Are the non-stationarities in global market shares of top automotive nations of the world same?

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Abstract. This paper is an attempt to investigate the non-stationary process in the global market shares of automotive industry of top 26 automotive producing nations. The time series data of global automotive market shares of top 26 automotive producing nations were collected from data stream Eikon for the period from 2002 to 2014. Augmented Dickey Fuller Unit root test (ADF URT) is used to investigate the non-stationarities or shocks in the outlined series of global automotive market shares. Findings confirmed the presence of shocks or non-stationarity (absence of stationary process) in global market shares of almost all top automotive producing nations except of Australia, India, Malaysia and South Africa for2002 to 2014. Findings further revealed that the non-stationarities got fixed at 2nd difference in all outlined series of global market shares of automotive for the period from 2002 to 2014. It is also revealed that there are the same shocking patterns in the global market shares of all top automotive producing nations with few exception.

1 Introduction

For the human kind, the automobile industry is an emblem of technological phenomenon. It is one of the growing and greatest industries in the world. Its expansion is seen through competition, consumer demand and product life cycle. The specifications, which translates the growth of this industry lies with the consumer demands of vehicle safety, design, safety and comfort.

The industry also has gone through various global acquisitions /mergers and production outsourcing and relocation centres for developing economies with a shocking patterns of market shares [1,2].

The primary objective of this paper is to investigate the common non-stationary processes in the global market shares of automotive industry of top 26 automotive producing nations.

Augmented Dickey Fuller Unit root test (ADF URT) is used to investigate the non-stationarities or shocks in the outlined series of global automotive market shares.

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ADF unit root test is widely became so popular over the period of time to check the stationarity/nonstationary in the given time series as confirmed by [3].

2 Literature Review

Global market share is normally measured by the sales of a particular nation to total sales of world [4,5]. The same philosophy is used to measure the global market share of automotive of all top outlined automotive producing nations. It is important to cite that the market shares of small vehicles are increasing with a shocking patterns day by day and there are chances of an increase of market shares of these vehicles purchase from 47% (year 2014) to 61 % (year 2021). Hence, Overall sales and market share of the auto industry would scale – up to 3.6 % (690, 724 units) [6].

Mazda auto brand has been emerged to gain sales in year 2015 in the foreign automobile market It has launched new vehicles in the same year only. After Mazda, Toyota takes the market space in a way that their sales stay nominal. Internationally, it has also focused on its existing brands besides Camry model. Furthermore, the international brands are resumed operating to sell their auto brands in the local markets [7,8].

3 Research Methodology

3.1 Description of selected Variables, Data and Hypotheses

As mentioned earlier that the main focus of this paper is to interrogate the non-stationary processes in the global market shares of automotive industry of top 26 automotive producing nations while further to find the similarities in the non-stationary processes in the outlined series. Therefore, the time series data of market shares of automotive industry of top 26 automotive producing nations are collected from data stream Eikon for the period from 2002 to 2014. The top 26 automotive producing nations taken in this study are mentioned in the following table.

Table 1. Top 26 automotive producing nations.

1: Argentina	8: Germany	15: Mexico	22: Taiwan
2: Australia	9: Hungary	16: Poland	23: Turkey
3: Brazil	10: India	17: Romania	24: Ukraine
4: Canada	11: Indonesia	18: Russia	25: United Kingdom
5: China	12: Italy	19: South Africa	26: United States
6: Czech Republic	13: Japan	20: South Korea	
7: France	14: Malaysia	21: Spain	

3.2 Hypotheses established

The following statement of hypothesis is established and tested for all outlined top 26 automotive producing nations. Statement of Hypothesis: Are the non-stationarities in global market shares of top automotive nations of the world same?

3.3 Description of the econometric model deployed to test hypothesis

The test which widely became so popular over the period of time to check the stationarity/ nonstationary in the given time series is ADF unit root test as confirmed by [3,9,10]. In order to see the presence of non-stationarity/ shocks and Unit root/ permanent shocks in

data streams (for the period from 2002-2014) of market share of automotive industry, Augmented Dicky Fuller (ADF) model was deployed via ADF unit root test [11,12]. The ADF model is described below at level for explaining the stationary/ non-stationary process in the time series market share of automotive industry of outline top 26 automotive producing nations.

$$\Delta Marketshares_t$$
$$= \alpha y_{t-1} + x'_t + b_2 \Delta\ Marketshares_{t-1} - -$$
$$- - b_n \Delta Marketshares_{t-n} + ET_t$$

4 Findings and Results

Table 2. Non-Stationarities and Similarity in the Non-Stationarities for Automotive global market shares.

P2: Are the shocks in automotive (Cars) total market shares of the world (top automotive manufacturing countries) same?				
Statement of Hypothesis: There is the Non- Stationarity in the of total market shares of automotive (cars) of top automotive manufacturing countries.				
	At Level		**Second Difference**	
	Prob.	**Non-Stationary**	**Prob.**	**Non-Stationary**
H1: Argentina	0.1712	Yes/Failed to Reject	0.0023	No/Failed to Accept
H2: Australia	0.0355	No		
H3: Brazil	0.7645	Yes/Failed to Reject	0.0173	No/Failed to Accept
H4: Canada	0.2023	Yes/Failed to Reject	0.0032	No/Failed to Accept
H5: China	0.7718	Yes/Failed to Reject	0.0431	No/Failed to Accept
H6: Czech Republic	0.2144	Yes/Failed to Reject	0.0019	No/Failed to Accept
H7: France	0.2975	Yes/Failed to Reject	0.008	No/Failed to Accept
H8: Germany	0.4172	Yes/Failed to Reject	0.0058	No/Failed to Accept
H9: Hungary	0.3175	Yes/Failed to Reject	0.0036	No/Failed to Accept
H10: India	0.0392	No		
H11: Indonesia	0.8088	Yes/Failed to Reject	0	No/Failed to Accept
H12: Italy	0.2344	Yes/Failed to Reject	0.0022	No/Failed to Accept
H13: Japan	0.4842	Yes/Failed to Reject	0.0232	No/Failed to Accept
H14: Malaysia	0.0404	No		
H15: Mexico	0.6161	Yes/Failed to Reject	0.0048	No/Failed to Accept
H16: Poland	0.1374	Yes/Failed to Reject	0.0027	No/Failed to Accept
H17: Romania	0.4087	Yes/Failed to Reject	0.017	No/Failed to Accept
H18: Russia	0.1991	Yes/Failed to Reject	0.0211	No/Failed to Accept
H19: South Africa	0.0369	No		
H20: South Korea	0.2096	Yes/Failed to Reject	0.0038	No/Failed to Accept
H21: Spain	0.4087	Yes/Failed to Reject	0.0170	No/Failed to Accept
H22: Taiwan	0.639	Yes/Failed to Reject	0.0000	No/Failed to Accept
H23: Turkey	0.2144	Yes/Failed to Reject	0.0019	No/Failed to Accept
H24: Ukraine	0.3175	Yes/Failed to Reject	0.0036	No/Failed to Accept
H25: United Kingdom	0.1991	Yes/Failed to Reject	0.0211	No/Failed to Accept
H26: United States	0.7986	Yes/Failed to Reject	0.0160	No/Failed to Accept

Findings as shown in table 2 confirms the presence of non-stationarity (absence of stationary process) in global market shares of automotive for the selectedperiod for almost all mentioned nations except of Australia, India, Malaysia and South Africa [13]. Thus we are failed to reject hypothesis for almost all nations except of few. Further, the non-stationarities got fixed at 2nd difference in the outlined series of global market shares of automotive for2002 to 2014. Therefore we are failed to accept stated hypothesis for all top automotive producing nations at 2nd difference.

5 Discussions and Conclusion

The proposition of this research i.e. Are the shocks in the automotiveglobal market shares of the world same?, was investigated and the findings revealed and concluded that there is more or less same shocking patterns of automotive market shares of all outlined topautomotive manufacturing nations at level, and further the shocking patterns at 2nd difference were not found present in the outlined series of outlined countries for outlined period. Hence, the patterns of non-stationary and stationary processes are same for all top 26 automotive producing nations for the series of automotive global market shares.

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