SSRG International Journal of Economics and Management Studies
ISSN: 2393 – 9125 / https://doi.org/10.14445/23939125/IJEMS-V8I10P117

Volume 8 Issue 10, 135-140, Oct, 2021

Original article

Economic Uncertainty and Intra-Regional Trade in West Africa

Dr. Kadagali Komlan

Faculty of Economics and Management, University of Lomé (Togo)

Received Date: 22 September 2021
Revised Date: 23 October 2021
Accepted Date: 30 October 2021

Abstract *- This paper investigates the effects of economic uncertainty (UPE) on intra-regional trade flows in ECOWAS countries. Using the Baker, Bloom, and Davis (2016) economic uncertainty index (UPE) in a gravity model taking into account the latest theoretical advances (Head and Mayer, 2014) and applying the Poisson pseudo maximum likelihood (PPML) estimator, we show over the period 1995-2015, that the effect of economic uncertainty on bilateral trade of these countries is negative and significative. These results have implications for the formation of the future common currency, and the current efforts of policymakers should take into account the heterogeneity of the different countries and their economic environment.*

Keywords *- Economic activity, Uncertainty, Economic growth.*

I. INTRODUCTION

A stable economic environment is essential for attracting private investment and thus expanding trade between countries. But today's global economic environment is marked by episodes of economic tension between countries that have resulted in great uncertainty. Economic uncertainty corresponds to a climate in which the situation where the economic future is illegible (Bloom, 2009; Baker, Bloom and Davis, 2012). It has many causes: shifts in economic and financial policy, divergent views on growth prospects, fluctuations in productivity, wars, terrorist attacks, or natural disasters.

In a situation of uncertainty, agents' behavior becomes unpredictable and development projects unreliable. The integration of uncertainty into economic analysis has upset the theoretical foundations of economics, so that simple rationality, as defined, has become considerably more complex. For a behavior to be rational, the classical approach understood at least two conditions: that the economic activity is consistent in purpose (i.e., in line with the goal we are trying to achieve) and that it be carried out under the best possible conditions of information (in the sense that we can only make a decision if we are well informed). However, it is difficult to quantify uncertainty, but recent work has made it possible to develop indicators using various methods. Regardless of the indicator used, it is clear that economic uncertainty has recently increased (Bloom and Davis, 2012; Kose and Terrones, 2012).

In this context of economic uncertainty coupled with the rise of regionalism in the world, it is important to examine the potential effects of economic uncertainty on regional trade flows of member countries of Regional Economic Communities (RECs).

In West Africa, the formation of the next monetary union is the focus of attention. Indeed, the transition to the single currency should intensifier the market integration (Rose, 2000) of these countries. However, there is still some doubt as to the existence of a positive link between the sharing of a currency and trade intensification, especially for a monetary union in the making such as that of the ECOWAS countries in a context of generalized economic uncertainty.

The objective of this paper is to verify whether economic uncertainty can undermine the objective assigned to the choice of a single currency by ECOWAS countries as a factor of integration through the market. Using the economic uncertainty index (UPE) of Baker, Bloom, and Davis (2016) in a gravity model taking into account the latest theoretical advances (Head and Mayer, 2014) and applying the Poisson pseudo maximum likelihood (PPML) estimator, we show over the period 1995-2015, that the effect of economic uncertainty on bilateral trade is negative and significative. The Economic Policy Uncertainty (UPE) index of Baker, Bloom, and Davis (2016) tracks well the main political developments and shocks in the world, and yields interesting empirical results. It has been used to explain investment, output, exchange rate volatility, and exchange rate expectations, not to mention other real and financial aspects of an economy.

The remainder of this paper is organized into three sections. Section 2 presents the literature review. Section 3 outlines the empirical strategy, and Section 4 concludes.

II. REVIEW OF THE LITERATURE

It is difficult to establish a causal relationship between uncertainty, the business cycle, and trade. Is it uncertainty that causes recessions, or is it the other way around? This is a difficult question to answer, but economic theory points to channels through which uncertainty can adversely affect economic activity and trade.

On the demand side, in the face of high uncertainty, firms cut back on investment and postpone projects while they gather new information, as it is often costly to reverse an

investment decision (Bernanke, 1983; Dixit and Pindyck, 1994). Households also react by reducing their consumption of durable goods while waiting for better times. On the supply side, firms' hiring plans are negatively affected by uncertainty, as downsizing is costly. In standard trade models, changes in production and demand imply changes in the volume of trade.

On trade, uncertainty can have direct and indirect effects. Considering the indirect channel of income, in an uncertain economic environment with fixed and irreversible investment costs, the real value of the option to wait for increases with a higher level of uncertainty, and firms respond by adopting a wait-and-see strategy to delay investments (Bernanke 1983; Dixit 1989). Similarly, the real value of the option to wait to make durable goods purchases increases with the level of economic uncertainty, leading to lower consumer spending (Dixit 1989; Romer
1990). To the extent that economic uncertainty is policy-related, Kang, Lee, and Ratti (2014) show empirically that the economic uncertainty index (EPU) dampens firms' investment decisions, while Jones and Olson (2013) and Baker, Bloom, and Davis (2016) provide evidence of a negative correlation between EI and output. Weak investment and consumption under uncertainty, coupled with the direct negative effect of uncertainty on output, not only dampen GDP growth, but also changes the income elasticity of trade, negatively affecting international trade (Armelius, Belfrage, and Stenbacka 2014; Constantinescu, Mattoo, and Ruta 2017).

Trade can also be indirectly affected by uncertainty through the exchange rate channel. Current exchange rates are determined by changes in expectations. Changes in current economic fundamentals and thus induced changes in monetary policy expectations can impact exchange rates (Engel, Mark, and West 2007). Empirically, Krol (2014) shows that economic uncertainty (EPU, Economic Policy Uncertainty) increases the volatility of exchange rates in times of economic difficulties.
According to Kido (2016), exchange rates that have deviated from the uncovered interest parity theory tend to adjust with UPE cycles in the US. Furthermore, while Beckmann and Czudaj (2017) conclude that uncertainty affects expected exchange rate changes and corresponding forecast errors and that UPE has a significant impact on exchange rate forecast errors. Moreover, Hlatshwayo and Saxegaard (2016) find that high UPE reduces the responsiveness of exports to real effective exchange rates (REER) and hence export performance.

Regarding the direct channel of uncertainty on trade, Novy and Taylor (2014) develop a theoretical framework in an open economy setting in which firms purchase intermediate inputs from domestic or foreign suppliers. During periods of heightened economic uncertainty, firms reduce foreign orders more sharply than domestic orders because inventory costs are higher for foreign inputs, leading to a contraction in trade. Uncertainty can also directly affect trade to the extent that uncertainty is related to trade policy. Relying on a dynamic model with export costs in which firms make entry and trade decisions, Handley and Limão (2015) show that trade policy uncertainty (TPU) does limit firms' entry into export markets.

Armelius, Belfrage, and Stenbacka (2014) find that the U.S. UPE is able to explain the growth patterns of world trade for the period 1994Q1-2013Q4. Similarly, using monthly data for 31 countries over the period 1999-2012, Han, Qi, and Yin (2016) show that the US UPE negatively affects countries' exports, and China's exports also react negatively to UPE shocks from Japan and the UK. Constantinescu, Mattoo, and Ruta (2017), on the other hand, show negative effects of global UPE on trade growth, using annual data between 1995 and 2015 for 16 countries.

III. ESTIMATION STRATEGY

A. Specification of the econometric model

To analyze the effect of economic uncertainty on intra-community trade of ECOWAS countries, we rely on a gravity model. The importance of the gravity model in the analysis of the determinants of trade is no longer in question in the literature Kepaptsoglou, et *al*., (2010). However, very few studies incorporate economic uncertainty in the analysis of these determinants. Gravity models offer a theoretical way to explain trade between two countries. In a simple, symmetric form, a gravity equation relates bilateral trade to the size of each country, bilateral trade barriers, and resistance to multilateral trade. There are several specifications of the gravity equation (Head and Mayer, 2014). In this paper, the following specification is chosen:

$$X_{ij} = GY_i^{\alpha} Y_j^{b} \phi_{ij}^{c} t_{ij} \qquad [1]$$

X_{ij} represents the exports from *i* to *j* ; G is the constant of the model ; $Y_{i(j)}$ the income of the country $i(j)$; ϕ_{ij} the common characteristics of countries *i* and *j* ; t_{ij} represents all the obstacles to trade relations between *i* and *j (trade costs).* Our empirical model is as follows:

$$\begin{aligned} Log(X_{ijt}) &= \beta_0 + \beta_1 Log(PIB_{it}) + \beta_2 Log(PIB_{jt}) \\ &+ \beta_3 Log(Dist_{ij}) + \beta_4 Log(RER_{ijt}) \\ &+ \beta_5 Log(DIFPIBH_{ijt}) + \beta_6 Log(SIMIL_{ijt}) \\ &+ \beta_7 EPU_i + \beta_8 EPU_j + \beta_9 LANG_{ij} \\ &+ \beta_{10} FRONT_{ij} + \beta_{11} ENCL_{ij} + \beta_{12} MU_{ij} + \varepsilon_{ijt} \quad [2] \end{aligned}$$

X_{ijt} Represents bilateral exports from country *i* to country *j*, PIB_{it} nominal GDP of country *i*, PIB_{jt} nominal GDP of country *j*, $Dist_{ij}$ the distance between

countries *i* and *j*, RER_{ijt} the real exchange rate at an uncertainty of *i's* currency expressed in *j*'s currency, $DIFPIBH_{ijt}$ the absolute value of the difference in GDP per capita of countries *i* and *j*, $SIMIL_{ijt}$ an indicator of similarity in size of GDP of countries *i* and *j*, EPU_i policy uncertainty index of country *i*, EPU_j policy uncertainty index of country *j*, $LANG_{ij}$ dummy variable that takes the value of 1 if the two countries share the same language and 0 otherwise, $FRONT_{ij}$ contiguity dummy variable that takes the value of 1 if the two partners have a common border and 0 otherwise, $ENCL_{ij}$ dummy variable that takes the value of 1 if one of the countries *i* or *j* is landlocked, MU_{ij} variable simulating the sharing of a single currency, taking the value 1 if countries *i* and *j* have the same currency and 0 otherwise, ε_{ijt} the error term.

We introduced the variables DIFPIBH (absolute value of the difference in GDP per capita) and SIMIL (similarity in GDP size) to test Linder's (1961) hypotheses of differences in factor endowments and similarity in national demand structures:

$$DIFPIBH_{ij} = \ln\left|\frac{PIB_i}{POP_i} - \frac{PIB_j}{POP_j}\right| \quad [3]$$

$$SIMIL_{ij} = \ln\left[1 - \left(\frac{PIB_i}{PIB_i + PIB_j}\right)^2 - \left(\frac{PIB_j}{PIB_i + PIB_j}\right)^2\right] \quad [4]$$

A positive sign of the coefficient of the DIFPIBH variable reflects traditional inter-industry trade. A negative sign supports Linder's (1961) thesis that the approximation of per capita income is one of the determinants of intra-industry trade (J. Frankel, 1997).

B. Choice of econometric estimators

To account for zero trade flows (an important debate in the gravity model literature) in the sample, appropriate estimation techniques must be used. A growing empirical literature opts for the Poisson Pseudo Maximum Likelihood estimator (PPML) as the default estimator to deal with zeros, as suggested by Santos Silva and Tenreyro (2006, 2011). The Poisson estimator (PPML) implies some non-linearity in the estimation and prevents the inclusion of all fixed effects in the linear model. Only the exporter and importer fixed effects and the time fixed effects can be included in the model. This allows us to add other time-varying variables, such as the logarithm of the GDP of the exporting and importing country in our model. Therefore, we use the Poisson pseudo maximum likelihood (PPML) estimator as the main estimation technique in this paper.

C. Sample and data source

The data used come from several sources, namely: the World Bank (World Development Indicators), UN Comtrade Database, CEPII, WUI (World Uncertainty Index). The analysis covers 14 West African[1] Countries and focuses on bilateral exports. The data used covers the period from 1995 to 2015. The definition of the variables and their sources are contained in Table 1.

D. Results

The results of the estimation of equation 2 are presented in Tables 2 and 3. The results of the regressions contained in columns 1, 2, 3, 4 of table 2 show that exogenous factors such as distance and landlockedness negatively and significantly affect intra-community trade. Indeed, the distance that separates a country from its main trading partners generally gives rise to an increase in transaction costs that is proportional to the distance of this country from the said partners, as pointed out by Kepaptsoglou, et al. Thus, distance becomes an economic factor that can justify price disparity and reduce trade between these countries (Sourdin and Pomfret, 2012).

The existence of a common border, a common official language, and the same currency (membership of WAEMU) do not influence trade between ECOWAS countries. On the other hand, landlockedness has a significant and negative impact on bilateral trade. The use of the same official language and currency by two trading partners should reduce trade costs and therefore increase trade. The bilateral real exchange rate affects trade positively and significantly. Partners' GDPs explain significatively (at the 1% threshold) their bilateral trade, but the effect is ambivalent.

The difference in GDP per capita has a negative effect on trade between ECOWAS countries. This is in line with Linder's thesis since trade is lower the greater the difference in per capita income.

Moreover, the approximation of absolute GDPs does not help to support bilateral trade, as the negative sign associated with the SIMIL variable reveals, on the contrary, that trade is more intense the more GDPs diverge. Turning to the economic uncertainty variables, the UPR index has a negative and highly significant effect on bilateral exports. This result for the main variable of interest in this paper seems to confirm our intuition. To support the validity of our results, we compare the PPML estimator to two other estimators that compete with it (Table 3). The results show different signs according to the specifications but significative at 1%.

IV. CONCLUSION

There are various direct and indirect channels through which uncertainty can affect trade. This paper addresses the link between trade and uncertainty by studying the effect of the UPE on trade flows in ECOWAS countries. To this end, we use a gravity model

[1] The Gambia was not included due to a lack of data.

in which we incorporate the economic uncertainty index. The gravity approach allows us to examine bilateral export flows of different economies jointly in a multilateral environment. We find that the UPE of West African countries has a negative impact on their bilateral trade flows. These findings highlight the increasingly prominent role of economic uncertainty in the global trading system, suggesting that trade flows of ECOWAS countries are increasingly exposed to domestic uncertainty in each country.

REFERENCES

[1] Armelius, H., Belfrage, C.-J., & Stenbacka, H., The mystery of the missing world trade growth after the global financial crisis. Sveriges Riksbank Economic Review, 3 (2014) 7–22.

[2] Baker, S. R., Bloom, N., & Davis, S. J. Has economic policy uncertainty hampered the recovery? Government policies and the delayed economic recovery, 70 (2012).

[3] Baker, S. R., Bloom, N., & Davis, S. J. Measuring economic policy uncertainty. The quarterly journal of economics, 131(4) (2016) 1593–1636.

[4] Beckmann, J., & Czudaj, R., Exchange rate expectations since the financial crisis : Performance evaluation and the role of monetary policy and safe haven. Journal of International Money and Finance, 74 (2017) 283–300.

[5] Bloom, N., The impact of uncertainty shocks. Econometrica, 77(3) (2009) 623–685.

[6] Constantinescu, C., Mattoo, A., & Ruta, M. Trade developments in 2016 : Policy uncertainty weighs on world trade. World Bank, (2017).

[7] Dixit, A., Hysteresis, import penetration, and exchange rate pass-through. The Quarterly Journal of Economics, 104(2) (1989) 205–228.

[8] Dixit, A. K., Dixit, R. K., & Pindyck, R. S., Investment under uncertainty. Princeton university press, (1994).

[9] Engel, C., Mark, N. C., West, K. D., Rogoff, K., & Rossi, B., Exchange rate models are not as bad as you think [with comments and discussion]. NBER macroeconomics annual, 22 (2007) 381–473.

[10] Frankel, J. A., Stein, E., & Wei, S.-J., Regional trading blocs in the world economic system. Peterson Institute, (1997).

[11] Han, L., Qi, M., & Yin, L., Macroeconomic policy uncertainty shocks on the Chinese economy : A GVAR analysis. Applied Economics, 48(51) (2016) 4907–4921.

[12] Handley, K., & Limao, N., Trade and investment under policy uncertainty : Theory and firm evidence. American Economic Journal: Economic Policy, 7(4) (2015) 189–222.

[13] Head, K., & Mayer, T., Gravity equations : Workhorse, toolkit, and cookbook. In Handbook of international economics, 4 (2014) 131–195 Elsevier.

[14] Hlatshwayo, S., & Saxegaard, M. M., The consequences of policy uncertainty : Disconnects and dilutions in the South African real effective exchange rate-export relationship. International Monetary Fund, (2016).

[15] Jones, P. M., & Olson, E., The time-varying correlation between uncertainty, output, and inflation : Evidence from a DCC-GARCH model. Economics Letters, 118(1) (2013) 33–37.

[16] Kang, W., Lee, K., & Ratti, R. A., Economic policy uncertainty and firm-level investment. Journal of Macroeconomics, 39 (2014) 42–53.

[17] Kepaptsoglou, K., Karlaftis, M. G., & Tsamboulas, D., The gravity model specification for modeling international trade flows and free trade agreement effects : A 10-year review of empirical studies. The open economics journal, 3(1) (2010)

[18] Kido, Y., On the link between the US economic policy uncertainty and exchange rates. Economics Letters, 144 (2016) 49–52.

[19] Kose, M. A., & Terrones, M., How does uncertainty affect economic performance? Box, 1 (2012) 49–53.

[20] Krol, R., Economic policy uncertainty and exchange rate volatility. International Finance, 17(2) (2014) 241–256.

[21] Linder, S. B., An essay on trade and transformation. Almqvist & Wiksell Stockholm, (1961).

[22] Novy, D., & Taylor, A. M., Trade and uncertainty. Review of Economics and Statistics, (2014) 1–50.

[23] Romer, P. M., Capital, labor, and productivity. Brookings papers on economic activity. Microeconomics, (1990) 337–367.

[24] Rose, A. K., Do currency unions increase trade? A gravity approach. FRBSF Economic Letter, (2000).

[25] Silva, J. S., & Tenreyro, S., Further simulation evidence on the performance of the Poisson pseudo-maximum likelihood estimator. Economics Letters, 112(2) (2011) 220–222.

[26] Sourdin, P., & Pomfret, R. W., Trade Facilitation : Defining, measuring, explaining and reducing the cost of international trade. Edward Elgar Publishing, (2012).

APPENDIX

Table 1 : Definition of variables and data sources

Variables	Unit	Definition	Source
X_{ijt}	Current US Dollars	Dependent variable measuring bilateral exports from country *i* to country *j*	UN Comtrade Database
$Dist_{ij}$	Kilometers	Distance from country *i* to country *j*	CEPII
$LANG_{ij}$	0 ; 1	Indicator variable =1 if both countries have the same official language	CEPII
$FRONT_{ij}$	0 ; 1	Indicator variable =1 if both partners have a common border	CEPII
$ENCL_{ij}$	0 ; 1	Indicator variable =1 if either country *i* or *j* is landlocked	CEPII
RER_{ijt}[2]		Real exchange rate at uncertainty of the currency of i expressed in that of *j*	WDI
MU_UEMOA	0 ; 1	Indicator variable =1 if both partners share the same currency	CEPII

[2] The formula used to calculate the real exchange rate is as follows: $RER_{ij} = NER_{ij} * \frac{IPC_j}{IPC_i}$ where *NERij* is the annual average nominal exchange rate of the currency of country *i* expressed in that of country *j*, CPI_j is the annual average consumer price index of country *j*, *CPIi* is the annual average consumer price index of country *i*.

$DIFPIBH_{ijt}$		Absolute value of the difference in GDP per capita of countries *i* and *j*	WDI
$SIMIL_{ijt}$		Indicator of the similarity of the size of GDP of countries *i* and *j*	WDI
PIB_i	Current US Dollars	Nominal GDP of country *i*	
PIB_j	Current US Dollars	Nominal GDP of country *j*	
EPU_i	Between 0 and 1	Country's policy uncertainty index *i*,	World Uncertainty Index (WUI)
EPU_j	Between 0 and 1	Country policy uncertainty index *j*	World Uncertainty Index (WUI)

Table 2 : Results of the Poisson Pseudo Maximum Likelihood estimator (PPML)

	Dependent variable : bilateral exports			
	(1)	**(2)**	**(3)**	**(4)**
$Log\ Dist_{ij}$	-1.661**	-1.654**	-1.643**	-1.635**
	(-2.54)	(-2.53)	(-2.52)	(-2.51)
$LANG_{ij}$	0.946	0.922	0.929	0.902
	(0.80)	(0.78)	(0.79)	(0.78)
$FRONT_{ij}$	1.022	1.021	1.024	1.023
	(1.44)	(1.45)	(1.45)	(1.45)
$ENCL_{ij}$	-1.544**	-1.537**	-1.533**	-1.524**
	(-2.57)	(-2.57)	(-2.56)	(-2.56)
$Log\ (RER_{ijt})$	0.672***	0.655***	0.663***	0.643***
	(14366.82)	(13948.40)	(14138.54)	(13663.61)
MU_UEMOA	1.228	1.223	1.215	1.207
	(1.03)	(1.03)	(1.03)	(1.03)
$Log\ (DIFPIBH_{ijt})$	-0.380***	-0.378***	-0.373***	-0.370***
	(-13878.07)	(-13804.96)	(-13548.56)	(-13437.64)
$Log\ (SIMIL_{ijt})$	-0.898***	-0.885***	-0.913***	-0.900***
	(-22258.50)	(-21843.19)	(-22397.87)	(-22022.41)
$Log\ PIB_i$	-0.116***	-0.098***	-0.099***	-0.078***
	(-2552.90)	(-2137.06)	(-2170.91)	(-1688.42)
$Log\ PIB_j$	1.356***	1.364***	1.382***	1.395***
	(39879.03)	(40078.00)	(39121.59)	(39319.47)
EPU_i		-0.101***		-0.110***
		(-3068.50)		(-3320.38)
EPU_j			-0.109***	-0.120***
		-1.654**	(-2816.78)	(-3090.02)
Constant	-0.056	(-2.53)	-1.176	-1.965
	(-0.01)	0.922	(-0.25)	(-0.41)
Log(a)_cons	1.050***	1.046***	1.049***	1.044***
	(6.70)	(6.67)	(6.69)	(6.66)
AIC	1.069e+10	1.068e+10	1.068e+10	1.067e+10
Prob > chi2	0.000	0.000	0.000	0.000
Observations	858	858	858	858
Pairs	52	52	52	52
Exporting fixed effect	Yes	Yes	Yes	Yes
Fixed effect importer	Yes	Yes	Yes	Yes

*p < 0,10 ; **p < 0,05 ; ***p < 0,01 *Source : Author.*

Table 3 . Sensitivity of results to competing estimators

	Dependent variable : bilateral exports			
	(OLS)	**(NEGBIN)**	**(OLS)**	**(NEGBIN)**
$Log\ Dist_{ij}$	-1.397***	-0.431***	-1.376***	-0.484***
	(-4.06)	(-4.03)	(-4.42)	(-4.51)
$LANG_{ij}$	1.561***	0.795***	1.531***	0.848***
	(3.34)	(5.43)	(3.60)	(5.75)
$FRONT_{ij}$	1.727***	0.183	1.705***	0.070
	(4.00)	(1.34)	(4.41)	(0.50)
$ENCL_{ij}$	-1.032***	-0.275***	-1.012***	-0.261**
	(-3.19)	(-2.59)	(-3.46)	(-2.47)
$Log\ (RER_{ijt})$	0.992***	1.202***	1.162***	1.244***
	(3.07)	(8.96)	(3.58)	(8.93)
MU_UEMOA	0.317	0.114	0.346	0.107
	(0.72)	(0.87)	(0.87)	(0.81)
$Log\ (DIFPIBH_{ijt})$	-0.302	0.385*	-0.157	0.430**
	(-0.80)	(1.88)	(-0.43)	(2.07)
$Log\ (SIMIL_{ijt})$	-0.419**	-0.022	-0.458**	-0.068
	(-2.14)	(-0.35)	(-2.51)	(-1.04)
$Log\ PIB_i$	1.691***	0.805***	1.758***	0.805***
	(13.64)	(17.44)	(14.36)	(16.38)
$Log\ PIB_j$	0.515***	0.172***	0.561***	0.157***
	(5.58)	(5.65)	(6.45)	(4.98)
EPU_i			0.812**	0.445***
			(2.34)	(3.27)
EPU_j			-1.556***	-0.455***
			(-4.08)	(-2.73)
Constant	-26.050***	-19.146***	-28.771***	-18.512***
	(-5.60)	(-11.15)	(-6.32)	(-10.31)
R^2	0.7333		0.7479	1.044***
Wald chi^2	.	635.17.		658.52
Prob > chi2		0.000		0.000
Observations	858	858	858	858
Pairs	52	52	52	52
Exporting fixed effect	Yes	Yes	Yes	Yes
Fixed effect importer	Yes	Yes	Yes	Yes

*p < 0,10 ; **p < 0,05 ; ***p < 0,01

Source : Author.