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Investigates the Effect of Foreign Direct Investment on Economic Growth in Cameroon

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Abstract

Every nation requires a certain amount of investment to reach a particular degree of growth. Investment and economic growth are topics of intense debate in developing countries today. This study investigates the effect of foreign direct investment on economic growth in Cameroon. Using the ordinary least squares (OLS) estimation technique, the data covered a period from 1985 to 2022 collected from the world development indicators (WDI). The finding reveals that there is a positive and significant effect between foreign direct investment (FDI) and Cameroonian GDP; this implies that a unit increase in FDI leads to increased economic growth. A negative correlation has been observed between economic growth and inflation, suggesting that a rise in inflation generally leads to a decline in economic growth. Furthermore, trade openness (TOP) and economic growth have a statistically significant positive association, suggesting that Cameroon's economic growth may rise due to greater global trade involvement. These findings have important policy implications. The Cameroonian government should improve infrastructure, guarantee political stability, and strengthen regulatory frameworks in order to attract foreign direct investment (FDI) and capitalize on its benefits. Since boosting international trade further spur economic growth, initiatives to encourage trade openness should also be given top priority. Trade agreements, tariff reductions, and the encouragement of export-oriented sectors.

Keywords: Foreign Direct Investment, Economic Growth, Cameroon

Introduction

Every nation requires a certain amount of investment to reach a particular degree of growth (Ayenew, 2022) ^[4]; foreign direct investment and economic growth are topics of intense debate in developing countries today. Foreign direct investment (FDI) is essential to economic development because it fosters innovation, improves infrastructure, creates jobs, and long-term rates of economic growth and prosperity are also often higher in nations with larger investment levels (Utouh *et al.*, 2024) ^[30]. A prominent feature of today's world is the flow of private capital, particularly in the form of FDI, into developing countries, especially around the 1980s and 1990s. Most countries that completed this transitional period were more successful since multinational corporations (MNCs) have emerged as key players in the globalization process. Governments worldwide, both in developed and developing nations, have sought to attract multinational companies (MNCs) by encouraging their FDI (Amirahmadi & Wu, 1994; Siddiqui, 2014; Makiela & Ouattara, 2018) ^[2, 27, 15]. This trend coincides with the broader shift towards market-oriented strategies in many developing countries, including Cameroon. Bello *et al.* (2023) ^[5] assert that the expansion of managerial skills, the creation of jobs, the spread of the internet, and economic advancement were all facilitated by foreign direct investment.

A portion of the literature, in analyzing the causes of the growth slowdown in the transition countries, concentrates on political decision-making, excessive spending, cumbersomeness, and the combination of political decision-making, excessive spending, and cumbersomeness, which leads to rising costs and expenditure and a departure from economically effective practices.

were assign shade dry and grated. The powder (1Kg) was culled three periods by cold leakage order accompanying 3 L flammable liquid at range hotness for 72 h, and before the extract was winnowed. The distillation was frequent three periods. The filtrates were reduced under shortened pressure at 40 °C and stocked in a fridge at 2–8 °C for use in after experiments. The portion extractive yield of the hexane, ethyl acetate, intoxicating and intoxicating of leaves, stem and root were weighed and famous.

Preliminary phytochemical protect

On preliminary phytochemical hide utilizing the stated arrangement ^[6], the methanolic extract of the Mahonia leschenaultii root revealed certain tests for tannin, Saponins, flavonoids and steroids.

Mammals

Hepatoprotective action was completed activity on adult male light Wistar rats (150-250 g), provided for one animal building convenience of our institution (Enrollment no). The rats were asserted in a 12 h light/dark era at 25 ± 2°C. They were admitted freedom to enter to a standard bullet diet (Amrut Lab Informer Feed, Navamaharashtra, Pune, India) and water at one's pleasure. The study was certified for one morality board CPCSEA and righteous standards were rigidly understood all along all exploratory processes.

Severe toxicity study

To judge the toxicity of M. leschenaultii root intoxicating extract, the severe toxicity study was acted established Irwin test ^[7]. Five groups of fasted athletic rats (six per group) were verbally executed the plant extract at a measurement of 1–5 g/kg bw. Each of the rats administrative group was doctored accompanying taxi unique (water purified by distillation). The rats in the test and control groups were admitted to approach to foodstuff and water and noticed for 1 h steadily and therefore at fixed intervals for 4 h and belatedly following in position or time each 24 h until 14 days for some material signs of toxicity, in the way that throbbing, snort, twisting and curbed signs of life or humanness. For further studies, the concentrations of plant extract were established at 200 and 400 mg/kg bw and berberine as 10 and 20 mg/kg bw.

Inference of hepatotoxicity

Seven days subsequently adaptation, the rats were detached carelessly into five groups of six mammals each and medicated for four weeks that is 28 days⁴¹. Rifampicin and isoniazid answer were planned alone in unproductive water purified by distillation. Rats were discussed accompanying isoniazid (100 mg/kg bw, verbally) and co-executed accompanying rifampicin (100 mg/kg, verbally) for 28 days ^[42, 43] in consideration of study the effect of methanolic root extract (200 and 400 mg/kg bw) of Mahonia leschenaultii in rats, were secondhand verbally. Silymarin (75 mg/kg bw

verbally) was secondhand as a standard drug in this place study ^[44].

Situation Obligation

Seven days following in position or time adaptation, rats were detached into seven groups bearing six mammals each and acted for four weeks that is 28 days ^[8].

Group 1: Rational control, taken 10ml/kg bw accompanying usual salty.

Group 2: Poisonous control group taken rifampicin and isoniazid 100 mg/kg bw executed verbally.

Group 3: Extract (MEML) situation groups taken 200 mg/kg bw executed verbally. **Group 4:** Extract (MEML) situation groups taken 400 mg/kg bw executed verbally. **Group:** Standard group taken silymarin 75 mg/kg bw executed verbally.

Groups G3 and G4 was likely two doses of M: Leschenaultii root flammable liquid extract, individual stage superior to the presidency of rifampicin and isoniazid. Weights of these rats were listened eventually administrative and exploratory mammals for ending of 28 days.

Biochemical Reasoning

Readiness of antitoxin from ancestry

Rats were gone 1h afterwards presidency of drug eventually-28. The ancestry was composed by from yesteryear-at fixed intervals channel puncture. The ancestry sample of each animal was admitted to clot for 45 brief time period at range hotness. Antitoxin was divided by centrifugation at 600 g for 15 brief time period and resolved for differing biochemical limits containing total protein ^[9], antitoxin glutamate pyruvate transaminases (Keyboard button with specific function/SGPT) ^[10, 11], antitoxin glutamate oxaloacetate transaminases (AST/SGOT) ^[10, 11] and salty phosphatase (Mountain) ^[11].

Histopathological reasoning

Tissues of liver were composed for histopathological study. Later obsession, the tissues were treated usually and entrenched in paraffin. Divisions tainted accompanying hematoxylin-eosin (HE) were judged subjective and quantitatively. Subjective studies of the liver were acted utilizing an Olympus BX50 microscope (10 and 40x) in consideration of validate alterations in the tissues, in addition to appearance of containers from the parenchymal polymorphonuclear angering penetrate (PMNII). The instigative pervade in the liver was characterized utilizing twenty fields captured carelessly (total district busy effective 1.5 x 106 µm², 40x). The morphometric study of the instigative penetrate in this place tool was acted from mathematical concepts got utilizing the calculating-camcorder Leica DFC340FX befriended to the microscope Leica DM5000 B (Germany), and so forth the figures were resolved utilizing the figure refine operating system, Leica Qwin.

Table 1: The relative organ weight (g/100 g body weight) of Wister rats treated with Mahonia leschenaultii methanolic root extract and berberine in isoniazid and rifampicin (INH + RIF) induced hepatotoxicity research.

Organs	Group 1	Group 2 (100 mg/kg)	Group 3 (200 mg/kg)	Group 4 (400 mg/kg)	Group 5 (75 mg/kg)
Heart	0.340 ± 0.005	0.289±0.023	0.320 ±0.025	0.328 ± 0.015	0.335 ± 0.005
Liver	2.866 ± 0.037	2.005±0.002	2.819 ± 0.177	2.923 ± 0.064	3.215 ± 0.032
Lungs	0.535 ± 0.046	0.436 ± 0.054	0.512 ± 0.018	0.564 ± 0.053	0.607 ± 0.041
Spleen	0.246 ± 0.012	0.196 ± 0.032	0.221 ± 0.043	0.235 ± 0.052	0.241 ± 0.012
Thymus	0.235 ± 0.051	0.155 ± 0.003	0.206 ± 0.024	0.217 ± 0.010	0.233 ± 0.046
Kidney	0.390 ± 0.05	0.329 ± 0.015	0.407 ± 0.062	0.463 ± 0.054	0.489 ± 0.078
Adrenal	0.010 ± 0.001	0.004 ± 0.001	0.007 ± 0.000	0.009 ± 0.001*	0.009 ± 0.000*

The values are expressed as mean ± SEM (n = 6), with *P < 0.05. G1: Normal control; G2: Toxic control (Isoniazid INH and Rifampicin RIF) (100+100) mg/kg bw, G3: MEML 200 mg/kg bw + (INH+RIF), G4: MEML 400 mg/kg bw + (INH+RIF), G5: silymarin 75 mg/kg bw + (INH+RIF).)

Statistical analysis

The results of biochemical parameters are reported as mean ± SEM. The statistical significance was determined by means of a one-way analysis of variance (ANOVA) followed by Dunnett's t-test^[13]. A p-value of < 0.05 was considered as being statistically significant.

Results

Biochemical analysis

Total protein and total albumin levels.

The results accompanied that rifampicin (RIF) and isoniazid (INH) began considerably depreciated (p<0.05) the level of antitoxin total protein and total albumin in rats of poisonous control group (G2) as distinguished to the rational control (G1) on account of rifampicin (RIF) and isoniazid (INH), but these levels were considerably raised (p<0.01) in rats of G3, G4 and G5 considered accompanying silymarin and M. leschenaultii root flammable liquid extract (MEML) at two various doses of 200 and 400 mg/kg bw (Table 2).

Antitoxin AST levels

Results revealed considerably raised (p<0.01) level of antitoxin AST in rats of poisonous control groups (G2) as distinguished to rational control (G1) on account of rifampicin (RIF) and isoniazid (INH), but these levels were considerably discounted (p<0.01) in rats of G5, G3 and G4, acted accompanying silymarin and M. leschenaultii root intoxicating extract (MEML) at two various doses of 200 and 400 mg/kg (Table 2).

Antitoxin Keyboard button with specific function levels

It was raise a considerably raised (p<0.01) level of antitoxin Keyboard button with specific function in rats of poisonous control groups (G2) as distinguished to rational control (G1) on account of rifampicin (RIF) and isoniazid (INH), when in fact these levels were considerably weakened (p<0.01) in rats of G5, G3 and G4 considered accompanying silymarin and M. leschenaultii root intoxicating extract (MEML) at two various doses of 200 and 400 mg/kg bw individually (Table 2).

was noticed that rifampicin (RIF) and isoniazid (INH) made considerably raised (p<0.01) level of antitoxin Mountain in rats of poisonous control group (G2) as distinguished to rational control (G1) on account of rifampicin (RIF) and isoniazid (INH), when in fact these levels were considerably diminished (p<0.01) in rats of G5, G3 and G4 medicated accompanying silymarin and M. leschenaultia root flammable liquid extract (MEML) at two various shot s of 200 and 400 mg/kg bw individually (Table 2).

Histopathological study

Histopathological reasoning disclosed that skilled was no alterations of the tools from control mammals, in addition to the liver of discussed mammals at two doses of the MEML root extract. The liver of control mammals bestowed sane (Figure 1 A). The liver histological study of rational control demonstrated the construction of liver accompanying sheets of hepatocytes divided by sinusoids cartial tone and opening lot perform rational while poisonous control (Isoniazid and Rifampicin) displayed hepatic blockage at sinusoids and the gate bowl, pericentre round data processing machine-steatosis, Kuffe container conception, hepatocyte wordy loss and mononuclear penetrate (Figure 1 B) when in fact standard control group displayed temperate hepatic blockage at sinusoids and the doorway ship, pericentre round calculating-steatosis, no Kuffe container conception, gentle hepatocyte wordy loss and mononuclear penetrate (Figure 1 C). Also, situation groups of methanolic root extract of M. leschenaultii (200 or 400 mg/kg bw) presented moderate hepatic blockage at sinusoids and the entry container, pericentre round data processing machine-steatosis, less Kuffe container conception, gentle hepatocyte wordy loss and mononuclear pervade (Figure 1 D) on measurement-contingent form.

However, the liver parenchyma had a complementary effect as the controls. The presidency of 400 mg/kg bw of extract, the liver bestowed an severe instigative process besides the alterations raise at lower doses (Figure 1 E). Histological changes in the liver can endure the biochemical changes noticed for AST and Keyboard button with specific function in mammals that taken the extract and berberine in two together judged doses.

Discussion

In our study, we noticed the hepatoprotective effect of methanolic root extract (MEML) of M. leschenaultii on rifampicin (RIF) and isoniazid (INH) inferred hepatotoxicity in rats. G2 rats that taken rifampicin (RIF) and isoniazid (INH) presented meaningful (P< 0.01) raised levels of antitoxin AST (15.64%), Keyboard button with specific function (117.97%), Mountain (90.55%) and important decrease level total protein (47.80%) and total albumin (48.64%) when distinguished to usual control group (G1). Inflated levels of these limits in antitoxin are assumptive gravestones of hepatotoxic lesions in the liver.

Co-presidency of silymarin and depressed & extreme quantity of (200 & 400 mg/kg bw) of methanolic root extract (MEML) of M. leschenaultii accompanying rifampicin (RIF) and ilsoniazid (INH) in G3, G4, and G7 mammals uphold the levels of AST, Keyboard button with specific function,

Mountain, and antitoxin total protein (36%, 43%, and 50% individually) and total albumin towards sane as distinguished to G2 rats. This was seemingly on account of the antioxidant effect of methanolic root extract *M. leschenaultii* (MEML) elements.

Changes in means pressure have long existed approved as signs of test persuaded changes, that are frequently guide situation accompanying belongings. Animal crowd burden is likewise an main determinant to judge the toxicity of a meaning. The decline in carcass pressure and within means pressure maybe a natural and impressionable index of toxicity following in position or time uncovering to a poisonous wealth. In the work, the extract of *M. leschenaultii* acted not encourage meaningful changes in the relative burden of the means of rodent (courage, liver, bronchi and sort). Water devouring in addition to foodstuff consumption entirely groups that taken 200 or 400 mg/kg bw of root extract individually was comparable to that of the control group. The determinations of water and feed devouring are main limits to judge the security of a amount accompanying potential healing exercise.

The spoken situation of rats accompanying the rude methanolic root extract of *M. leschenaultii* and berberine, usually acted not encourage meaningful modifications of the biochemical sketch when distinguished to the control group. Nevertheless, a decrease in AST, Keyboard button with specific function and Mountain antitoxin ancestry levels were noticed in the mammals that taken two together doses (200 or 400 mg/kg bw) of extract distinguished to the control group (Table 2).

The calculation of antitoxin AST, Keyboard button with specific function and Mountain levels serves by way of for the roundabout appraisal of the condition of the liver. The level of these enzymes considerably raised in antitoxin, when mammals were executed accompanying isoniazid and rifampicin. The pre-situation of the mammals accompanying methanolic root extract of *M. leschenaultii* and berberine, concerning inebriation accompanying isoniazid and rifampicin reserved the AST, Keyboard button with specific function and Mountain levels when distinguished accompanying the poisonous group.

Histopathological notes subsequently isoniazid and rifampicin presidency revealed harsh damage in hepatocytes, that fundamentally backed the alterations noticed in biochemical reasoning. Hepatocellular fatality, combination of periportal mononuclear container of liver containers were characteristic alterations happen on account of acetaminophen inebriation. Situation of methanolic root extract of *M. leschenaultii* and berberine curtailed pertaining to a focus loss, vacuolation and weakened the lymphocytic combination in the liver and bestowed educational belongings. This maybe thought-out as an verbalization of the working bettering of hepatocytes, that maybe on account of increased conversion of hepatic containers or slight damage of containers.

On semantic test in G3, reduced dosage methanolic root extract of *M. leschenaultii* (MEML) accompanied prejudiced improvement in few liver. While in G4 extreme application methanolic root extract of *M. leschenaultii* (MEML) in addition to the berberine acted groups G5 and G6 presented a important improvement towards rational, shows hepatoprotection afterwards a two together quantity of methanolic root extract of *M. leschenaultii* (MEML) in addition to the berberine in tentatively drug persuaded

hepatitis (DIH) in rats. In this place study alkaloids in methanolic root extract of *M. leschenaultii* (MEML) in addition to the berberine power have a part in the improvement in rifampicin (RIF) and isoniazid (INH) persuaded hepatotoxicity in rats.

Plant structure of liver portion of a rational control animal shown a usual hepatic containers each accompanying clear cytoplasm, conspicuous core and nucleolus and well drew out main tone. Histological changes in the liver can endure the biochemical changes noticed for Mountain, AST and Keyboard button with specific function in mammals that taken the extract and berberine in two together judged doses. Morphometric reasoning of the liver presented that the extract does absent hepatotoxic effect by occasion and dosage weak category.

Conclusion

The results of antitoxin biochemical stones and histopathological studies in flammable liquid extract medicated group support the hepatoprotective effect and support evidence for the usual use of *M. leschenaultii* support situation of liver disorders. The best doses presented a unusual hepatoprotective exercise, that was corresponding to silymarin. The attendance of unrefined antioxidants in the flammable liquid extract can expound the noticed hepatoprotective ventures. These imply that collaboration established 'tween the antioxidant venture and basic guarding belongings of the plant extract hold in check debilitation of liver harm.

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