

Do Winner's curse induce market failure? New Evidence from the used truck market of Nigeria

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Abstract: Winner's curse is a common phenomenon in used truck markets. Its existence is known to prevent markets from clearing. This study examined how the existence of winner's curse affect buyers' behaviour in used truck market. It considered a one-shot selling condition under an asymmetric information environment that leads to winner's curse type of distortion. Findings from the study showed the occurrence of winners' curse of about 17.9%. Despite the occurrence of winners curse, the markets clear with time, suggesting that there is little occurrences of market failure. Buyers of used trucks for the sake of the spare parts are less affected by winner's curse than those who purchase it for other purposes.

Keywords: Winner's curse, asymmetric information, used truck market,

I. Introduction

Transportation by road accounts for more than 70% of all intra and inter-city movement of goods in Nigeria. This factor is a major reason for the growing demand for trucks in Nigeria. The used trucks market exist mainly to satisfy this need as over 65% of the trucks on the Nigerian roads are purchased as foreign used. The market is basically categorised into grades. On one side of the market, there is a market for used trucks that are imported from abroad and displayed for sale locally. For these category of trucks, the United States, Germany, Netherlands and Belgium dominate the countries of imports. The trucks are usually never been used in Nigeria and are displayed the way it is brought in for sale except that there may be some repairs done on them to improve the appearance for sale. The price of this category of trucks is usually dependent on the prevailing exchange rate. As a result, the prices change and fluctuate often as the importers consider the replacement cost before making up their selling prices. The price of this category of vehicles is usually high but trucks of this category are usually of good quality having been used in climes with better road infrastructure than Nigeria. Established haulage firms, new entrants into transportation businesses and construction companies usually go for this category of market.

On one other side of the market is the market for those trucks which had been used locally. By this, the truck had worked in Nigeria and so the owner is just selling it in relation to his personal valuation of the residual value of the vehicle. Chinese and Asian trucks constitute the majority of the new trucks sold in Nigeria. However, the foreign used represent the dominant source of on the Nigerian roads. Transport companies have a culture of replacing their fleet after several years of usage or when the vehicles had hit some mileages. Transport and construction companies change their trucks of between 4-10 years depending on the depth of usage and condition. The used trucks market essentially form the focus of this study. There are three reasons for focusing on the used truck part of market.

First, majority of the truck spare parts sellers depend on used trucks to derive the spare parts they sell. In some states of Nigeria for instance, at least two trucks are butchered on a daily basis to provide the spare parts needs of the industry. Onitsha, Lagos, Jos, Kano and Ibadan represent the states with the leading daily butcher of trucks. With the worsening depreciation of exchange rate, more truck owners now depended on this segment of the market for their spare parts need rather than direct imports.

Second, the market is very large. With an estimated size of over N100 billion annual turnover on the sale of locally used trucks, the used truck market offers a prospect for the sustenance of the haulage subsector of the transport industry of Nigeria. With the introduction of an automobile policy in 2014, tariffs on imported vehicles rose and the trend has not stopped. Ever since, haulage owners have been switching to the locally used category of the market to maintain their fleet. While an average used truck costs between three to five million naira, the imported

counterparts cost as much as four or five times these prices. This makes the market the hope of the spare parts dealers.

Third, the market offers a rich platform for understanding the consequence of winners curse in an information asymmetric environment. Winners curse is a common phenomenon in bid-like markets. It is used to refer to a situation whereby the bidder's price exceed the intrinsic value of the item traded. For a buyer of used truck, the fear of winner's curse is real and can be very devastating. The buyer usually estimate the asking price based on the physical examination of the vehicle against the actual market price of the spare parts derivable. For this, they do not go beyond 30-50% range of the value of the estimation. In view of this, a well packaged but bad truck can be evaluated beyond its intrinsic price to lead to a winners curse. In addition, for every truck that is bought, a number of other cost joins. The cost of settling the locals of the area before the truck is removed can sometimes be annoying. For an immobile one, the cost of a toying truck, and other costs as depends on the place of purchase are also inclusive. These additional expenses do add up to about 5-10% of the value of every truck bought.

Sale of truck transaction can be considered as a one shot action because of the tendencies of the agents in behaving opportunistically. Similarly, the seller of the truck is presumed not to be the manufacturer. As a result, continuous sales relationship cannot be guaranteed and is not a consideration for current sales. In addition, it is in the best interest of the seller to want to sell to different buyers at different times in order to enhance the chances of making profits. Hence, the reaction of the buyer or sellers if eventually cheated becomes secondary.

The rest of this paper is structured as follows. Section II compared the characteristics of the used truck market in relation to that of an auction market. In section III, the various categories of the used truck markets in Nigeria were compared. In section IV evidence of winners curse were presented and section V concludes the study.

II. Used Truck Market as an Auction Market

The used truck market mimics an auction market in many areas. The seller offers a price on the truck and interested buyers come up with their offers such that the person with the highest offer takes the vehicle. In common situations, a truck is displayed for sale and interested buyers come up with their prices and the person with the lead offer gets the vehicle. An auction market essentially requires that there is an item to be auctioned (truck), the bidder (or agents), seller and the buyers. All this parties are present in the used truck market. There is always an agent whose duty is spying on availability of any truck to be sold and finding out some history around it to help the potential buyers make appropriate offer.

In buying used trucks, the buyer checks for the quality of the engine, gear box and the axles. The quality of the engine can be discerned from the sound of the engine when it is started if it's a mobile one. Otherwise, only the physical examination is done. However, a poor quality engine may sound well but weak within; such that the true faults can only be detected when the vehicle is on load. Similarly, a faulty gearbox may be able to pull an empty truck through high speeds and but not with heavy loads. Same can be said of the axles, as the bearing, bushing and hubs will show their faults only when it is on load. Since trucks are usually sold with empty buckets and not necessarily with loads, a number of its inherent qualities and deficiencies remains unknown unless when put into use. Because of this uncertainty, the party who wins the auction may likely pay more than the asset is actually worth if his assessment does not match the true quality of the truck or the realizable market value of the vehicle. Auction winners are known to be likely to pay more when a market becomes competitive (Kagel and Levin, 1986) or when there is uncertainty in the value of the asset (Bazerman and Samuelson, 1983).

A common rule of thumb in the truck market is that buyers usually set their prices between 25-30% of the direct imported counterpart which had not been driven in Nigeria. While the directly imported used trucks were still very affordable, selling the locally used one around these prices poses no problem. However, as the directly imported ones are becoming more expensive and scarce, the prices on the locally used ones are also going up. By implications, those who butchers complete trucks for the sale of their spare parts find it difficult to get old used trucks at the prices suggested by the rule of the thumb. Thus, they need to bid higher on the locally used ones to sustain their trade. In fact, the intrusion of the spare parts dealers into the used truck market have changed the dynamics of the market and raised competition. Of every 10 locally used trucks sold, at least 7 is headed for the butcher market. At the market, the spare part sellers dismember it into the various components for their stores. Since sellers of used truck will sell only when they feel it has attained some level of performance, the market may

continue to shrink with the demand outstripping supply. In addition, the market becomes set in motion for prices to continually be on a steady rise such that the rise in the prices of spare parts and used trucks. In the absence of certainty of long-term contracts or bidding, the buyer will be under pressure not to lose any bid as his source of sales depends on it. A stage therefore becomes set for competition between the inside users and potential outside competitors who need the truck for butcher and those who need used vehicles for other uses. The consequence of these suggests that a market may fail (Akerlof, 1970), be resolved via incentives (Barzel, 1977), induced losses (Thaler, 1988 ; Roll 1986) or precipitate break even market. While these outcomes is the not the core of the study, further interrogation on the prospects of these outcomes presenting in the market can be an interest for further study.

III. Categories of the Used Truck Markets Compared

There are three main categories of used truck markets in Nigeria. The first category of the market is the foreign used trucks market. This refers to the market where trucks that have been used in mostly European countries and imported into Nigeria are made available for sale. Over 90% of trucks brands such as Mercedes, Daf, Mandiesel, Mack, Volvo, Scania and Iveco that are on the Nigerian roads are brought in as foreign used and are bought in this market. This segment of the market dominate the Nigerian used truck market mainly because the trucks are affordable and their spare parts are easily available. The second category refers to the market where the trucks purchased (from the first category) as foreign used are sold after they have worked for several years locally. This second category is otherwise known as the foreign-locally used category. The major participants in the second category market are the spare parts sellers who purchase such trucks because of their cheaper prices and for the sake of the spare parts. The third category of the market capture the market for those trucks that are bought brand new but used locally (in Nigeria). The trucks in this category are mainly Chinese brands. These trucks are bought as new but pushed to the market for sale after some years of use. Because they have been used in Nigeria before being put up for sale, they are tagged as locally used truck market. The focus of this study is essentially on the foreign-locally used truck market for three main reasons. First, it stands as the end point of all the trucks in the market. Most buyers at the segment of the market buys for the sake of butcher or to be used to overhaul an already old or weak truck. Second, it represent the market with the highest concentration of participants among the three categories. In fact, it is always a beehive of activities whenever a vehicle is being butchered. Unlike the standard sale of truck which may not involve more than 2 or 3 persons before the transaction is completed. For instance, it is not uncommon to see one buying an old used 10tyre truck to couple a weak 12-tyre truck. In such instance, it is most likely that the buyers is in need of many parts from the truck intended to buy to couple the own vehicle. Had he to buy the vehicle in pieces, the cost may be overwhelming. Third, it is only in this segment of the market which the vehicle sold may be immobile. Sale of an immobile used truck can be cumbersome. For most of the purchases, a tow truck may be needed to tow the vehicle to the dump site. Apart from the cost of such movement, settlement of area boys as well as the road expenses involved until the vehicle is towed to the destination can be killing.

One thing that is common to all the markets is that prices are rising. While prices of imported used trucks are driven by exchange rate depreciation, inflation and clearing costs, the cost of the locally used ones are driven up as a result of surging demands and increasing interest of spare parts seller in butchering of trucks as against those who may need it for other uses. In fact, they now constitute the major source of spare parts for trucks in Nigeria. The same also is happening in the market for those trucks which were bought new but used locally in Nigeria. The Chinese brands have a very low second-hand value and their spare parts are very expensive. This has made the market for the European truck brands to be larger and the preferred choice for new entrants into the haulage and transportation industry of Nigeria.

IV. Evidence of Winners Curse

The concept of winner's curse became popular in the literature following the works of three Atlantic Richfield engineer (Capen, Clapp, and Campbell, 1971). Though originally discussed within the context of an auction market, the application had deepened across many fields of economics with wider applications (Thaler, 1988). Despite economic agents being adjudged to be rational, evidence of winner's curse are observed to be pervasive in the market. Rational bidding requires that economic agents distinguish accurately between the expected value of the object for sale, conditioned on the prior information available, and the expected value conditioned on winning the auction. Even if a buyer accurately estimate the true value of the vehicle, winner's curse can still occur if the

bidder underestimates the magnitude of the cost adjustment necessary to compensate for the presence of other buyers (Thaler, 1988).

A look at the used truck market shows varying evidence of miscalculation on the realizable values at the point of purchase of used truck. In effect, the buyer suffers a winner's curse every time his estimated value of the realizable value from the purchase is less than the amount of purchase of the truck. For the sake of this study, let's take a look at the Onitsha old spare part market in Nkpor, Anambra state as a case study. Primarily, used trucks are purchased to be butchered for the purpose of servicing the spare parts needs of the market. So on regularly basis, trucks are butchered. The butchers are linked to agents across the country who gives them information on anywhere a truck is to be sold. Upon examination and negotiation, payments are made and a tow truck is sent to bring in the truck. At the butcher pit, fellow spare parts sellers assemble to pick up the parts of their specialization from the truck. A nut and bolt seller will be around with spanners to lose all the nuts and bolts from the truck. The same for a tyre and rim seller as well as other truck parts sellers. On every day of the butcher, every seller is entitled to come and bid for any price of the parts needed. As a rule, most spare parts markets do not allow the butcher man to sell directly to the end users unless the end user is also a member of the market. It is possible in many instance that a butchered truck may fetch in varying values of money as a result of the bids of those who needs the spare parts. In the other way, the bids may vary because of the varying grades of the vehicle or the spare parts derived there from. Table 1 below shows the average number of trucks butchered in the year 2019. The figure for 2020 is expected to be less because of the disruptions caused by the Corona Virus pandemic and the facts that many owners are becoming reluctant in selling their used trucks due to higher costs of replacements.

Table 1: Number of Man diesel Trucks Butchered in Onitsha in 2019

Months	Number of Vehicles	Number of vehicles sold at loss	Proportion of winner's curse
January	14	2	14.3
February	37	5	13.5
March	25	5	20.0
April	19	4	21.1
May	27	7	25.9
June	15	3	20.0
July	21	5	23.8
August	18	3	16.7
September	11	1	9.1
October	16	3	18.8
November	22	3	13.6
December	21	3	14.3
Total	246	44	

Source: Authors compilation

Based on personal evaluation and interviews, the above table was compiled. Ordinarily, a person is adjudged to suffer a winner's curse any time the realised value from sale is less than the purchase price of a truck. Out of a total of 246 trucks sold in a year, winner's curse was only present in 44 of them. This represents 17.9% of the total trucks sold. Despite this magnitude of occurrence, the demand for used truck has been on a steady increase. What this suggest is that the occurrence is not a major deterrent to prevent people from buying used trucks. In the other way, the continuous exchange depreciation has set the market in a situation such that with winner's curse, a used truck buyer is still guaranteed of market to realise value of the purchase by raising the price of the spare parts.

Table 2: Tables showing the growth of sold used and butchered trucks in Nigeria

Years	Growth rate in the number of trucks sold per year (%)	Growth rate of number of butchered trucks
2010	-28.0	164.3
2011	19.5	-32.4
2012	13.0	-24.0
2013	6.1	42.1
2014	15.5	-44.4
2015	-49.4	40.0
2016	9.2	-14.3
2017	0.0	-38.9
2018	-48.2	45.5
2019	-42.4	37.5
2020	-21.4	-4.5
Average	-11.5	15.5

Source: Estimated

The presence of winner's curse suggest that the expected returns from sales of truck be inversely related to competition and uncertainty. In view of this, the growth rate of the sales volume of used truck should be on the decline. The decline essentially serves to signal that the buyers are becoming dissatisfied with the purchases. A look at tables 2 showed an average downward trend of 11.5% in the rate of sales of used truck. The computation was made based from the national data on the total trucks registered over the years in the country (the number of registered trucks was used here to represent the total number of trucks sold for the respective years). On the other hand, the average rate of trucks that were butchered over the years 2010 to 2020 was 15.5%. The rate of growth is far more that the rate of the sales of the used truck. A major implication of the foregoing is that the used truck markets faces price pressure from two side. On one side is the pressure from the exchange rate depreciation and at the other side is the pressure from those earnestly seeking to purchase a whole truck for the sake of its spare parts. One can only imaging the implication of this on the haulage market and the average cost of transportation of good in Nigeria given the fact that over 70% of goods produced and distributed in Nigeria is by means of the trucks.

Despite the fact that buyers are not very certain of the quality of the truck, high demand for old spare parts joined with the very high cost of new parts which serves as the alternative is a major factor sustaining the rising cost of haulage in Nigeria. Buyers of used trucks for the sake of the spare parts are less affected by winner's curse than those who purchase it for personal use and as a result becoming major actors in the used truck market in Nigeria.

V. Conclusion

This study examined the incidence of winner's curse in used truck market of Nigeria under a one-shot selling condition. Based on the study, the incidence of winners' is about 17.9%. The study observed that the occurrence is not a major deterrent in preventing people from buying used trucks. High demand for old spare parts joined with the very high cost of new parts are major factors for huge patronage of the used truck market.

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