



SURINAME

SELECTED ISSUES PAPER

October 2014

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SURINAME

SELECTED ISSUES

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Approved By
**Western Hemisphere
Department**

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MODELING DEMAND RESPONSES TO POLICIES AND SHOCKS: AN APPLICATION TO SURINAME¹

A. Introduction

1. **Modeling the effects of economic policies and external shocks on demand and output is important for policy analysis and forecasting.** The global crisis has refocused the attention of policy makers on the responses of demand and output to fiscal and monetary policy shocks as well as to international spillovers. These issues are also pertinent for Suriname, which recently suffered a large external shock from declining gold prices and is embarking on substantial policy tightening to ensure macro stability.
2. **The evidence on the impact of economic policies on economic activity has been mixed.** On the one hand, Giavazzi and Pagano (1990, 1996) have shown that fiscal consolidations could lead to confidence effects and higher output in the short run. On the other hand, other studies have provided evidence that cuts in spending and increases in taxes reduce output in the short-run (Blanchard and Perotti, 2002; Barro and Redlick, 2009). Recent findings indicate that fiscal multipliers have been positive and larger during the global crisis because of the zero lower bound constraints (Blanchard and Leigh, 2013). Overall, it appears that fiscal multipliers can be country, time and circumstance specific (Spilimbergo et al., 2009). Also, prior empirical studies have suggested that the responses of demand to monetary shocks can vary with the economy under investigation and its monetary framework (Angeloni et al., 2003).
3. **This chapter carries out an empirical analysis of the effects of policies and external shocks on economic activity in Suriname.** As empirical results tend to be country and circumstance-specific, it is important to research these issues with a specific focus on Suriname. There has been little research on these topics that is focused specifically on Suriname²

B. Empirical Strategy

4. **Our empirical analysis was constrained by data limitations.** Since monetary and fiscal policies affect activity by adjusting demand, empirical analysis should ideally be based on demand side GDP and its components. This helps establish a more direct link between policies and the channel through which they affect output. However, demand-side GDP for Suriname is currently not available. Thus, we proxied domestic demand by subtracting net exports taken from

¹ Prepared by Kalin Tintchev.

² Schmittmann (2013) constructs a high frequency output indicator for Suriname, which exploits the strong correlation between growth in GDP and credit.

BOP data from the level of nominal GDP from the supply-side estimates.³ Although under this approach we can analyze aggregate demand we are unable to disentangle consumption and investment, which may respond differently to monetary and fiscal shocks. We then assess the impact of policies and other relevant variables on economic activity by combining their effects on domestic demand and on net exports.

5. **We model domestic demand and imports econometrically, but not exports.**⁴ Exports are dominated by three commodities exported by a few large companies. Therefore, we forecast exports using firm-level projections of future volumes and WEO commodity price projections. However, domestic demand is modeled as a function of fiscal and monetary variables and exogenous factors. Imports are then modeled as a function of domestic demand and other relevant variables. Deflators for domestic demand, exports and imports are then used on the nominal variables to arrive at the real variables and to estimate real output.

6. **To model empirically domestic demand, we estimate a function of the following form:**

$$\Delta \ln(DD_t) = \beta_0 + \beta_1 \Delta \ln(SPE_t) + \beta_2 \Delta \ln(REV_t) + \beta_3 \Delta \ln(CRE_t) + \beta_4 \Delta \ln(EXP_t) + \varepsilon_t \quad (1)$$

where DD is nominal domestic demand, SPE is fiscal expenditures, REV is fiscal non-mineral revenue, CRE is credit to the private sector, EXP is exports of goods and services, and ε is a standard white noise disturbance. To deal with possible non-stationarity of the variables in levels, we estimate the model in log differences. As fiscal mineral revenues are sizable and are driven by volatility in commodity prices, we use fiscal non-mineral revenues as the relevant fiscal revenue policy variable rather than total fiscal revenues. On the monetary side, we control for changes in credit. On the trade side, we control for changes in exports in order to measure the effects of external shocks on domestic demand. Such shocks are important in Suriname given its reliance on commodity exports.

7. **We estimate an import demand function with the following specification:**

$$\Delta \ln(IMP_t) = \delta_0 + \delta_1 \Delta \ln(IMP_{t-1}) + \delta_2 \Delta \ln(DD_t) + \delta_3 \ln(EXP_t) + \delta_4 \ln(NEER_t) + \mu_t \quad (2)$$

where IMP are imports of goods and services, IMP_{t-1} are lagged imports, DD is nominal domestic demand, EXP are exports of goods and services, $NEER$ is the nominal effective exchange rate, and μ is a white noise disturbance. All variables are in log differences. We fit the two equations using data for 1979-2013. We exclude from the estimation period the observations for 1993 because of

³ The General Office of Statistics is working on the compilation of demand-side GDP estimates.

⁴ For a similar econometric approach see for instance Barro and Redlick (2009).

a large spike in the series for that year that we attribute to the near-hyperinflation during this period.

C. Results

8. **As specified, some coefficient estimates in the two equations could suffer from endogeneity bias.** In the domestic demand equation, it is difficult for instance to ascertain causality between credit and demand. Although higher credit growth can fuel domestic demand, higher demand would also lead to higher credit growth. Hence, changes in credit could reflect both changes in credit policies and demand-side effects. Similarly, an increase in fiscal expenditures would lead to higher demand but higher demand would also result in higher revenues and spending. The same argument holds for fiscal revenues. However, exports appear to be exogenous in the model since they would affect domestic demand, but demand is unlikely to influence exports. As regards the import equation, imports could affect exports if they include capital goods that increase firms' export capacity. Also, both imports and exports could respond to a common price shock.

9. **To address possible endogeneity of some of the regressors, we perform instrumental variable estimation.** In the domestic demand equation, we treat fiscal expenditures, non-mineral revenues, and credit as endogenous variables and instrument for them with their first lags and other instruments. Our list of instruments includes oil, gold, and food prices, which are correlated with credit but will not be influenced by domestic demand. We also include the reserve requirement and lagged real GDP, which would affect the supply of credit. In the import equation, we treat exports as endogenous and use its lags as well as the prices of food, gold, and oil, and lagged real GDP as instruments. We estimate the two equations with two-stage least squares and heteroskedasticity and auto-correlation robust standard errors.

10. **As expected, the fiscal variables have statistically significant and economically meaningful effects.** The estimates indicate that both a negative shock to spending and a positive shock to non-mineral revenues lead to lower demand (Table 1). On the spending side, a 1 percent decrease in spending leads to a 0.43 percent decline in demand. On the revenue side, a 1 percent increase in non-mineral revenues reduces demand by 0.11 percent. The estimates indicate that fiscal tightening leads to lower output, implying limited confidence effects, which are consistent with Suriname's low debt levels. Second, changes in spending have a strong concurrent effect on demand, while the impact of non-mineral revenues is lagged. Third, demand appears much more sensitive to changes in spending than non-mineral revenues. Our estimates suggest that the spending multiplier is approximately four times larger than the non-mineral revenue multiplier. However, as non-mineral revenue is substantially smaller than total revenue (with mineral revenues comprising a large fraction of total revenue), this is not strictly comparable with cross-country studies of the differences between spending and revenue multipliers (e.g. Spilimbergo et al, 2009). The results are however broadly consistent with the theoretical argument that spending affects demand directly, while the effect of revenue

measures is indirect, through the adjustment of private consumption to changes in disposable income.

Table 1. Domestic Demand Equation 1/ 2/				
Dependent Variable: Domestic Demand				
Method: Two-stage Least Squares 3/				
Sample: 1983-2013				
Variable	Coefficient	Std. Error	t-Statistic	Probability
Fiscal expenditure (t)	0.426	0.20	2.11	0.04
Nonmineral revenue (t-1)	-0.110	0.02	-4.45	0.00
Credit (t)	0.565	0.12	4.56	0.00
Exports (t-1)	0.318	0.14	2.30	0.03
Constant	-0.053	0.03	-1.67	0.11
R-squared	0.91			
Adjusted R-squared	0.90			
F-statistic	50.6			
Prob(F-statistic)	0.00			
1/ All variables are in log differences.				
2/ Heteroskedasticity and autocorrelation robust standard errors.				
3/ Variables used as instruments include lagged expenditure, non-mineral revenue and credit, gold, oil and food prices, lagged real GDP and the reserve requirement in domestic currency.				

11. **Our multipliers are not fully comparable with other studies because of differences in definitions.** In particular, our multipliers are calculated with respect to nominal domestic demand and hence will be larger than real output multipliers. This is because leakages through imports tend to reduce output multipliers, which is not the case for demand multipliers. Moreover, changes in nominal variables will tend to be larger than real changes because they reflect both price and quantity effects.

12. **The estimates are nonetheless broadly consistent with prior empirical findings.** Spending and revenue multipliers with similar values have been reported in a number of other empirical studies (Blanchard and Perotti, 2002; Al-Eyd and Barrell, 2005; Coronado et al., 2005; Freedman et al., 2008; Barro and Redlick, 2009). The estimates are also in line with guidance provided by the International Monetary Fund for small open economies, which recommends spending multipliers of 0.5 or less and revenue multipliers of half of that value (Spilimbergo et al., 2009). Spending multipliers for Barbados, Jamaica and Trinidad and Tobago range between 0.11 and 0.18 (Guy and Belgrave, 2012). However, they are based on real output and will be lower than our nominal estimates by definition. Moreover, these countries' higher debt may lead to higher confidence effects and smaller multipliers (Corsetti et al., 2012).

13. **The results also reveal a strong contemporaneous correlation between credit and demand, while the empirical link between exports and demand seems slightly weaker.** The

coefficient on credit is both statistically and economically significant. A negative credit shock of 1 percent leads to a fall in demand of about 0.6 percent. Shocks to exports also have a significant effect on domestic demand, as a negative export shock of 1 percent leads to a fall in demand of about 0.3 percent with a lag.

14. **The results for import demand point to a strong correlation between imports and exports.** The export variable is highly significant and explains a large fraction of the total variation in imports. An increase in exports of 1 percent is associated with a 0.61 percent increase in imports (Table 2). The empirical link between import and export fluctuations has been noted previously in the literature (Tuck, 2007). This link may be stronger in Suriname where a significant part of total imports may represent inputs into the production of major exporters in the extractive sector.

Table 2. Import Demand Equation 1/ 2/				
Dependent Variable: Imports Method: Two-stage Least Squares 3/ Sample: 1983-2013				
Variable	Coefficient	Std. Error	t-Statistic	Probability
Domestic demand (t)	0.227	0.046	4.9	0.00
Imports (t-1)	0.154	0.135	1.1	0.26
Exports (t)	0.609	0.091	6.7	0.00
Nominal effective exchange rate (t)	0.216	0.130	1.7	0.11
Constant	-0.007	0.017	-0.4	0.69
R-squared	0.66			
Adjusted R-squared	0.61			
F-statistic	6.99			
Prob (F-statistic)	0.00			
1/ All variables are in log differences. 2/ Heteroskedasticity and autocorrelation robust standard errors. 3/ Variables used as instruments include lagged exports, gold, oil and food prices, and lagged real GDP.				

15. **Imports also depend on domestic demand and relative prices.** Imports that are not offset by exports would add to the current account deficit. Such effects appear driven by changes in domestic demand and relative prices, which are statistically significant and have the expected sign. Our estimates suggest that an increase in demand of 1 percent leads to an increase in imports of 0.23 percent. The effect of the nominal effective exchange rate is also as expected, with a 1 percent appreciation leading to a 0.24 percent increase in imports.

D. Concluding Remarks

16. **The estimated equations provide useful inputs for preparing medium term economic forecasts for Suriname.** Staff's medium term forecasts for economic activity and the

external current account take into account WEO projections of commodity prices, information about the plans of the major commodity exporters, the fiscal and monetary policy outlook, and the estimated equations described above. Expert judgment however is always very important in evaluating and finalizing macro projections.

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FOSTERING SUSTAINABLE AND INCLUSIVE GROWTH IN SURINAME¹

This chapter offers a summary of key issues and recommendations regarding the business environment, structural competitiveness, poverty and inequality.

A. Introduction

1. **Overall, although a supportive economic environment has buoyed Suriname's income per capita, strengthening the business climate and competitiveness are priorities for supporting diversified and inclusive growth over the medium-term.** In particular, enhancing the competitiveness of the non-extractive sector would help diversify the sources of growth and promote job creation. High prices of Suriname's export commodities in recent years and public investment have supported growth in income per capita but dependence on the extractive sector for growth increases exposure to a volatile commodity cycle, while limiting scope for employment growth. Hence, critical issues ahead are how to modernize the legal framework for doing business and increase competition and flexibility in product and labor markets to support diversified private sector-led growth.

B. Strengthening the Business Environment

Reducing the cost of doing business and continuing to modernize the legal framework would help strengthen the business environment.

2. **Some positive changes in the business environment have already occurred.** In 2013, Suriname moved up by 3 places in the World Bank Doing Business ranking and is currently ranked 161 out of 189 countries thanks to progress in streamlining the process for registering a new company and simplifying the procedure to transfer property. The country is rated in line with regional peers in several areas including dealing with construction permits, getting electricity, paying taxes, and macroeconomic stability (Table 1).

3. **Efforts currently underway focus on modernizing the legal framework for doing business.** Suriname still lags behind many of its peers in a number of areas, including starting a business, registering property, getting credit, protecting investors, and enforcing contracts (Figure 1). The 2013–14 Global Competitiveness Report identified lengthy procedures and low access to financing as key constraints on the business climate. The Competitiveness Unit of the Office of the Vice President is leading the modernization of the legal framework for doing business. The Council of Ministers has recently approved draft laws on competition policy,

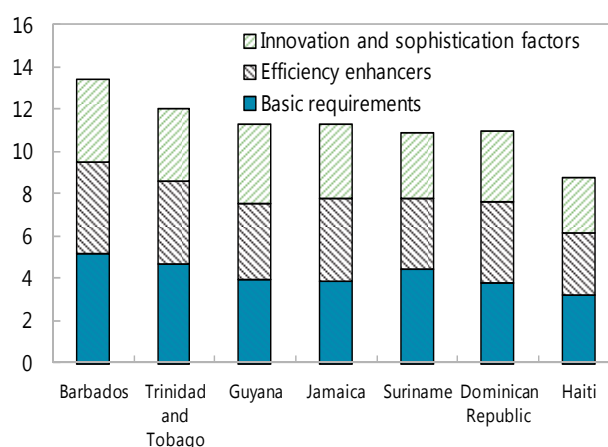
¹ Prepared by Kalin Tintchev.

limited liability companies, and electronic publication of the registration of new firms. The new legislation aims to strengthen the business environment, particularly for small and medium-sized enterprises by reducing the cost of starting a business. The pipeline of new legislation encompasses 16 draft laws in areas ranging from protection of intellectual property to access to finance for small and medium-sized enterprises.

C. Structural Competitiveness

Now that Suriname has transitioned into an efficiency-driven economy, it should focus on increasing competitiveness in priority areas: higher education, product markets, and financial market development.

4. **Suriname has transitioned from a factor-driven economy into an efficiency-driven economy.** Rising commodity prices and an expanding extractive sector have buoyed income per capita, which increased at an average rate of about 6 percent over the last decade, faster than the average of Latin America and the Caribbean. As a result, Suriname is currently classified as an efficiency-driven economy by the World Economic Forum. Further, the 2013–14 Global Competitiveness Report ranked Suriname 106 out of 148 countries. In particular, its ratings were in line with regional peers in most basic competitiveness indicators, including macroeconomic environment (66), quality of health and primary education (78), and infrastructure (81) but below the average in institutional quality (99).



5. **But growth at the efficiency stage is determined not so much by factor endowments but by product quality and the efficiency of production.** Efficiency-driven economies have higher wages but cannot raise prices. Hence, their competitiveness hinges upon the ability to improve efficiency, which in turn is related to higher education and training, efficiency of goods and labor markets, financial market development, ability to benefit from existing technologies, and market size. By contrast, factor-driven economies compete on prices based on their endowments of unskilled labor and natural resources. Therefore, for these countries competitiveness in quality of institutions and infrastructure, macroeconomic stability, and access to basic health and education are more important.

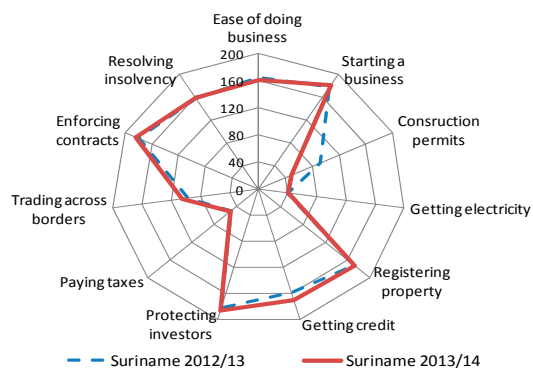
Table 1. Suriname: Business Climate and Structural Competitiveness

	Suriname	Latin America and the Caribbean	Upper middle income economies	All countries
Ease of doing business	161	115	90	95
Starting a Business	181	123	93	95
Dealing with Construction Permits	49	82	111	95
Getting Electricity	40	83	101	95
Registering Property	173	107	91	95
Getting Credit	170	86	73	86
Protecting Investors	186	98	80	80
Paying Taxes	50	125	106	95
Trading Across Borders	105	90	94	95
Enforcing Contracts	184	102	92	95
Resolving Insolvency	160	112	86	95
Global competitiveness Index	106	92	73	75
Basic requirements	82	82	75	75
1st pillar: Institutions	99	99	81	75
Property rights	109	94	77	75
Intellectual property protection	118	91	83	75
Burden of government regulation	99	84	90	75
Public institutions	89	99	84	75
Private institutions	128	90	71	75
2nd pillar: Infrastructure	91	81	77	75
Quality of air transport infrastructure	104	81	78	75
Quality of roads	71	88	77	75
Quality of railroads	108	73	59	61
Electricity and telephony infrastructure	80	89	78	75
3rd pillar: Macroeconomic environment	66	75	67	75
4th pillar: Health and primary education	78	86	73	75
Primary education	68	105	81	75
Efficiency enhancers	121	81	75	75
5th pillar: Higher education and training	98	80	73	75
6th pillar: Goods market efficiency	128	99	84	75
7th pillar: Labor market efficiency	102	102	87	75
Hiring and firing practices	138	96	84	75
Capacity to retain talent	101	63	74	75
Women in labor force, ratio to men	117	104	98	75
8th pillar: Financial market development	111	86	79	75
Availability of financial services	111	73	78	75
Ease of access to loans	111	71	63	75
9th pillar: Technological readiness	101	84	76	75
10th pillar: Market size	140	84	65	75
Innovation and sophistication factors	120	75	86	75
11th pillar: Business sophistication	118	71	76	75
12th pillar: Innovation	125	83	83	75

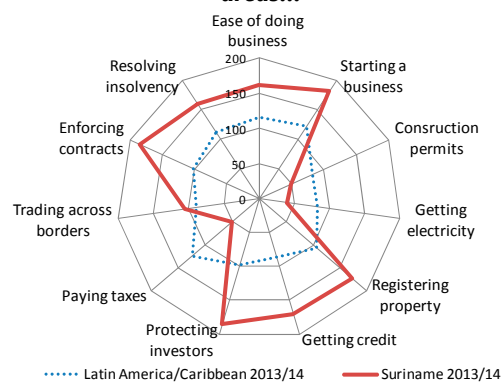
Source: The World Bank and World Economic Forum

Figure 1. Suriname: Business Climate and Competitiveness Rankings

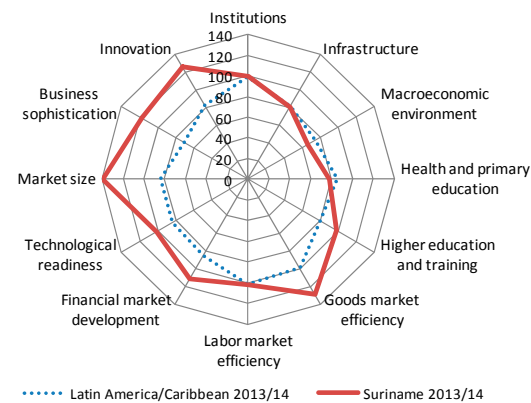
Suriname has made progress in some business climate areas...



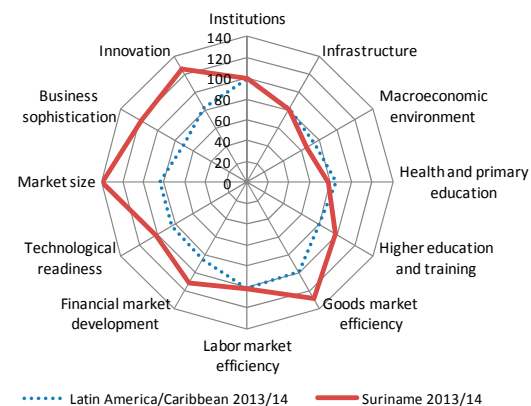
But still lags regional peers in several areas...



Suriname is ranked higher in basic competitiveness indicators...



But there is room for improvement in most efficiency areas...



Source: World Bank; World Economic Forum.

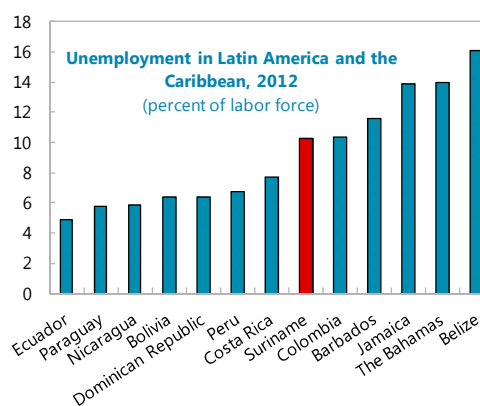
6. **Future efforts should therefore aim to enhance efficiency in priority areas.** Suriname is rated below many of its peers in higher education and training, goods market efficiency, and financial market development. Higher education and training could be strengthened in key areas to respond to the increased demand for business and engineering professionals. Competition in product markets could be further enhanced by strengthening anti-monopoly policy and streamlining the procedures for starting a business. Finally, improved access to loans and venture capital could create a more enabling environment for small and medium-sized enterprises.

D. Unemployment

Increasing the efficiency and flexibility of product and labor markets could lead to improvements in productivity and reduce long-term unemployment.

7. **A generally supportive economic environment led to some reduction in unemployment, which was however concentrated in particular sectors.** Buoyant commodity prices and increased public investment helped reduce unemployment to about 7 percent in 2012 from 12.3 percent in 2006 in the capital and adjacent areas (based on General Bureau of Statistics data for the capital Paramaribo and Wanica).

However, job creation was concentrated in particular sectors such as mining and construction, and unemployment will be higher if we consider long-term unemployed (discouraged workers) who are not officially in the labor force. Adding discouraged workers will increase unemployment to 10.2 percent. The share of discouraged workers has been relatively stable at about 4 percent of the labor force in Paramaribo and Wanica in 2012, down by 1.5 percentage points from 2005. Data compiled by the General Statistical Office of Suriname show that the unemployment rate nationwide was 10.3 percent at end-2012.²



Sources: Suriname General Bureau of Statistics; and the World Economic Outlook.

8. **For sustainable and inclusive growth, enhancements are needed in productivity and competitiveness of non-extractive sectors.** On the one hand, part of the problem of fostering inclusive growth in Suriname may come from high dependence for growth on the extractive sector. The formal extractive sector is capital intensive and with moderate impact on job creation. However, the increase in the price of gold in recent years may have contributed to higher

² Including discouraged workers, the national unemployment rate increases to 12.8 percent.

informal employment in the gold-mining sector and lower official labor force participation. Nonetheless, uncertain prices of Suriname's export commodities weigh on the employment outlook in the extractive sector. Labor-intensive sectors such as services, agriculture, and construction together with government account for the bulk of employment. However, growth has slowed in the agriculture sector, which is confronted with increased competition from other Latin American countries, and there are limits to increasing government employment. The productivity and competitiveness of the non-extractive sector could be enhanced by reducing barriers to entry, encouraging competition, and increasing market size. In this context, the sale of the state-owned banana company in 2014 to a strategic foreign investor could lead to economies of scale and broaden its market access.

9. **Greater labor market flexibility could facilitate firms' adjustment to shocks and help reduce long-term unemployment.** One area for reform is reducing employment protection, while at the same time introducing some unemployment insurance to reduce welfare costs. Strict labor laws constrain firms' ability to adjust costs to cyclical fluctuations. High employment protection reduces the probability of new hiring and can increase the duration of unemployment, particularly among youth and long-term unemployed. Reducing employment protection would also require introducing some unemployment insurance, which could decline with unemployment duration. Labor market reforms should be also complemented by active labor market policies that provide training and skill matching to help unemployed return to work.

10. **New legislation aims to reduce the wedge between employment benefits in the public and private sectors.** Until recently, limited health and pension benefits in the private sector encouraged workers to seek employment in the public sector, which accounts for more than 40 percent of total employment. However, new legislation being implemented in 2014 extends health and pension benefits nationwide. This will enhance the attractiveness of private sector jobs, help reduce informal sector activities, and may help encourage female labor force participation and reduce the higher female unemployment rate.

E. Poverty and Inequality

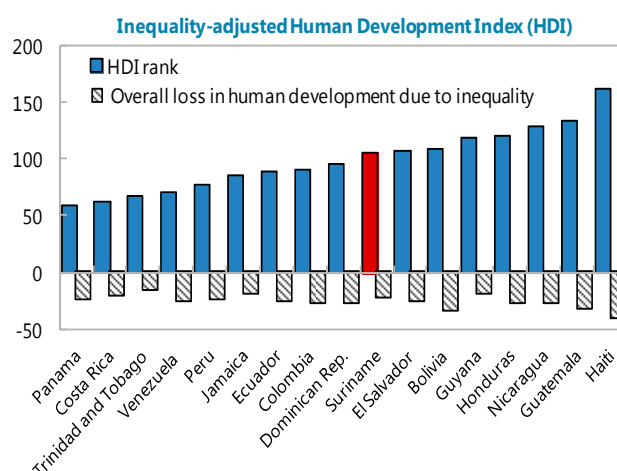
Data on poverty and inequality are scarce but offer indications that Suriname is near the regional average.

11. **The analysis of trends in poverty and inequality is constrained by data limitations.** Conventional income-based poverty and inequality indicators are fairly outdated. A recent household survey of the General Bureau of Statistics did not produce new estimates due to low response rates. Although robust growth in income per capita over the last decade may have reduced absolute poverty, its impact on inequality is more uncertain. The 2013 United Nations inequality-adjusted human development index estimated that the loss in human development due to inequality in 2006 was broadly in line with the regional average.

12. **A broader snapshot suggests that poverty in Suriname is broadly in line with the regional average.**

The 2013 United Nations Human Development Report indicated that about 8 percent of the population lived in “multidimensional” poverty at end-2006, which is below the regional average of 13 percent (Figure 2). These results are based on a novel broader definition of poverty, which covers overlapping deprivations in living standards, health, and education. Using

the same methodology, the report also found that about 3 percent of the population lived in severe poverty, which is somewhat less than the regional average of 5 percent. Social welfare programs of the Ministry of Social Affairs cover about 4 percent of the population, while a social housing program of the Ministry of Public Works aims to improve the affordability of housing for disadvantaged segments of the population. The authorities are also considering introducing a minimum wage, and staff has advised that it should be set at a level that does not compromise job creation among the low-skilled population.

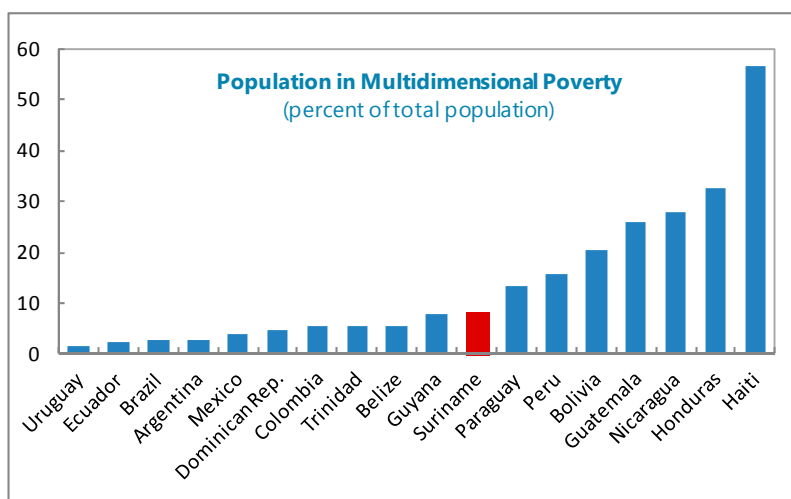


F. Conclusion

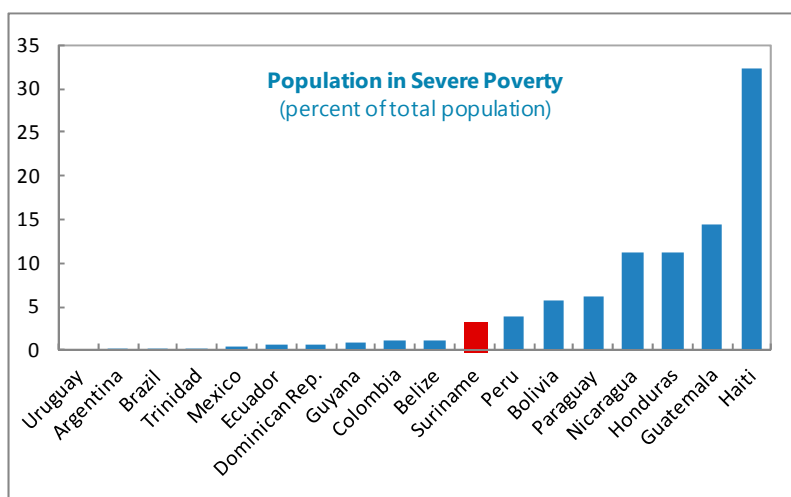
13. **In summary, improving the business climate and structural competitiveness would help support diversified and inclusive private sector-led growth.** Efforts should continue to focus on priority areas, in particular modernizing the legal framework to create a more enabling environment for entrepreneurs, increasing efficiency, and fostering competition in product and labor markets. Further reforms in these areas are important for strengthening job creation in the private sector and reducing dependence on the extractive sector for employment and growth.

Figure 2. Suriname: Poverty Indicators

A novel “multidimensional” index rates poverty in Suriname below the regional average.



The severe poverty index is also in line with regional peers.



Source: United Nations Development Program.

WHAT DOES MS. MUFFET TELL US ABOUT THE MACRO-FINANCIAL SITUATION IN SURINAME¹

Applying Ms. Muffet to Suriname, we find that macro-financial risks have increased in recent years.

A. Introduction to CFSM²

1. **The Country Financial Stability Map (CFSM) aims to help staff analyze macro-financial risks and conditions by comparing various risks over two specific periods.** The IMF developed a Global Financial Stability Map (GFSM) to visually communicate changes in risks and conditions affecting global financial stability in 2007. The CFSM was subsequently developed, using the same methodology, to complement the GFSM. Similar to the GFSM, four broad risks and two conditions are mapped in a spidergram. The six indicators include macroeconomic risks, inward spillover risks, credit risks, market and liquidity risks, monetary and financial conditions, and risk appetite. One difference with the GFSM is that the CFSM uses inward spillover risks instead of emerging market risks to avoid double counting risks for emerging market countries.
2. **Each of the six broad indicators is given a numerical ranking by calculating an equally-weighted average of the rankings of its sub-indicators.** The ranking of a sub-indicator is computed by first normalizing various variables (z-score) under that category and ranking it relative to its 5-year history. For example, the Z score of variable v for the 5-year period to time t is: $Zv_t = (V_t - \mu_t) / \sigma_t$, where μ is the mean and σ is the standard deviation of v . The mean and standard deviation of v is the same at $t+s$ as t . A ranking from 0 to 10 is assigned to each normalized variable for every period, with 0 representing the lowest first percentile of risk and 10 representing the 99th percentile of risk. A ranking of 5 broadly corresponds to the long-term average (over a 5-year period).
3. **Ms. Muffet is a standardized, Excel-based tool.** The template allows country teams to automatically generate CFSMs for specific countries at specific points in time. Data come from key databases available to IMF staff, including Bloomberg, Direction of Trade Statistics, Haver Analytics, Corporate Vulnerability Utility, Information Notice System on exchange rates, International Financial Statistics, Financial Soundness Indicators, and World Economic Outlook databases.

¹ Prepared by Qiaoe Chen.

² See IMF working paper (WP/14/99): Ms. Muffet, the Spider(gram) and the Web of Macro-Financial Linkages done by Ricardo Cervantes, Phakawa Jeasakul, Joseph F. Maloney and Li Lian Ong.

B. Data Limitations in the Application of Ms. Muffet to Suriname

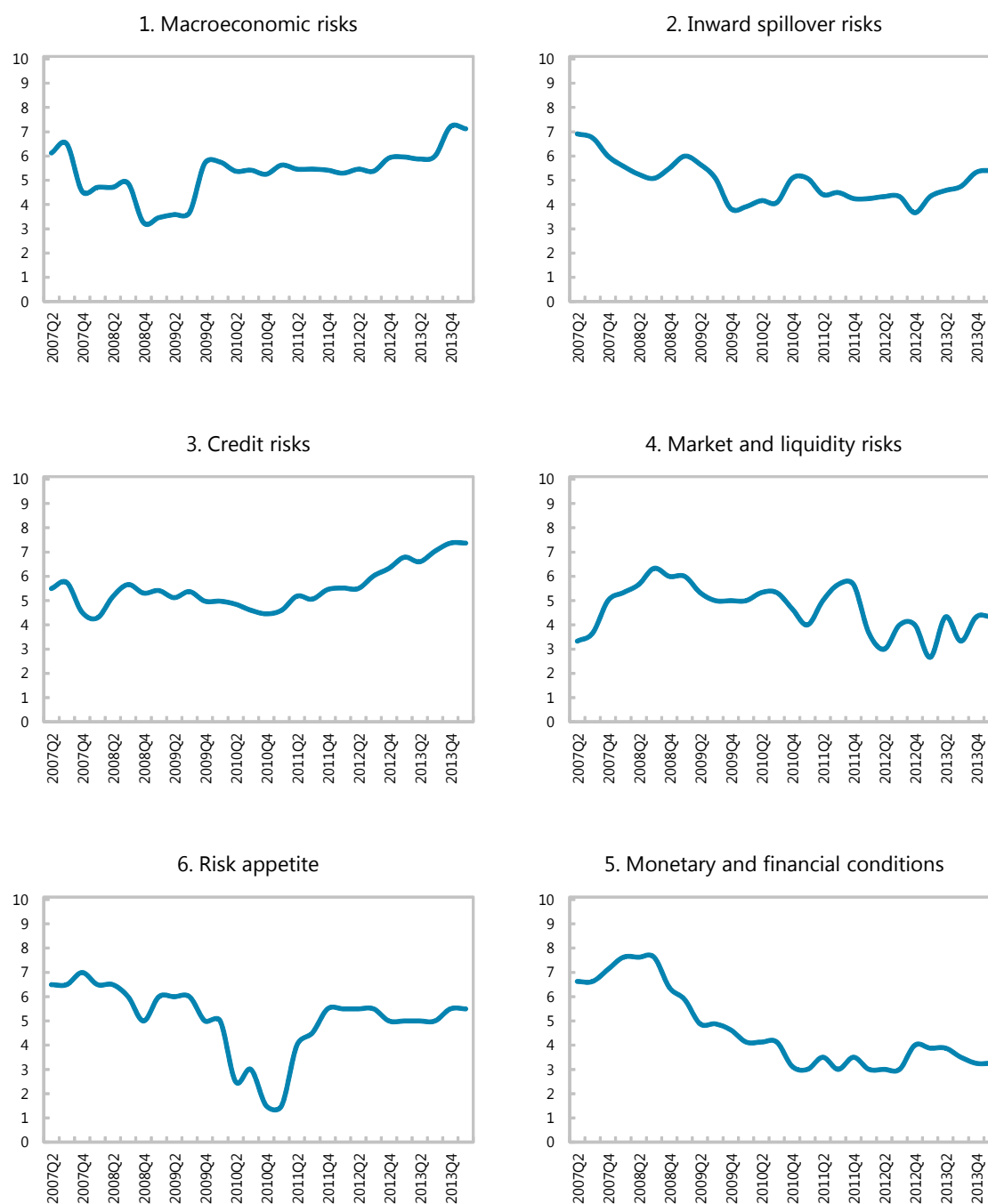
4. **Some high frequency indicators (quarterly) are not available and we also made adjustments to capture specific features of Suriname.** Notably, quarterly GDP data are not available, and so estimates were derived using interpolation. Alumina, oil and gold prices are added as indicators of inward spillover risk to reflect the vulnerability of the Suriname economy to commodity price movements, and reserve requirement ratios are used as an indicator of the monetary policy stance since the Central Bank of Suriname (CBoS) has no indirect monetary policy tools. Furthermore, since there is no available data on corporate debt profiles³, the ratio of corporate loans to GDP is used as an approximation.

5. **It should also be noted that the CFSM might not fully reflect some important risks to Suriname due to data deficiencies.** In particular, while banks and non-bank financial institutions have large exposures to the housing sector, there is no housing price index at present, making it impossible to accurately measure the potential risks in this area. And as Suriname has very limited integration with the global financial system, variables typically used to measure risk appetite, such as risk premia and sovereign debt spreads are not available.

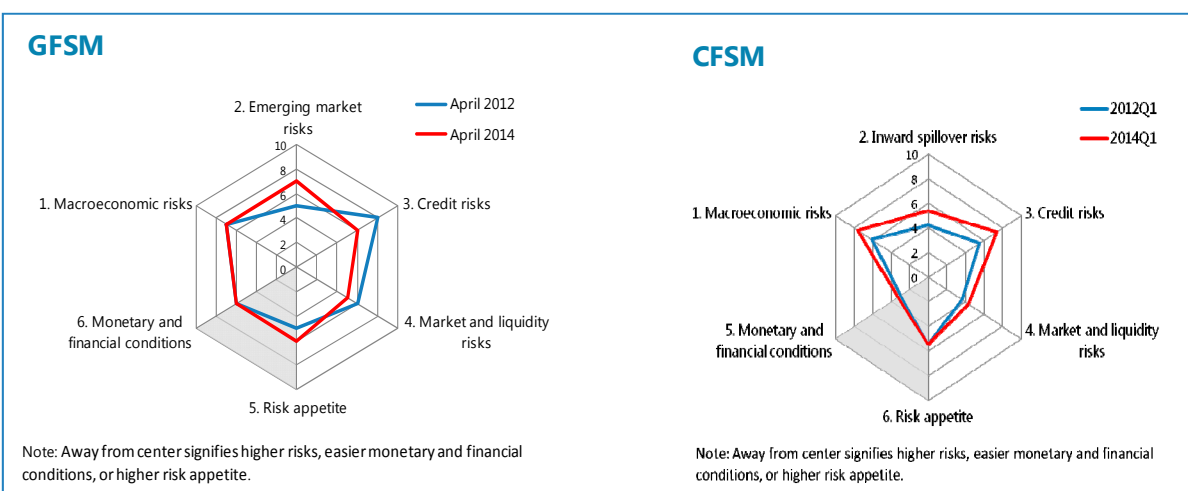
C. Trend in Indicators in Recent Years

6. **Figure 1 presents the trends in the indicators over 2007 Q2-2014Q1.** These indicate that macroeconomic risks were in decline till late 2008, but picked up significantly thereafter. The initial reversal appears to have been caused by sharp drops in oil and alumina prices in 2009, which resulted in the current account surplus sliding from 9.2 percent of GDP to 2.9 percent of GDP. Domestic policies however also amplified the effects of commodity price shocks on macro stability. Notably, expansionary fiscal policy which increased civil servant wages by 42 percent in nominal terms between 2008 and 2010 increased domestic demand and helped increase inflation from 1.3 percent at end-2009 to 10.3 percent at end-2010. Credit risks have been rising since mid-2011, while inward spillover risks have picked up in 2013. On the other hand, the indicators for market and liquidity risks, risk appetite, and monetary and financial conditions indicate flat or declining risks. Overall, the indicators appear to give relatively plausible results for Suriname.

³ Suriname's financial market is dominated by banks; there is no active bond market and no available data on corporate bond issuance.

Figure 1: Risk Rank by Level*

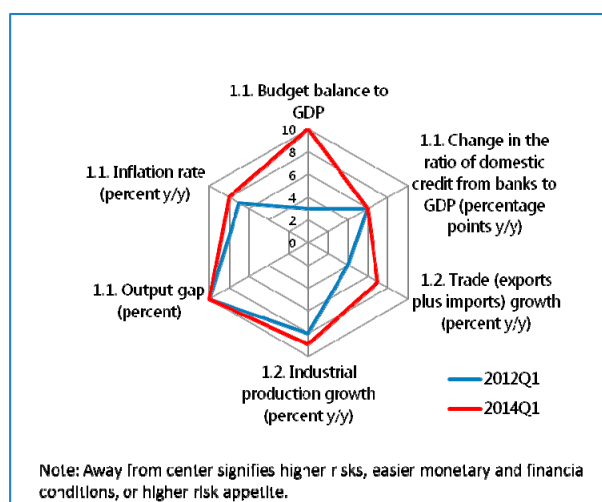
* These charts show the trends of risk rankings with a ranking of 5 representing the long-run average. A ranking over 5 means heightened risks.



7. **Spidergrams comparing changes between 2012Q1 and 2014Q1 also indicate that risks in Suriname have increased in several categories while global risks have been relatively more stable.** The contrast reflects the large exposure of Suriname to commodity price fluctuations as well as domestic factors such as fiscal relaxation and relatively strong credit growth. In the global financial stability map, risks from emerging market economies increased due to weak growth outlook and increased domestic vulnerabilities. This worsening emerging market outlook may also have increased the inward spillover risks to Suriname through its negative impact on commodities prices.

8. **Macro-economic risks mainly originate from domestic factors.** Decomposing the macro-economic risk indicator into its sub-indicators shows that the deterioration of the fiscal situation poses a major risk. Other domestic risks indicators include rapid increase of domestic credit and weak outlook of industrial production, which all show increase of risks. The current account also registered a deficit of close to 4 percent of GDP for the first time since 2006 as the value of gold exports dropped by 14 percent.

9. **Higher inward spillover risks have been reflected in the weakening of the current account and fiscal balance, and declining international reserves.** Exports of gold, oil, and alumina account for 92 percent of total exports, and mineral revenues (including royalties, dividends, and corporate taxes from the mining sector) contribute a substantial share of government revenues. Downward shocks to major commodity prices have been the key reason for the recent deterioration in fiscal and

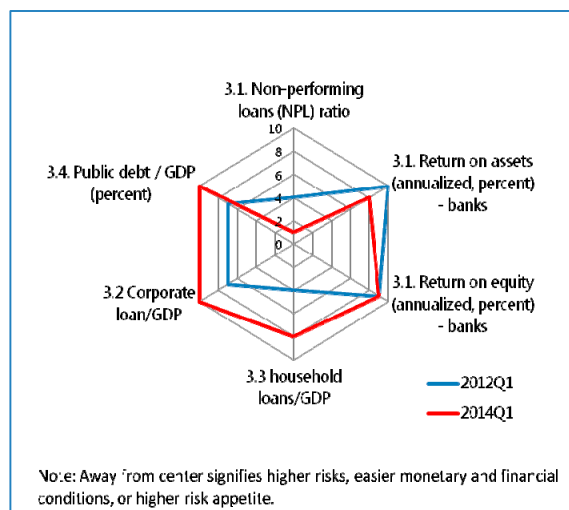


external positions in Suriname, though the fiscal deterioration also owes much to policy slippages.

10. Credit risk trends reflect changes in banks profitability, asset quality, solvency, and credit growth in the period.

From 2007 to 2010, credit risk was on a downward trajectory

mainly reflected the reduction of NPLs and foreign exchange lending, but since then credit risks have been rising due to lower bank profitability and weakening fiscal soundness. From 2011 to 2013, the central bank raised the reserve requirement ratio (RRR) three times to curtail credit growth and thus reduced banks' profitability. Suriname's financial market is dominated by commercial banks, and bank lending is the major source of financing. Although financial intermediation levels are low, with the credit-to-GDP ratio standing at only 28½ percent in 2013, the banking sector's exposure to



corporations, households, and the government is high. Indeed, Suriname's risk ranking in terms of corporate loans to GDP and public debt to GDP increased from 7 to 10 between 2012Q1 and 2014Q1. Moreover, non-bank financial institutions developed "shadow-banking" business due to a lack of alternative investment channels. Although the NPL ratio declined from 6.2 to 5.9 in 2013, NPLs may not be adequately accounted for, and some banks may not have adequate provisioning.

11. Relatively low market and liquidity risks partly reflect the generally prudent management of the banking sector and monetary policy.

The loan-to-deposit ratio was kept at around 60 percent, which is relatively conservative. Banks also have relatively high liquid assets to short-term liabilities ratio (around 55 percent). However, as part of the liquid assets is in the form of required foreign currency reserves held abroad, it might not be available immediately if needed.

12. Monetary and financial conditions have generally been on a tightening trend.

The main indicators to measure monetary conditions for Suriname are RRR, real broad money growth and credit growth. As mentioned-above, RRR was raised three times since 2011 to contain credit growth. As a result, banks lending capacity was reduced and credit growth declined from its peak of 36.8 percent in 2007 to 18 percent in 2013. Unsterilized foreign exchange sales by the central bank have also helped contain broad money growth recently.

13. Suriname has no indicators of risk pricing and the indicator for risk appetite only reflects changes to FDI flows.

The stock market is underdeveloped, with an informal exchange and few traded companies, therefore there is no stock price index. Government treasury bills are negotiated bilaterally between Ministry of Finance and commercial banks with a fixed interest

rate around 9 percent. Accordingly, the only available indicator to reflect investor's risk perception is the FDI flows. But even this indicator is a bit problematic, as Suriname does not report gross FDI flows to the Fund according to its agreement with the direct investment companies.

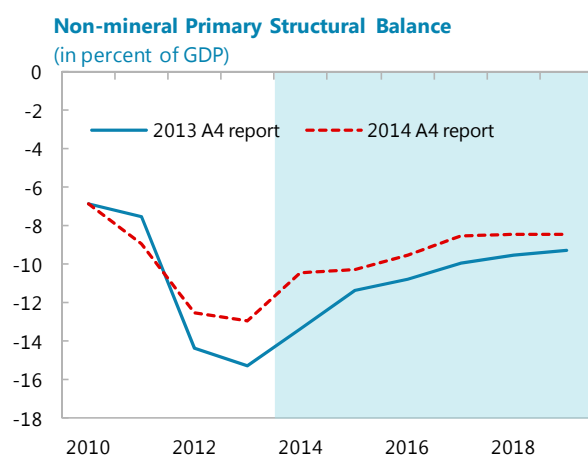
FISCAL SUSTAINABILITY AND AGING PRESSURES IN SURINAME ¹

A. Background

1. **This paper provides an updated fiscal sustainability assessment for Suriname and extends the analysis to include aging pressures.** It extends the analysis of previous work (IMF, 2013) by, first, measuring aging pressures, second, accounting for recent revisions in the composition of total revenues between commodity and non-commodity revenues in 2011–13 and, finally, incorporating recent revisions to the fiscal outlook. Taking into account these considerations, the note shows the fiscal sustainability gap to be smaller than previously thought. The fiscal gap is revised down from 14.2 percent to 12.5 percent. However, once aging pressures are taken into account, the fiscal sustainability gap is projected to be larger than previously forecasted.

B. Mineral Resources of Suriname

2. **The fiscal sustainability gap has improved compared to the one reported in (IMF, 2013), primarily due to downward revisions in mineral revenue estimates.** While revisions in total revenues have been marginal, mineral revenue data has been revised downward by about 1 percent of GDP from 2011 to 2012. As a result, the share of non-mineral revenue to total revenue in 2012 is larger than previously thought. With other major spending items remaining unchanged, the 2012 non-mineral structural primary balance is 1½ percent of GDP better than previously forecasted in (IMF, 2013). Similarly, compared to the previous projections, the 2013 non-mineral primary structural balance is adjusted up by 2½ percent of GDP.



Source: Suriname authorities; and IMF staff estimates and projections.

Table 1. Suriname: Fiscal updates
(in percent of GDP; unless otherwise noted)

	2013 Staff Report	2014 Staff Report
Total commodity revenue outlook (mn, SUR) 1/	10,562	7,798
Gold	3,407	2,063
Oil	6,590	5,339
Commodity price outlook in the medium term 2/		
Gold (US\$ per troy ounce)	1381.2	1296.1
Oil (US\$ per barrel)	96.2	96.5
Primary balance improvement from 2013-2018	0.7	4
Real discount rate	5.50	5.50
Average nominal GDP growth rate	9.20	9.25
Non-mineral primary structural balance (2013)	-15.3	-12.8
Public debt (2013) 3/	37.1	29.8

Source: Suriname authorities; and IMF staff estimates and projections.

1/ Estimated revenue from 2013-2018.

2/ Estimated as simple average from 2013- 2018.

3/ 2013 Staff Report projected to include sovereign bond issuance to finance the purchase of stakes in the new gold mining ventures in 2013. With the recent information, staff now included the equity stake purchase in 2014.

¹ Prepared by Hye Sun (Marie) Kim.

3. **Key assumptions of the fiscal sustainability assessment are updated to reflect the revised information (see Table1).** The same methodology is applied as in (IMF, 2013) and Kanda and Mansilla (2014) to derive the sustainability gap, which is defined as follows:

$$S_t = (r - g) \left[b_t - \left(\frac{1}{1+r} \right) \sum_{j=0}^{\infty} \left(\frac{1+g}{1+r} \right)^j p_{t+j} \right]$$

$$P_t = (MR_t + NMR_t) - PE_t$$

where S_t , r , g , b_t and p_t represent the sustainability gap in percent of GDP in period t , discount rate, GDP growth rate, debt-to-GDP ratio in period t and primary surplus to GDP ratio in period t , respectively. The primary balance (P_t) is calculated by subtracting non-interest expense (PE_t) from the sum of non-mineral revenue (NMR_t) and mineral revenue (MR_t).

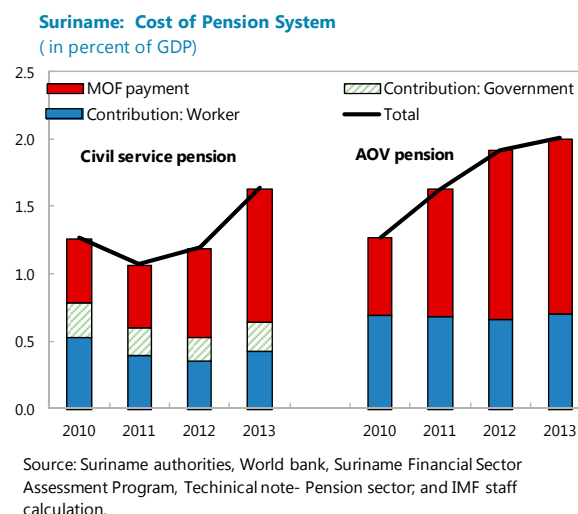
4. **Main changes in the key assumptions:**

- The GDP growth rate (g) is revised up by 0.05 percent to 9.25 percent, while the real discount rate (r) remains constant at 5.5 percent.
- Total expected mineral revenue from gold sector has been revised down due to a more pessimistic gold price outlook than what was forecasted a year ago. Separately, this update includes mineral revenues from the informal gold sector (¾ percent of revenue from total gold sector), which was omitted in the 2013 report given the small magnitude of its contribution.
- In 2014, the authorities have introduced non-tax revenue measures, which are incorporated into this fiscal sustainability assessment. The non-tax revenue measures include: (i) an increase in royalties on the informal gold sector from 1 to 2 percent. (ii) A rise in wood concession fees by 400 percent, from 5 cents to 20 dollar SRD. (iii) Sales of public land. However, the sales of public land will only temporarily increase revenue.

C. Current Pension System in Suriname

5. **Currently, three different pension schemes are available in Suriname: the AOV, Civil Service Pension, and private pensions.** The AOV public pension provides a basic flat rate to all Surinamese who are over 60 years old, and resident non-citizens who have made a contribution for more than 10 years. In addition to the AOV payment, public workers, which constitute about 40 percent of formal workers, are provided a Civil Service pension. Only a handful of formal workers (10–15 percent) are enrolled in voluntary private pensions. A low labor force participation rate (55 percent) and a high informality rate (53 percent of formal employment) suggest that the majority of the old population relies on limited income payments from the AOV pension or family transfers.

6. **Although the Universal AOV is provided to all Surinamese, the payment only guarantees the minimum living standard.** The current AOV payment is 525SRD (\$US159) per month, well below the 2012 GDP per capita of the country (\$US9,376). The Ministry of Social Affairs delivered payments to over 47,000 citizens in 2012, which is about 90 percent of Surinamese population over age 60. However, only about half of these recipients made the required payment of 4 percent of wage contribution during their working years, and the government has paid the rest.² Since benefit payments are made regardless of contribution history, collected revenues are insufficient to cover the full pension expense, resulting in a funding gap. As of 2013, the Ministry of Finance (MoF) paid 65 percent of the total AOV pension expense in order to fill the funding gap.



7. **The Civil Service pension is provided to all public workers starting at age 60.** Public workers contribute 10 percent of their salary with the government paying 5 percent as the employer. Workers receive 70 percent of their final salary after 35 years of contribution. Currently run as a Pay-As-You-Go (PAYG), the system has a funding gap of 60 percent, which is financed by the government.

Table 2. Suriname: Pension System

Pension parameter	(Universal) AOV Public Pension	Civil Service Pension Fund	New Pension 1/
Eligibility	Any Surinamese who are over 60 year-old; and residents with 10+ year of contribution.	Public workers after 35 years' of contributions from age 60	Any Surinamese who are over 60 year-old after minimum 10 years of contribution.
Contribution Rates	4 percent of salary	10 percent from worker's salary, and 5 percent from government (as employer contribution)	3 percent to 28 percent of salary
Coverage rates	90 percent of population over 60	Currently 40,000 contributors (42 percent of formal labor force)	Plans to cover over 50 percent of formal workers
Benefit payments/rates	525 SRD (US\$159) per month	70 percent of final salary	70 percent of final salary, shared equally between employee and employer

Source: World Bank, *Technical note- pension sector* (2014)

1/ Full detailed information is not yet available.

² See Suriname Financial Sector Assessment Program, *Technical Note – Pension Sector*, World Bank Group.

8. **The government has proposed a new pension plan to cover those who are not covered by the Civil Service pension scheme and/or private pension plans.** Only 4,000 pensioners (less than 10 percent of population over 60) are currently receiving private pension benefits. The new pension plan is, reportedly, projected to cover over 50 percent of workers who are not currently enrolled in the Civil Service and/or other private pension plans. The new scheme is designed as a Pay-As-You-Go (PAYG) system, which is in contrast with recent trends toward funded systems.³ The new government plan also aims to bring down informality in the society by enrolling informal workers to the new pension plan. Under the new PAYG system, workers and employers will share the cost of pension contributions equally, and contribution rates are expected to start from 3 percent but rise substantially, reaching 28 percent by 2050.⁴ Similar to the Civil service pension scheme, the proposed new pension scheme plans to provide 70 percent of the final salary starting age 60. At present, the new pension law is being discussed in parliament, with full detailed information not yet available.

D. Projection of Aging Pressure

9. To project pension spending over the medium term, we use the following equation from IMF (2011).

$$\frac{\text{Pension Expenditure}}{\text{GDP}} = \underbrace{\left(\frac{\text{Pop.60+}}{\text{Pop.19-59}}\right)}_{\text{Old-age dependency ratio}} \times \underbrace{\left(\frac{\text{Pensioners}}{\text{Pop.60+}}\right)}_{\text{Eligibility ratio}} \times \underbrace{\left(\frac{\text{Average pension}}{\text{Average wage}}\right)}_{\text{Replacement rates}} \times \underbrace{\left(\frac{\text{Pop.19-59}}{\text{Workers}}\right)}_{\text{Inverse of employment rate}} \times \underbrace{\left(\frac{\text{Compensation}}{\text{GDP}}\right)}_{\text{constant}} \quad (1)$$

For the AOV pension plan, given limited data, the analysis is based on a simpler version of identity (1):

$$\frac{\text{Pension Expenditure}}{\text{GDP}} = \underbrace{\left(\frac{\text{Population 60+}}{\text{Pop.19-59}}\right)}_{\text{Old-age dependency ratio}} \times \underbrace{\left(\frac{\text{Pensioners}}{\text{Pop.60+}}\right)}_{\text{Eligibility ratio}} \times \underbrace{\left(\frac{\text{Average pension}}{\text{GDP/Pop.19-59}}\right)}_{\text{Replacement rates}} \quad (2)$$

³ A pay-as-you-go system uses employer and employee contributions to pay for current pensions to the retired. A funded system depends on investments on assets to finance future retirement benefits. Most commonly, public systems are PAYG and private pensions use funded system.

⁴ This is higher than the average contribution rate of around 20 percent in other advanced and emerging countries. See (Eich, Gust, & Soto, 2012).

10. **Forecasted public pension spending is sensitive to demographic, macroeconomic, and policy assumptions.** Given limited data available, Staff made the following assumptions to estimate the pension spending over the medium term.

- **Dependency ratio.** The old-age dependency ratio is defined as the proportion of population over 60 to population of 19–59.⁵ Naturally, demographic trends will be the main cause of the rise in future public pension spending. Compared to neighboring countries, the overall population of Suriname is still relatively young. However, estimates suggest that the old-age dependency ratio could rise to 45 percent in 2060 under the medium fertility rate scenario.⁶
- **Eligibility rates.** Eligibility rates are defined as the number of pensioners as a proportion of the population over 60. Staff assumed constant eligibility rates over the medium term at 14 percent for public civil pension and 90 percent for the AOV system.
- **Replacement rate.** The replacement rate is defined as the ratio of average pension to average wages of current workers. Given limited data, the replacement rates are derived from equation (1) for the historical period, and assume to be held constant for the foreseeable future. In 2013, replacement rates were 60 percent for the Civil service pension and 12 percent for the AOV. The Civil pension benefit is generous compared to other countries where often replacement rates are within a range of 40 to 60 percent.⁷ Staff incorporated a 10 percent anticipated pension increase in 2014, and kept the replacement rates constant from then on.
- **Inverse of employment rate.** Projections are also sensitive to unemployment rates and participation rates. The current model keeps the official rate participation rate of 55, and assumes a 7.6 percent unemployment rate to remain constant in the medium term. The share of government workers is also kept constant at 42 percent of the formal workforce, as indicated by official sources. The low participation rate could understate the true state of labor force participation, where informal sector activities are common, and account for around 50 percent of formal employment.

E. Fiscal Sustainability Gap Including Aging Pressures: Public Sector

11. **Public pension expenditure has been growing, and poses a threat to government spending priorities and fiscal sustainability.** The costs of the AOV and the Civil Service pension schemes have been rising rapidly since 2010, while the contribution from workers and the government (as an employer) has remained constant. As a result, the Ministry of Finance (MoF) has carried an increasing funding burden. MoF payments to fill the funding gap for the public civil

⁵ In Suriname, the retirement age is 60, which is low relative to global trend of 65.

⁶ Median fertility rate in the medium term is used, provided by United Nation population projection.

⁷ Average replacement rate is around 40 percent. See Eich, Gust and Soto (2011).

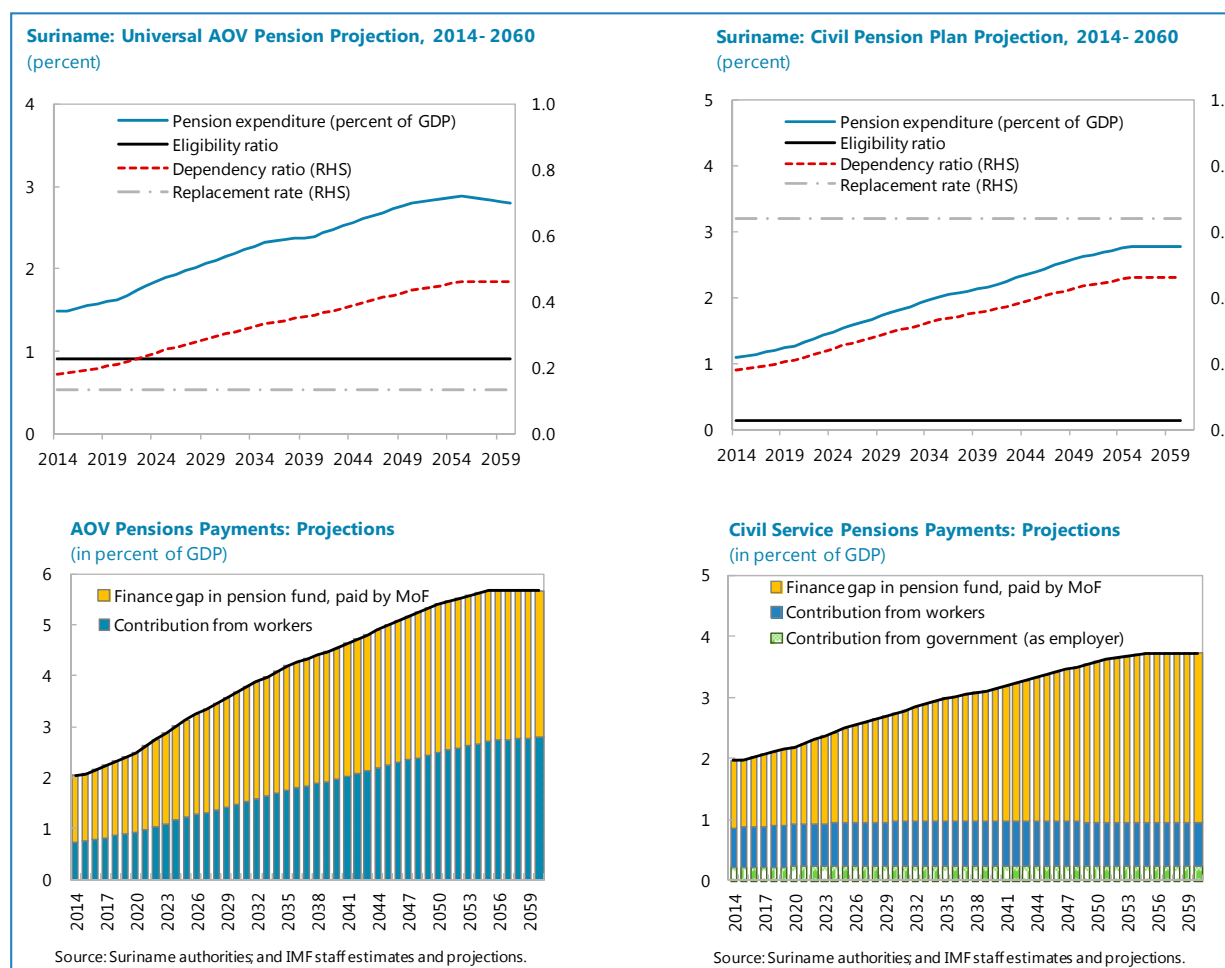
pension system has risen by 188 percent since 2010, and 213 percent for the universal AOV pension scheme, both measured in nominal terms.

12. **The universal AOV public system is forecast to add 1½ percent of GDP to fiscal expenditure by 2060.** Although the payment to each individual is not significant, considering the rising dependency ratio and a high eligibility ratio, the costs related to the AOV could rise significantly. Without anticipating any policy changes, Staff assumes the current trend of high eligibility (or coverage) ratio will be kept at 90 percent of total population aged over 60. We also assume a rising contribution from the total labor force, primarily resulting from the incorporation of more informal sector workers into the new pension plan.⁸ As a result, as a percentage of the total workforce, wage contributors are expected to rise from 50 to 70 percent, helping ease fiscal pressures. Failing to capture workers in the informal sector to contribute to the scheme will increase pressures the system by adding another one percent of GDP to government spending.

13. **The Civil Service pension fund is expected to cost the government an additional 1¾ percent of GDP by 2060.** In absence of any pension reforms, the funding gap that the MoF will have to cover is projected to rise to 75 percent of total civil pension by 2060, up from over 50 percent in 2013. An increase in replacement rates could easily exacerbate the widening of the finance gap of the system. A 10 percent increase in the replacement rate will expend government pension expense by 0.3 percent of GDP, assuming other assumptions kept constant over the medium term.

⁸ New pension plan aims to bring down informality by encouraging workers, including who are in currently in informal sector, to join the new pension plan.

14. **It is estimated that the aging pressure from the current public pension system will worsen the fiscal sustainability gap from the current 12½ to 15½ percent.** The public pension spending from both the civil servant pension plan and AOV is forecast to rise by 3¼ percent of GDP



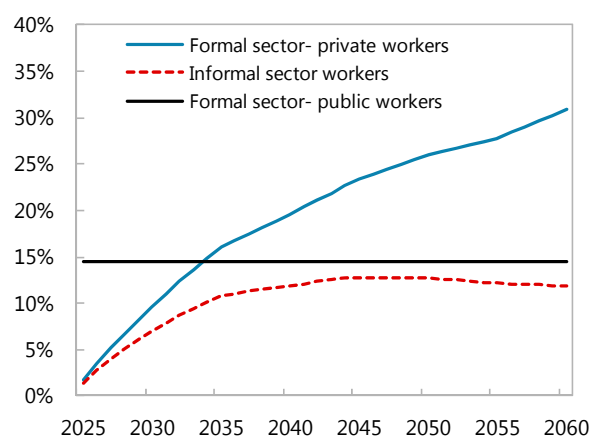
by 2060.

F. Fiscal Sustainability Gap Including Aging Pressures: Private Sector

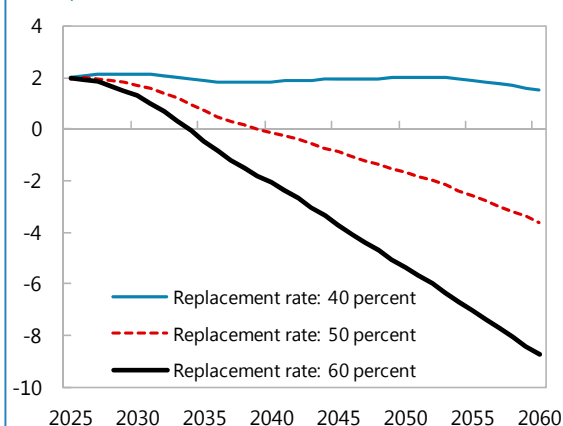
15. **The government is proposing a new pension plan to cover the private sector, but detailed information on its parameters is not yet available.** Attempts to expand the coverage rate are encouraging, especially if, as planned, the new pension system can bring down informality. However, at present, not much information is available in regards its sustainability and efficiency, even among major stakeholders.
16. **Aging pressure in the private sector is susceptible to multiple variables, and should be carefully designed to contain its sustainability.** With limited information available, the analysis of the new-pension plan is based on the same methodology that was applied to the public sector

pension scheme. In this regard, we used the same dependency ratio and employment rates; appraised the replacement rates to be in the range of 40 to 60 percent; and assumed private sector wage to be 70 percent of those in the public sector. We also assumed that the new policy will bring down employment in the informal sector by half, as advocated by the new pension plan. Lastly, as with existing schemes, we assumed that any Surinamese who are over 60 and have a minimum of 10 years of contribution history are eligible to the new pension plan. By design, eligibility rates of the new pension system are time variant. This implies that more people will be eligible to receive a pension as the new system matures. Specifically, if the new system is launched in 2015, at present only those currently in their 50's will be eligible for pension benefits in 2025. Correspondingly, the present 40 age group cohort will be eligible in 2035. Under the assumption that 60 percent of the private sector workforce and 70 percent of informal sector will join the new pension plan, half of the total population over 60, including the workers enrolled in the civil public pension scheme, will be covered by some type of pension plan by 2040.

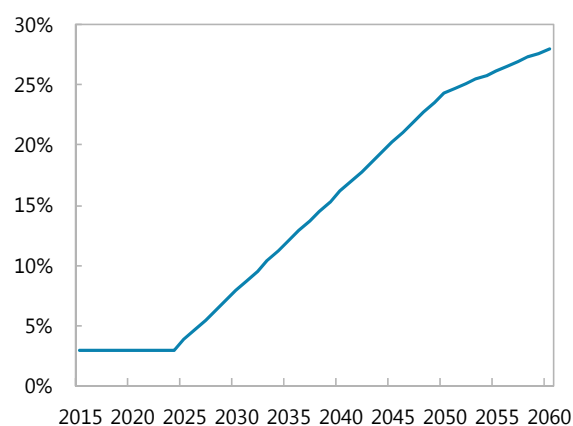
Projection: Coverage of Pension System
(in percent of total population over 60)



Suriname: New Pension Plan Balance (Projection)
(in percent of GDP)



Suriname: New Pension Plan Contribution Rate
(in percent)



17. The new pension plan contains risks that would add contingent liabilities to the government should revenue shortfalls materialize. Based on the assumptions mentioned above, Staff estimated probable revenues and expenditures given time-varying contribution and eligibility rates. Over the first 10 years, when the pension fund has no obligation to pay, the pension system would accumulate assets. However, in some scenarios, the accumulated assets combined with

projected revenue streams may not be sufficient to meet the full obligations to pensioners in the medium term. A 60 percent replacement rate scenario, which is comparable to that of the public pension scheme, will produce a revenue shortfall by 2035, 20 years after launch of the new system. Under the 40 percent replacement rate scenario, the cash flow (revenue) appears to meet the needed payments through 2050. However, the suggested high contribution rates in the medium term will be hard to enforce, and brings into question the credibility of the system. The new pension system in Suriname proposes a 28 percent contribution rate from workers towards their pension, in addition to their usual tax obligations, despite an expected future income stream of (only) 40 percent of final salary. It is unlikely that this volunteer system will be sustained under this scenario, and the government may come under political pressure to cover the private pension finance gap if the new pension plan fails to deliver the promised benefits.

G. Fiscal Pension Reforms

18. **To contain the impact of aging, further pension reforms are critical to ensure long-run public finance sustainability.** There are four main areas where the government of Suriname's could implement pension reforms in order to prevent the fiscal pension funding gap from growing.

- Increasing statutory retirement age in line with rising longevity: A decomposition of projected future pension spending suggests that most of the spending increase is due to a rising old-age dependency ratio. Raising the retirement age will not only help contain fiscal spending, but could also promote economic growth via: (i) sustaining higher labor supply over the long run, (ii) boosting real consumption, (ii) reducing social problems, including poverty, among elders, and lastly, (iii) increasing tax revenues.
- Contain the rate of growth of pension benefits. The benefit rate, often-referred to as the replacement rate, could be better contained within the range where income security among elders is protected. Over the recent commodity price boom period, public pension replacement rates have increased from 40 percent in 2010 to 60 percent in 2013. Assuming all else constant, Staff estimate that a 10 percent rise in replacement rates in the Civil service and AOV pension schemes will cost the government an additional one percentage point of GDP by 2060. Under the new pension plan, we estimate that a 10 percent rise in replacement rates could lead extra pension spending size of 10 percent of GDP in the new pension system by 2060.
- Increase revenue by strengthening the contribution base. The AOV pension payments cover approximately 90 percent of old citizens who are over 60, but only half have fully contributed to the system. To sustain the high coverage ratio at 90 percent, additional efforts are required to broaden the contribution base. Staff estimates that with every 10 percent increase in the contribution base could reduce pension pressures in the AOV by 0.5 percentage points of GDP.
- Increase revenue by increasing contribution rates. Current contribution rates, 4 percent for the AOV and 5 percent from public workers enrolled in the Civil service pension system, are lower compared to other emerging economies (IMF, 2011). Analogously, the suggested 3 percent contribution rate to be applied to the new private pension system is low. Moreover, the

contribution rate is to rise from 3 percent to 28 percent by 2050, which would make it the highest contribution rate amongst neighboring countries at present, and increasing enforcement difficulties. This could eventually exacerbate informality, as workers seek to avoid higher tax pressures. The new system could consider a mixture of a funded system and PAYG. The income secured from pre-funding will lessen the burden that the government will have to bear as aging pressures increase.

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