation

** Do not include PAOMA (Paositra Malagasy) due to data unavailability*

Banking Sector

5. In 2018, the banking system remained sound, highly profitable, liquid, and relatively insensitive to market risks. Most financial soundness indicators in the banking sector have seen an improvement since 2012 (Figure 1). A benchmarking exercise with comparator countries indicates that banking system of Madagascar performed relatively well (Figure 2). Comparisons suggest:

Figure 1. Madagascar: Key Financial Soundness Indicators Changes Developments



Note: (+) indicates an augmentation while (-) indicates a dimunution

Source: The Malagasy Authorities, IMF Staff calculation

- *Capital Adequacy.* Overall, the banking sector has remained well capitalized and robust to withstand potential shocks on its balance sheet. All banks have respected the minimum regulatory requirement of a solvency ratio of 8 percent. This ratio stood at almost 14 percent at end-2018, an improvement over 13 percent in 2017. At the same time, capital has appeared sufficient to cover losses from non-performing loans as indicated by the non-performing loans

net of provisions to capital ratio which has continued to be on a declining trend from around 26 percent in 2013 to 16 percent in 2018s.[2] Even in an extreme scenario of a stress test where banks have to constitute an additional 25 percent provision on loans to risky activities, most of the banks remain sound. Despite this good performance, however, the country's performance lags behind comparator countries.

- *Asset Quality*. The non-performing loans to total gross loans ratio is down from 11 percent in 2012 to 7 percent in 2018, indicating an improvement of the quality of the assets. Nevertheless, it remains above the international standard of 5 percent, and is about at the median level compared to comparators.

- *Earnings*. Profitability remains high thanks to high interest rate spreads and low operating costs. The return on equity (ROE) and assets (ROA) ratios reached 35 and 4 percent, respectively, in 2018. In the SSA region, the country's banking system remains among the top-three performers in terms of profitability.

- *Liquidity*. The system continues to be liquid and banks seem to be in a comfortable position to service potential short-term withdrawals of their deposits. Under severe stress scenarios, however, the situation could deteriorate quickly for some banks. A simulation of a massive withdrawal of 25 percent of customers deposits or 25 percent outflow of short-term liabilities would result in 5 to 6 banks breaching the minimum regulatory requirement. Comparison with peers indicates a ranking among the top-four most liquid banking system of the region.

- *Sensitivity to market risk*. Banking exposure to interest and exchange rate risks appears limited. Lending is mostly on the short-run reducing the maturity mismatch between assets and liabilities. The net open position in foreign exchange to capital ratio is less than 20 percent as per the regulatory norm, and both the ratio of foreign currency denominated loans to total loans and the ratio of foreign currency denominated liabilities to total liabilities stay low. Madagascar ranks among the top-5 less exposed countries to exchange rate risk of the SSA region.

[2] The development of this capital adequacy ratio, aimed at measuring the capacity of bank capital to withstand losses from non performing loans, is subject to some cyclical factors associated mainly with the period of distribution of dividend by banks which generally takes place at the end of the 1st semester of the year.

Figure 2. Madagascar: Financial Soundness Indicators
Benchmarking with SSA peers (as of end-2018)

Sources: Malagasy Authorities; and IMF FSIs Database.

6. Risks to the banking system continue to be contained, but close monitoring is needed in light of the authorities' ambitious plans to scale-up investment.

- *Credit risk*. Banks in Madagascar have been traditionally risk averse, resulting in a moderate increase of credit over the past years. Despite a high concentration of the loans in few sectors, the former remains adequately provisioned reducing credit risk.

- *Concentration risk*. Despite a diversification effort, loans continue to be mostly directed to a few sectors including commerce. While this might be a source of potential vulnerability, data should be interpreted considering sectoral performances. For example, the commerce sector, largely dominated by oil companies, has regularly displayed growth even during crisis time.

- *Sovereign risk*. Although investment in government securities has regularly increased, loans to the sovereign are unlikely to cause vulnerabilities for the following reasons: (i) the authorities' moderate risk profile of debt distress; (ii) the banks' self-imposed ceiling on their exposure to the government; and (iii) the authorities' ongoing efforts to reduce reliance on bank financing through higher revenues mobilization and monetary policy reforms.

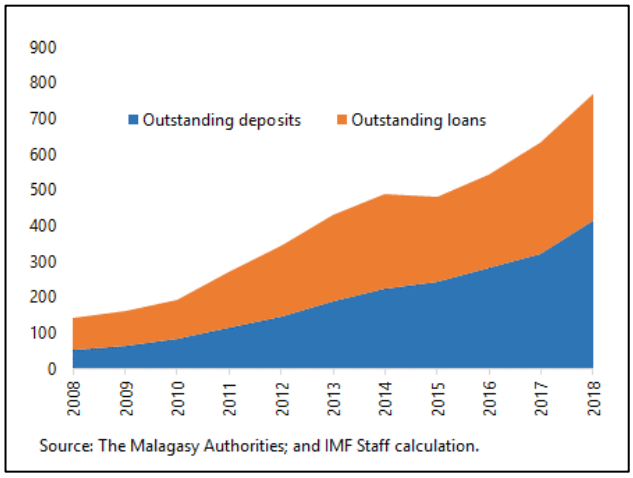
- *Liquidity risk*. A priori, this risk appears low due to the excess liquidity in the system. But, in view of uneven distribution of liquidity across banks, close monitoring is needed to ensure that liquidity remains available.

- *Interconnectedness risk*. Risks resulting from banks' interactions with each other and with other financial institutions seem to be limited. Banks' aggregate balance sheets indicate that claims on other credit institutions are less than 15 percent of total banking assets on average. In addition, despite some recent improvements, the interbank market remains embryonic.

Microfinance

7. Microfinance institutions (MFIs) have boosted access to financial services in rural areas. Over the last few years, MFIs activities have expanded rapidly, even though the sector only counts for 5 percent of the total financial system assets and less than 2 percent of the country's GDP. MFIs outstanding deposits and loans have augmented exponentially in line with the increased numbers of customers (Figure 3).

Figure 3. Microfinance: Outstanding Deposits and Loans
(in billion of Ariary)



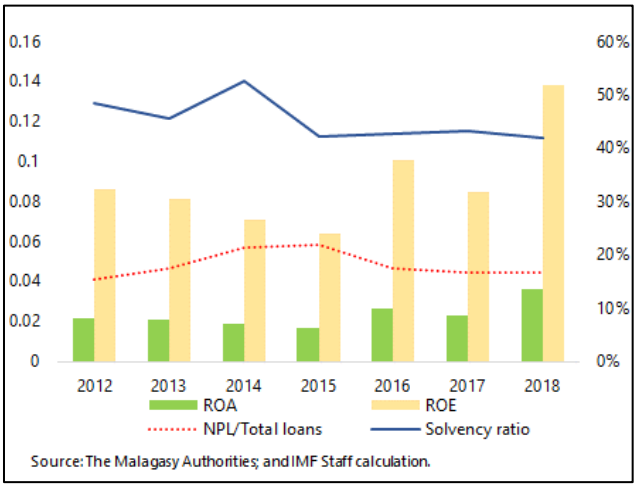
Source: The Malagasy Authorities; and IMF Staff calculation.

8. Despite rapid growth, the financial performance of MFIs appears mixed. Overall, the sector remains well-capitalized. Assets are of good quality and credit risk stays low as illustrated by the declining NPLs to total loans

ratio. Loans are covered by deposits and activities seemed to be profitable even if profits remain modest due to high operating costs (Figure 4). Nonetheless, the sector is prone to some liquidity issues as pointed out by low liquidity ratios, with MFIs liquid assets insufficient to cover short-term liabilities.

9. Recent performance seems to indicate that the business model of MFIs may need to be reconsidered. The stagnation of the number of institutions coupled with the slow growth of the numbers of beneficiaries and low profitability seem to point out that the financial model of the sector might have reached its limit. Governance issues that some MFIs were victims of, stress the need to strengthen sectoral supervision. The recent adoption of the new law on Microfinance was a positive step but it should be followed by the adoption of implementation decrees.

Figure 4. Microfinance: Quality of Assets and Profitability
(in Percent)



Source: The Malagasy Authorities; and IMF Staff calculation.

Insurance

10. The use of insurance services is limited despite national coverage and diversified products. Being the second most important in terms of size in the country, the sector weighs 7 and 2 percent of the total financial assets and GDP, respectively, in 2018. It is mostly dominated by two state-owned companies which hold more than 70 percent of the market shares. Access to insurance services is as low as 3 percent of the adult population.

11. Activities in the insurance sector have shown good progress in the last few years, but the financial performance appears mixed. The sector's turnover increased by 39 percent over the past six years, driven by non-life insurances, and total assets grew by almost 57 percent over the same period. The solvency ratio, measuring the financial capacity to fulfil contractual commitments, remains higher than the minimum regulatory requirement; this is also the case of the outstanding premium ratio, which measures non-paid to the written premiums. Nonetheless, profitability remained flat and even declined from 7.3 percent in 2017 to 6.2 percent in 2018.

12. Investment in the sector requires close monitoring to ensure its financial viability. More than two thirds of total assets in the sector are invested in financial assets, including T-Bills and share purchases. Such level of portfolio concentration could potentially be a source of risks for the sector and need close monitoring.

Pension

13. The pension system in Madagascar consists of public and private schemes. The public sector pension sector comprises two schemes covering the career civil servants and the military (CRCM, Caisse de Retraite Civile et Militaire) and contractual government employees (CPR, Caisse de Prévoyance et de Retraite). The private sector pension (CNAPS, Caisse Nationale de Prévoyance Sociale) provides for a general regime, as well as specific ones for the agricultural sector and household employees. Pension services coverage remains low with the public pension system covering only 3 percent of the workforce against 10 percent for the private pension system.

14. The public pension system has been in continuous deficit for years, mainly due to its generous design. The system continues to function thanks to regular transfer by the government, and arrears accumulation. Reforms adopted so far to reduce the deficit have not been effective as they relied on an incorrect evaluation of the system: while the system has been always managed as a pay-as-you-go scheme but it effectively does not work as such—the pensions payment is simply treated as a budget line under spending in the budget. Efforts to strengthen the financial viability of the system should be directed toward better controlling pension expenditures.

15. The private pension system has started facing financial challenges as well as assets management and supervision issues. Although the system currently collects more than it pays, the design of the system as well as investment choices need to be reconsidered as they could affect the financial viability of the sector.

Caisse d'Epargne de Madagascar (CEM)

16. One of the oldest active financial institutions, CEM plays a major role in savings mobilization. Fully owned by the government, the main objective of CEM is to collect household savings via three main products, namely regular savings books, term accounts, and retirement savings plans. Being the first institution to represent Western Union in the country, CEM is also very active in providing cash transfers services. In 2018, its assets amounted to 3.1 percent of total financial assets or 1 percent of the country's GDP. The number of savings accounts reached almost 1.2 million over the same period.

17. CEM seems to be in relatively good financial health but there are sources of vulnerabilities which need to be monitored. Assets have been increasing as well as net income, although the latter remains low due likely to increasing costs. The concentration of the deposits with credit and other financial institutions (66 percent of assets in 2018) could be a source of concern, exposing the sector to an eventual financial vulnerability of these institutions. The recent licensing of CEM as MFIs will boost its resources and diversify its activities.

Paositra Malagasy

18. Despite some financial difficulties, PAOMA remains a major player for financial inclusion due to its large footprint across the country. The activities of PAOMA have been

affected by the diminution of mailing services. To compensate for its losses, the institution has tried to diversify its services, but financial difficulties went on accumulating. In 2017, the institution was audited with the aim to develop an action plan for its development.

19. The implementation of the recommendations by the audit is mitigated. On the one hand, the action plan has not been developed yet and PAOMA has started to work on new mobile banking services (Paositra Money) despite the recommendation that it should refrain from doing so pending the completion of the action plan. On the other hand, some of the recommendations by the audit have been implemented, namely: (i) taking stock of its property assets; (ii) preparing a full audit of its customer accounts; and (iii) working on procedures manual as well as on the audits of its financial statement for the period 2015-2017.

Mobile Banking

20. Mobile banking services development has been exponential, boosting access to financial services. The service is used to transfer and deposit money as well as to make payments in various transactions. The system counts three electronic money intermediaries with the number of accounts exploding from less than 140,000 in 2010 to almost 10 million last year. The volume of transactions grew concomitantly and went from 2 to about 200 billion of Ariary over the same period.

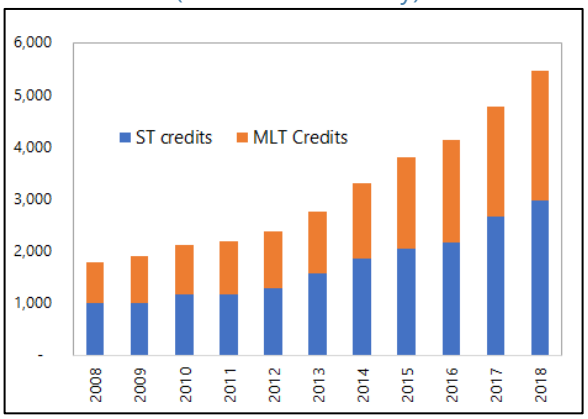
21. Due to lower operating costs, mobile banking is likely to become the future of financial inclusion in Madagascar. Financial institutions increasingly resort to electronic money intermediaries to support their activities, on the model of BNI Madagascar who recently launched a new credit product named KRED, aimed at SMEs operating in the informal sector mainly relying on mobile technologies.

C. Access to Credit—Main Obstacles

22. Despite a relatively sound financial system, financial intermediation remains low. Credit to the private sector ratio is well below the one in peer countries (14 percent of the GDP at end-2018 against an average of 25 percent for SSA countries) despite the upward trend of these past years. Getting credit continues to be difficult with the country ranking 132th out of 190 in terms of access to finance.

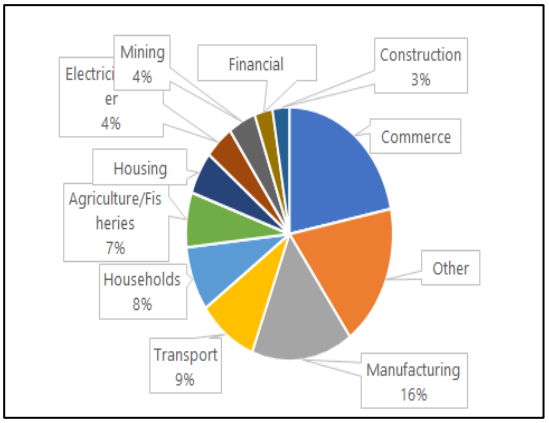
23. Credit activities remain concentrated. A risky environment and the inexistence of capital markets for long-term placement explains the concentration of the credit on short-term segments (Figure 5). Moreover, credit mostly benefits to non-capacity enhancing sectors, such as commerce which got 22 percent of the total credit in 2018 whereas growth supportive sectors such as energy or construction got respectively 4 and 3 percent (Figure 6). Not only credit level is low, but it is not used very efficiently.

Figure 5. Banking Credits by Category
(In Billions of Ariary)



Sources: Malagasy authorities; IMF staff.

Figure 6. Banking Credits by Sector
(In Billions of Ariary)



Sources: Malagasy authorities; IMF staff.

24. Both supply and demand factors can explain the low access to credit, along with other factors including macroeconomic, political and judicial environment.

Supply factors include:

- *Asymmetric information.* In the absence of a credit bureau, getting information on borrowers' creditworthiness appear to be costly, encouraging financial institutions to focus on those whose information are complete and easily verifiable.
- *Weak protection of creditors rights.* In Madagascar, for example, the existing bankruptcy law does not prioritize creditors to be paid in case of business liquidation.
- *Unfavorable business environment.* Despite reforms to improve the business climate, borrowers continue to operate in a difficult environment. The last *Doing Business* report ranked Madagascar 161st out of 190 in terms of business environment, with a score regressing from 48.9 last year to 47.7 this year.
- *Political instability.* Volatile political situation linked to the electoral cycles of the past three decades have created a risky environment, comforting banks in their risk-averse position. As result, credit portfolios expansion remains subdued and credit activities focus more on the short term, limiting economic expansion.

Demand Factors include:

- *Low financial inclusion.* In Madagascar, financial inclusion is well below of the level of comparator countries. Only 30 percent of the adult population have access to formal financial services with the percentage of the same population having access to credit being as low as 5

percent. This low access to financial services could be largely explained by the high informality rate of the economy, which is between 30-40 percent of the GDP.

- *High credit costs.* In 2018, the nominal interest rates revolve on average around 15 percent, up to 60 percent for banks providing microfinance services. Due to more risks exposure and higher operating costs, interest rates charged by MFIs are even higher.

- *Incapacity to satisfy collateral requirement* either because of the value of the requested collateral largely exceeds the value of the loan itself, or because there are no formalized property rights on the collateral which makes it unusable.

- *Weak consumers protection.* Current practices do not always allow customers to have complete information on their credit final conditions until the end of the process. The latitude to compare across institutions to get the best credit conditions is almost inexistent as well as customers possible recourse.

- *Other factors linked to borrowers' specificities.* Due to the structuration of SMEs, they are the most affected by the credit access issue, with difficulties in presenting bankable projects and low managerial capacities. As a result, only 4 percent of SMEs have a line of credit against 33 and 30 percent for medium and large enterprises, respectively. Consequently, as low as 1 percent of SMEs investments are financed by banks against 7 percent for the other type of enterprises.

- *Lack of credit culture.* Despite a relatively high literacy rate among the adults, 70 percent of this population do not have any credit neither from formal nor informal sources. Further to above-mentioned factors, additional statistics seem to reinforce the idea that Malagasy are in general reluctant to get into debt. Indeed, even in case of emergency, only 1 percent of the adult population uses credit to address the emergency.

D. Conclusion and Policy Recommendations

25. The financial sector is expanding but its contribution to the economy remains modest due to low access to the credit. The banking system appears overall healthy, with limited exposure to risks, although the situation needs to be closely monitored, especially in light of the authorities' ambitious plan of development. Microfinance institutions have boosted access to financial services by deserving traditionally excluded actors and areas of the economy. The insurance sector remains profitable, but concentration of investments could be a source of vulnerability. PAOMA and the *Caisse d'Epargne de Madagascar* have a significant room to boost financial inclusion due to their comparative advantage, even though their financial situation warrants careful supervision to preserve the savings of millions of small depositors. Both the public and private pension system need to be revamped based on Fund TA recommendations for an efficient use of public funds and to avoid burdening the budget.

26. The adoption of the new banking and financial stability laws by the Parliament should remain a priority to secure financial stability and credit expansion. The new banking law

strengthens the independence of the financial supervisor (CSBF, Commission de Supervision Bancaire et Financière), improves the bank resolution framework, introduces risk-based supervision, and reinforces the framework for corrective bank supervisory measures. It also includes innovative measures favoring access to credit, namely: the possibility to outsource banking services to selected providers, options to diversify banking services, higher transparency requirements, and some reinforced consumer protection.

27. Efforts to improve the availability of credit information should be pursued to support lending. Madagascar currently has an operational credit registry and is about to operationalize its first private credit bureau. In addition to improving the quality of loans review processes, the availability of credit information is expected to lower associated costs, improving credit risk monitoring by the regulator, and disciplining borrowers.

28. Promoting financial inclusion activities is likely to be bolstered by investment in digital finance. The expansion of banks and MFIs activities are limited due to the cost of brick and mortar investment. Digital finance, through mobile banking services, allows to bypass such costs and reduce geographical constraints. Last year, Madagascar adopted its national strategy to promote financial inclusion for the period 2018-2022. The strategy identifies three focus areas including financial education and consumers protection, access and use of financial service, and legal and regulatory framework.

29. Reforms to improve the macroeconomic, business and judicial environment continue. A sound business and judicial environment are key to developing credit activities by reducing uncertainties and by guaranteeing the property rights. Pursuing the ongoing monetary policy reforms is also important to introduce more predictability in the interest rates determination.

Annex I. List of Banking Institutions

Table 1. Madagascar: Overview of the Banking Institutions			
Banks	**Date established**	**Parent Company**	**Legal Structure**
BMOI	1989	Groupe BCP	Territorial bank
BNI Madagascar	1991	-	Territorial bank
MCB Madagascar	1992	Mauritius Commercial Bank	Territorial bank
SBM Madagascar	1998	State Bank of Mauritius	Territorial bank
Société Générale Madagasikara	1998	Société Générale	Territorial bank
BOA Madagascar	1999	Groupe Bank of Africa	Territorial bank
Accès Banque Madagascar (ABM)	2007	Groupe Accès	Territorial bank
BGFIBank Madagascar	2009	Groupe BGFI Bank	Territorial bank
Baobab Banque Madagascar	2010	Groupe Baobab	Territorial bank
BM Madagascar	2011	Groupe BCP	Territorial bank
SIPEM Bank	2014	ONG SIDI, APEM	Territorial bank

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