

Macroeconomic Shocks and Employment in sub-Saharan Africa: Do Labour Market Institutions Matter?

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Abstract: *The effects of macroeconomic shocks and labour market institutions on employment in sub-Saharan African countries are examined in this study. Using a sample of 27 SSA countries for the period 2007 to 2018, both linear and interactive relationships are investigated. The results show that labour market institutions (especially in terms of wage flexibility) dampen the effects of shocks on modern employment but amplify the effects of shocks on informal employment in the sampled SSA countries. There is also evidence that shocks themselves (especially those emanating from the external sector) do not matter for a huge proportion of employment changes in SSA countries. Rather, the direct effects of shocks on employment are more profound in the formal sector. The study therefore concludes that reforming the informal sector will help to ensure the effectiveness of labour market institutions in mitigating the negative impacts of external shocks on employment in SSA.*

Keywords: hiring and firing; sectoral employment; terms of trade; vulnerable employment; wage flexibility

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Introduction

The responses of domestic fundamentals to uncertainties created by exogenous changes in elements of the economic environment is critical for maintaining long run economic balance and sustainability (Blanchard and Wolfers, 2000; Fallon & Lucas,

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2002; Ferraresi et al, 2019; Morsy et al, 2021). The drive to ensure minimum impacts of such external influences has necessitated the establishment of domestic institutional frameworks and regulations that are intended to provide important buffers for the economy. An interesting research question however borders on the extent to which shock-stimulated declines in domestic output and productivity affect labour market outcomes, like employment rates, and what policy tools are available in mitigating the negative effects of the crisis. For instance, the recent macroeconomic shock created by the COVID 19 pandemic led to significant declines in output growth among sub-Saharan African countries with reverberating effects on employment at all levels (Gondwe, 2020; Morsy et al, 2021). Essentially, external shocks are transmitted into developing countries through different channels including productivity, terms of trade, and world interest rates (Fallon & Lucas, 2002). These channels have had serious consequences for macroeconomic outcomes for SSA countries. For instance, although negative terms of trade shocks are expected to boost prices in the tradeables markets with expected increases in labour demand in the sector, structural constraints on capacity expansion may constrain employers in tradable sectors from expanding (Besley & Burgess, 2004). These structural constraints may include difficulty in obtaining loan facilities arising from banking crisis that are often associated with terms of trade shocks in developing countries. Thus, structural bottlenecks tend to intensify the impacts of terms of trade shocks in the non-tradeables market, forcing employers to either cut wages or employment.

Theoretical and empirical research have shown that strong labour market institutions may influence the nature of the labour market in developing countries by making it more efficient in which case, flows such as layoffs and hirings decrease (Blanchard & Wolfers, 2000; Adegboye, 2019). This situation is essentially acceptable in labour markets of developing economies, where high levels of informality exist in labour contracts and wage arrangements. It is however yet to be determined how such labour market institutions influence the impacts of macroeconomic shocks on employment rates in the highly segmented labour markets of developing economies. For instance, there is little evidence regarding the implications of the typically rigid labour markets in most SSA economies (see Fields, 2011; Adegboye et al, 2019) for macroeconomic adjustment after a shock. Moreover, it is pertinent to understand whether labour market institutions mitigate the pattern of responses of the labour markets to macroeconomic shocks among SSA countries.

The foundations for considering different shock patterns and their interactions with institutions can be found in the study by Blanchard and Wolfers (2000) which showed that interaction between macroeconomic shocks and institutions effectively explained the divergent impacts of shocks in European countries for over 3 decades. Moreover, there are literature that find the state of economic actors or institutions can lead to differing impacts of shocks on macroeconomic aggregates (Nucci & Ruggi, 2011; Auerbach & Gorodnichenko, 2012; Ferraresi, Roventini & Semmler 2019).

Moreover, deep segmentation in SSA labour markets may have serious implications for the patterns of effects that short term macroeconomic shocks may deliver on the distributional aspects of employment as well as the capacity of institutional influences in the labour market (Martins, 2012; Adegboye, 2019). Essentially, market segmentation has the tendency to alter efficiency outcomes and deepen the impacts of shocks in the labour markets.

In this study, we build on the previous studies to examine how labour market institutions influence the impacts of external shocks on employment in selected SSA countries. In particular, the study seeks to determine how the distribution of employment changes among SSA countries in response to macroeconomic shocks emanating from both external and domestic sectors, as well as the role that labour market institutions play in this relationship.

Brief Review of Literature

The effects of external shocks on employment may be direct or induced. The direct effect occurs through changes in relative prices or terms of trade, while the induced effects occur via changes in domestic prices, wages, consumption, and overall productivity (Pappa, 2009; Albert, Caggese & González, 2020). In the same vein, the effect of external shocks on employment is determined by considering the nature of producers in the economy. For instance, shocks that lead to exchange rate depreciation provides increased incentive for producers of tradables to increase labour demand in the sector, while producers of nontradables may only increase employment if the resultant decline in aggregate demand is offset by a switch in demand toward nontradables as their relative price declines (Fallon & Lucas, 2002). The negative effect of shock on employment is also intensified if a domestic price shock accompanies the external shock even when the tradables sector is dominant. For many SSA countries where the non-tradable sector is predominant in terms of labour demand (Adegboye, 2020) with strong binding constraints on capacity expansion by the tradables sector, external shocks tend to deliver negative effects on employment (Kaplan et al, 2011; Helm, 2020; Regis & Silva, 2021).

Moreover, the employment effects of shocks on sectors can vary widely. This is because when workers are laid off in one job, they may seek and find other jobs (often at lower pay) in another sector or location, thereby changing the structure of employment among sectors. For instance, Fallon and Lucas (2002) found that while manufacturing employment shrank in response to the financial crises of the 1990s in a group of developing countries, government employment remained fairly constant and agricultural and vulnerable employment expanded in several cases. The relative decline in manufacturing employment due to external shocks can be linked to higher costs of imported materials for the corporate sector as well as shrinking credit supply

and the rising burden of debt in foreign currency-denominated instruments. On the other hand, traditional sector employment may boom during this period due to the less formal nature of the sector as well as the ease of entering. Thus, there is evidence that more formal employment may be more negatively affected by shocks than the informal sector.

At the empirical level, Campos-Vázquez (2010) examined the effects of macroeconomic shocks in employment and wages for the in Mexico. The study found that shocks have led to large declines in wages, employment and participation rates, especially among young and unskilled workers. For Mexico also, García, Hernández and Bolívar (2017) found that inertia in unemployment directions are higher in the Mexican labour market during period of export or terms of trade shocks. For a group of East Asian countries and Mexico, Fallon and Lucas (2002) investigated the effects of the financial crises of the 1990s on employment and other labour market characteristics. They found that negative productivity shocks arising from the crises did not lead to serious decline in total employment, rather employment increased in some cases. These findings were linked to the desire of families to smoothen their incomes through increased labour force participation during the periods of crises. Thus, there is evidence that for poorer economies, shocks in the macroeconomic system may actually lead to more employment – though such employment are often low-productivity and low wage jobs. Moreover, the study also found wide variations in the impact of shocks on employment across sectors, employment status, and location and that exchange rate shocks provided the greatest employment effects among the economies.

Ferraresi et al (2019) found that though positive productivity shocks in the U.S. economy stimulate output growth, the effect on employment is negative and debilitating. Similarly, Helm (2020) explored how inter-industry trade shocks affected in-country labour markets arising from within industry demand changes. Using a broad set of national industry trade shocks in Germany, the study found that shocks in the tradable sector had spillover effects on employment in other tradable industries, especially in industries within the same broad sector and those employing similar workers.

Labour market institutions play significant roles at each stage of the transmission of macroeconomic shocks into domestic employment (Nickell et al., 2005). This assertion is strengthened by studies in both advanced and developing economies. For instance, Nickell et al. (2005) in their assessment of unemployment in a sample of OECD countries for a long period, found that decline in unemployment across the OECD were largely explained by negative shifts in labour market rigidity. They also found that interactions between institutions and macroeconomic shocks did not matter in the determination of unemployment rates. Edwards and Edwards (2000) also found that reforms that promoted labour market flexibility contributed to the reduction of unemployment in Chile. de Barros and Corseuil (2007) however found that similar pattern of reforms in the late 1980s that pushed for more flexibility in Brazil

had very weak effects on overall employment. Also, Bordon et al (2016) found that for 30 OECD countries between 1980 and 2013, structural reforms in the labour markets had a lagged positive impact on employment. For the US, Fernández-Villaverde (2018) found that at the aggregate levels, labour market rigidity (with rising minimum wages) tends to reduce overall employment.

The most favoured perspective of many recent studies on the relationship between labour market institutions and employment is that dimensions of these institutions can have varied effect on employment depending on the type of institutions being examined, the pattern of employment in consideration, or the dynamic framework of the employment system. For studies in developing countries, the findings have consistently showed that less rigid labour market institutions may not deliver uniform impacts on employment given the deep imperfections in labour markets for these countries. The effects of more liberal labour markets are mostly distributional on employment, with only formal employment benefiting. Moreover, such distributional effects are difficult to evaluate in terms of determination of the overall direction of impact. For instance, Betcherman (2014) studied the labour market regulations on employment in developing countries and concluded that policies that increase flexibility of labour markets can lead to undesirable outcomes on employment, especially when the policies further deepen labour market segmentations. Earlier, Heckman and Pages Pages (2004) demonstrated that stringent labour market institutions increased the employment of marginal (or vulnerable) workers and generated more inequality in the labour markets of developing economies. Nataraj et al (2014) found that labour market policies determine the type of employment when categorised in terms of economic condition for LICs, with labour regulations being associated with a decrease in formal employment but increase in informal employment. They conclude that stringent labour markets exert ambiguous effects on total employment. Adegbeye et al (2019) found similar results for employment elasticities in a group of SSA countries.

In terms of the dynamics of market reforms, Blanchard and Giavazzi (2003) distinguished between short-run and long-run effects and found that this dimensions matter for effectiveness of labour market institutions in EU countries. Cacciatore et al. (2012) also examined the macroeconomic effects of a reduction in labour market institutions for selected OECD countries using a dynamic stochastic general equilibrium model and found a long-term effect but no short-term effect. Controlling for country-fixed effects, endogeneity and a large set of covariates, Piton and Ryxc (2018) examined the effects of market regulation on employment for a group of European countries. They found that while product market deregulation unequivocally reduces unemployment rates, labour market deregulation actually raises unemployment in the short run but reduces it in the long run. Fox and Oviedo (2013) investigated the effect of employment protection regulation on job provisions using firm-level survey data from the manufacturing sector in 20 SSA countries and Doing Business country indicators. They found that the effect of the labour market institution on employment

only occurs in the long run, rather investment climate has more immediate impact on employment.

According to Blanchard and Wolfers (2000), labour market institutions influence the impacts of external shocks on unemployment in terms of both the strength of effect and the persistence of unemployment in response to shocks. For instance, a major centralised bargaining system might influence the response of unemployment to various shocks through provision of indexation clauses in labour contracts provisioning a slowdown in wage growth in response to a slowdown in productivity growth. Blanchard and Wolfers (2000) found that while shocks directly and significantly increase unemployment in most European countries, differences in institutions can potentially explain the differences in the outcomes of shocks on employment across the countries.

This study builds on the foregoing studies on the relationship between macroeconomic shocks and employment, with focus on the influences of labour market institutions. In general, previous studies (e.g., Calderon et al. 2012; Bluhm et al, 2020, Abere & Akinbobola, 2020) generally concluded that the quality of domestic institutions is as potent as the resilience of macroeconomic fundamentals in absorbing external shocks to output in the system. The main question in this regard is whether the labour markets also possess internal institutional mechanisms to aid efficient adjustment to shocks. In essence, it is not clear how quality of labour market institutions in SSA guide employment against shocks. These issues are critical, especially given that previous findings (e.g., Adegboye & Ighodaro, 2020) have found that domestic macroeconomic policies that drive growth may not deliver positive or significant effects on employment in a sample of SSA countries. This is a major point of divergence in this study that focuses on the role of labour market institutions in mitigating the effects of shocks on employment in SSA.

Methodology

Data and Sources

The data used in this study consists of 27 SSA countries for which data is available for the period between 2007 and 2018. Data on external and domestic shocks were obtained from the UNCTAD database. All the data on the measures of labour market institutions are based on the dataset from the World Economic Forum's (WEF) Global Competitiveness Index (CGI) where the indicators are computed for values between 1 and 7, with 7 being the most flexible system. Data on the productivity growth, labour force, urban population rate, and share of services sector are obtained from the World Development Indicators database. Data on macroeconomic environment and ease of access to loan access were also all obtained from the GCI

database. It should be noted that these datasets were generated from the annual Executive Opinion Surveys from a sample of executives in the respective countries.

The Model

The model specified in this section is based on the framework formulated by Nickell (1997) and Blanchard and Wolfers (2000) the fixed-effects panel regressions of the labour market institutions and macroeconomic shock proxies on the employment rates is demonstrated by including fixed effects at the country level. In the first equation, the effects of labour market institutions and macroeconomic shocks on employment is specified, where all the explanatory variables are assumed exogenous (following IMF, 2003). Indeed, most existing empirical studies on the effects of labour institutions do not suggest a significant feedback effect of employment rate on the institutional framework, especially for a group of developing economies. In this study, the model specified is based on the theoretical postulation that labour market institutions (or labour market regulations) act as intermediary agencies between shocks in productivity or terms of trade and employment (or labour demand) in the economy. Thus, the following model is specified:

$$emplr_{it} = \beta_0 + \beta_1 SHOCK_{it} + \beta_2 labinst_{it} + \beta' X_{it} + u_i + \varepsilon_{it} \quad (1)$$

where *emplr* is the natural logarithm of employment rate (i.e. total employment, vulnerable employment and sectoral employment) in country *i* at year *t*, *SHOCK* is the measure of external shock in the economy arising from macroeconomic uncertainties (including terms of trade shocks, productivity shocks, real exchange rate shock, and price shocks). Also, u_i represents the unobservable country-specific fixed effect that are time invariant, *X* represents a vector of other important factors that either directly affect employment or improve the effects of either labour market institutions or shocks on employment.

Three labour market institutions variables are employed in this study, including flexibility of hiring and firing (*hfr*), flexibility of wage bargaining (*wfl*), and workers' pay linkage with productivity (*ppr*). Flexibility of hiring and firing by employers captures regulations related to employment protection. The variable is more related to external flexibility as against internal flexibility. External flexibility pertains to institutional structures that encourage "flexibility that allows firms to adjust the size of their labour force through flexible hiring and firing" (Beatson, 1997; Michie & Sheehan, 2003). This variable is used based on the fact that nation-wide rules on hiring and firing are prevalent in many SSA countries (Hall & Soskice, 2001; Vergeer & Kleinknecht, 2014). The model also shows that innovation should have positive impacts on youth employment in the SSA region.

Flexibility of wage bargaining reflects a measure of wage bargaining coordination or centralisation. Coordinated bargaining “acts as means of governance by preventing the distinct bargaining units of, either the trade unions or the employers, from being played off against one another” (Tomassetti et al., 2017). Total tax wedge represents a collection of employers’ tax obligations that may hamper employment capacity. Finally, the linkage of workers’ pay to productivity represents the capacity of employers to link wages to productivity of employees. It is another form of wage flexibility which concerns the responsiveness of wages to shocks in the economy (Tridico et al, 2014) and captures the degree of adjustability of wages to prevailing macroeconomic conditions. According to Gazier (2013), both employment and labour market institutional variables have been known to be highly heterogenous among countries. This is a major factor for employing a country fixed effect model for the study.

In order to observe the influences of labour market institutions on the impact of external shocks on employment among SSA countries, the following interaction model is specified:

$$\begin{aligned} emplr_{it} = & \xi_0 + \xi_1 SHOCK_{it} + \xi_2 labinst_{it} * SHOCK_{it} + \xi_3 labinst_{it} + \\ & + \xi_4 pmr_{it} + \beta' X_{it} + u_i + \varepsilon_{it} \end{aligned} \quad (2)$$

where $labinst * SHOCK$ is the interaction between shocks and labour market institutions, where the coefficient indicates the direction of influence of labour market institutions on the impact of shocks on employment. Also, pmr is product market regulation which is introduced to enhance the robustness of the estimates given that it affects the elasticity of substitution between products and the level of competition among firms.

The two equations are estimated with Generalised Least Squares (GLS) allowing for fixed effects (i.e., country-specific and time intercepts). This is performed by weighting the estimates and correcting for both period heteroskedasticity and general correlation of observations within a given cross-section. These procedures are used to obtain a pooled OLS estimate with country-specific and time heteroscedasticity-robust standard errors (Adegboye, 2020). This method therefore adjusts for the presence of heteroskedasticity in the dataset. The effects of endogeneity that may arise the labour market institutions variables in the estimates are also limited by estimating the robust standard errors (Wooldridge, 2010). In the same vein, adequate modeling of country and time fixed effects in the estimation helps to address the dynamic endogeneity problem arising from the inclusion of labour market institutions as independent variables (Barros et al, 2020). Given that it is not feasible to employ an instrumental variable-based estimation technique like the GMM due to limited number of cross-sections (27 countries and 12 years), the capacity of fixed effects GLS to adjust for endogeneity and heteroskedasticity makes the GLS an effective technique in this study.

Empirical Analysis

Descriptive Statistics

Annualised summary statistics of the series used for the estimations are reported for sub-periods in Table 1. Average total employment rate is 64.55 percent, which is high although, the distributional aspects suggest that much of the employment (67.9 percent) is vulnerable. Agricultural employment rate is 58.04 percent, suggesting that along with the services sector, agricultural sector employs a very large proportion of labour in SSA countries. These two sectors are however the most informal among the countries, therefore indicating that employment churned out in these sectors have contributed to the large vulnerability of employment for the selected SSA countries over the study period. Manufacturing employment rate is 5.06 percent, which is small as expected, given the small size of the sector and the level of capital intensiveness in input demand for the sector. Given that manufacturing employment is a major aspect of the formal and modern sector employment, this outcome indicates that a small proportion of workers are in the formal sector in SA countries. For the shocks, that of domestic prices is the strongest, which shows that price level among SSA countries is the foremost macroeconomic factor that reflects macroeconomic behaviour. Productivity shock over the period averaged 2.43 percentage points, while *terms of trade* shock was 1.1 percentage points. Real exchange shock appears to be the least noticeable within the period of the study.

Table 1: Descriptive statistics

Mean	Mean	Std. Dev.	Max.	Min.	N
<i>total employment rate</i>	64.55	13.45	87.80	39.40	297
<i>vulnerable employment rate</i>	67.99	26.82	92.70	7.20	297
<i>agricultural employment rate</i>	58.04	21.69	90.80	3.70	297
<i>manufacturing employment rate</i>	5.06	3.80	19.80	0.60	297
<i>productivity shock</i>	2.43	3.42	29.76	-17.28	297
<i>terms of trade shock</i>	1.10	8.89	24.95	-37.26	297
<i>real exchange rate shock</i>	0.91	8.04	34.40	-27.96	297
<i>domestic price shock</i>	6.95	10.48	156.96	-3.98	297
<i>hiring and firing flexibility</i>	3.94	0.72	5.90	1.93	297
<i>wage bargaining flexibility</i>	4.80	0.79	6.26	2.47	297
<i>pay linked to productivity</i>	3.45	0.48	4.65	2.10	297
<i>loan access</i>	2.59	0.69	5.20	1.20	281
<i>macro environment</i>	4.22	0.78	6.30	1.00	281
<i>service sector (%)</i>	52.33	8.89	75.57	32.05	297
<i>urban rate (%)</i>	36.50	14.56	67.96	9.86	297

Source: Author's computation

Among the labour market institutional indicators, flexibility of wage bargaining has the highest average score for the countries. This indicates that decentralisation of bargaining is a prevalent aspect of labour markets among SSA countries. Linkage of pay to productivity is the lowest, indicting prevalence of wage rigidities among the countries. It shows that variations in productivity do not necessarily generate strong wage responses. The low wage to pay linkage in SSA countries can be explained by noting that most employment in SSA countries is low-wage, low-productivity and often informal (Adegboye, 2020). This implies that there is often no need to adjust wages when output changes since wage rates are on the Harris-Todaro equilibrium level in most cases. Access to loans does not appear to be easy, especially for SMEs in SSA countries, with an average score of 2.59. In the same vein, the relatively high score (above the middle point of 3.5) in macroeconomic environment indicates that most of the components of the macroeconomy are high thereby suggesting more susceptibility to instability in the system. Urban population rate is 36.5 percent on average, indicating that a large proportion of the population in SA countries are in urban centres.

Analysis of Regression Results

The results on the effects of shocks and labour market institutions on employment are presented for each of the employment groups (total, vulnerable, and manufacturing). In Table 2, the results for total employment is presented. Note that four sets of estimates are reported in line with the inclusion of the four shock variables. Among the labour market institutions, only the coefficient of pay linkage with productivity is significant in each of the estimates, suggesting that wage adjustment capacity is crucial for total employment growth among SSA countries. The coefficient is positive and suggests that increase in wage linkage to productivity improves employment rate among the countries, irrespective of the type of shock that is being experienced. More ability of the wage system to adjust to output changes will lead to employment growth. Thus, a flexible labour market in this regard is shown to be useful for employment expansion in the sampled SSA countries. Flexibility of hiring and firing however has a significant negative impact on employment rate in the equation with productivity shock. This indicates that flexibility in labour contracts or lower job protection is not good for employment growth in SSA countries.

Among the shock variables, only productivity shock, with a negative coefficient, is significant in the total employment model. The negative impact indicates that a negative productivity shock leads to an increase in total employment for the countries. This result confirms previous estimates for developing countries where it is demonstrated that in an attempt to smooth consumption during a negative macroeconomic, households tend increase their labour market participation (Fallon & Lucas, 2002;

Ferraresi et al, 2019). Another implication of this outcome is that external shocks that do not translate into productivity shocks do not exert significant effects on employment rate in the sampled SSA countries. This outcome is significant since it reveals that if domestic productivity can be shielded from external shocks, employment will not be significantly affected. This is however not the case for almost all SSA countries, given that macroeconomic environment is strongly linked to external sector in many of the countries (Adegboye, 2020; Boukar, 2021; Morsy et al, 2021).

Table 2: Result for Total employment

Variable	1	2	3	4
<i>constant</i>	5.271** (0.42)	5.643** (0.42)	5.625 (0.18)	5.334** (0.29)
<i>hfr</i>	0.005 (0.02)	0.010 (0.02)	-0.027* (0.01)	0.019 (0.02)
<i>wfl</i>	0.022 (0.02)	0.018 (0.02)	0.020 (0.09)	0.012 (0.02)
<i>ppr</i>	0.044* (0.02)	0.043* (0.02)	0.051** (0.02)	0.040* (0.02)
<i>urbanr</i>	-0.147** (0.02)	-0.151** (0.02)	0.064** (0.02)	-0.159** (0.02)
<i>lbf</i>	0.002 (0.01)	0.001 (0.01)	-0.005 (0.01)	-0.001 (0.01)
<i>topen</i>	-0.151** (0.03)	-0.162** (0.03)	-0.071** (0.02)	-0.151** (0.03)
<i>macroenvr</i>	-0.049** (0.01)	-0.049** (0.01)	0.015 (0.01)	-0.047** (0.01)
<i>gpart</i>	0.016* (0.01)	0.018* (0.01)	0.024** (0.01)	0.020 (0.01)
<i>pmr</i>	-0.027** (0.01)	-0.026** (0.01)	0.014** (0.00)	-0.027* (0.01)
<i>tot shock</i>	0.005 (0.08)			
<i>exchange rate shock</i>		-0.063 (0.30)		
<i>productivity shock</i>			-0.203** (0.01)	
<i>domestic price shock</i>				0.001 (0.03)
<i>Adj. R-sq</i>	0.403	0.405	0.704	0.405
<i>F-stat.</i>	22.772	23.009	77.649	21.143

Source: Author's computation

To ensure that our results are not driven by patterns of modern economic sectors in countries with large urban sector as in Harris and Todaro (1970), we include urban population rate as a control variable. The coefficient of the rate of urban population

is significant and negative for most of the equations, which supports the postulation that increased urban population tends to limit overall employment opportunities. Trade openness is significant in each of the equations with negative coefficients. This shows that trade openness has significant negative impact on employment at every level. Increased trade tends to limit employment by possibly taking jobs away from the economy. The measure of government participation is significant and positive in three of the equations, while product market regulation negatively affected total employment in three equations. This means that increased control of the goods market tends to reduce the capacity of employers to demand more labour, irrespective of the sector in the economy. The diagnostic tests are generally impressive, in terms of the adjusted R-squared values. The F-values are also significant at the 1 percent level for each equation, suggesting strong relationships between employment rates and the explanatory variables.

The results of the estimated equations for vulnerable employment are presented in Table 3. None of the shock factors has significant impact on vulnerable employment in the result. This further shows the unique characteristics of vulnerable employment among SSA countries. Sharp changes in macroeconomic activities are shown to have no effect on vulnerable employment largely due to the ability of the this employment category to continuously increase employment, irrespective of economic performance. The coefficients of *hfr* in each of the estimates are positive, indicating that more rigid institutions in terms of labour protection actually increases vulnerable employment. In reality this positive relationship can be seen from the tendency of strong employment protection to limit the capacity of employers to increase labour demand even in periods of positive shocks in the system. The coefficient of flexibility of wage bargaining (*wfl*) is also positive, and indicates that more flexible bargaining systems that are highly decentralised have positive impacts on vulnerable employment in the sampled SSA countries. The coefficients of pay linkage to productivity (*ppr*) are all negative and significant which means that more rigid wage adjustment increases vulnerable employment among the countries. This further justifies the result from the *hfr* coefficients. The other variables exhibit similar coefficients with that of the total employment rate.

Table 3: Result for vulnerable employment

	1	2	3	4
<i>Constant</i>	7.305** (1.11)	4.890** (1.11)	6.930** (0.48)	6.030** (0.71)
<i>Hfr</i>	0.275** (0.05)	0.264** (0.05)	0.208** (0.03)	0.319** (0.05)
<i>Wfl</i>	0.156** (0.05)	0.166** (0.05)	0.134** (0.03)	0.149** (0.05)
<i>Ppr</i>	-0.143* (0.06)	-0.145* (0.06)	-0.151** (0.04)	-0.181** (0.06)
<i>Urbanr</i>	-0.132* (0.06)	-0.112 (0.06)	0.438** (0.05)	-0.163* (0.07)
<i>Lbf</i>	0.117** (0.03)	0.119** (0.03)	0.105** (0.02)	0.111** (0.03)
<i>Topen</i>	-0.434** (0.09)	-0.421** (0.09)	-0.207** (0.06)	-0.422** (0.09)
<i>macroenvr</i>	-0.198** (0.03)	-0.207** (0.03)	-0.052* (0.02)	-0.212** (0.04)
<i>Gpart</i>	0.005 (0.02)	-0.009 (0.02)	0.008 (0.02)	-0.008 (0.02)
<i>Pmr</i>	-0.178** (0.03)	-0.182 (0.03)	-0.066** (0.02)	-0.178** (0.03)
<i>tot shock</i>	-0.336 (0.21)			
<i>exchange rate shock</i>		0.887 (0.17)		
<i>productivity shock</i>			-0.009 (0.01)	
<i>domestic price shock</i>				-0.001 (0.002)
<i>Adj. R-sq.</i>	0.650	0.649	0.830	0.649
<i>F-stat.</i>	60.985	60.781	158.158	55.683

Source: Author's computation

In Table 4, the results of the estimated equations for the manufacturing sector employment are reported. In the result, the coefficients of shocks to exchange rate, productivity and price level are all significant and negative. This demonstrates that most of the shocks exert strong negative effects on manufacturing employment, unlike the case of total and vulnerable employment rates. This result shows a clear pattern where the effects of shocks on employment are more pronounced in the more formal and modern sectors. Essentially, the result reveals that much of the changes in employment during periods of macroeconomic shocks result from employment adjustments in the modern sector. Three of the four shock variables are significant in the manufacturing employment model. This shows that the pattern of effect of macroeconomic shocks on employment in the sampled SSA countries are more demon-

strated in the more formal sectors. Apparently, the larger the formal sector, the larger the effect of macroeconomic shock (both external and domestic) will be. This outcome further demonstrates the less correspondence between informal employment and macroeconomic activities as was theoretically demonstrated in the Harris and Todaro (1970) model and from previous studies like Fields (2011), Edwards and Edwards (2000), Blanchard and Wolfers (2000) and Adegboye and Ighodaro (2020).

Table 4: Result for manufacturing employment

Variables	1	2	3	4
constant	-4.431* (1.717)	1.359 (1.712)	-2.624** (0.998)	-2.126* (1.09)
<i>Hfr</i>	-0.023 (0.072)	0.015 (0.073)	0.037 (0.069)	-0.060 (0.08)
<i>Wfl</i>	-0.170* (0.068)	-0.211** (0.070)	-0.171** (0.065)	-0.138* (0.07)
<i>Ppr</i>	0.324** (0.092)	0.314** (0.092)	0.323** (0.087)	0.376** (0.09)
<i>Urbanr</i>	0.525** (0.096)	0.458** (0.097)	0.096 (0.112)	0.552** (0.09)
<i>Lbf</i>	-0.012 (0.040)	-0.022 (0.040)	0.002 (0.038)	-0.025 (0.04)
<i>Topen</i>	-0.130 (0.137)	-0.200 (0.143)	-0.239 (0.131)	-0.163 (0.14)
<i>macroenvr</i>	0.084 (0.050)	0.100* (0.050)	-0.015 (0.051)	0.129* (0.05)
<i>Gpart</i>	0.099** (0.036)	0.132** (0.037)	0.104** (0.034)	0.133** (0.04)
<i>Pmr</i>	0.104* (0.041)	0.120** (0.041)	0.035 (0.041)	0.095* (0.04)
<i>tot shock</i>	0.607 (0.324)			
<i>exchange rate shock</i>		-0.574* (0.245)		
<i>productivity shock</i>			-0.384** (0.062)	
<i>domestic price shock</i>				-0.010* (0.00)
<i>Adj. R-squared</i>	0.319	0.321	0.384	0.360
<i>F-stat.</i>	16.09	16.24	21.15	16.12

Source: Author's computation

The coefficients of the labour market institutions variables tend to exhibit more stable characteristics in the manufacturing employment equations. For instance, though the coefficients of *hfr* fail the significance test in each case, the coefficients of wage bargaining flexibility is negative and significant. This indicates that a more flexible labour market institutional regime in terms of wage bargaining actually limits formal sector employment. More important information can be obtained from the results of the coefficients of *ppr*, which are all significant and positive. This implies that stronger linkage between pay and productivity yields better employment in the manufacturing sector, irrespective of the shocks in the system. Thus, this result, along with those of the total employment, reveals that labour market institutions with more flexible wage adjustments in line with output conditions is more relevant to formal employment growth among SSA countries. Thus, wage flexibility tends to be the most important institutional factor that helps adjust macroeconomic fluctuations within the labour markets in SSA countries. This result suggests that like in advanced economies (see Montenegro & Pagés, 2005; Gazier, 2013), excessive wage rigidities tend to hurt employment in the modern sectors. Similar findings were made for the SSA region by Golub et al. (2015) who demonstrated that the effects were secondary to other factors and Adegboye et al (2019) who noted that the effect was more pronounced in the formal sector. The result from the study also indicates that the capacity of labour market institutions to shield employment from shocks is only effective in the formal sector.

The estimation of non-linear relationships in the models are intended to observe the pattern of shock effects on employment based on the level of interventions by labour market institutions. The results for total employment rate *1re* shown in Table 5. The focus of the analysis is on the coefficients of the interaction terms. From the result, the coefficient of the interaction of *tot* and exchange rate shocks with hiring and firing flexibility are both positive and significant. This shows that the effect of a negative shock to terms of trade and exchange rate is negative for countries with more flexible hiring and firing conditions. Given that the effects of both shocks are negative in the result, the effect of the interaction terms reveal that less job protection can actually intensify the impact of terms of trade and exchange rate shocks in an economy. From the results, the more the flexibility of wage bargaining in a country, the more the negative impact of a shock in the economy. This implies that more rigid labour markets in terms of job protection are the important direction in the drive to reduce the impact of macroeconomic shocks among SSA countries.

Table 5: Non-linear relationship estimates for total employment rate

Variables	Measure of shock			
	tot	exchange rate	productivity	domestic price
<i>constant</i>	9.614** (3.64)	-5.872** (1.94)	9.176** (0.48)	5.267** (1.48)
<i>hiring_firing</i>	-1.824** (0.70)	-2.720** (0.49)	0.101 (0.13)	-0.246 (0.30)
<i>wage_flex</i>	-0.551 (0.72)	0.941** (0.37)	-0.409** (0.10)	0.044 (.24)
<i>pay_prodt</i>	1.795* (0.80)	-1.089* (0.49)	-0.536** (0.14)	0.323 (0.40)
<i>SHOCK</i>	-0.918 (0.79)	-0.127** (0.02)	0.062** (0.02)	-0.148** (0.02)
<i>hfr*SHOCK</i>	-0.399** (0.15)	-0.024** (0.01)	-0.002 (0.01)	0.003 (0.01)
<i>wfl*SHOCK</i>	0.125 (0.16)	-0.097** (0.03)	-0.090** (0.02)	-0.150** (0.03)
<i>ppr*SHOCK</i>	-0.381* (0.18)	-0.050** (0.01)	0.012 (0.01)	-0.051** (0.01)
<i>Urbanr</i>	-0.147** (0.02)	0.017* (0.01)	0.026** (0.01)	0.016 (0.01)
<i>Lbf</i>	-0.008 (0.01)	-0.006 (0.01)	0.026** (0.01)	-0.025** (0.01)
<i>Topen</i>	-0.165** (0.03)	2.268** (0.40)	-0.603** (0.05)	0.002 (0.31)
<i>macroenvr</i>	-0.050** (0.01)	-0.578** (0.11)	-0.016 (0.01)	0.054 (0.06)
<i>Gpat</i>	0.018* (0.01)	-0.198* (0.08)	0.049** (0.01)	-0.005 (0.05)
<i>Pmr</i>	-0.025* (0.01)	0.240* (0.10)	0.066** (0.02)	-0.060 (0.08)
<i>Adj. R-sq.</i>	0.43	0.54	0.76	0.40
<i>F-stat</i>	18.03	29.60	78.14	17.48

Source: Author's computation

Finally, the impacts of interaction between labour market institutions and shocks on manufacturing employment are reported in Table 6. The coefficients of the interaction terms between hiring and firing flexibility with the shock factors are mostly insignificant at the 5 percent level. This shows that countries with more flexible labour market institutions tend to experience insignificant impacts of shocks on manufacturing sector employment. The insignificance of the coefficients indicate that shocks actually play little role in employment changes when the labour market institutions are more intense for a country. Thus, the result reveals that labour market

institutions appear to dampen the effects of shocks on modern employment among SSA countries by lowering the intensity of the impacts.

Table 6: Non-linear results for manufacturing employment rate

Variable	Measure of shock			
	tot	exchange rate	productivity	domestic price
<i>constant</i>	-28.34 (15.1)	-31.21** (8.79)	-4.16 (2.91)	24.85** (5.82)
<i>hiring_firing</i>	1.794 (2.94)	-0.961 (2.17)	-1.584* (0.77)	1.130 (1.15)
<i>Wfl</i>	6.187* (3.06)	1.920 (1.59)	2.310** (0.61)	-2.359* (0.92)
<i>Ppr</i>	-4.123 (3.30)	7.873** (2.18)	-0.950 (0.81)	-5.502** (1.56)
<i>SHOCK</i>	-5.822* (3.29)	-0.423** (0.10)	-0.278** (0.12)	-0.531** (0.09)
<i>hfr*SHOCK</i>	-0.396 (0.64)	0.016 (0.04)	0.003 (0.04)	-0.014 (0.04)
<i>wfl*SHOCK</i>	-1.387* (0.67)	-0.167 (0.14)	-0.121 (0.13)	-0.123 (0.13)
<i>ppr*SHOCK</i>	0.955 (0.72)	0.118* (0.05)	0.027 (0.05)	0.124* (0.05)
<i>Urbanr</i>	0.559** (0.10)	0.150** (0.04)	0.119** (0.03)	0.120** (0.04)
<i>Lbf</i>	0.012 (0.04)	0.127** (0.04)	0.001 (0.04)	0.140** (0.04)
<i>Topen</i>	-0.101 (0.14)	6.235** (1.82)	0.394 (0.32)	-5.695 (1.21)
<i>macroenvr</i>	0.053 (0.05)	0.210 (0.46)	0.185* (0.08)	-0.249 (0.24)
<i>Gpart</i>	0.083* (0.04)	-0.459 (0.34)	-0.284** (0.07)	0.464* (0.19)
<i>Pmr</i>	0.112** (0.04)	-1.602** (0.46)	0.152	1.229** (0.33)
<i>Adj. R-sq.</i>	0.319	0.350	0.417	0.355
<i>F-stat.</i>	11.706	14.404	18.783	14.66

Source: Author's computations

Conclusion

The standard consideration of labour market institutions in any economy is to facilitate the linkage between the labour market and production activities. Policy dimensions in labour markets among SSA countries are however ridden with the challenges of dual markets and weak productivity which have had implications for

the effectiveness of labour market institutions. In this study the effect of macroeconomic shocks on employment in sub-Saharan African countries was examined. The role of labour market institution as an intervention mechanism between shocks and employment was also considered. We argue that given the deep segmentations in labour markets for SSA countries, institutions in the labour markets may exhibit different characteristics in terms of mitigating the effects of macroeconomic shocks on employment. A sample of 27 SSA countries was used for the period 2007 and 2018 based on data from the Global Competitiveness Index and ILO. From the study, it was shown that more rigid labour market institutions in terms of employment protection can help achieve expansion in total and more productive employment rates, given the nature of economies in the SSA region. It is clear that labour market institutions in SSA economies must not be allowed to be overly flexible, especially in terms of employment protection. More stringent policies that protect employment are necessary for ensuring sustained employment yields. The results also reveal that shocks themselves (especially those emanating from the external sector) do not matter for a huge proportion of employment changes in the sampled SSA countries. However, the direct effects of shocks on employment are more profound on employment changes within the formal sectors which was represented by manufacturing sector in the study. However, the effects of shocks on both total and distributional employment are felt more significantly when labour market characteristics are taken into cognisance. In particular, the study finds that labour market institutions appear to dampen the effects of shocks on modern employment in SSA by lowering the intensity of the impacts.

It is therefore recommended in this study that labour market institutions need to be strengthened as effective tools for directing employment more meaningfully in a larger sphere on the employment among SSA countries. This requires deep reforms that help to integrate the informal sector within the control of labour market institutions. However, although reforms have been prevalent in many sectors of many African economies, labour reforms are scarce and far between, focusing mainly on government determined wage fixing and employment protection for the formal sector. In this direction, labour-market policies can play important roles in supporting intermediate transition of many SSA economies if proper reforms are undertaken. This can aid in shielding employment from frequent shocks in the economy which are often generated from the external sector.

Moreover, adequate integration of these labour market institutions among SSA countries should be pursued in order to help to stabilise employment, especially in the modern sectors. Effective linkage between employment protection and wage adjustability implies that the stringency of employment protection could be linked to the buildup of the productivity-pay contracts in the short term. Over time, as wage adjustability (with productivity) is fully put in place, then more flexible employment protection systems can be designed in the system. This is because by making wages rise with productivity in the long run, uncertainty about the cost and duration of

firing procedures may be reduced thereby fostering a protection system that is more worker-focused rather than job-focused.

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