



THE IMPACT OF COVID-19 ON HOUSEHOLD INCOME AND CONSUMPTION IN NORTH KIVU / DRC: STUDY CARRIED OUT IN THE CITY OF BENI

ANGOEZI KALIA Papy

Université Chrétienne Bilingue du Congo (UCBC)

papyangoezi@gmail.com, pap.angoezi@ucbc.org

Abstract

The present study is analyzing the repercussions of measures to combat Covid-19 on household income and consumption. The results show the extent of the phenomenon on income in the city of Beni, Congo. The study is conducted in the hypothetico-deductive approach (Sekara, 2016) for which we consider that the reality of the crisis of COVID-19 is general and global, affects everyone in several aspects. It is then a question here of analyzing the effect of Covid-19 on the well-being of the population of the city of Beni in particular and producing a new knowledge. The consumer price index is 1.553 in 5 months, which increases the general price level in the Oder to 55.3%. That for a population whose household income is unequally distributed, 60% of households are enjoying only 19% of income against 40% of households who enjoy 81% of remaining income with a GINI index of 0.5683 or 56.83%. Considering the marital status of the head of household, the married couple and divorced people have a high monthly median income of USD 500, then USD 400 for widows and widowers, finally singles with a median income of 250 USD. The median is considered because it has the great advantage of being insensitive to the influence of extreme terms, and therefore of being robust. The 55.3% increase in the price level reduced household purchasing power by 36%, for a population that already consumes below the World Bank poverty line of USD 1.25 per day.

Keywords: Covid-19; impact; Income; Households; Beni; North-Kivu, DRC

INTRODUCTION

The end of 2019 and the beginning of 2020 was characterized by the emergence of the covid-19 pandemic in China. This viral pandemic has spread quickly around the globe and to limit its spread, a "lockdown" is decreed in almost all countries of the world characterized by the closure of borders, public administrations, educational, religious meetings, etc.

These decisions are not without impact on the global economic circuit, especially on the economies of countries that are behind in their equipment in Africa. According to the Oxfam Dignity Report, the economy in less developed countries has backward by 30 years and in developed countries by 8 years (Oxfam, 2020). without drastic measures to consolidate the economies of developing countries, the crisis could push as many as half a billion people into poverty (Sumner, at. al, 2020).

The DRC is one of the poorest countries with an outward-looking economy, yet it has closed its land, air and sea borders; closed its administrations, etc. All these closures are a hindrance to the development of the country. All these closures constitute a brake on economic activities that facilitate the satisfaction of needs by scarce resources that are accessible through trade between resident and non-resident economic agents in a market economy (Krugman & Wells, 2013).

In such circumstances; by anticipation effect, there is an increase in demand, consequently a generalized increase in prices (Krugman & Wells, 2013). The DRC in general and the city of Beni in particular is not exempt from this inflation on the market of goods and services. Unfortunately, this economic reality impacts the well-being of the population by affecting household disposable income, as purchasing power only evolves positively if gross disposable income increases by more than prices. Conversely, purchasing power will decline if the price index rises more than gross disposable income.

From all of the above, the purpose of this research is to answer the following questions:

- How did the covid-19 shocks have affected the general price level of basic goods and services in Beni?
- To what extent has the general price level affected household income and consumption in Beni town?

Tentatively, in response to the questions, we estimate that:

- H1: COVID-19 would have affected the general price level in Beni town upwards
- H2: The purchasing power of households would have decreased by at least 30% in the first lockdown in DRC

In addition to the introduction and conclusion, the literature review and methodology are discussed in section one (1), the data analysis and presentation of results in section two (2) and the discussion of results in section three (3).

LITERATURE REVIEW

Household income, on which consumption depends, is a theme that has already been the subject of several analyses. Household income can be defined at the operational level in terms of (i) income from employment (salaried and self-employed), (ii) income from property, (iii) income from the production of services for own consumption, and (iv) transfers received. (ILO, 2003).

If high is the household's income, then richer they are. In Africa, household incomes are unequally distributed. According to the African Development Bank in 2010, African households are distributed as follows: a rich class with USD 20 per person/day, this class represents 6% of the population; upper middle class with USD 10 to USD 20 per person/day, this class represents 5% of the population; lower middle class with USD 4 to USD 10 per person/day, this class represents 9% of the population; floating class with USD 2 to USD 4 per person/day this class represents 20% of the population and finally the population living below the poverty line for an income less than USD 2 per person/day this class represents 60% of the population (AFDB, 2011).

Some researchers demonstrate that it is through political instability generated by corruption and ethno-linguistic fragmentation and several other elements that these negatively affect economic growth and consequently household income. (Karnane&Quinn, 2017).

In a study designed to test the impact of income distribution on investment, (Alesina and Perotti, 1996) showed that income inequality appears to be among the factors that reduce investment via the channel of political instability.

According to these authors, inequality increases popular discontent and fuels social unrest, and political uncertainty, which stems from increased inequality, can generate mass violence that can result in revolutions.

They conclude that so more is unequal societies then greater is the probability of having events of political instability and they deduce that income inequality increases socio-political instability, depresses the level of domestic investment.

Blanco and Grier (2009) insist on inflation as a factor explaining income inequality and instability, especially the decrease in purchasing power, in addition to the budget deficit.

From the above, an exogenous factor such as the covid-19 with the measures that accompanied it can only lead to devastating effects on the standard of living of households.

The theoretical foundation of this study is based on evolutionary theories belonging to the so-called modernization school of thought developed in the 1950s-1960s by Parsons, (1955) and Goode (1963). They predict the universal and irreversible convergence of family structures towards the Western nuclear model, under the effect of economic development. Economic development is synonymous with progress that leads to the enrichment of the population and the improvement of its living conditions. As soon as the economic crisis hits, economic activity slows down in several sectors, companies start laying off workers, unemployment increases and poverty spreads.

This reality tends to converge with the realities of COVID-19 and its causal effects on household incomes and lead household to poverty. Thus, in the face of the economic crisis, poor individuals and households are expected to join forces to strengthen their potential to produce and generate additional income (Wakam at all, 1998)

METHODOLOGY

Research Approach

The study is conducted in the hypothetico-deductive approach (Sekara, 2016) for which we consider that the reality of the crisis of COVID-19 is general and global, affects everyone in several aspects. It is then a question here of analyzing the effect of Covid-19 on the well-being of the population of the city of Beni in particular and producing a new knowledge.

The technique of data collection is the survey by questionnaire of survey addressed to 1000 head of households of which 758 provided us data thus a rate of response of 75,8 %. And 25 products of the basket for which the prices are collected at two different periods T1=15 March 2020 and T2=15 August 2020.

Nature of the data

To test our hypotheses, we undertake the primary and the secondary data. The primary data are collected directly from households in the city of Beni. The primary data consists of data on income and monthly food expenditures, as well as the prices of various consumer goods in the household basket. The secondary data are essentially the threshold for consumer spending in developing countries according to the World Bank per day, per person in a household. 1.25 USD (Zammin, 2010).

Sampling

In relation to the nature of the data needed for our research, we have constituted two samples, each of which provides us with useful information for our research.

Sample 1: Sample of households in the city of Beni, whose size were 1000 households selected in the city of Beni. This sample is representative of the population because, if great is the population, then the sample size doesn't influence the representativity, but only the variability of the population (Trembley, 1968). Hence, a sample of 1000 households in the city of Beni is acceptable. The households are then classified according to the marital status of the head of the household into four subgroups: single, married, divorced and widowed.

Stratified sampling was used to constitute sample N° 1, dividing the population (households) into homogeneous groups called strata according to the criterion of marital status of the person in charge, which are mutually exclusive (single, married, divorced and widows/widowers) and then selecting in each stratum the units to be included in the sample.

Sample 2: Sample of the products in the household basket: 25 products.

For sample 2, we simply took into consideration the products that regularly appear in the household basket.

Instrument and Analytical Approach

The instrument of collection is the survey questionnaire submitted to the heads of households with kobotoolboxhumanitarian.

The analysis plan is as follows: analyze household income in Beni; analyze household consumption expenditures in Beni by comparing it to the World Bank threshold; determine the consumer price index at the local level for the 25 prices (LASPEYRES CPI) and determine the proportion in which household purchasing power is affected.

RESULTS

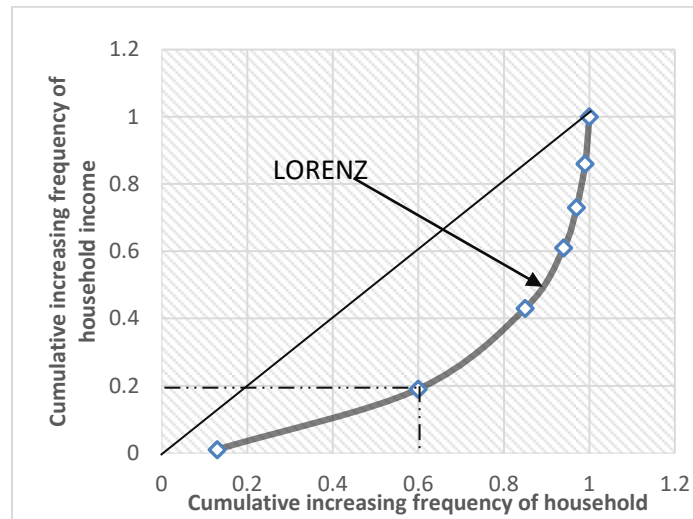
The results of Household Income Analysis in Beni

Analyzing the income concentration using the Lorenz curve and the Gini index, and then tests for differences in household income in Beni town broth us to the following result:

- Considering the LORENZ curve and the GINI index, these two statistic indicators are used to determine whether income is equally or unequally distributed among households. For the LORENZ curve: the further the curve is from the first diagonal, "the distribution is unequal" and the more it merges with the diagonal, "the distribution is egalitarian". For the GINI index: it is between 0 and 1, the closer it is to 0 "the distribution is egalitarian" and the closer it is to 1 "the distribution is unequal" (BRESSOUD & KAHANÉ, 2009)

The Lorenz Curve is following:

Figure 1: The Lorenz Curve



Source: Annex N°1, the household income grouped by class of unequal amplitude, number, relative frequency and cumulative increasing, cumulative increasing mass and relative cumulative increasing mass.

Comment: From figure N°1, it emerges that 60% of households enjoy only 19% of the income against 40% of households that enjoy 81% of the remaining household income. Hence an unequal distribution of income in the households, because the curve is far from the diagonal; thus a restricted class of rich people who possess an important part of the income, more than 6 times the income of the proletarian class and a predominant class of poor people. The middle class is almost non-existent.

The GINI index is determine the following formula (Data source : Annex N°2)

$$\text{GINI Index} = \frac{\sum_i \sum_j |x_i - x_j| n_i n_j}{2n(n-1)\bar{x}} \text{ (MAZEROLE, 2006)}$$

$$\sum_i \sum_j |x_i - x_j| n_i n_j = 506805500$$

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i n_i = \frac{1}{150} (589029) = 777,08311346$$

$$2n(n-1)\bar{x} = 2 \times 758(758-1) \times 777,08311346 = 891789775,8$$

$$\text{Indice de GINI} = \frac{506805500}{891789906} = 0,5683 \text{ soit } 56,83\%$$

As the value of the index approaches 1 then the concentration of household income is high.

Household income difference test in Beni town

Null assumption $H_0 : \mu_1 = \mu_2 = \mu_3 = \mu_4$; household incomes are equal in groups

Alternative Assumption $H_1 : \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$; household incomes are different in groups

We were interested in testing the intergroup difference.

Table 1 : ANOVA test with 1 factor for equality of means.

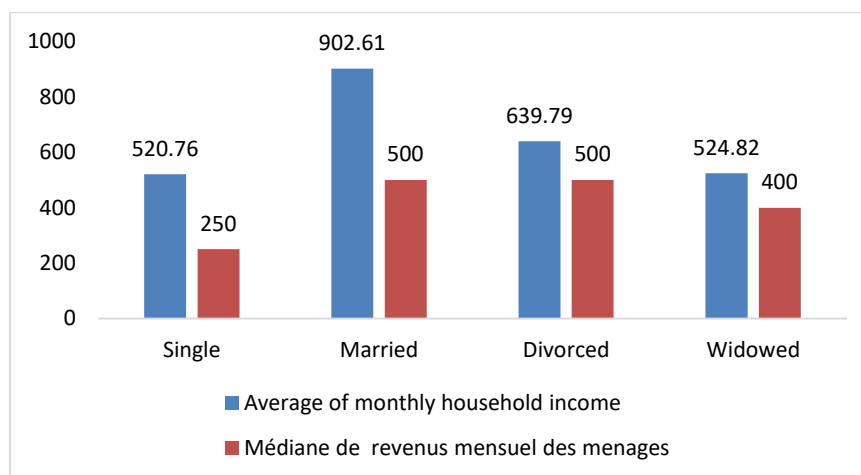
	Sum of squares	ddl	Average of squares	F	Signification
Inter-group	21732705,034	3	7244235,011	3,407	,017
Intra-group	1602984298,05	754	2125973,870		
Total	1624717003,083	757			

Source: SPSS 20 calculation on household income grouped by marital status of the head of household.

Comment: From Table N°1, as p-value associated with Fisher's F-test $0.017 < 0.05$ we reject the null assumption, therefore we accept the alternative hypothesis of difference in household income.

The precision of statistical income difference between the four groups are in the annex N°3.

Figure 2: Graph of Means and Median difference between groups.



Source: The Annex table N°4

Comment: From graph N°2: married people have a high monthly income average of 902.6 USD with a median of 500 USD, then 639.79 USD for divorced people with a median of 500 USD,

followed by 524.82 USD for widows or widowers with a median of 400 USD and finally single people with 520.76 USD associated with a median of 250 USD.

Beyond the mean, the median is related to the notion of distribution function, a function defined by R in $[0 ; 1]$, extremely important in probability. For a continuous statistical variable, the distribution function is defined by : $F(x) = P(X \leq x)$, which gives the proportion of individuals in the population for whom the statistical variable takes a value less than or equal to x . Thus: $F(\text{Me}) = 0.50$. However, it has the great advantage of being insensitive to the influence of extreme terms, and therefore of being robust (Bressoud & Kahané, 2009).

The comparative Analyze of monthly household consumption expenditures in the city of Beni with the World Bank threshold

- Household consumption expenditures are derived directly from observed proportion of income allocated to monthly consumption in each surveyed household.
- In addition, the amount to be spent on consumption according to the World Bank (WB) threshold (USD 1,25 per day, per person). This amount was determined as follows:

Expected consumption expenditure of a household according to the WB Threshold = ***WB threshold × household size × 30 (approximate number of days in a month)***.

The result of the comparison is the following:

From the annex table N°5, the average of observed expenditure is 171.63 USD with the standard deviation of USD 205,34 against 200.11 USD expected according to the WB with a standard deviation of USD 108,08.

The result of the statistical test of equality between observed household consumption expenditures in Beni compared to the World Bank threshold is the following:

Null assumption $H_0 : \mu_1 = \mu_2$; household consumption is equal to the world Bank threshold consumption

Alternative Assumption $H_1 : \mu_1 \neq \mu_2$; household consumption are different to the world Bank threshold

From the annex Table N°7, as the Levene's test on the equality of variances is significant with a P-value of $0.000 < 0.05$, we read the second line. And as the P-value associated with the t-test on the equality of means is $0.001 < 0.05$, we conclude that the two means are different at the 95% confidence interval. Thus, households in Beni City live below the US\$1.25 per day threshold.

The calculation of the consumer price index. (Data from annex table N° 7)

Using the formula of LASPEYRES (Jean-Louis MONINO, 2010) :

$$L_{t/0}^p = \frac{\sum_{i=1}^n q_0^i p_t^i}{\sum_{i=1}^n q_0^i p_0^i}$$

$$\sum_{i=1}^n q_0^i p_t^i = 75,66 \text{ USD}$$

$$\sum_{i=1}^n q_0^i p_0^i = 48,71 \text{ USD}$$

$$L_{t/0}^p = \frac{75,66 \text{ USD}}{48,71 \text{ USD}} = 1,553,$$

The consumption index price is 1,553 which means the price increase of 55.3% between March 15, 2020 and August 15, 2020.

Household purchasing power and the COVID-19 shock

It is important to note that COVID-19 indirectly affects economic life, and we are interested in price variations in Beni as a variable that directly affects the population's standard of living. The consumer price index (CPI) is an important indicator in the lives of individuals, and measures the purchasing power of households.

The purchasing power of a dollar = 1/CPI, which can then be reduced to income (amount of income)/CPI

Table 2: Calculation of the variation in household purchasing power in Beni

Grouping criteria	Average and Median	Income in t_0	CPI	Income value		
				in t_1	Δ in USD	Δ in %
Single	Average	USD 520,76	1,55	USD 335,33	(-) USD 185,44	(-) 36%
	Median	USD 250,00		USD 225,94	(-) USD 161,29	(-) 36%
Married	Average	USD 902,61		USD 581,21	(-) USD 321,41	(-) 36%
	Median	USD 500,00		USD 322,58	(-) USD 234,61	(-) 36%
Divorced	Average	USD 639,79		USD 411,97	(-) USD 227,82	(-) 36%
	Median	USD 500,00		USD 322,58	(-) USD 176,23	(-) 36%
Widowed	Average	USD 524,82		USD 337,94	(-) USD 186,88	(-) 36%
	Median	USD 400,00		USD 258,06	(-) USD 152,61	(-) 36%

Source: Excel spreadsheet based on Figure 2 and CPI

Comment: This table shows that, all other things being equal, households have lost 36% of their purchasing power in all categories. In other words, USD 100 after 5 months measures accompanying the fight against Covid-19 represents only USD 64 in the city of Beni.

DISCUSSION OF RESULTS

Hypothesis testing and comparison of results with other researchers

The first hypothesis, according to how COVID-19 affected the general price level upwards, is confirmed because in the interval of one month from 15 March 2020 to 15 August 2020, the synthetic price index of LASPEYRES is 1.553 or 155.3%, an increase of 55.3% in the price level.

Currently, in the context of globalization, international organizations advocate free trade which is based on the theory of absolute and comparative advantages (G. Deleplace, 2008). Based on the idea that: "each country gains by producing what it has an absolute or comparative advantage in and buying the rest from other countries. In this perspective, it is clear that in countries with an extroverted economy such as the Democratic Republic of Congo, the general price level will increase to unsustainable proportions as a result of scarcity.

The second hypothesis, according to how the purchasing power of households was affected, is also confirmed because the decrease is 36% higher than the minimum of 30% in the hypothesis. These results obtained reinforce the extent of the poverty phenomenon in the Democratic Republic of Congo.

A study on poverty in the DRC shows that the poverty rate at the national level is close to 70% of all households. The spatial distribution of this phenomenon shows that the rural area records a poverty rate of 72% against 59% for the urban area (Moummi, 2010).

The results of this analysis are in line with those of Andy (2020): in the absence of drastic measures to consolidate the economies of developing countries, the crisis could push no less than half a billion people into poverty. In view of this result, low-income populations in the DRC in general and those in Beni in particular are likely to be more affected if they already lose 36% of the value of their income after 5 months.

According to the Oxfam report (Dignity Award 2020) "The virus will starve us before it makes us sick". So, for an already poor population living below the threshold of 1.25 UDS of consumption per day per capita. They are more likely to die from hunger than from COVID-19.

IMPLICATIONS OF THE RESULTS

The above results would likely be the situation in all cities and provinces of the DRC. This implies that measures to help revitalize economic and social life should be considered by the government of the republic:

- To reduce significantly the salary difference between the political class and the other categories of the population in the DRC.

- To use the difference to increase investments in the agricultural sector, because the crisis will become more food crisis;
- To subsidize the public and private companies clearly identified. This subsidy will have to serve to maintain the salary in the first time, then to extend market portion of local companies.
- To develop a mechanism that could help citizens to create more sustainable Enterprises in different sectors to diversify the economy of the country.

CONCLUSION

This study has shown the extent of Covid-19 on household income in Beni, Congo. The consumer price index rose from 1 to 1.553 in one month, representing a 55.3% increase in the general price level.

Household income is unevenly distributed, with 60% of households enjoying only 19% of the income compared to 40% of households that enjoy 81% of the remaining income with a GINI index of 0.5683, or 56.83%. Considering the marital status factor of the head of household, married people have a high monthly average of 902.6 USD with a median of 500 USD, then 639.79 USD for divorced people with a median of 500 USD, followed by 524.82 USD for widows or widowers with a median of 400 USD and finally single people with 520.76 USD associated with a median of 250 USD. The increase in the price level to 55.3% has reduced the purchasing power of households by 36%, for a population that already consumes below the poverty line established by the World Bank of 1.25 USD per day.

The question that arises from the above is: in the face of the extraversion of the DRC's economy, what model should be developed to reduce the DRC's dependence on the outside world and guarantee the population's peaceful survival if such a situation were to persist?

This study has only taken into account the price level as an intermediate variable affecting income. We suggest that other researchers consider the following variables in other analysis of the impact of Covid-19 on poverty: the inability of companies to pay their employees' salaries; technical leave; the deterioration of monetary parity in countries with a bi-monetized economy (currency and local currency); etc.

REFERENCES

- AFDB. (2011). The middle of the pyramid dynamics of the middle class in Africa. With paper/livre blanc.
- ILO. (2003). Income and expenditure statistics. Geneva: ILO.
- Bressoud, É., & Kahané, J.-C. (2009). Descriptive statistics. Paris: Pearson.
- G. Deleplace, C. L. (2008). History of economic thought. Paris: Dunod.

Goode, W. J. (1963). World Revolution and Family Patterns. New York: Free Press.

Grier, B. &. (2009). Long live democracy: The determinants of political instability in Latin America. The Journal of Development Studies, 76-95.

Jean-Louis MONINO, J.-M. K. (2010). Statistique descriptive. PARIS: DUNOD.

Karnane&Quinn. (2017). Political instability, ethnic fractionalization and economic growth. International Economics and Economic policy, pp. 1-27.

Krugman, P., & Wells, R. (2013). Macroeconomics. Paris: DeBoeck.

Mazerole, F. (2006). Statistique descriptive. Paris: Gualino.

Moumami, A. (2010). Poverty Analysis in the Democratic Republic of Congo. Tunis: African Development Bank.

Oxfam. (2020). Dignity Awards. Paris/France: www.oxfam.org.

Parsons, T. (1955). "The Kinship System in the United States Today "Eléments pour une sociologie de l'action. Paris: plon.

Perotti, A. &. (1996). Income distribution, political instability and investmen. European Economic Review, 1203-1228.

Sekara, R. B. (2016). Reseach methods for business. Chichester(United Kingdom): WILEY.

Sumner, A., Ortiz-Juarez, E., & Hoy, C. (2020, April 15). Estimates of the Impact of COVID-19 on Global Poverty. Paris/France: UNU-WIDER: Helsinki.

Trembley, M.-A. (1968). Introduction to research in the human sciences. Montreal: McGraw-Hill.

Wakam, J. M. (1998). "Poverty and Family Structures in Three African Metropolises: Yaoundé, Abidjan, and Dakar" Crises, Poverty, and Demographic Change in the Global South. Paris: Estern.

Zammin, E. (2010). The millennium development goals: Eight ways to change the world. Paris: Nouvelle Arche de Noé.

ANNEXURE

Annex N°1: Table of household income grouped by class of unequal amplitude, number of households, relative frequency and cumulative increasing, cumulative increasing mass and relative cumulative increasing mass.

Li	Ls	xi	ni	fi	Ficc	nixi	nixicc	Nixicc
1	100	50,5	97	0,13	0,13	4898,5	4898,5	0,01
101	500	300,5	361	0,48	0,60	108480,5	113379	0,19
501	1000	750,5	184	0,24	0,85	138092	251471	0,43
1001	2000	1500,5	71	0,09	0,94	106535,5	358006,5	0,61
2001	4000	3000,5	24	0,03	0,97	72012	430018,5	0,73
4001	6000	5000,5	15	0,02	0,99	75007,5	505026	0,86
6001	22000	14000,5	6	0,01	1	84003	589029	1
TOTAL			758	1		589029		

Source: Our surveys

legend:

- Li: Lower limit of the class
- Ls : Upper limit of the class
- Xi : Class center
- ni : Number of the class
- fi : relative frequency of the class
- Ficc : Cumulative increasing frequency
- nixi : Cumulative mass of the class
- nixicc : Cumulative increasing mass
- Nixicc : Relative cumulative increasing mass

Annex N°2 : Calculation table of the Gini index components

Xj	nj	50,5	300,5	750,5	1500,5	3000,5	5000,5	14000,5	Σ
Xi	ni	97	361	184	71	24	15	6	
50,5	97	0	8754250	12493600	9986150	6867600	7202250	8118900	53422750
300,5	361	8754250	0	29890800	30757200	23392800	25450500	29674200	147919750
750,5	184	12493600	29890800	0	9798000	9936000	11730000	14628000	88476400
1500,5	71	9986150	30757200	9798000	0	2556000	3727500	5325000	62149850
3000,5	24	6867600	23392800	9936000	2556000	0	720000	1584000	45056400
5000,5	15	7202250	25450500	11730000	3727500	720000	0	810000	49640250
14001	6	8118900	29674200	14628000	5325000	1584000	810000	0	60140100
Σ		53422750	147919750	88476400	62149850	45056400	49640250	60140100	506805500

Source: Table N°1, of the grouping of the household income classes.

Annex N° 3 : Test Post Hoc de Tukey pour précision des différences de Comparaisons multiples.

(I) Marital status of the head of the household	(J) Marital status of the head of the household	Mean Difference (I-J)	standard Error	Signification	95% confidence interval	
					Lower bound	Upper bound
Single	Married	-381,85092	140,45	,034	-743,4818	-20,2201
	Divorced	-119,03080	211,97	,943	-664,8152	426,7537
	Widowed	-4,06056	231,01	1,000	-598,8793	590,7581
Married	Single	381,85092	140,45	,034	20,2201	743,4818
	Divorced	262,82012	183,97	,482	-210,8850	736,5252
	Widowed	377,79036	205,63	,257	-151,6670	907,2477
Divorced	Single	119,03080	211,97	,943	-426,7537	664,8152
	Married	-262,82012	183,97	,482	-736,5252	210,8850
	Widowed	114,97024	259,79	,971	-553,9310	783,8715
Widowed	Single	4,06056	231,01	1,000	-590,7581	598,8793
	Married	-377,79036	205,63	,257	-907,2477	151,6670
	Divorced	-114,97024	259,79	,971	-783,8715	553,9310

Source: SPSS 20 calculation on household income grouped by marital status of the head of household.

Annex N° 4: Descriptive calculation of income by marital status of the head of household

Marital status of the head of the household		Statistic	Standard Error		
Household income	Single	Average	520,76	86,03	
		95% confidence interval for the mean	Lower Bound	350,64	
			Upper Bound	690,88	
		Average truncated at 5%.		350,89	
		Median		250,00	
		Standard deviation		1010,64	
		Skewness		5,23	0,21
		Kurtosis		31,29	0,41
	Married	Average		902,61	75,24
		95% confidence interval for the mean	Lower Bound	754,78	
			Upper Bound	1050,45	
		Average truncated at 5%.		658,87	
		Median		500,00	
		Standard deviation		1668,94	
		Skewness		7,96	0,11
		Kurtosis		87,28	0,22
	Divorced	Average		639,79	115,94
		95% confidence interval for the mean	Lower Bound	408,62	
			Upper Bound	870,96	
		Average truncated at 5%.		494,92	
		Median		500,00	
		Standard deviation		983,76	
		Skewness		6,23	0,28
		Kurtosis		45,31	0,56
	Widowed	Average		524,82	93,15
		95% confidence interval for the mean	Lower Bound	338,15	
			Upper Bound	711,49	
		Average truncated at 5%.		428,57	
Median		400,00			
Standard deviation		697,04			
Skewness		5,04	0,32		
Kurtosis		31,51	0,63		

Source: SPSS 20 calculation on household income grouped by marital status of the head of household

Annex N° 5 : Mean and Standard deviation calculation table

	The consumption expenditure	N	Mean	Ecart-type	Mean standard error
The consumption expenditure	Consumption expenditure by WB	758	200,11	108,08	3,92
	Observed household Consumption expenditure	758	171,63	205,34	7,45

Source: Calculation with SPSS 20, on the observed consumer spending of households in Beni and expected according to the WB report.

Annex N°6 : Comparison test of household consumption expenditures in Beni compared to the World Bank threshold

Levene's test for equality of variances			Test-t for equality of means						
Assumptions	F	Sig.	T	ddl	Sig.	Mean difference	Standard deviation difference	95% confidence interval of the difference	
								Lower	Upper
Assumption of equal variances	12,99	,000	3,37	1514	0,001	28,48	8,42	11,94	45,01369
Assumption of unequal variances			3,37	1146,59	0,001	28,48	8,42	11,94	45,01792

Source: Calculation with SPSS 20, on the observed consumer spending of households in Beni city and expected according to the WB threshold

Annex Table N° 7: Basic necessities and their prices between the period before and during Covid-19 at the exchange rate of 1750 CDF for 1 USD (between 15 March 2020 and 15 April 2020)

N°	PRODUCT	UNIT	Qte	Up in March 15, 2020	Up in August 15, 2020
1	Table salt	packet	1	\$ 0,23	\$0,57
2	Vegetable oil	bottle	1	\$ 0,86	\$ 1,43
3	Sugar	Kg	1	\$ 0,86	\$ 1,14
4	Pork meat	Kg	1	\$ 3,43	\$ 4,57
5	Cassava flour	seal	1	\$ 4,00	\$ 6,29
6	Corn flour	seal	1	\$ 3,43	\$ 5,71
7	Ember	bag	1	\$ 11,43	\$ 17,14

8	Beans	Kg	1	\$ 0,86	\$ 1,43
9	Salted fish	piece	1	\$ 4,57	\$ 7,43
10	Rice	Kg	1	\$ 0,86	\$ 1,14
11	Banana planted	diet	1	\$ 2,00	\$ 4,57
12	Cassava leaf (Pondu)	box	1	\$ 0,29	\$ 0,57
13	Cow meat	Kg	1	\$ 4,00	\$ 5,71
14	Goat meat	Kg	1	\$ 4,57	\$ 6,29
15	Squash leaf	can	1	\$ 0,29	\$ 0,57
16	Tap water	20 liter can	1	\$ 0,03	\$ 0,06
17	Peanut	Kg	1	\$ 2,00	\$ 2,86
18	Fresh fish	piece	1	\$ 2,00	\$ 4,00
19	Soaps	bar	1	\$ 0,34	\$ 0,69
20	Potato	Kg	1	\$ 0,46	\$ 0,69
21	Onion	Kg	1	\$ 0,57	\$ 0,86
22	Tomato	box	1	\$ 0,14	\$ 0,29
23	Fuel	Liter	1	\$ 0,91	\$ 0,91
24	Eggs	piece	1	\$ 0,11	\$ 0,17
25	Aitime Card of 50 units	piece	1	\$ 0,49	\$ 0,57
TOTAL				\$48,71	\$ 75,66