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# Unbearable Costs: When Is Inflation Impeding Job Creation? Evidence from Sub-Saharan Africa

Ibrahima Camara, Rasmane Ouedraogo and Amadou N. R. Sy

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# Unbearable Costs: When Is Inflation Impeding Job Creation? Evidence from Sub-Saharan Africa

**Prepared by Ibrahima Camara, Rasmane Ouedraogo and Amadou Nicolas Racine Sy***

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**ABSTRACT:** Covid-19 and war-induced commodity price fluctuations, and broadening price pressures have led to a surge in inflation in many sub-Saharan Africa (SSA) countries. To adjust to increasing costs, firms have resorted to several measures including shuttering offices, reducing businesses, laying off, and freezing hiring, thus putting at risk job creation and raising concerns of youth unemployment. This paper explores the effects of inflation on private employment growth in SSA using a large firm-level dataset from the World Bank's Enterprise Surveys. We find a non-linear relationship between inflation and job creation in SSA, with job creation being negatively correlated with inflation rate when the latter is above 14 percent. This finding holds regardless of the sector of activities of firms and the exchange rate regime. In addition, the paper finds some differential effects based on the type of products. An increase in fuel prices tends to be more detrimental to job creation than food prices. The study also provides evidence that the state of implementation of structural reforms matters. The results show that inflation reduces job opportunities mostly in countries with bad or no structural reforms.

| | |
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| Author's E-Mail Address: | icamara99@gmail.com; rouedraogo@imf.org; asy@imf.org |

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WORKING PAPERS

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Prepared by Ibrahima Camara, Rasmane Ouedraogo and Amadou N. R. Sy[1]

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# I. Introduction

Job creation is one of the major challenges facing Sub-Saharan Africa (SSA). While the number of new jobs to be created to absorb new entries in the labor market in SSA is estimated at 18 million per year, only 9 million new jobs were created between 2000 and 2021, most of which were self-employed and family workers (Abdychev et al., 2018). The COVID-19 pandemic has worsened these pre-existing conditions. According to ILO (2022), the pandemic has cost sub-Saharan Africa 13.5 million jobs in working hour losses, leading to a two percentage points decline of the employment-to-population ratio (EPR). Improving job opportunities in the region, especially for the youth, becomes crucial as the region is the world's youngest, with more than 60 percent of its population under the age of 25 years.

Yet, the current unstable macroeconomic environment may endanger employment opportunities in the region. In recent years, the economies of SSA have been plagued by macroeconomic instability, characterized by volatile business cycles and high inflation, due to the fluctuations in commodity prices, the Covid-19 pandemic and the war in Ukraine. These multiple shocks have prompted a surge in food and fuel prices that threatens the region's economic outlook. Inflation in the region is expected to remain elevated in 2022 and 2023 at 14.4 percent and 11.9 percent respectively—the first time since 2008 that regional average inflation will reach such high levels (IMF 2022). With high levels of inflation, firms may face higher uncertainty and unpredictable sales. For firms, inflation result in rising costs, falling profitability, and a decline in international competitiveness, which in turn can undermine job creation.

In this paper, we investigate the effects of inflation on private employment growth in sub-Saharan Africa. The few studies on the region focus on country specific cases such as South Africa (Reid et al., 2021; Vermeulen, 2007), the Kingdom of Eswatini (Phiri, 2018), and Nigeria (Efayena et al., 2020). Vermeulen (2007), using country-level data, finds no evidence of a trade-off between inflation and the unemployment rate in the short run in South Africa. In the long run, however, the author finds strong evidence of a negative relationship between these variables, confirming that inflation harms job creation.

We also explore the non-linearity of the relationship between inflation and employment, and potential threshold effects. Malinvaud (1977), for instance, argues that an increase in the real wage raises unemployment through capital-labor substitution, but conversely, a higher real wage can increase the demand for goods under certain conditions, thereby decreasing unemployment. The author concludes that the relationship between real wages and unemployment is negative when wages are low and positive for high wages. In the same vein, Blanchflower and Oswald (1990) find a nonlinear relationship in the UK and the US, with a negative curve slope at low and moderate

unemployment rates and a flat and possibly positive slope when unemployment rates are high. Phiri (2018) found a nonlinear relationship between the unemployment gap and inflation in Eswatini. Some empirical works identified a threshold level of inflation of 7-11 percent above which economic growth slowdown in developing countries (Khan and Senhaadj, 2000).

Our study complements previous works on the sub-Saharan African region using a large firm-level dataset. To the best of our knowledge, all studies focusing on SSA countries have so far used country-level data, while annual employment data quality is often called into question. In fact, measuring employment in sub-Saharan Africa at the country level is difficult given the large size of the informal sector, self-employment and labor devoted to subsistence activities. In addition, few countries undertake annual labor surveys, with most conducting labor surveys every 5 years. Estimates are therefore used to fit non-survey years. In contrast, firm-level data are becoming increasingly available and are of better quality. They avoid the issues that accompany employment analysis when using country-level data, such as adjustments made for non-survey years by applying some assumptions to employment statistics based on economic conditions. Another key advantage of firm-level data is that they demonstrate firm heterogeneity within a country and sector and provide insight into the dynamics within sectors and size of firms that is beyond the scope of more aggregate data. The main data source we use is the firm-level surveys for 32 sub-Saharan African countries conducted by the World Bank's Enterprise Surveys (ES) between 2013 and 2019. The ES are nationally representative surveys of the non-agricultural private sector of the economies.

Our study also contributes to the literature on the determinants of job creation by firms and the role of macroeconomic instability. Several studies focus on firm characteristics, including firms' age and size (Davis and Haltiwanger, 1990, 1992; Haltiwanger et al., 2008; Osterman et al., 2002; Shiferaw and Bedi, 2009; Dencker et al., 2009; Esaku, 2020), the education level of employees (Osterman et al., 2002; Garibaldi and Paulo, 2004) and the sector of activities of firms (Allen et al., 2021), and others on labor market policies and institutions (Garibaldi and Paulo, 2004). Macroeconomic stability also plays a critical role in job creation as it helps firms make informed decisions (Nela, 2019). According to the ILO (2012), maintaining macroeconomic stability is a prerequisite for sustainable and inclusive growth, which creates decent jobs.

Our results indicate that there is a non-linear relationship between inflation and job creation in SSA. Using a large firm-level dataset of more than 14,000 firms and fixed-effects model, we find that there is a positive relationship between inflation and job creation when the inflation rate is below 14 percent, and a negative relationship when the inflation rate is above this level. This finding is robust to the inclusion of firms' characteristics and several macro variables in the

estimates. Interestingly, the results highlight that the products in consumer baskets have differential effects on job creation. While prices of food products are negatively correlated with job creation when they increase by 15 percent or more, any increase in the price of fuel products could undermine job creation. To identify the channels through which inflation affects job creation, we assess the impact of inflation on firms' sales. We find that inflation is positively correlated with growth in firms' sales if the inflation rate is below 15 percent, but this relationship becomes negative when the inflation rate is above 15 percent due to the erosion of consumers' purchasing power. The results also show that the inverted U relationship between inflation and job creation holds regardless of the exchange rate regime of the country, the sector of activities of firms, and small and medium enterprises. For large firms, the coefficients associated with inflation are not statistically significant, likely due to their power to increase prices to consumers in line or more than their costs of production rises.

We also find that structural reforms matter. Well-functioning and transparent institutions are essential for creating a stable and predictable business environment, which in turn fuels investment and contribute to create jobs. We investigate the role of the structural reforms and the business environment on job creation using the World Bank's Country Policy and Institutional Assessment (CPIA) indices on structural policies cluster and the business regulatory environment rating. Splitting the sample into 3 subsamples (good reforms, no reforms, and bad reforms) based on the change in the CPIA indices, the results show there is an inverted U relationship between inflation and job creation in countries that have implemented bad or no reforms. Indeed, a high level of inflation is associated with a slowdown in job creation in these countries. However, the results show that good implementation of structural reforms and improved quality of business environment dampen the impact of high inflation on job creation. The findings are robust to several alternative checks. While the data used in the paper are pre-pandemic, the high-inflation episodes and job cuts observed during and in the aftermath of the pandemic show that the findings of this paper can be extrapolated to the recent periods.

The remainder of the paper is structured as follows. Section 2 describes the data sources in this paper. Section 3 discusses the empirical methodology and variables used for the estimation, while Section 4 presents the empirical results. Finally, Section 5 provides concluding remarks, pointing out key policy implications of the findings.

# II. Data sources

We use firm-level data to analyze the relationship between inflation and job creation in sub-Saharan Africa. Our main source of data is the World Bank Enterprise Survey (ES). We used

survey data from 2013 to 2019. The ES are nationally representative surveys of non-agricultural and nonfinancial private enterprises with 5 or more full-time permanent workers. The surveys use a common sampling methodology, stratified random sampling, as well as a common questionnaire across all countries. Stratification of the sample is on three criteria –sector, firm size (employees), and geographic location within the country. The stratified random sampling methodology is used to generate a sample large enough to be representative of the nonagricultural formal private economy, as well as key sectors and firm size classifications. The ES is comprised of both formal and informal firms, making it unique to consider a large proportion of activities in an economy. The ES data set provides firm-level information on employment levels, as well as other firm characteristics. Our main dependent variable is employment growth, which is defined as the change in the number of full-time employees between the year of the survey and 3 years before. While we would have preferred to include temporary employees in the calculation of employment growth, it is worth noting that the number of temporary employees are not available for the years before the survey. Measuring employment in sub-Saharan Africa is often difficult given the large size of the informal sector, self-employment and labor devoted to subsistence activities. A caveat of the ES dataset is that it includes firms with at least 5 employees, and therefore self-employed and other small enterprises with less 5 employees are not considered.

Inflation data are from the International Monetary Fund (IMF)'s World Economic Outlook (WEO) and measure the change in the consumer price index (CPI). We fully acknowledge the concerns on the measurement of CPI in Africa as revealed in Dabalen et al. (2016), including the urban bias of the underlying input data, the representativeness of CPI weights for the poor, commodity substitution bias, outlet substitution bias, quality change bias and bias from the introduction of new goods. However, addressing these weaknesses in country statistical systems are beyond the purpose of this study. Finally, we use economic growth data from the IMF's WEO.

Our baseline estimates are based on a sample of 14,384 firms spread across 32 sub-Saharan African countries. In Appendices, Table A1 provides the list of countries in the sample and survey years, and table A2 provides the summary statistics of the variables.

# III. Empirical Methodology

We estimate the following equation using panel fixed-effects model:

$$Emp_{ijt} = \alpha Inf_{jt-3} + \beta X_{ijt} + \pi_t + \mu_j + \varepsilon_{ijt} \quad (1)$$

where $Emp_{it}$ denotes the growth rate of full-time employees of firm $i$, in country $j$ at time $t$, and $Inf_{jt}$ is the inflation rate. $\mu_i$ stands for country-fixed effects to capture time-invariant country characteristics that are related to employment growth; $\pi_t$ are time-fixed effects to control for common shocks across countries; and $\varepsilon_{it}$ is the error term. Standard errors are clustered at the firm level. The vector $X_{ijt}$ represents a set of control variables, including the following:

- Age of the firm: the difference between the year of the survey and the year of creation of the firm.
- Number of full-time employees at creation.
- Formal firm: a binary variable taking the value of 1 if the firm is formally registered and 0 otherwise.
- Credit line: a binary variable taking the value of 1 if the firm has a credit line from a bank and 0 otherwise
- Labor regulations: derived from a survey question asking firms whether labor regulations are an obstacle to their businesses. The responses are coded as follows: 0 if no obstacle, 1 if minor obstacle, 2 if moderate obstacle, 3 if major obstacle and 4 if very severe obstacle.
- Political instability: from a survey question asking firms whether political instability constitutes an obstacle to their businesses. The responses are coded as follows: 0 if no obstacle, 1 if minor obstacle, 2 if moderate obstacle, 3 if major obstacle and 4 if very severe obstacle.
- Foreign ownership: it is the percentage owned by private foreign individuals, companies and organizations.
- Economic growth: measures the growth rate in real gross domestic product.

In subsequent estimates, we added the square value of inflation to gauge the existence of non-linear relationship between inflation and job creation. The estimated equation is as follows:

$$Emp_{ijt} = \alpha Inf_{jt-3} + \vartheta Infsq_{jt-3} + \beta X_{ijt} + \pi_t + \mu_j + \varepsilon_{ijt} \quad (2)$$

With $Infsq_{jt}$ being the square value of the inflation rate.

# IV. Results

## A. Baseline results

The baseline estimation results are displayed in Table 1. We control for country and time fixed effects in all columns. In columns 5-8, we added economic growth as additional control variables. As predicted by the Phillips Curve, the coefficients associated with inflation are positive and strongly significant at the 1 percent level in columns (1) and (5). An increase of inflation by 1 percentage point is associated with an increase in job creation by up to 0.6 percentage point.

In columns (2) and (6), we added inflation square to gauge about the impact of high inflation and potential threshold effects. The results show that the coefficient associated with inflation itself remains positive and significant, while the coefficient associated with inflation square is negative and highly significant at the 1 percent level. This finding suggests that there is a threshold level beyond which inflation starts hitting the labor market. Based on the results in columns (6), inflation is adversely correlated with job creation in sub-Saharan Africa when it is beyond 14.1 percent. The job destruction effect is likely due to the additional costs of goods, services and inputs, and potential risk of recession which could erode consumption, investment and sales. Higher salary adjustment could also reduce firms' incentive to recruit. High-inflation periods could be dominated by (global) supply shocks that increase inflation and lower output/employment. The IMF (2022) estimate that 12 SSA countries will have inflation rate above 14.1 percent in 2022, including Angola, Burkina Faso, Burundi, Ethiopia, Ghana, Malawi, Nigeria, Sao Tome & Principle, Sierra Leone, South Sudan, Zambia and Zimbabwe. Our results are in line with Coibion et al. (2020) who also find that higher inflation expectations on the part of firms leads them to raise their prices, increase demand for credit, and reduce their employment and capital.

We report at the bottom of Table 1 the p-value from the likelihood-ratio test (LRT) to test how the model with the squared term of inflation compares to the linear only model. With the p-value being 0 in all columns, we conclude that the model that includes inflation and inflation squared terms fits significantly better than the model containing only the linear term (i.e. the non-linear relationship fits better).

In columns (3-4) and (7-8), we included several firm-level characteristics, such as the age of the firm at the time of the survey, the number of full-time employees at creation, a binary variable to capture whether the firm is formally registered and has a credit line from banks. We also control for the firm assessment of labor regulations and political instability in the country, and whether

the firm is owned by foreigners. The inclusion of these firm-level variables does not change the key findings. The coefficients associated with inflation and inflation square remain positive and negative, respectively. However, the coefficients associated with inflation in columns (3) and (7) are higher than in columns (1) and (5). Based on the results in columns (7), an increase of inflation by 1 percentage point is associated with an increase in employment by 0.7 percentage point, nearly 34 percent higher than estimated effect in column (5). In addition, the estimated threshold levels in columns (4) and (8) are higher than in columns (2) and (6).

**Table 1. Baseline results**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Inflation | 0.4548*** | 2.4092*** | 0.6232*** | 2.3263*** | 0.5502*** | 2.5179*** | 0.7357*** | 2.3997*** |
| | (0.084) | (0.292) | (0.095) | (0.319) | (0.085) | (0.294) | (0.097) | (0.322) |
| Inflation square | | -0.0883*** | | -0.0775*** | | -0.0890*** | | -0.0759*** |
| | | (0.012) | | (0.013) | | (0.013) | | (0.013) |
| Age of the firm | | | -0.0041** | -0.0043** | | | -0.0038** | -0.0039** |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Number of full-time employees at creation | | | -0.0059*** | -0.0056** | | | -0.0052** | -0.0050** |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Formal firm | | | -4.4313*** | -3.6810*** | | | -4.3023*** | -3.6540*** |
| | | | (1.179) | (1.182) | | | (1.187) | (1.188) |
| Credit/loan line | | | 2.7242*** | 3.0183*** | | | 2.1276** | 2.4620** |
| | | | (1.014) | (1.013) | | | (1.023) | (1.022) |
| Labor regulations | | | -0.4223 | -0.3934 | | | -0.2883 | -0.2704 |
| | | | (0.405) | (0.404) | | | (0.408) | (0.407) |
| Political instability | | | -1.3757 | -1.6162* | | | -0.4614 | -0.7722 |
| | | | (0.947) | (0.944) | | | (0.967) | (0.965) |
| Foreign ownership | | | 0.0071 | 0.0041 | | | 0.0024 | 0.0001 |
| | | | (0.014) | (0.014) | | | (0.014) | (0.014) |
| GDP growth | | | | | 0.7676*** | 0.6995*** | 0.7645*** | 0.6869*** |
| | | | | | (0.107) | (0.108) | (0.124) | (0.125) |
| Constant | 30.6659 | 21.2912 | 46.1733* | 37.7046 | 24.6022 | 15.5861 | 38.7304 | 31.1193 |
| | (22.356) | (22.400) | (27.497) | (27.646) | (22.375) | (22.412) | (27.553) | (27.679) |
| Observations | 14,384 | 14,384 | 11,085 | 11,085 | 14,185 | 14,185 | 10,927 | 10,927 |
| R-squared | 0.007 | 0.010 | 0.012 | 0.014 | 0.010 | 0.014 | 0.015 | 0.018 |
| LR chi2 p-value | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Regarding the control variables, Table 1 shows that the coefficients associated with economic growth and credit line are positive and significant in all columns. As expected, an improvement in economic prospects could boost firms' sales and profits, and thus improving firms' ability to create jobs. Access to financial services can help expand firms' production capacity and output, and therefore contribute to create more jobs (Ouedraogo et al. 2021; Ayyagari et al., 2016). We also find that the coefficients associated with the age of the firm, the number of full-time employees at creation and formal firm are negative and significant. That said, the results show

that the pace of job creation by formal firms tend to be low, which could be due to the cost of recruiting formally or unfair practices by informal firms. Older firms may have lower capacity to expand compared to newer start-ups and disruptive companies. The remaining variables including labor regulations, political instability and foreign ownership are not statistically significant. Not all firms are affected in the same way by labor regulations; medium and large-sized firms are the ones most severely affected, while small firms tend to be less concerned. This divergence may be related to the lack of enforcement of labor legislation in small firms, either because of legal exemptions or widespread informality, and can potentially explain the non-significant coefficient associated with labor regulations. As for political instability, the result is surprising given that political instability hurts everything from operations to the working conditions of the employees to profits. Yet, the effect of political instability on firms may depend on its duration as firms may be able to overcome short-lived political instability contrary to the long-lasting cases. While foreign ownership can bring innovation, help firms to raise funds for operations, the effects on employment will depend on sales and the effective performance of the foreign-owned firms.

## B. Fuel and food prices

We run the estimates of the effects of food and fuel prices on employment in Table 2. We attempted to disaggregate total domestic prices into its different components but given the lack of data for most sub-Saharan African countries, we focus on food and fuel prices. The results show that the coefficient associated with food prices is positive and significant at the 1 percent level in columns (1) and (5), while the coefficient associated with fuel prices is negative and significant in columns (2) and (5). That being said, an increase in food prices is correlated with an increase in job creation, while an increase in fuel prices tend to reduce job creation. This differential effect could be due to the fact that fuel prices are inputs for most firms and could trigger an increase in prices of other inputs, thus creating direct and immediate effects on firms' costs, contrary to food products. When the square values are added in column (3), we find that the coefficient associated with food price remain positive while its square value is negative and significant at the 1 percent level, thus suggesting that food prices can hurt job creation when they reach higher levels. However, the coefficients associated with fuel prices is negative and significant, but its square value is not statistically significant in column (4). These findings remain unchanged when food and fuel prices are both included in columns 6 and 8. One may argue that the differential effect is due to real wage dynamics as rising food prices may take some time to push wages upward, but real wage data are not available in the Enterprise Survey dataset to explore this hypothesis.

**Table 2. Using food and fuel prices**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Food prices | 0.2025*** | | 1.2770*** | | 0.2934*** | 0.9902*** | 0.3502*** | 1.1527*** |
| | (0.053) | | (0.123) | | (0.055) | (0.119) | (0.065) | (0.144) |
| Food prices square | | | -0.0441*** | | | -0.0325*** | | -0.0390*** |
| | | | (0.004) | | | (0.004) | | (0.005) |
| Fuel prices | | -0.0800*** | | -0.3223*** | -0.2082*** | -0.0968** | -0.2199*** | -0.1164** |
| | | (0.031) | | (0.043) | (0.028) | (0.049) | (0.033) | (0.057) |
| Fuel prices square | | | | -0.0011 | | 0.0005 | | 0.0019 |
| | | | | (0.001) | | (0.001) | | (0.002) |
| Age of the firm | | | -0.0038** | -0.0040** | | | -0.0040** | -0.0039** |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Number of full-time employees at creation | | | -0.0057** | -0.0059** | | | -0.0061** | -0.0060** |
| | | | (0.002) | (0.003) | | | (0.003) | (0.003) |
| Formal firm | | | -4.4423*** | -3.8215*** | | | -3.8031*** | -4.2859*** |
| | | | (1.187) | (1.194) | | | (1.196) | (1.196) |
| Credit/loan line | | | 1.9629* | 1.5198 | | | 1.4644 | 1.5555 |
| | | | (1.021) | (1.032) | | | (1.034) | (1.032) |
| Labor regulations | | | -0.2236 | -0.2353 | | | -0.2522 | -0.2162 |
| | | | (0.406) | (0.410) | | | (0.410) | (0.408) |
| Political instability | | | -0.2150 | -0.1252 | | | -0.3806 | 0.0409 |
| | | | (0.965) | (0.982) | | | (0.983) | (0.982) |
| Foreign ownership | | | 0.0089 | -0.0020 | | | 0.0037 | 0.0063 |
| | | | (0.014) | (0.014) | | | (0.014) | (0.014) |
| GDP growth | 0.7541*** | 0.7322*** | 0.5674*** | 0.4783*** | 0.7015*** | 0.6354*** | 0.6430*** | 0.5311*** |
| | (0.106) | (0.104) | (0.122) | (0.125) | (0.107) | (0.107) | (0.125) | (0.124) |
| Constant | -6.8608*** | -4.5848*** | -11.1574*** | -0.6395 | -5.8624*** | -9.9066*** | -5.1937*** | -9.8189*** |
| | (0.916) | (0.717) | (1.647) | (1.505) | (0.920) | (1.274) | (1.587) | (1.935) |
| Observations | 14,177 | 13,859 | 10,921 | 10,674 | 13,859 | 13,859 | 10,674 | 10,674 |
| R-squared | 0.008 | 0.008 | 0.020 | 0.015 | 0.012 | 0.015 | 0.015 | 0.020 |
| LR chi2 p-value | | | 0.000 | 0.000 | | 0.000 | | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

## C. Transmission channel: impact of inflation on firms' sales

In an inflationary environment, unevenly rising prices inevitably reduce the purchasing power of some consumers and create an erosion of real income. This drop in real income can, in turn, negatively affect firms' sales, thereby forcing them to adjust to the new environment and reduce new hires in an attempt to cut costs. In this section, we estimate the impact of inflation on firms' sales, which is a potential channel through which inflation affects job creation. We estimate equations (1) and (2) with the dependent variable being the growth rate in firms' sales. The results are reported in Table 3. We find that the coefficients associated with inflation are positive and significant at the 1 percent level in columns (1) and (5), suggesting that high level of inflation is correlated with high growth in firms' sales. Based on the results in columns (5), an increase of inflation by 1 percentage points is associated with an increase of firms' sales by 3.8 percentage points. We also find that there are some threshold effects as the coefficients associated with inflation remains positive and significant in columns (2) and (6), while the coefficients associated with inflation square are negative and strongly significant at the 1 percent

level. Focusing on column (6), the results show that firms' sales start to decline when inflation rate reaches 15 percent. High level of inflation reduces the purchasing power of consumers, and thus leads to lower sales. The inclusion of additional control variables in columns 3-4 and 7-8 does not alter the findings.

**Table 3. Effects of inflation on firms' sales**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Inflation | 3.8527** | 13.1068*** | 5.1640*** | 13.5336*** | 3.8014** | 12.7765*** | 5.1337*** | 13.3231*** |
| | (1.523) | (3.802) | (1.873) | (4.455) | (1.549) | (3.829) | (1.891) | (4.481) |
| Inflation square | | -0.4388*** | | -0.4013** | | -0.4251** | | -0.3923** |
| | | (0.168) | | (0.198) | | (0.170) | | (0.199) |
| Age of the firm | | | 0.0206 | 0.0201 | | | 0.0199 | 0.0194 |
| | | | (0.041) | (0.041) | | | (0.041) | (0.041) |
| Number of full-time employees at creation | | | 0.2519 | 0.2534 | | | 0.2506 | 0.2522 |
| | | | (0.187) | (0.187) | | | (0.187) | (0.187) |
| Formal firm | | | -42.7612** | -39.5175** | | | -43.1200** | -39.9890** |
| | | | (18.197) | (18.245) | | | (18.222) | (18.276) |
| Credit/loan line | | | 0.5667 | 1.6436 | | | 1.8964 | 2.9097 |
| | | | (14.599) | (14.649) | | | (14.661) | (14.705) |
| Labor regulations | | | 5.1207 | 5.0643 | | | 4.5247 | 4.4868 |
| | | | (7.157) | (7.155) | | | (7.223) | (7.220) |
| Political instability | | | -6.8638 | -8.0703 | | | -8.8694 | -10.0098 |
| | | | (14.058) | (14.060) | | | (13.992) | (13.981) |
| Foreign ownership | | | -0.2583 | -0.2678* | | | -0.2532 | -0.2621* |
| | | | (0.159) | (0.159) | | | (0.159) | (0.158) |
| GDP growth | | | | | -1.7149 | -1.5998 | -2.4463 | -2.3942 |
| | | | | | (1.981) | (1.996) | (2.048) | (2.054) |
| Constant | -66.8196* | -106.5618*** | -88.9228** | -125.1884*** | -55.7154 | -95.0416** | -71.0607** | -106.9722*** |
| | (35.309) | (38.040) | (36.252) | (39.739) | (34.090) | (38.246) | (33.993) | (39.082) |
| Observations | 10,094 | 10,094 | 7,918 | 7,918 | 10,037 | 10,037 | 7,871 | 7,871 |
| R-squared | 0.006 | 0.006 | 0.013 | 0.013 | 0.006 | 0.006 | 0.013 | 0.013 |
| LR chi2 p-value | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

## D. Role of structural reforms

In this section, we explore the role of the structural reforms and the business environment. Structural reforms tackle obstacles to the fundamental drivers of growth by liberalizing labor, product and service markets, thereby encouraging job creation and investment and improving productivity. Well-functioning and transparent institutions are essential for creating a stable and predictable business environment, which in turn fuels investment and creates jobs. To investigate the role of structural reforms and the business environment, we extract the World Bank's

Country Policy and Institutional Assessment (CPIA) indices on structural policies cluster and the business regulatory environment rating. We focus on the business environment as it is key for entrepreneurship and job creation (UNIDO, 2017). We then split the sample into 3 subsamples based on the state of implementation of reforms. We calculate the change in the index of structural policies and business environment between the year of the enterprise survey and 3 years before. If the change in the index is positive, meaning that the quality of the business environment is improving or improvement in structural reforms, we assume that the country has implemented good reforms. On the contrary, if the change in the index is negative, we assume that the country has enacted bad reforms. If there is no change in the index, then we assume that no significant reform was implemented. We then run the estimates for each group of countries. The results are displayed in Table 4. We find that the inverted U relationship between job creation and inflation is verified in countries that have implemented bad or no reforms. The coefficients associated with inflation are positive and significant at the 1 percent level, while those associated with inflation square are negative in columns 1-2 and 4-5, suggesting that job creation starts slowing when inflation becomes very high. However, countries that implemented good structural reforms and improved the business environment tend to be better off. Table 4 also shows that the coefficients associated with inflation are positive and strongly significant in columns (3) and (6), while the coefficients associated with inflation square are not statistically significant. This finding suggests the adverse effects of high domestic prices on job creation are dampened in countries with good structural reforms and high quality of business environment, which are key to attract private investors. Furthermore, the inflation rate is lower in countries with good structural reforms (6.5 percent on average, against 10.2 percent in countries with poor structural reforms), reinforcing therefore the role of macroeconomic stability.

**Table 4. Role of structural reforms**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | CPIA: Structural reforms | | | CPIA: business environment | | |
| VARIABLES | Bad reforms | No reforms | Good reforms | Bad reforms | No reforms | Good reforms |
| Inflation | 4.2704*** | 5.4909*** | 2.2213** | 8.1215*** | 2.3968*** | 2.5136** |
| | (1.037) | (0.708) | (0.978) | (1.814) | (0.731) | (1.023) |
| Inflation square | -0.2237*** | -0.3063*** | -0.0403 | -0.7620*** | -0.1393*** | -0.0486 |
| | (0.065) | (0.044) | (0.035) | (0.191) | (0.043) | (0.037) |
| Age of the firm | -0.0049 | -0.0025 | -0.0043** | -0.0029 | -0.0033 | -0.0040** |
| | (0.004) | (0.003) | (0.002) | (0.005) | (0.003) | (0.002) |
| Number of full-time employees at creation | -0.0047 | -0.0045* | -0.0039 | -0.0019 | -0.0052** | -0.0045 |
| | (0.013) | (0.002) | (0.003) | (0.017) | (0.002) | (0.004) |
| Formal firm | 0.8071 | -5.8265*** | -2.4493 | -2.7392 | -4.3201*** | -2.1945 |
| | (2.290) | (1.899) | (2.000) | (2.953) | (1.646) | (2.105) |
| Credit/loan line | 1.6589 | 3.2609* | 2.0142 | 0.2611 | 2.9670* | 1.5685 |
| | (1.746) | (1.912) | (1.817) | (2.011) | (1.598) | (1.900) |
| Labor regulations | 0.5535 | -1.0115 | 0.0907 | 0.1433 | -0.6745 | 0.0761 |
| | (0.747) | (0.708) | (0.665) | (0.845) | (0.621) | (0.678) |
| Political instability | 1.5320 | -1.2456 | -1.1859 | 1.5345 | -0.8117 | -1.1789 |
| | (1.697) | (1.612) | (1.983) | (1.918) | (1.426) | (2.001) |
| Foreign ownership | 0.0207 | -0.0121 | 0.0101 | 0.0191 | -0.0201 | 0.0075 |
| | (0.022) | (0.025) | (0.026) | (0.028) | (0.020) | (0.029) |
| GDP growth | 0.9484*** | -0.3943 | 1.9700*** | 3.7949** | 0.1822 | 2.2803*** |
| | (0.257) | (0.323) | (0.250) | (1.508) | (0.241) | (0.260) |
| Constant | -27.9033*** | 11.9579 | 17.0939 | 14.4981 | 11.4298*** | 12.4926 |
| | (5.768) | (9.907) | (28.917) | (14.045) | (4.192) | (29.057) |
| Observations | 3,318 | 4,382 | 3,227 | 2,363 | 5,438 | 3,126 |
| R-squared | 0.025 | 0.024 | 0.040 | 0.012 | 0.031 | 0.048 |
| LR chi2 p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

## E. **Sensibility analysis**

### (i) Size of firms and sector of activities

We run the estimates by size of the firms (small, medium and large) and by sector of activities (manufacturing, retail services and other services). The results are displayed in Table 5. We find that the coefficients associated with inflation and inflation square are positive and negative in columns (1) and (2), respectively, and not statistically significant in column (3). This finding suggests that the U inverted relationship between inflation and job creation holds for small and medium firms. Inflation seems not to affect employment of large firms. High market powers, opportunities for economies of scale and greater access to funding are among other factors that can explain the resilience of large firms. They also enjoy more repeat business, which generates higher sales and larger profits than smaller and medium scale companies. Furthermore, large firms might have international operations and are thereby less affected by domestic factors Regarding the results by sector of activities, we find that the coefficients associated with inflation and inflation

square are significantly positive and negative in columns 4-6, respectively. Therefore, high level of inflation can undermine job creation regardless of the sector of activities of the firms.

**Table 5. Results by size and sector of activities**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Size | | | Sector | | |
| | Small | Medium | Large | Manufacturing | Retail | Other services |
| Inflation | 2.4842*** | 2.8456*** | 1.6760 | 2.6898*** | 3.8595*** | 1.9837*** |
| | (0.420) | (0.600) | (1.142) | (0.500) | (0.868) | (0.478) |
| Inflation square | -0.0799*** | -0.0890*** | -0.0517 | -0.0784*** | -0.1699*** | -0.0514*** |
| | (0.018) | (0.024) | (0.044) | (0.021) | (0.039) | (0.020) |
| Age of the firm | -0.0048** | 0.0006 | -0.0114*** | -0.0024 | -0.0003 | -0.0085*** |
| | (0.002) | (0.004) | (0.003) | (0.003) | (0.006) | (0.002) |
| Number of full-time employees at creation | -0.0059* | -0.0028 | -0.0085** | -0.0075** | -0.0050 | -0.0003 |
| | (0.004) | (0.004) | (0.004) | (0.003) | (0.004) | (0.004) |
| Formal firm | -5.0111*** | -0.5553 | -0.4381 | -3.4514** | 0.1725 | -5.4199*** |
| | (1.429) | (2.671) | (4.543) | (1.704) | (2.794) | (2.098) |
| Credit/loan line | 1.7292 | 3.8021** | -0.7250 | 5.0151*** | -0.8937 | 0.3193 |
| | (1.543) | (1.831) | (2.388) | (1.622) | (2.347) | (1.556) |
| Labor regulations | -0.2471 | -0.0516 | -0.8063 | -0.7589 | -0.4230 | 0.2297 |
| | (0.560) | (0.772) | (1.104) | (0.640) | (1.028) | (0.615) |
| Political instability | -0.0929 | -3.1049* | 1.2812 | -0.1037 | -3.6833 | 0.0862 |
| | (1.293) | (1.764) | (2.759) | (1.456) | (2.418) | (1.532) |
| Foreign ownership | 0.0005 | -0.0229 | 0.0211 | 0.0417* | -0.0782** | -0.0145 |
| | (0.024) | (0.023) | (0.033) | (0.023) | (0.034) | (0.019) |
| GDP growth | 0.4557*** | 0.9228*** | 0.9977** | 0.2044 | 0.0766 | 1.1268*** |
| | (0.170) | (0.234) | (0.405) | (0.231) | (0.326) | (0.189) |
| Constant | 42.3902 | -24.4293*** | -0.5522 | 15.9440 | 71.7611 | 6.5119 |
| | (31.247) | (5.725) | (13.675) | (45.208) | (62.401) | (10.498) |
| Observations | 6,392 | 2,981 | 1,212 | 4,784 | 1,967 | 4,176 |
| R-squared | 0.018 | 0.025 | 0.021 | 0.021 | 0.025 | 0.028 |
| LR chi2 p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

### (ii) Exchange rate regime

In this section, we check whether the exchange rate regime matters. Although the theoretical relationship is ambiguous, evidence suggests a strong link between the choice of the exchange rate regime and macroeconomic performance. Adopting a pegged exchange rate can lead to lower inflation (Atish et al., 1995), while attempts to achieve full employment could lead to a loss of foreign exchange reserves. With a floating rate currency, interest rates are set exogenously, and foreign reserves are not at risk. Therefore, full employment policy can be pursued with no risk of loss of foreign reserves, but the currency could depreciate. We split the sample into two subsamples between countries with pegged exchange rate regime and countries with floating exchange rate regime. The data are from Ilzetzki et al. (2019). The results are displayed in Table 6. We find the coefficients associated with inflation and inflation square are significantly positive and negative in all columns, respectively. The results imply that the U inverted relationship

between inflation and employment exists both in pegged and flexible exchange rate regimes. However, the inflation threshold is higher in fixed exchange rate regime (15.1 percent) than in flexible exchange rate regime (11.6 percent), likely due to the discipline and greater confidence in pegged exchange rate regimes (Atish et al., 1995).

**Table 6. Results by exchange rate regime (ERR)**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| VARIABLES | Fixed ERR | | Flexible ERR | |
| Inflation | 3.0643*** | 3.0621*** | 2.7402*** | 2.2490*** |
| | (0.377) | (0.379) | (0.798) | (0.827) |
| Inflation square | -0.1056*** | -0.1015*** | -0.1164*** | -0.0967*** |
| | (0.016) | (0.016) | (0.033) | (0.034) |
| Age of the firm | -0.0032 | -0.0028 | -0.0082*** | -0.0082*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| Number of full-time employees at creation | -0.0053* | -0.0047* | -0.0070** | -0.0065** |
| | (0.003) | (0.003) | (0.003) | (0.003) |
| Formal firm | -4.6564*** | -4.5091*** | -1.8274 | -1.5369 |
| | (1.459) | (1.470) | (2.001) | (2.003) |
| Credit/loan line | 2.0581* | 1.4907 | 4.1135** | 4.4765** |
| | (1.179) | (1.198) | (2.013) | (2.018) |
| Labor regulations | -0.2766 | -0.0964 | -0.9403 | -1.1603* |
| | (0.488) | (0.497) | (0.687) | (0.693) |
| Political instability | -2.2999* | -1.6992 | -0.6153 | 0.1124 |
| | (1.175) | (1.191) | (1.656) | (1.696) |
| Foreign ownership | 0.0213 | 0.0155 | -0.0073 | -0.0057 |
| | (0.019) | (0.019) | (0.020) | (0.020) |
| GDP growth | | 0.6605*** | | 0.5559** |
| | | (0.167) | | (0.235) |
| Constant | 11.9343*** | 4.6094 | 38.3267 | 37.1100 |
| | (2.572) | (2.977) | (28.607) | (28.656) |
| Observations | 8,448 | 8,290 | 2,637 | 2,637 |
| R-squared | 0.020 | 0.023 | 0.014 | 0.016 |
| LR chi2 p-value | 0.000 | 0.000 | 0.000 | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

## F. Robustness checks

### (i) Different sampling

We present in Table 6 the results obtained with several alternative samples. In column (1) and (2), we exclude all firms with government partnership and those awarded contracts by the government. The partnership of the government with a firm could offer a lifeline for the latter during difficult times as some governments provide financial support and reduction of some taxes to firms with some social responsibilities. In column (3), we exclude all firms with foreign partnership to focus on domestically owned companies. We split the sample into two subsamples in column (4) for only exporting firms and in column (5) for non-exporting firms. In regard to the importance of government regulations, we run the estimate on firms that assess that there are too much government regulations in column (6) and those that assess that there are limited government regulations. By preventing firms to adjust their workforce in response to market fluctuations and economic conditions, more stringent government regulations increase hiring costs, provide little employment prospects and less productive matches between workers and firms. Given that firms can resort to corruption in search of financial support, we split the sample between firms that are involved in corruption by giving gifts to government officials (column 9) and those that did not give gifts to government officials (column 8). Finally, we split the sample between formal and informal firms in columns 10 and 11, respectively, as the two groups of firms may have different coping mechanisms in an inflationary environment. The results obtained with these different samples are reported in Table 7. We find that the coefficients associated with inflation is positive and significant, while those associated with inflation square is negative and significant in all columns. Therefore, our key findings remain unchanged despite the changes in the sample of firms.

**Table 7. Results obtained using different samples**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No government partnership | No government contracts | No foreign partnership | Only exporters | No exporters | Too much government regulations | Limited government regulations | Excluding firms involved in corruption | Only firms involved in corruption | Excluding informal firms | Excluding formal firms |
| Inflation | 2.4297*** | 2.7563*** | 2.2926*** | 1.6480** | 2.6541*** | 2.5171*** | 2.3498*** | 3.1098*** | 3.4642*** | 2.5883*** | 2.3739*** |
| | (0.325) | (0.373) | (0.352) | (0.806) | (0.355) | (0.678) | (0.367) | (0.453) | (1.098) | (0.871) | (0.351) |
| Inflation square | -0.0773*** | -0.0943*** | -0.0711*** | -0.0735** | -0.0818*** | -0.0859*** | -0.0722*** | -0.1005*** | -0.1652*** | -0.0838** | -0.0741*** |
| | (0.014) | (0.016) | (0.015) | (0.036) | (0.015) | (0.030) | (0.015) | (0.019) | (0.049) | (0.041) | (0.014) |
| Age of the firm | -0.0033* | -0.0028 | -0.0033 | -0.0074** | -0.0024 | -0.0065** | -0.0033 | -0.0027 | -0.0144*** | -0.0014 | -0.0049*** |
| | (0.002) | (0.002) | (0.002) | (0.004) | (0.002) | (0.003) | (0.002) | (0.003) | (0.004) | (0.005) | (0.002) |
| Number of full-time employees at creation | -0.0050** | -0.0044 | -0.0078*** | -0.0033 | -0.0063** | 0.0038 | -0.0105*** | -0.0053 | -0.0173*** | -0.0108*** | -0.0037 |
| | (0.002) | (0.003) | (0.003) | (0.004) | (0.003) | (0.005) | (0.002) | (0.003) | (0.007) | (0.003) | (0.003) |
| Formal firm | -3.3687*** | -3.7406*** | -3.0732** | -5.5161* | -2.9728** | -2.1129 | -4.0271*** | -5.4615*** | 4.2135 | | |
| | (1.201) | (1.334) | (1.234) | (2.945) | (1.305) | (2.320) | (1.380) | (1.728) | (2.985) | | |
| Credit/loan line | 2.4931** | 2.6439** | 1.8954* | 1.0044 | 2.8253** | 1.9528 | 2.5396** | 3.3480** | 3.5037 | -3.2923 | 3.4540*** |
| | (1.026) | (1.216) | (1.113) | (2.115) | (1.199) | (2.297) | (1.145) | (1.310) | (3.140) | (2.788) | (1.096) |
| Labor regulations | -0.3136 | -0.5877 | -0.4547 | 0.2803 | -0.3462 | 0.9415 | -0.6630 | 0.1055 | -3.2625*** | 0.9544 | -0.5623 |
| | (0.414) | (0.449) | (0.446) | (0.950) | (0.461) | (0.817) | (0.473) | (0.549) | (1.153) | (0.977) | (0.448) |
| Political instability | -1.0219 | -0.8309 | -1.0306 | 1.7665 | -1.3671 | 1.5845 | -1.1862 | 0.3370 | 2.2990 | -1.1554 | -0.6351 |
| | (0.972) | (1.090) | (1.063) | (2.178) | (1.088) | (2.120) | (1.092) | (1.279) | (3.137) | (2.549) | (1.025) |
| Foreign ownership | -0.0020 | -0.0058 | | 0.0433* | -0.0210 | 0.0122 | -0.0015 | 0.0019 | 0.0667 | 0.0367 | -0.0046 |
| | (0.014) | (0.016) | | (0.026) | (0.017) | (0.036) | (0.015) | (0.017) | (0.047) | (0.056) | (0.014) |
| GDP growth | 0.6648*** | 0.5916*** | 0.7244*** | 0.4402 | 0.7222*** | 0.1842 | 0.7768*** | 0.8810*** | 0.0594 | 0.0215 | 0.8034*** |
| | (0.126) | (0.147) | (0.137) | (0.288) | (0.141) | (0.274) | (0.143) | (0.160) | (0.406) | (0.397) | (0.134) |
| Constant | 21.1167 | 51.5383** | 21.3542 | 42.7161 | 28.2256 | 37.3167 | 28.4238 | 60.4814 | 25.3092*** | 155.1333*** | 2.4691 |
| | (31.332) | (21.060) | (31.414) | (36.238) | (37.648) | (31.511) | (38.262) | (60.165) | (9.497) | (6.631) | (19.533) |
| Observations | 10,630 | 7,852 | 9,330 | 2,157 | 8,498 | 2,219 | 8,708 | 6,337 | 1,150 | 2,107 | 8,820 |
| R-squared | 0.018 | 0.021 | 0.018 | 0.017 | 0.021 | 0.021 | 0.019 | 0.025 | 0.057 | 0.020 | 0.019 |
| LR chi2 p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

### (ii) Adding more covariates

We control for several covariates that can potentially affect job creation. These variables include natural resource rents in percentage of GDP to capture the endowment in natural resources, and public debt and fiscal balance in percentage of GDP to take in to account the state of public finances and financial constraints. We also include the growth in terms of trade and the Chicago Board Options Exchange's CBOE Volatility Index (VIX) to capture global conditions, and control of corruption to incorporate the quality of governance. International reserves and broad money in percentage of GDP are controlled for to take into account the role of monetary policies. The data on natural resource rents are from the World Bank's World Development Indicators and the control of corruption data are from the World Bank's Worldwide Governance Indicators dataset. The VIX data are from the St-louis Federal Reserve website. The remaining variables are extracted from the IMF's World Economic Outlook (WEO). The results of the estimates are reported in Table 8. They

show that our key findings remain unchanged despite the inclusion of various covariates in the estimates.

**Table 8. Results obtained by adding more covariates**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Inflation | 2.2664*** | 1.5214*** | 2.2030*** | 2.4874*** | 2.4016*** | 2.5364*** | 2.3568*** | 3.5972*** |
| | (0.322) | (0.336) | (0.336) | (0.324) | (0.322) | (0.321) | (0.321) | (0.373) |
| Inflation square | -0.0735*** | -0.0439*** | -0.0650*** | -0.0808*** | -0.0760*** | -0.0763*** | -0.0784*** | -0.1591*** |
| | (0.013) | (0.014) | (0.015) | (0.014) | (0.013) | (0.013) | (0.013) | (0.017) |
| Age of the firm | -0.0039** | -0.0036* | -0.0040** | -0.0040** | -0.0039** | -0.0037** | -0.0037** | -0.0037** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Number of full-time employees at creation | -0.0051** | -0.0051** | -0.0050** | -0.0051** | -0.0050** | -0.0048** | -0.0052** | -0.0044* |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Formal firm | -3.3634*** | -3.1155*** | -3.3040*** | -3.2261*** | -3.5774*** | -4.0104*** | -3.1955*** | -3.3360*** |
| | (1.206) | (1.191) | (1.206) | (1.200) | (1.187) | (1.191) | (1.188) | (1.216) |
| Credit/loan line | 2.6896*** | 2.1307** | 2.3673** | 2.6463*** | 2.4579** | 2.1420** | 2.5938** | 1.4943 |
| | (1.031) | (1.045) | (1.024) | (1.024) | (1.022) | (1.024) | (1.021) | (1.080) |
| Labor regulations | -0.2253 | -0.1654 | -0.2702 | -0.2401 | -0.2708 | -0.2318 | -0.1894 | -0.2760 |
| | (0.407) | (0.416) | (0.408) | (0.407) | (0.407) | (0.407) | (0.408) | (0.410) |
| Political instability | -0.7939 | -1.0071 | -0.7885 | -1.1510 | -0.7704 | 0.0847 | -0.5826 | 0.2935 |
| | (0.965) | (0.994) | (0.965) | (0.978) | (0.965) | (0.989) | (0.965) | (0.996) |
| Foreign ownership | -0.0023 | -0.0003 | 0.0004 | -0.0002 | -0.0000 | -0.0042 | -0.0031 | 0.0031 |
| | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) |
| GDP growth | 0.6103*** | 0.3444** | 0.6210*** | 0.6781*** | 0.6877*** | 0.5127*** | 0.6068*** | 0.2094 |
| | (0.130) | (0.138) | (0.134) | (0.126) | (0.125) | (0.134) | (0.127) | (0.147) |
| Natural resources rents (% of GDP) | 0.1902** | | | | | | | |
| | (0.079) | | | | | | | |
| Terms of trade growth | | -0.0600 | | | | | | |
| | | (0.049) | | | | | | |
| Debt (% of GDP) | | | -0.0493* | | | | | |
| | | | (0.027) | | | | | |
| Fiscal balance (% of GDP) | | | | 0.5534*** | | | | |
| | | | | (0.188) | | | | |
| VIX | | | | | -1.9364*** | | | |
| | | | | | (0.638) | | | |
| Control of Corruption | | | | | | 4.6722*** | | |
| | | | | | | (1.153) | | |
| Reserves (% of GDP) | | | | | | | -1.2161*** | |
| | | | | | | | (0.268) | |
| Broad money (% of GDP) | | | | | | | | -0.0602 |
| | | | | | | | | (0.058) |
| Constant | 27.8425 | -11.2582*** | -16.4592*** | -18.1053*** | 27.4636* | -17.9881*** | -17.0570*** | 35.2752 |
| | (27.767) | (2.549) | (2.805) | (2.336) | (15.394) | (2.325) | (2.343) | (27.830) |
| Observations | 10,927 | 10,490 | 10,921 | 10,921 | 10,921 | 10,921 | 10,921 | 10,313 |
| R-squared | 0.018 | 0.019 | 0.018 | 0.018 | 0.017 | 0.019 | 0.019 | 0.021 |
| LR chi2 p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

### (iii) Using inflation expectations data

Finally, we use inflation expectations data to check the robustness of the results. Inflation expectations matter because actual inflation depends, in part, on what people expect it to be. If everyone expects prices to rise, workers and their unions will want salary adjustments, and businesses will want to raise prices to account for the additional costs or undertake cost reduction strategies including employment freezes and layoffs. We use the IMF's WEO vintage data based on the projections of inflation made one year before the conduct of the enterprise survey. The results are reported in Table 9. We still find that the coefficients associated with inflation is positive and significant, while its square term is negative and strongly significant at the 1 percent level. In addition, we use the deviation from average prices over 2013-2019 to capture unexpected inflation rates. The results reported in Table 10 are still in line with the baseline. Our findings thus remain robust to the use of inflation expectations data.

**Table 9. Robustness checks: results obtained using inflation expectations data**

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Inflation | 0.2491*** | 1.3714*** | 0.0911** | 1.5052*** | 0.1945*** | 1.3672*** | 0.2370*** | 1.5278*** |
| | (0.040) | (0.141) | (0.044) | (0.165) | (0.046) | (0.157) | (0.051) | (0.183) |
| Inflation square | | -0.0377*** | | -0.0398*** | | -0.0361*** | | -0.0393*** |
| | | (0.004) | | (0.004) | | (0.004) | | (0.005) |
| Age of the firm | | | -0.0042** | -0.0036* | | | -0.0038** | -0.0034* |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Number of full-time employees at creation | | | -0.0059*** | -0.0052** | | | -0.0051** | -0.0049** |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Formal firm | | | -4.3336*** | -3.1475*** | | | -4.3741*** | -3.5242*** |
| | | | (1.189) | (1.193) | | | (1.193) | (1.196) |
| Credit/loan line | | | 2.7921*** | 2.2805** | | | 2.3048** | 2.1001** |
| | | | (1.018) | (1.021) | | | (1.025) | (1.026) |
| Labor regulations | | | -0.4945 | -0.2933 | | | -0.3899 | -0.2738 |
| | | | (0.405) | (0.405) | | | (0.408) | (0.407) |
| Political instability | | | -1.3438 | -0.4763 | | | -0.5252 | -0.2208 |
| | | | (0.952) | (0.959) | | | (0.969) | (0.967) |
| Foreign ownership | | | 0.0070 | 0.0016 | | | 0.0030 | 0.0014 |
| | | | (0.014) | (0.014) | | | (0.014) | (0.014) |
| GDP growth | | | | | 0.8618*** | 0.2363 | 0.8647*** | 0.1695 |
| | | | | | (0.120) | (0.146) | (0.140) | (0.170) |
| Constant | 37.0387* | 27.6032 | 54.6173** | 42.4391 | 30.3974 | 26.0641 | 47.0707* | 41.1769 |
| | (22.324) | (22.346) | (27.479) | (27.671) | (22.345) | (22.352) | (27.513) | (27.634) |
| Observations | 14,384 | 14,384 | 11,085 | 11,085 | 14,185 | 14,185 | 10,927 | 10,927 |
| R-squared | 0.005 | 0.011 | 0.009 | 0.016 | 0.008 | 0.012 | 0.012 | 0.017 |
| LR chi2 p-value | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

## Table 10. Robustness checks: results obtained using deviation from averages prices

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Inflation | 0.0973** | 1.9876*** | 0.1161* | 2.1964*** | 0.2646*** | 2.1894*** | 0.3350*** | 2.4498*** |
| | (0.055) | (0.188) | (0.060) | (0.216) | (0.062) | (0.213) | (0.069) | (0.245) |
| Inflation square | | -0.0637*** | | -0.0674*** | | -0.0683*** | | -0.0741*** |
| | | (0.005) | | (0.006) | | (0.007) | | (0.008) |
| Age of the firm | | | -0.0042** | -0.0039** | | | -0.0039** | -0.0038** |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Number of full-time employees at creation | | | -0.0060*** | -0.0058** | | | -0.0053** | -0.0056** |
| | | | (0.002) | (0.002) | | | (0.002) | (0.002) |
| Formal firm | | | -4.2821*** | -2.7116** | | | -4.2961*** | -3.0951*** |
| | | | (1.185) | (1.193) | | | (1.191) | (1.195) |
| Credit/loan line | | | 2.8003*** | 2.2372** | | | 2.3482** | 2.0892** |
| | | | (1.018) | (1.020) | | | (1.025) | (1.025) |
| Labor regulations | | | -0.4872 | -0.2288 | | | -0.3713 | -0.1995 |
| | | | (0.405) | (0.404) | | | (0.408) | (0.406) |
| Political instability | | | -1.3776 | -0.7509 | | | -0.6479 | -0.6052 |
| | | | (0.954) | (0.956) | | | (0.969) | (0.966) |
| Foreign ownership | | | 0.0071 | 0.0016 | | | 0.0035 | 0.0023 |
| | | | (0.014) | (0.014) | | | (0.014) | (0.014) |
| GDP growth | | | | | 0.8656*** | 0.0690 | 0.8744*** | -0.0135 |
| | | | | | (0.119) | (0.149) | (0.139) | (0.173) |
| Constant | 36.7637* | 22.0535 | 53.6341* | 35.4602 | 28.0350 | 19.5591 | 44.0026 | 33.3353 |
| | (22.338) | (22.386) | (27.492) | (27.766) | (22.371) | (22.392) | (27.545) | (27.726) |
| Observations | 14,384 | 14,384 | 11,085 | 11,085 | 14,185 | 14,185 | 10,927 | 10,927 |
| R-squared | 0.005 | 0.013 | 0.009 | 0.018 | 0.008 | 0.015 | 0.012 | 0.020 |
| LR chi2 p-value | | 0.000 | | 0.000 | | 0.000 | | 0.000 |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

# V. Policy implications and conclusions

Against the background of the rising inflation rate amid the recent fluctuations in commodity prices, the Covid-19 pandemic, and the war in Ukraine, the paper explores the effects of inflation on private job creation in SSA. It also complements previous works on the sub-Saharan African region using a large firm-level dataset compiled from the World Bank's Enterprise Surveys conducted between 2013 and 2019. Using this dataset and fixed-effects models, we found evidence of a non-linear relationship between inflation and private employment creation in SSA. Indeed, there is a positive (negative) relationship between inflation and job creation when the inflation rate is below (above) 14 percent.

Moreover, the paper found that the type of products matters. It shows that while fuel prices are negatively correlated with job creation at any rate of inflation, food prices are adversely correlated with job creation when the inflation rate is above 15 percent. In addition, the paper highlighted that the inverted U relationship between inflation and job creation holds regardless of the exchange rate regime of the country and the sector of activities of firms. Size matters as small and medium firms tend to cut jobs during period of high inflation, contrary to large firms.

Finally, our paper highlighted the importance of structural reforms undertaken by countries. The results revealed that there is an inverted U relationship between inflation and job creation in countries with bad or no reforms, i.e job opportunities are reduced in these countries when inflation rates are high. On the contrary, the impact of inflation on employment creation is cushioned in countries with strong structural reforms and good business environment.

Several policy implications can be drawn from the findings of this paper. First, the results imply that maintaining macroeconomic stability, particularly an appropriate level of inflation, is critical to job creation in sub-Saharan African countries. With a large youthful population and the current environment of increasing prices, combating inflation could help ensure that it does not depress the already limited number of job opportunities. Second, the findings suggest that pursuing structural reforms will be key to encourage job creation. A predictable and business-friendly investment climate stands as an integral component of policies to support the private sector and enhance job creation. At the current juncture, it is important to improve the business climate to boost confidence among investors.

**Annex 1. List of countries and survey years**

| Country Name | Number of firms | Survey years |
|---|---|---|
| Benin | 150 | 2016 |
| Burundi | 157 | 2014 |
| Cameroon | 361 | 2016 |
| Chad | 153 | 2018 |
| Congo, Dem. Rep. | 529 | 2013 |
| Cote d'Ivoire | 361 | 2016 |
| Djibouti | 266 | 2013 |
| Eswatini | 150 | 2016 |
| Ethiopia | 848 | 2015 |
| Gambia, The | 151 | 2018 |
| Ghana | 720 | 2013 |
| Guinea | 150 | 2016 |
| Kenya | 1,782 | 2013; 2018 |
| Lesotho | 150 | 2016 |
| Liberia | 151 | 2017 |
| Madagascar | 531 | 2014 |
| Malawi | 523 | 2014 |
| Mali | 185 | 2016 |
| Mauritania | 150 | 2014 |
| Mozambique | 601 | 2018 |
| Namibia | 580 | 2014 |
| Niger | 151 | 2017 |
| Nigeria | 2,634 | 2014 |
| Rwanda | 360 | 2019 |
| Senegal | 601 | 2014 |
| Sierra Leone | 152 | 2017 |
| Sudan | 662 | 2014 |
| Tanzania | 813 | 2013 |
| Togo | 150 | 2016 |
| Uganda | 762 | 2013 |
| Zambia | 1,321 | 2013; 2019 |
| Zimbabwe | 600 | 2016 |
| Total | 16,855 | |

## Annex II. Descriptive statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Employment growth | 14,384 | 15.8 | 43.3 | -61.1 | 275.0 |
| Inflation | 14,384 | 8.2 | 5.7 | -0.9 | 23.4 |
| Inflation square | 14,384 | 99.6 | 133.8 | 0.0 | 546.6 |
| Age of the firm | 14,384 | 14.4 | 22.2 | 6 | 31 |
| Number of full-time employees at creation | 13,047 | 31.8 | 154 | 5 | 5000 |
| Formal firm | 13,292 | 0.8 | 0.4 | 0.0 | 1.0 |
| Credit/loan line | 13,819 | 0.2 | 0.4 | 0.0 | 1.0 |
| Labor regulations | 14,175 | 1.0 | 1.1 | 0.0 | 4.0 |
| Political instability | 13,999 | 3.1 | 2.1 | 0.0 | 4.0 |
| Foreign ownership | 14,085 | 11.3 | 29.1 | 0.0 | 100.0 |
| GDP growth | 14,185 | 5.3 | 3.2 | -4.0 | 14.0 |

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