University of Dschang, Cameroon

****

"Implications of legalizing artisanal chainsaw milling on social welfare, income distribution and the economic performance of sawyers in Cameroon"

****

Presented during the ALL-IUFRO Conference

By:

JAZA FOLEFACK A.J. and DARR D.

Online to Vienna, Austria, 21st-23rd September 2022

Summary of the situation:

- Lack of implementation of 1994 Forestry Law

- Non respect of international agreements:

  -CITES
  -VAP/FLEGT
  -REDD+
  -Voluntary carbon payments

Proportion and loss from non tax payment:

- 715,000 m^3 per year of informal timber logging

- 29% of forest operators do not pay any form of forestry taxes.

- 68% of the forest operators not having a tax identification number.

- State loses nearly 7 billion FCFA each year from informal forest operations through unrecovered taxes.

RESEARCH QUESTIONS

(i) How does chainsaw milling illegality influence social welfare and benefit distribution among different sawyer categories?

(ii) How would legalization of timber logging change the sawyers' benefit distribution as well as social welfare and forest degradation impact?

STUDY OBJECTIVES

(i) Categorize the sawyer in different clusters by considering their socio-economic and business characteristics in the CSM marketing chain;

(ii) Estimate and compare the private and social welfare of different sawyer categories in situation of legal and illegal timber logging activities;

(iii) Analyse the equity inside and between sawyer categories by considering their private and social welfare under legal and illegal conditions.

ANALYTICAL TECHNIQUES

- Descriptive statistics

- Cluster analysis

- Profit and loss account

- Gini coefficient

- Counterfactual analysis of legalizing scenario

RESULTS: CLUSTER ANALYSIS

Quantitative variables: Mean±SD

	Group A: Professional sawyers (n=31)	Group B: Semi-professional sawyers (n=69)	Group C: Upper-survivalist sawyers (n=140)	Group D: Lower-survivalist sawyers (n=110)	Difference: ANOVA between groups
Volume of sawn timber products (m³ per year)	704± 58	510± 49	347± 54	162± 45	F=1217.488 Sig.=0.000***
Business capital of sawyer at the starting of the activity (FCFA in year 0)	46,682,585 ± 3,803,510	33,853,710 ± 3,223,071	23,144,048 ± 3,630,671	10,862,747 ± 3,019,525	F=1210.819 Sig.=0.000***
Total number of customers (n° per year)	117± 10	85± 8	58± 9	27± 8	F=1217.488 Sig.=0.000***
Age of chainsaw at the time of purchase (years)	0.1± 0.3	1.0± 0.9	2.2± 1.3	5.9± 1.8	F=269.301 Sig.=0.000***

RESULTS: CLUSTER ANALYSIS

Qualitative variables: count (proportion)

		Group A: Professional sawyers (n=31)	Group B: Semi-professional sawyers (n=69)	Group C: Upper-survivalist sawyers (n=140)	Group D: Lower-survivalist sawyers (n=110)	Difference: ANOVA between groups
Ownership of chainsaw	Own chainsaw	27 (87.1)	53 (76.8)	112 (80)	92 (83.6)	χ^2=2.131 Sig.=0.546
	Rented chainsaw	4 (12.9)	16 (23.2)	28 (20)	18 (16.4)	
Adhesion to marketing cooperative	Yes	31 (100)	69 (100)	46 (32.9)	0 (0)	χ^2=222.969 Sig.=0.000***
	No	0 (0)	0 (0)	94 (67.1)	110 (100)	
Adhesion to social media network	Yes	31 (100)	69 (100)	101 (72.1)	0 (0)	χ^2=234.917 Sig.=0.000***
	No	0 (0)	0 (0)	39 (27.9)	110 (100)	
Timber quality	Precious red wood[a] (protected species)	7 (22.6)	8 (11.6)	0 (0)	0 (0)	χ^2=336.251 Sig.=0.000***
	Red or hard wood[b]	24 (77.4)	57 (82.6)	13 (9.3)	6 (5.5)	
	White wood[c]	0 (0)	4 (5.8)	127 (90.7)	104 (94.5)	

8

RESULTS: PROFIT AND LOSS ACCOUNT

Elements differentiating illegal vs. legal timber logging

	Illegal timber logging				Legal timber logging			
	Gr.A	Gr. B	Gr. C	Gr. D	Gr. A	Gr. B	Gr. C	Gr.D
Total cost	52,528,960 (74,615)	30,899,880 (60,588)	17,915,736 (51,482)	6,976,726 (42,802)	40,857,500 (81,715)	32,758,000 (65,516)	20,168,688 (57,956)	8,246,496 (50,592)
Net profit or private welfare	12,689,128 (18,025)	6,192,012 (12,142)	3,282,126 (9,432)	806,731 (4,950)	31,659,600 (63,320)	27,759,100 (55,519)	17,235,282 (49,527)	6,755,090 (41,443)
Profit margin in %	19.46	16.69	15.48	10.36	43.66	45.87	46.08	45.03
Value added	31,951,976 (45,387)	17,495,142 (34,305)	9,892,734 (28,428)	3,267,379 (20,045)	50,530,600 (101,062)	42,633,100 (85,267)	26,858,526 (77,180)	10,773,529 (66,096)

9

RESULTS: PROFIT AND LOSS ACCOUNT

Elements differentiating illegal vs. legal timber logging

	Illegal timber logging				Legal timber logging			
	Gr.A	Gr. B	Gr. C	Gr. D	Gr. A	Gr. B	Gr. C	Gr.D
Negative externality from forest loss	17,440,192 (24,773)	12,634,230 (24,773)	8,621,004 (24,773)	4,037,999 (24,773)	12,386,500 (24,773)	12,386,500 (24,773)	8,621,004 (24,773)	4,037,999 (24,773)
Social welfare	-4,751,064 (-6,749)	-6,442,218 (-12,632)	-5,338,878 (-15,342)	-3,231,268 (-19,824)	+19,273,100 (+38,546)	+15,372,600 (+30,745)	+8,614,278 (+24,754)	+2,717,091 (+16,669)

RESULTS OF EQUITY ANALYSIS

Equity analysis from net profit's standard deviation and Gini coefficients

		Illegal timber logging				Legal timber logging			
		Gr. A	Gr. B	Gr. C	Gr. D	Gr. A	Gr. B	Gr. C	Gr. D
Standard Deviation (S.D.)	Private S.D.	4,865,548 (6,912)	1,432,133 (2,809)	570,575 (1,645)	130,964 (809)	3,522,767 (5,004)	1,387,009 (2,752)	567,835 (1,637)	127,056 (785)
	Social S.D.	-4,865,548 (-6,912)	-1,432,133 (-2,809)	-570,575 (-1,645)	-130,964 (-809)	+3,522,767 (+5,004)	+1,387,009 (+2,752)	+567,835 (+1,637)	+127,056 (+785)
Gini Coefficient	Private Gini coeff.	0.477	0.364	0.242	0.172	0.289	0.204	0.131	0.096
	Social Gini Coeff.	0.511	0.402	0.309	0.203	0.217	0.197	0.125	0.091

11

CONCLUSION

In conclusion, the study reveals that legalization of timber logging activity would:

- Induce sawyers' cooperation, increase social welfare by lowering bribes while raising tax payment;

- Reduce inequality and help alleviate poverty;

- Lower forest degradation impact while improving social welfare.

RECOMMENDATIONS

- Creation of marketing cooperatives so that rich sawyers should help poor sawyer categories in social networking and group solving problems.

- International organisations should accompany the government in implementing legality through the forest conservation projects which exist on papers but still delay to be launched in the field.