Households and 1-World economy: A mathematical discourse

Abstract

We examine several options available for households to withstand the challenges posed by long held positions about nation-state macroeconomics and mathematically argue outlets for showcasing the foundational essence of household economy in the coming mainstreaming of 1-World economy without the necessary drawbacks of the failing nation-state macroeconomics which its attendant inadequacies and inefficiencies. We brought out the core importance of the zeroing in on household economics as we evolve further virtual economics as these are the main frames as regards our quest for survival of the human race, and showed that the household must be the core for this new world to work. This paper suggests perhaps another perspective to the other known conventional systems that can be used to assess the impact of internet enabled economic activities on households within a setting without economic borders or barriers. Finally, we relate two the concepts to the world economy.

1. Introduction

Nation-state economies as we know them are seriously impoverishing households the world over. The actors raise various obstructionist ideas, hypotheses, theories, and mathematized economic literature. The virtual world spear-headed by the internet or world-wide world, is the panacea for poverty in the 21st century and beyond. We must make bold actions to pull down nation-state dogma in economic literature, policy and practice. The new world order has arrived. How can this be? Let attempt to use investment goods with respect to consumptions goods within the structural realities of household subject to their internet access status governed by 1-world economic rules devoid of national protectionism, is showing remarkable increase worldwide (see figure 1 in appendix). For, instance in Nigeria as depicted by figure 1, as at 2020, she topped the chart reporting 154.30 million, over 90 million more then the closet rival – Egypt that reported 54.74 million. In figure 2, we could see that household's internet presence in Nigeria have consistently risen in terms of access, which will definitely have some positive impacts on the investment and consumers goods market alike. A number of authors interpret this spike as evidence of mass adoption of the intern especially mobile internet by household. Guerriero (2015) use the demand for consumers goods as a driver in their model. Azubuike (2021) similarly argued that just concluded COVID-19 pandemic inspired lockdown explains the surge in demand for both

consumer and investment goods. Onohwakpor (2013) in the study of cybercafe services consumed by households in delta state and Magaji and Eke (2013) stressed that households are increasingly appreciating the efficiency laded benefits of the internet.

The aim of the work is to show that identifying the need for consumer goods and investment goods by households is potentially robust to further deepen the open economy setting. We argue that as soon as one pushes for more efficient, low-cost internet infrastructure and adoption, the nexus between household and goods markets will become a leading indicator of household specific technological progress. To demonstrate this point, a goods-household internet model similar to that of Onohwakpor (2013), Magaji and Eke (2013) and Azubuike (2021) where households studied strictly internet of their demand for goods. In this digital economy the link between the goods market (sectors/industry the household depends on the degree of household bias for the internet relative infrastructure constraints. The reminders of this paper is structured as follows. Sections 2 details literature review while section 3 describes the mathematical logic for abolishing nation-state economies and enthroning 1-world economy and finally section 4 concludes.

2. Literature review

The internet has evolved over the years to become the central nerve system of the various often conflicting nation state economies in the world acclaimed global village. Authors and researchers alike have grappled with the idea of a 1-world economy but still cannot divorce themselves from the attachment we nurtured and enshrined from centuries that is injuries to households – the system of the nation states. Every calamity that befallen the household since prehistorical times can be traceable to the system of nation states.

The challenge now is, with the internet as the 21st century nerve center for governance, commerce and data banking, is it time to jettison this multi-century concept of nation states and begin embracing a 1 world economic system?

The internet is defined by Eke and Aluko (2006) as simply a network of computers conveying various information using a standardized communication protocol. This network has become sophisticated in terms of its human interface and societal importance. The internet in itself has created a virile virtual world that is fast evolving in its essence and is demonstrating capacity to support the global economy. One of the ways to access this virtual world via the mobile protocol on mobile phones. Mobile internet access refers to the use of

global system for mobile communication - GSM android and apple phones to participate in the information super highway. Oberiri and Iyendo (2018) concluded that the utilization of the internet is resource-efficient. Qureshi (2022) observed that the optimal use of the digital infrastructure enhances economic efficiency on multiple fronts.

The United Nations in 2022 defined household as a small unit of group of persons who share the same accommodation, who pool some or all of their financial resources and consumed certain resources as well. We will like to note at this juncture that Treble, Jordon, James, & Kay (1993) had enunciated that households in a typical economic, own all resources. Cockrane (2022) argued that consumer goods are final items that satisfy users and create utility, while investment goods are those goods that are used in the production of other goods. What could be possibly be the nexus between the three concepts? Ironmonger (2001) in laying out some insights of the household economics, opined that households as a general rule demand and purchase various units of consumer and investment goods. Their work identified a positive correlation. The Organization for Economic Cooperation and Development, OECD in 2022 asserted the definition of internet access as per households. That is, fixating the household as a fundamental metric for gauging access to the world wide web or virtual world. The study posits that internet access is the percentage of households that can connect to the virtual world. Maruyama and Sonoda (2011) concluded that there is a positive and significance relationship between household internet consumption, consumer and investment goods. The pull factor for the internet within households is its efficiency laden features. The virtual world portends possibilities. Chulikavit and Rose (2016) contends that globalization is the internationalization of trade and commerce occasioned by digital technology. On the other hand, the world economy is simply a concept that encapsulates the entire economies of nation states as one indivisible unit. When a disequilibrium occurs in one economy it quickly spreads to others depending on the degree of exposure.

In a nutshell, digital technology via the internet has ushered in a vital virtual world. Hence the need to scrutinize the adverse effect of nation state economies on household. Sinding (2009) in assessing population, poverty and economic development posited that Malthusian analysis is insufficient. It did not benchmark protectionism occasioned by nation-state economic policy, which in his submission suppresses household economy. Dabla-Norris

(2015) in studying the causes, consequences of income inequality argued that nation-state policies generally motivate resource misallocation, corruption, and nepotism, with its adverse social and economic consequences that stifles household welfare. What then is the way forward?

3. A globalized economy without nation-state economies

In an increasingly global digitized economy, we have economic agents that are have mobile internet access (1) and those that do not have access to the world wide web (0) - this defines a somewhat binary world, with consumer goods (C_i) and investment goods (I_i):

$$C_i = g^{1/\Theta} C_t + (1 - g)^{1/\Theta} C_i \quad (1)$$

$$I_i = g^{1/\Theta} I_t + (1 - g)^{1/\Theta} I_i \quad (2)$$

Where C_i are consumer goods, I_i; investment goods; g either for investment or consumer goods. Θ represents the elasticity ratios for the goods in their respective industries, we assume that a rise in consumer goods orders generated on the internet directly increases demand for investment goods.

Profit maximization by producers of these goods may yield the following price trends:

$$P_{ci} = [gP_{ci} + (1 - C_i) P_{Ii}] \quad (3)$$

$$P_{Ii} = [gP_{Ii} + (1 - I_i) P_{ci}] \quad (4)$$

Studying equations 3 and 4, the price of investment goods relative to consumer goods, P_I/P_c can be written as a log-linear approximation of the price index.

$$P_I/P_c = P_Ic/Pc_I \quad (5)$$

Taking the internet generated consumer and investment good prices index and normalize it, assuming a steady state, in which there are no foreign sectors and domestic, just one single global village without economic barrier or borders,

$$P_I/P_c = (1 - C)P_Ic/Pc_I + (I - 1) P_Ic/Pc_I \quad (6)$$

The crux of the matter is that in a setting without economic borders, economic activities can reveal their links or nexus. To motivate our analysis, lets assume the economy is activated by agents with/out internet access – [1,0] respectively, therefore the utility function will be

$$U_i = \square_i \beta_i [U (I_i - \gamma)(C_i - \alpha)] \quad (7)$$

Where β_i denotes the discount factor, $0 < \beta < 1$. γ and α denote the habits of consumption

The household's first order condition is described by the following equations

$$U_i [U(I_i - \gamma)(C_i - \alpha)] - \mu = 0 \quad (8)$$

In the same vein, households of same size are symmetric in terms of structural parameters exhibiting functional form:

$$U_i = \square_i \beta_i [\{(I_i - \gamma)(C_i - \alpha)\}/(1 - P)] \quad (9)$$

Recall that we asserted economic agents are considered as having binary features – [0,1]. In the same vein, the population of economically active agents in the world, (W) are between that is those without virtual business suites online - [0, n] and those with virtual business suites online - [1, n]. It can be summated that these economic actors or agents can have utility preferences described as:

$$U_i = \square_i \beta_i [U(I_i - \gamma)(C_i - \alpha), n(1 - e_i)] \quad (10)$$

4. Conclusion

This paper suggests perhaps another perspective to the other known conventional systems that can be used to assess the impact of internet enabled economic activities on households within a setting without economic borders or barriers. We find that the changes associated with the parameters depict an inverse relationship regardless their access status. our argument suggest that researchers can make s serious effort to identify relative impacts, volatilities, etc. of other parameters using an open economic scenario.

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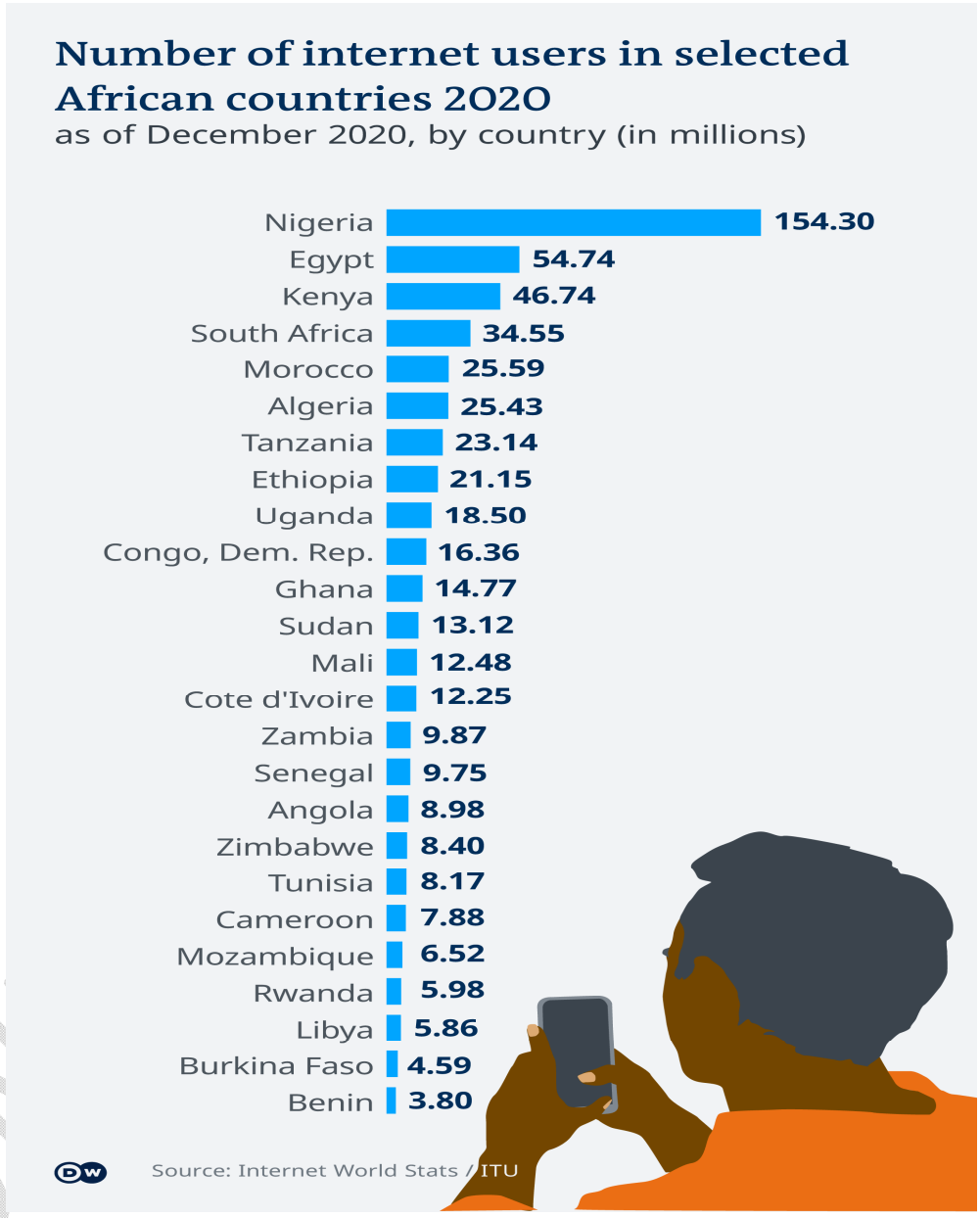
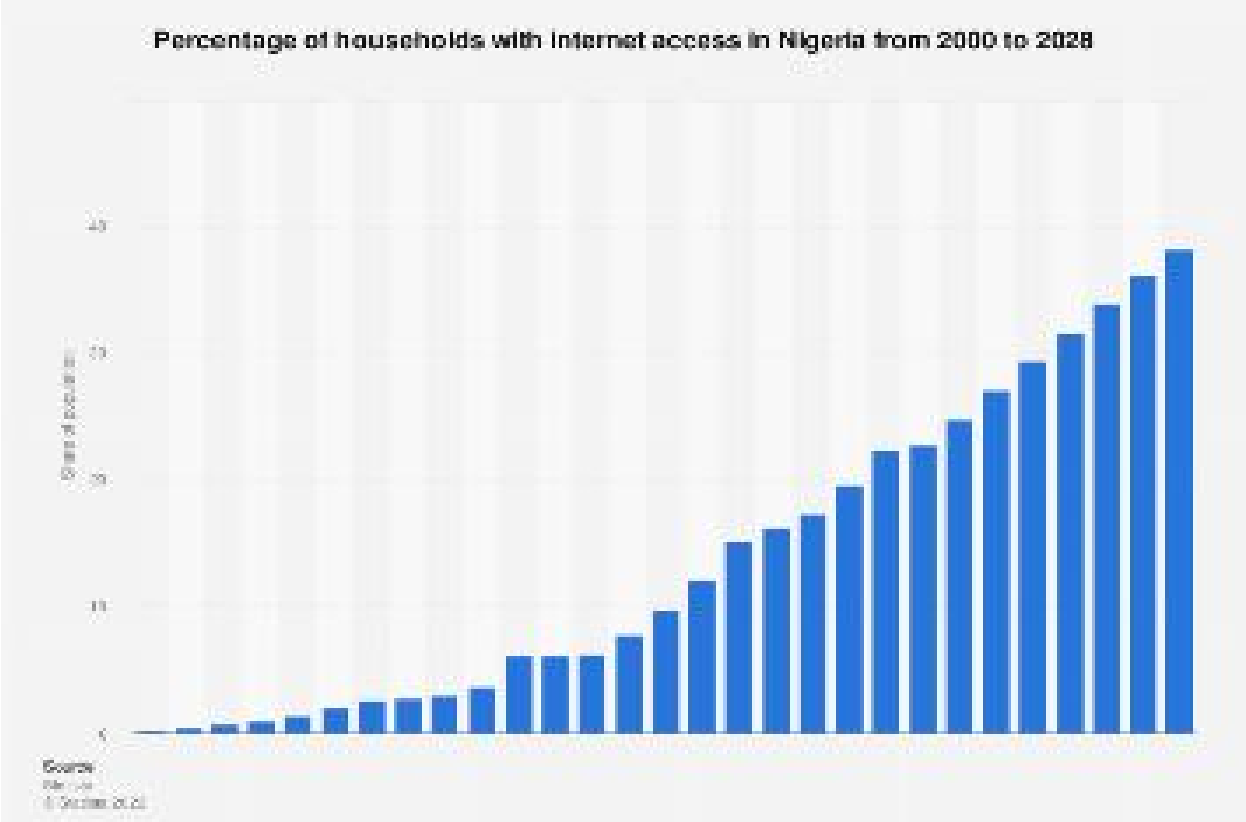
Appendix



Courtesy International Telecommunication Union, ITU

Figure 1



Courtesy Statista

Figure 2