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Investor Perception Index: Foreign Investors Perspective on the Investment and Doing Business Environment in Zambia

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Bank of Zambia Working Paper Series

Investor Perception Index: Foreign Investors Perspective on the Investment and Doing Business Environment in Zambia

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Abstract

The paper assesses how Zambia's overall foreign investor perceptions have evolved over the period 2016 to 2018. The study also shows how disaggregated perceptions on particular themes pertaining to the investment climate in Zambia have evolved during this period. Given the absence of a reference variable, the Principal Component Analysis (PCA) is used to calculate the index by extracting a common factor from a group of variables and to capture the highest level of common trend from the six broad themes. The results show an improvement in Zambia's Investor Perception Index (IPI's) for 2017 and 2018 to 103 and 106 respectively, from 100 in 2016. Interestingly, theme-specific results show varying changes in perceptions across the various themes with some worsening while others improving. Thus, the IPI can be considered as a valuable tool for assessing and gauging foreign investor perceptions in Zambia and an early indication of turning points.

JEL classification: F22 Key words: Investor perception; investment climate; principal components analysis

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Contents

1.	Introduction	. 4
2.	Literature Review	. 8
2.1.	Theoretical review	. 8
2.2.	Empirical review	. 9
3.	Methodology	11
4.	Empirical results	17
5.	Conclusion	20
Refe	erences	21
App	endix	23

1. Introduction

In 2010, the Bank of Zambia (BOZ) began to undertake annual Foreign Private Investment and Investor Perception (FPIIP) surveys in collaboration with the Zambia Development Agency (ZDA), Zambia Statistics Agency and other member institutions of the Balance of Payments Statistics Committee (BoPSC). The main objective of the FPIIP survey is to collect information required for the compilation of Zambia's balance of payments and determine the magnitude and trends of foreign private capital in Zambia. The survey provides data for macroeconomic analysis that in turn informs policy decisions, specifically policies and strategies aimed at improving Zambia's investment climate. Further, the survey captures actual flows and stock of foreign private capital statistics in Zambia. Additionally, the survey reports help gauge the foreign investors' perceptions prevailing at a given point in time. This information is useful for supporting the creation of a favorable investment environment (BoP Statistical Committee of Zambia, 2018).

Beyond the policy and strategic objectives of the FPIIP, the survey series present an important opportunity to construct a composite indicator that summarises the perceptions of foreign investors about the Zambian business and investment environment and tracking this over time. To capture a summary perspective of the different perceptions of foreign investors in Zambia, this study developed an investor perception index (IPI). Therefore, this paper presents a proposed approach to building an investor perceptions index for Zambia. The exercise utilised the readily available data on investor perceptions in Zambia obtained from the annual FPIIP survey. The aim was not only to see how the overall perceptions evolve but to also gauge how disaggregated perceptions on particular themes pertaining to the investment climate in Zambia have evolved over time.

The development of the investor perception index (IPI) was made possible by the available data collected through the FPIIP surveys. In addition to what was already highlighted in the introduction, the FPIIP surveys were introduced to partly inform reforms by the Zambian Government in an effort to promote a private sector led economy, particularly through Foreign Direct Investment (FDI).

Therefore, our focus on FDI is motivated by the fact that it is at the center of foreign private investments. That is, in Africa and globally, FDI is considered the biggest and most reported and analysed component of foreign private capital (FPC) while the other components are considered short-term and volatile and therefore less analysed (Rwanda FPC Report, 2017). Further, Todaro and Smith (2015) assert that FDI boosts a country's economic growth by making positive contributions to the host economy through capital and technological enhancements. What follows in the next few paragraphs is an analysis of global, regional and domestic FDI flows over the period 2016 to 2018.

In 2018, global flows of FDI fell by 13% to US\$1.3 trillion, the lowest level since the global financial crisis of 2008. Following reductions in global FDI's in 2016 and 2017, the 2018 fall underlined the lack of growth in international investment this decade (UNCTAD, World Investment report 2019). Furthermore, the World Investment Report indicates that FDI flows to developed economies reached the lowest point since 2004, declining by 27% in

2018. Inflows to Europe halved to less than US\$252 billion, while flows to Asia, the largest recipient region, were up 4% in 2018. On the African front, the 2018 FDI flows to Africa defied the global downward trend and rose to US\$46 billion, an 11% increase after successive declines in 2016 and 2017 (UNCTAD, World Investment Report 2019).



Figure 1.1 : FDI inflows for World, Developing Economies and Developed Economies

Source: UNCTAD, FDI/MNE database (<u>www.unctad.org/fdistatistics</u>).

From Zambia's FPIIP surveys, the 2017 survey found that Zambia's net FDI inflows significantly improved in 2017, rising to US\$1,179.6 million from US\$486.1 million in 2016 (BoP Statistical Committee of Zambia, 2017). However, in 2018, FDI inflows fell by more than 49% to about US\$560 million (BoP Statistical Committee of Zambia, 2018). The significant decline was mainly due to losses of almost US\$340 million mostly in the mining sector where some companies encountered operational challenges. However, despite this drop in FDI, Zambia was still a popular FDI destination in the region (see Figure 1.2).



Figure 1.2: FDI inflows (millions USD)

Source: UNCTAD, FDI/MNE database (www.unctad.org/fdistatistics).

Further, results on selected investor perception themes analysed from Zambia's FPIIP surveys highlighted a number of issues. For instance, Figure 1.3 shows improvements in foreign investor perceptions on the economic and financial factor theme in Zambia, implying that economic growth was a vital pull factor to investors, with 78% of the sampled investors stating that it had positive effects on their investments in 2018. On the contrary, the survey's highlight worsening investor perceptions on both market access and competition, implying that most investors found these themes (market access and competition) unfavorable for their investments.



Figure 1.3: Investor perceptions on Competitiveness, Economic growth and Market access

Source: Authors construction from BOPSC (FPIIP survey)

The 2018 FPIIP survey results show that the pull factors for foreign investments in Zambia were economic stability (79% of respondents') and political stability (89% of respondents) among others as shown in Figure 1.4. However, for the years 2017 and 2018, the results highlight declines in the respective proportions of investors that perceived the two themes as major pull factors, reducing from 89% to 79% for the economic stability theme and from 92% to 89% for the political stability theme, respectively.

Figure 1.4: Did the following factors attract you to invest in Zambia?



Source: Authors construction from BOPSC (FPIIP survey)

Further, figure 1.5 shows how perceptions regarding the ease of doing business in Zambia evolved during the period under consideration. The 2018 overall ease of doing business was at roughly 78%, a decline from 84% in both 2016 and 2017.



Figure 1.5: Rate the ease of doing business in Zambia

The objectives of this study were to construct an Investor Perception Index (IPI) for Zambia and to assess the evolution of investor perceptions about various political and economic aspects in Zambia.

2. Literature Review

This section presents the review of literature made for this study, particularly on perception of investors towards various investment avenues. To justify the need and approach used in our study, the following pieces of literature were reviewed:

2.1. Theoretical review

Perception plays a critical role in the daily decision-making process for all investors. Investors behavior is based on their perception of what reality is, not on reality itself and to explain this, the direct perception theory, prospect theory and rational expectation theory were explored.

What follows next is an expansion of these theories in greater detail.

Source: Authors construction from BOPSC (FPIIP survey)

Direct Perception Theory

The Direct Perception Theory is premised on three principles. By using three principles, Gibson (1950) argues that direct perception is the use of environmental cues to generate a percept. The first principle states that the environment contains all of the sensory information needed to form an accurate perception. The second principle of direct perception states that perception is immediate and spontaneous; therefore, it does not use any unconscious inference. The third principle of direct perception states that perception and action are inextricably linked. Gibson (1950) further adds that perception is used to guide action, and this action provides additional cues to be processed by the perceptual system, and this in turn provides more guidance for the ongoing movement.

Prospect Theory

Prospect theory states that people's perceptions of gain and loss are skewed. That is, people are more afraid of a loss than they are encouraged by a gain. If people are given a choice of two different prospects, they will pick the one that they think has less chance of ending in a loss, rather than the one that offers the most gains. This makes Prospect theory important for investors. Prospect theory tells us that very few people understand emotionally what they realise intellectually. For the investor, the challenge is to overcome the disappointing predictions of prospect theory and become brave enough to get the returns you want (Elliot, 2006).

Rational Expectations Theory

The rational expectations theory states that the players in an economy will act in a way that conforms to what can logically be expected in the future. That is, a person will invest or spend according to what he or she rationally believes will happen in the future. By doing so, that person creates a self-fulfilling prophecy that helps bring about the future event (Ibid).

2.2. Empirical review

Mazziotta and Pareto (2012) explain that the process of constructing a composite index is a complex task whose phases involve several alternatives and possibilities that affect the quality and reliability of the results. The main problems, in this approach, concerns the choice of theoretical framework, the availability of the data, the selection of the more representative indicators and their treatment in order to compare and aggregate them.

Mazziotta and Pareto (2012), Salzman (2003), and Dunteman (1989) break down the steps in constructing an index as follows:

- i. Defining the phenomenon to be measured. The definition of the concept should give a clear sense of what is being measured by the composite index. It should refer to a theoretical framework, linking various sub-groups and underlying indicators.
- ii. Selecting a group of individual indicators. Ideally, indicators should be selected according to their relevance, analytical soundness, timeliness and accessibility. The selection step is the result of a trade-off between possible redundancies caused by overlapping information and the risk of losing information. A statistical approach to indicators choice involves calculating correlation between potential indicators and then including the ones that are less correlated in order to minimize the redundancy.
- iii. Normalizing the individual indicators. This step aims to make the indicators comparable. Normalization is required prior to any data aggregation as the indicators in a data set often have different measurement units. Therefore, it is necessary to bring the indicators to the same standard by transforming them into pure and dimensionless numbers.
- iv. Aggregating the normalized indicators. It is the combination of all the components to form one or more composite indices (mathematical functions). Different aggregation methods are possible. The most used are additive methods that range from summing up unit ranking in each indicator to aggregating weighted transformations of the original indicators. Multivariate techniques such as Principal Component Analysis (PCA) are also often used.

Further, Bobbie (2011) highlights that a wide range of methodologies for estimating the composite indices have been developed over time and used in many advanced economies. These methodologies include the weighted average method, the regression model and the principal component approach. Bobbie (2011) also explains that the choice of the appropriate methodology depends highly on the quality of the data available and on the reference, indicator measuring the economic activity. In constructing an index, the first step is to determine a reference series. Given the absence of a relevant reference variable and the lack of long historical, as well as a lack of high frequency reliable data, the PCA is the most appropriate method to calculate this indicator. Many studies using indices have relied on the 'face validity' of the variables included (Ibid).

Conceptually, the works of Bobbie 2011 and Spector 1992, provide academic and theoretical reference in the process of index construction. While research conducted by African Response (2006), the South African Advertising Research Foundation (2009), Mazziotta and Pareto (2012), Salzman (2003), and Dunteman (1989) provide specific pragmatic and empirical reference in identifying the typical reasons for constructing an index, as well as considerations and common steps relevant in the process. Following these works, the development of the IPI was thus carried out in the following three steps, namely: (i) variable

selection; (ii) examination of the empirical relationships of variables and combining these items into components; and (iii) computing the index.

Specific literature on country investor perception indexes is few and far between. It seems only a few countries have constructed their IPI's and Rwanda is one of them. Rwanda's 2016 investor perception computation was jointly conducted by the National Bank of Rwanda, the Rwanda Development Board, the National Institute of Statistics of Rwanda and the Private Sector Federation. They explain that the index helps to measure the responses of firms given in relation to eight broad themes pertaining to the investment climate they operate in. These sub-themes were given an equal weighting, and their scores were aggregated into a rating for the theme as a whole. This was also done at the theme level, providing a theme-specific index value for investor perceptions.

The eight themes of the Rwanda investor perception computation included: (1) legal framework; (2) governance; (3) taxation and investment framework; (4) infrastructure; (5) access to finance; (6) domestic resources; (7) support services; and (8) trading across borders. In their evaluation, they found that business climate continued to perform better with the score for the Investor IPI 2016 standing at 72.6. For the eight themes which were sought to affect the business climate in Rwanda, legal framework led with 82.1 followed by infrastructure with 80.1, taxes and investment stood at 78.9, governance with 77.5 and support services with 77.0 while low performance was reported on finances and domestic resources with their IPI standing at 57.8 and 60.7, respectively. From their findings, they recommended that the results be used to guide policy makers on investment sectorial performance, as well as assist design new policies and programs focusing on priority investment issues (Rwanda FPC report, 2017).

3. Methodology

This section presents the analytical approach employed by the study as well as the main data sources that the study drew on. The sub-sections that follow explain the main steps that were involved in constructing the IPI.

Data Sources and Data Management

The construction of the index utilised the available data on investor perceptions in Zambia obtained from the annual FPIIP survey conducted by the Bank of Zambia (BoZ). The survey provides highlights on the magnitude, types and direction of foreign private capital assets and liabilities, foreign affiliates trade in services (FATS) as well as investor perceptions.

The FPIIP survey datasets

The FPIIPS is a firm-level survey that typically covers about 180-240 companies. In terms of selecting firms to be included in the FPIIPS, a two-stage sampling procedure utilizing both probability (or none purposive) and non-probability (or purposive sampling) is used. In the first stage, under the none-purposive sampling approach, all companies that reported to have foreign assets and liabilities (FAL) in the previous survey are purposively returned to be part of the current sample while taking due care that companies with sizable FAL are all included. While in stage two, under the probability (or purposive) sampling approach, the remainder of the sample is selected based on the "Kish method" of sampling. This method ensured that companies with bigger FAL stand a better chance of being selected than their smaller counterparts (BoP Statistical Committee of Zambia, 2017). Using this procedure, a total of 240 firms were sampled in 2016, while only 208 and 182 firms were sampled in 2017 and 2018, respectively.

Variable Selection

To begin with, a large number of possible variables were selected from the questions administered in the FPIIP survey. It is important to note that the questionnaire was not originally developed with the primary aim of developing an index, but was nonetheless central in the context of the study. Given the inconsistencies in the questions included in the FPIIP survey questionnaire from year to year, 2016 was adopted as the base year since the 2016 questionnaire did not depart much from the 2017 and 2018 questionnaires.

Broadly speaking, the variables that were considered for the development of the index from the FPIIP reports included those relating to six broad themes: (i) economic and financial factors; (ii) political governance and labor factors; (iii) efficiency and cost of infrastructure and services; (iv) service delivery by government ministries and statutory bodies; (v) ease of doing business; and (vi) Zambia's membership to regional economic and trading blocs (COMESA and SADC) (BoP Statistical Committee of Zambia, 2018). These themes (shown in Annex A1) were chosen, not only for their relevance to the exercise, but also for their consistent presence in the questionnaire and database during the review period.

Principal Component Analysis (PCA)

Being a data reduction method, PCA was used to reduce the large set of variables to a small set that still contained most of the information in the large set. Before the application of the PCA, the first step was to undertake a pairwise correlation test to ensure that the variables had some level of inherent co-movement. The correlation matrix confirmed that the pairwise correlates shared significant co-movement in most cases. This meant that the PCA would work as an appropriate tool for establishing the data's top "n" principal components and the

variables loaded in each component. With the confirmation on the pairwise correlation test, the next step was to run the actual PCA. The PCA derives eigenvalues for the correlation matrix. The ratio of eigenvalues gives the explanatory importance of the factors with respect to the variables. If a factor has a lower eigenvalue, then it is contributing little to the explanation of variances in the variables and may be ignored as redundant with more important factors (Spector, 1992).

As a guideline from the Kaiser-Meyer-Ohlin rule of thumb, components with eigenvalues greater than one (1) were selected (ibid). Based on that, thirty (30) components were selected explaining 73.1% of the variation (information) in the data. The results show that the first factor provided for the largest proportion of the variation in the data (about 16.3%), with the other factors catering for smaller proportions. This is shown in both Table 3.1 (principal component outputs) and figure 3.1 (scree plot).

Principal compone	ents/correlation	Number of obs	=	240		
		Number of comp.	=	30		
		Trace	=	113		
Rotation: (unrotat	ed = principal)	Rho	=	0.7311		
Component	Eigenvalue	Difference	Proportion	Cumulative		
Comp1	18.38560	11.38500	0.1627	0.1627		
Comp2	7.00070	1.88429	0.0620	0.2247		
Comp3	5.11641	0.43186	0.0453	0.2699		
Comp4	4.68455	0.51023	0.0415	0.3114		
Comp5	4.17432	0.61818	0.0369	0.3483		
Comp6	3.55614	0.31065	0.0315	0.3798		
Comp7	3.24549	0.44906	0.0287	0.4085		
Comp8	2.79643	0.35034	0.0247	0.4333		
Comp9	2.44610	0.20039	0.0216	0.4549		
Comp10	2.24571	0.16233	0.0199	0.4748		
Comp11	2.08338	0.14354	0.0184	0.4932		
Comp12	1.93983	0.02003	0.0172	0.5104		
Comp13	1.91980	0.16216	0.0170	0.5274		
Comp14	1.75764	0.02995	0.0156	0.5429		
Comp15	1.72768	0.01939	0.0153	0.5582		
Comp16	1.70830	0.05722	0.0151	0.5733		
Comp17	1.65108	0.13495	0.0146	0.5880		
Comp18	1.51613	0.05263	0.0134	0.6014		
Comp19	1.46349	0.05647	0.0130	0.6143		
Comp20	1.40702	0.06118	0.0125	0.6268		
Comp21	1.34584	0.04282	0.0119	0.6387		
Comp22	1.30302	0.00602	0.0115	0.6502		
Comp23	1.29700	0.01622	0.0115	0.6617		
Comp24	1.28078	0.08930	0.0113	0.6730		
Comp25	1.19148	0.04021	0.0105	0.6836		
Comp26	1.15126	0.02977	0.0102	0.6938		
Comp27	1.12149	0.06970	0.0099	0.7037		
Comp28	1.05179	0.02351	0.0093	0.7130		
Comp29	1.02828	0.00587	0.0091	0.7221		
Comp30	1.02241	0.02847	0.0090	0.7311		

Table 3.1: Principal Component Output 2016

Source: Authors construction using STATA

More formally, to assess the eigenvalues for significance, the PCA application uses a scree plot of eigenvalues, with a cut-off point (blue dotted line) at the mean of the eigenvalues which is one (1) (Figure 3.1). The scree plot identified the eigenvalues of the first 30 components to be above one (1), thus confirming the rule of thumb interpretation offered above.





Source: Authors construction using STATA

With the scree test, we plotted the eigenvalues associated with each component and looked for a "break" between the components with relatively large eigenvalues and those with small eigenvalues (Pitblado, 2018). The components that appear before the break are assumed to be meaningful and are retained; those appearing after the break are assumed to be unimportant and are not retained.

Table 3.2 shows how the different themes load on the first five components, we see that the service delivery by Government ministries and statutory bodies theme loads heavily on component one. This gave us a sense of how important and/or sensitive that theme is to foreign investors in Zambia. However, for a more detailed and disaggregated variable level component loadings, see Annex A3: Varimax Rotations and Factor Loadings.

Table 3.2 Themes-Components matrix

Theme	Comp1	Comp2	Сотр3	Comp4	Comp5
1. Service delivery by Government ministries and statutory					
bodies					
2. Ease of Doing Business					
3. Labor factors					
4. Zambia's membership to SADC and COMESA					
5. Political governance					

Source: Authors construction using STATA

Weighting of variables

One challenge that was faced, however, was the difference in scores for the selected variables. This was because of the total 113 variables considered in the analysis, 64 variables had a rating scale from a minimum score of 1 and a maximum score of 3. Additionally, 30 variables had scores on a scale ranging from 1 to 5. Furthermore, 19 variables were binary with scores of 1 and 2 as minimum and maximum scores, respectively.

Considering PCA was to be used in selecting final variables for inclusion in computing the index, there was need for correcting for differences in the scales of these variables. Otherwise if left uncorrected, variables with a wider range would naturally have higher variations associated with the components and ultimately bias the selection of variables for computing the index as explained by Amaral (2017) as well as Philip and Kott (2005). To give equal importance to all variables, the variables were weighted by limiting each variable to a maximum possible rate of 5. This was executed as follows:

$$A_{new} = (A - 1) * \frac{5}{1} \dots eq1$$

$$B_{new} = (B - 1) * \frac{5}{2} \dots eq2$$

$$C_{new} = (C - 1) * \frac{5}{4} \dots eq3$$

where:

A represents the 19 binary variables whose response were 1 for yes and 2 for no;

B represents the 64 variables that had a minimum score of 1 (for positive or improved) and a maximum score of 3 (for negative or worsened) for their responses; and

C represents the 30 variables that had scores ranging between 1 (for excellent) to five 5 (for very bad) for their responses.

4. Empirical results

In 2016, 240 firms were sampled while only 208 and 182 firms were sampled in 2017 and 2018, respectively making the panel data for the respective years unbalanced, since the sample sizes were different for the three years.

Table 4.1 shows both the weighted $(\sum_{ti}^{n} P_{ti}) * w_t$ and the un-weighted $(\sum_{ti}^{n} P_{ti})$ summations of perceptions and IPI's. The weighted perceptions show improving investor perceptions whereas unweighted perceptions show a decline. If left uncorrected, years with larger sample sizes would naturally have an influence on the IPI and command a higher weighting on the results (Amaral, 2017).

Perceptions	2016	2017	2018
Un-weighted perceptions	71856	65568	58035
Weighted perceptions	71856	74132	76530
IPI	2016	2017	2018
Unweighted IPI	100	91	81
Weighted IPI	100	103	106

Table 4.1: Summations of perceptions (Un-weighted and weighted)

In order to take care of sample size differences among cross-sections, weights were formulated, following the insights in Pitblado (2018), Folsom and Singh (2000) as well as Vallian and Dever (2018). The following weights were applied in the computation of the IPI for 2017 and 2018:

$$w_t = \frac{S_{Ti}}{S_{Ai}}$$

where

t is the time period or year

 S_{Ti} is the target sample size

 S_{Ai} is the actual sample size for time period *t*.

Therefore, since the target sample size was equal to the base-year sample size of 240, the weights for 2017 and 2018 were computed as follows:

$$w_{2017} = \frac{240}{208} = 1.1538$$

 $w_{2018} = \frac{240}{182} = 1.3187$

Having dealt with the issue of varying variable scores and sample size, the formula for the IPI was thus computed as follows:

$$IPI_t = 100 * \left(\frac{\sum_{ti}^n P_t}{\sum_b^n (P_b)}\right) * w_t$$

where

 IPI_t is the investor perception index in time period t $\sum_t^n P_t$ is the summation of perceptions in time period t $\sum_b^n (P_{bi})$ is the summation of perceptions in the base year.

Using the formula above, the IPI for 2016 (the base year) is 100. The weighted IPI's for 2017 and 2018 were found to have increased to 103 and 106, respectively. This means that investor perceptions on the investment climate in Zambia showed continued improvement over the period under review. Formally, investor perceptions on the investment climate in Zambia improved marginally by 3% and 6%, respectively in 2017 and 2018 compared to the base year (2016).

Results by Theme (Disaggregated IPI)

The Index on investor perceptions was computed across 6 themes: (1) Economic and Financial Factors; (2) Political Governance and Labor Factors; (3) Access Membership to SADC/COMESA; (4) Infrastructure and Services; (5) Ease of doing business; (6) Service Delivery by Government Ministries. These theme specific perception indexes are presented in Table 4.2 with 2016 as the base year, a higher value from year to year indicate improvements in perceptions. Each of these indexes is then explained in detail.

	Theme	2016	2017	2018
1	Economic and Financial Factors	100	126.9	125.4
2	Political Governance and Labor Factors	100	100.8	108.3
3	Access Membership to SADC/COMESA	100	99.3	93.7
4	Cost of infrastructure and Services	100	92	89.4
5	Ease of Doing Business	100	99.3	102.2
6	Service Delivery by Govt. Ministries	100	100.7	109.9
	Aggregated IPI	100	103	106

Table 4.2 Theme	specific	perceptions
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Economic and Financial Factors

Perceptions of Zambia's Economic and Financial Factors showed improvements in 2017 to an IPI of 126.9, from a base IPI of 100 in 2016, implying that in 2017, economic and financial

perceptions were 26.9% better than in 2016. However, despite a 25.4% economic and financial perception improvement in 2018 than 2016, the year-on-year perception were 1.5% less favorable in 2018 than 2017.

Political Governance and Labor Factors

Results show a marginal improvement in perceptions of the Political Governance and Labor Factors with its IPI standing at only at 100.8 in 2017 and 108.3 in 2018 from 100 in 2016. This represents a 0.8% improvement on perceptions on political governance and labor factors from 2016 to 2017 and 8.3% from 2016 to 2018. On the political governance front, issuance of visa's, title deeds and work permits were the core issues, whereas on the labor factors front, labor productivity and work culture were the more prominent issues.

Access Membership to SADC/COMESA

Zambia's Access Membership to SADC/COMESA theme showed deteriorating perceptions with the themes IPI falling from 100 in 2016 to 99.3 in 2017 and further down to 93.7 in 2018, meaning perceptions on this theme were actually 6.3% better in 2016 than in 2018. The most prominent issue was the easy access or lack thereof to finance that comes with Zambia's membership to SADC.

Cost of Infrastructure and Services

Perceptions on the Cost of Infrastructure and Services theme for Zambia continuously performed poorly with its IPI falling from 100 in 2016 to 92 and 89.4 in 2017 and 2018, respectively. These results imply that perceptions on this theme were 8% and 10.6% more favorable in 2016 than 2017 and 2018, respectively. The efficiency and cost of road transportation and efficiency and cost of air transportation were the two prominent issues on this theme.

Ease of Doing Business

Results show that Zambia's business environment perceptions have remained relatively constant albeit a very minimal drop in 2017 and an increase in 2018 with the themes IPI score for 2017 and 2018 standing at 99.3 and 102.2, respectively, indicating 0.7% decline and 2.2% improvements from 2016 to 2017 and 2018, respectively. Resolving insolvency, getting electricity and tax administration proved to be the major issues influencing the ease of doing business.

Service Delivery by Government Ministries

The theme-wise IPI for the Support services in Zambia recorded marginal improvements with its IPI increasing to 100.7 in 2017 and 109.9 in 2018 from 100 in 2016. This meant that, compared to 2016, perceptions were 0.7% and 9.9% more favorable in 2017 and 2018, respectively. We also found, after running the PCA, that this theme was the most influential amongst all the themes as it explained the most variation and made up most of component one (1), therefore making it a very sensitive theme.

5. Conclusion

In closing, this paper set out to construct a stable and empirically plausible IPI for Zambia, and to assess the evolution of investor perceptions about various economic aspects in Zambia. These two objectives were met. The findings from this exercise can be used to guide policy makers on designing investment policies that will focus on priority investment issues as highlighted in the theme-wise IPI.

One shortcoming of the data collected from the FPIIP to be taken into consideration is the fact that from year to year, some of the questions that are asked in the survey vary depending on the broader economic context at the time. Going forward, to improve the quality of the IPI, relevant measures can be taken by BoZ to ensure that the variables that do find themselves entering the index are collected more consistently and in a systematic way year to year. BoZ can utilise such an arrangement for a parallel Investor Perception Survey that strictly feeds into the development of the IPI.

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Appendix Appendix A1: Indexed Variables

Below is the breakdown of the themes and the respective variables that were adopted. The variables for the themes listed above were mostly consistently collected throughout the 3 years (2016-2018) from different firms depending on the number of firms in each year.

Theme 1: Economic and Financial Factors

To what extent did the following economic and financial factors influence investors' perceptions?

- 1 Global Economic Growth
- 2 Domestic Economic Growth
- 3 Exchange Rate Management
- 4 Inflation Rate
- 5 Corporate Tax

Theme 2: Political, Governance and Labor Factors

To what extent did the following political governance and labor factors affect investors' perceptions?

- 1 Political Climate
- 2 Corruption
- 3 Issuance of Licenses
- 4 Minimum Wage Levels
- 5 Availability of Professional Staff

Theme 3: Access of Membership to SADC/Regional Blocs

How did Zambia's membership to SADC (and/or COMESA) impact on investors' perceptions?

- 1 Market Access
- 2 Access to Access to Raw Materials
- 4 Competition
- 5 Access to Finance

Theme 4: Efficiency and Cost of Infrastructure and Services

To what extent have the efficiency and cost of the following infrastructure and services affected investment in your business?

- 1 Road Transport
- 2 Electricity cost
- 3 Fuel Prices
- 4 Internet Services
- 5 Banking Services

Theme 5 Ease of Doing Business

Please rate the ease of doing business in Zambia of the factors listed according to the scale indicated below

- 1 Starting a new business
- 2 Paying Taxes
- 3 Protecting Investors
- 4 Trading Across Borders
- 5 Getting Credit

Theme 6Service Delivery by Govt. Ministries and Statutory BodiesKindly rate the efficiency of service delivery by the following institutions

- 1 Patents and Company Registration (PACRA)
- 2 Zambia Revenue Authority (ZRA)
- 3 Zambia Development Agency (ZDA)
- 4 Utilities Companies
- 5 Ministry of Commerce and Trade Industry (MCTI)

Appendix A2: Questions used in the index

Variable	Question
02 11	3.1.1 How has Zambia's membership to COMESA impacted on the operations of your business in market
Q5_11	access?
Q3_13	3.1.3 How has Zambia's membership to COMESA impacted on the operations of your business in access to
	finance
03_14	3.1.4 How has Zambia's membership to COMESA impacted on the operations of your business in access to
	competition
Q4_21	3.2.1 How has Zambia's membership to SADC impacted on the operations of your business in market access
Q4_23	3.2.3 How has Zambia's membership to SADC impacted on the operations of your business in access to
04.24	Innance
Q4_24	3.2.4 How has Zambia's membership to SADC impacted on the operations of your business in competition
Q4_25	skills and skilled labor
Q4A	4.1 Was availability of resources your motivation factor for investing in Zambia?
Q4B	4.2 Was ease of doing business your motivation factor for investing in Zambia?
Q4C	4.3 Was easy access to finance your motivation factor for investing in Zambia?
Q4E	4.5 Was economic stability your motivation factor for investing in Zambia?
Q4I	4.9 Was good infrastructure your motivation factor for investing in Zambia?
Q4K	4.11 Was political stability your motivation factor for investing in Zambia?
Q62A	6.2.1 If your major source of financing is through borrowing, is it because of the capital-intensive nature of
	your business?
Q62B	6.2.2 If your major source of financing is through borrowing, is it because your company is in its infancy?
Q62C	6.2.3 If your major source of financing is through borrowing, is it because borrowing is easy to access?
Q62D	6.2.4 If your major source of financing is through borrowing, is it because equipment is very expensive?
Q62F	6.2.6 If your major source of financing is through borrowing, is it because of the favourable interest rates?
Q62G	6.2.7 If your major source of financing is through borrowing, is it because of the lack of access to capital
	markets?
Q62H	6.2.8 If your major source of financing is through borrowing, is it because of operational losses?
Q11A	11.1 To what extent has global economic growth influenced investments in the country by your enterprise?
011B	11.2 To what extent has regional economic growth influenced investments in the country by your
	enterprise?
Q11D	11.4 To what extent has the decline in oil prices on the international market in the country by your
	enterprise?
Q11E	11.5 To what extent has domestic economic growth influenced investments in the country by your
0110	11.7 To what extent has domestic market size influenced investments in the country by your enterprise?
Q110 011K	11.7 To what extent has utilitien influenced investments in the country by your enterprise:
0111	11.11 To what extent has annation influenced investments in the country by your enterprise?
Q11L 011M	11.12 To what extent has extrained rate influenced investments in the country by your effect prise?
QIIM	11.13 To what extent has access to short term local husiness finance influenced investments in the country.
Q11N	by vour enterprise?

Variable	Question
0110	11.15 To what extent has access to long-term local business influenced investments in the country by your
QIIO	enterprise?
011P	11.16 To what extent has the availability of international business finance influenced investments in the
QIII	country by your enterprise
Q12A	12.1 To what extent has political climate affected investment in the country by your enterprise
Q12B	12.2 To what extent has security affected investment in the country by your business by your enterprise
Q12C	12.3 To what extent has public order and safety affected investment in the country by your enterprise
Q12E	12.5 To what extent has access to land affected investment in the country by your enterprise
Q12F	12.6 To what extent has issuance of licences affected investment in the country by your enterprise
0120	12.7 To what extent has issuance of entry Visas/Permits affected investment in the county by your
Q12G	enterprise
Q12H	12.8 To what extent has issuance of title deeds affected investment in the county by your enterprise
Q13B	13.2 To what extent has the issuance of work permits affected investment in your business
Q13E	13.5 To what extent has availability of professional staff affected investment in your business
Q13F	13.6 To what extent has availability of technically trained staff affected investment in your business
Q13G	13.7 To what extent has labor productivity affected investment in your business
Q13H	13.8 To what extent has the work culture affected investment in your business?
Q14A	14.1 To what extent has the climatic conditions (e.g. prolonged dry spells/Drought) affected investment in
	your business?
Q142A	14.2.1 To what extent has the level of disease burden for HIV/AIDS affected investment in your business?
Q142B	14.2.2 To what extent has the level of disease burden for Malaria affected investment in your business?
Q142C	14.2.3 To what extent has the level of disease burden for Tuberculosis affected investment in your
	business?
Q14B	14.3 To what extent has the level of disease burden for Livestock affected investment in your business?
0151A	15.1 (a) To what extent has the efficiency and cost of Road Transportation affected investment in your
Q 10111	business?
Q151B	15.2 (a) To what extent has the efficiency and cost of Rail Transportation affected investment in your
	business
Q151C	15.3 (a) To what extent has the efficiency and cost of Air Transportation affected investment in your
0151D	15.4 (a) To what avtant has the officiancy and cost of Electricity affected invoctment in your business
Q151D 0151E	15.4 (a) To what extent has the efficiency and cost of Evel affected investment in your business
QISIE	15.5 (a) To what extent has the efficiency and cost of Fuel anected investment in your business
Q151F	your business
01516	15.7 (a) To what extent has the efficiency and cost of Telecommunication Service affected investment in
41310	your business
Q151H	15.8 (a) To what extent has the efficiency and cost of Internet Services affected investment in your business
01511	15.9 (a) To what extent has the efficiency and cost of Customs Services affected investment in your
<u><u> </u></u>	business

variable	Question
01511	15.10 (a) To what extent has the efficiency and cost of Banking Services affected investment in your
Q151j	business
0151K	15.11 (a) To what extent has the efficiency and cost of Insurance Services affected investment in your
QIUIN	business
Q16A	16.1 Kindly rate the efficiency of service delivery by Local Authorities (Councils)
Q16E	16.5 Kindly rate the efficiency of service delivery by Zambia Development Agency
Q16M	16.13 Kindly rate the efficiency of service delivery by Patents and Company Registration Authority
Q16N	16.14 Kindly rate the efficiency of service delivery by Zambia Police (ZP).
Q160	16.15 Kindly rate the efficiency of service delivery by Road Transport and Safe Agency
Q16Q	16.17 Kindly rate the efficiency of service delivery by Road Development Agency
Q18A	18.1 Please rate the ease of doing business in Zambia with regards starting a business
Q18C	18.2 Please rate the ease of doing business in Zambia with regards resolving insolvency
Q18E	18.4 Please rate the ease of doing business in Zambia with regards getting electricity
Q18I	18.8 Please rate the ease of doing business in Zambia with regards paying taxes
Q18J	18.9 Please rate the ease of doing business in Zambia with regards trading across
018K	18.11 Please rate the ease of doing business in Zambia with regards the overall ease of doing business in
VION	Zambia

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9	Comp10
016E	0 3133									
0180	010100	0.3634								
018E		0.3585								
018K		0.3383								
Q18J		0.3275								
Q18I		0.3227								
Q13G			0.4167							
Q13H			0.4077							
Q13E			0.3997							
Q13F			0.3959							
Q4_23				0.415						
Q3_13				0.3916						
Q4_25				0.303						
Q12G					0.4411					
Q12H					0.4275					
Q13B					0.3646					
Q12E					0.32					
Q12F					0.3174					
Q142B						0.469				
Q142C						0.4682				
Q142A						0.457				
Q14B						0.3119				
Q11A							0.4718			
Q11B							0.4678			
Q11E							0.4336			
Q11G							0.3233			
Q12A								0.5053		
Q12B								0.491		
Q12C								0.432		
Q160									0.479	
Q16Q									0.3943	
Q110										0.5317
Q11N										0.5175
Q11P										0.394

Appendix A3: Varimax Rotations and Factor Loadings:

riable	mp11	mp12	mp13	mp14	mp15	mp16	mp17	mp18	mp19	mp20
Va	Co	Co	CO	Co	Co	Co	Co	Co	CO	Co
Q151K	0.4792									
Q151J	0.4203									
Q151I	0.3545									
Q4K		0.4962								
Q4E		0.4609								
Q11L			0.4463							
Q11K			0.3305							
Q11M			-0.5101							
Q151D				0.5114						
Q151E				0.4946						
Q151F				0.4153						
Q3_11					0.5159					
Q4_21					0.4847					
Q151A						0.35				
Q151C						0.46				
Q151B						0.53				
Q151G							0.4331			
Q151H							0.4207			
Q4_24								0.6202		
Q3_14								0.6026		
Q16A									0.5444	
Q16N									0.3246	
Q62D										0.5599
Q62A										0.4936
Q4B										
Q4I										
Q16M										
Q18A										
Q4A										
Q14A										
Q62H										
Q62G										
Q62C										
Q4C										
Q62B										
Q62F										
Q11D										

iable	np21	np22	np23	np24	np25	np26	np27	np28	np29	np30
Var	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con
Q151K										
Q151J										
Q151I										
Q4K										
Q4E										
Q11L										
Q11K										
Q11M										
Q151D										
Q151E										
Q151F										
Q3_11										
Q4_21										
Q151A										
Q151C										
Q151B										
Q151G										
Q151H										
Q4_24										
Q3_14										
Q16A										
Q16N										
Q62D										
Q62A										
Q4B	0.5073									
Q4I		0.4587								
Q16M			0.5508							
Q18A			0.3513							
Q4A				0.5991						
Q14A					-0.6112					
Q62H						0.6045				
Q62G						0.3275				
Q62C							0.6126			
Q4C							0.377			
Q62B								0.6384		
Q62F									0.6132	
Q11D										0.6003



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