Journal of Economic Cooperation and Development, **43**, 1 (2022), 133-158

Economic Independence of Bangladesh: An Empirical Assessment

Iftekhar Mohammad Fakhruddin[1], Mohammad Abdul Hannan Pradhan[2] and Golam M. Mathbor[3]

ABSTRACT

The aim of the study is to measure the degree of economic independence of Bangladesh using time series data from 1990 to 2016. The study uses an economic independence index to quantify its ability to survive unilaterally. Six indicators under the three dimensions underlying economic independence are used. By using highest and lowest historic value of each indicator, it normalizes each indicator. Then, it estimates the composite index using definite weights assigned to each indicator and to each dimension. The degree of index on an average is 0.57 and 0.46 when rice and wheat are taken as the main food, respectively. The estimated value indicates that the country has acquired economic independence moderately. However, the estimated value provides a tool for the government of the country to determine the direction and magnitude of action required to improve its level of economic independence.

ملخص

يتمثل الهدف من الدراسة في قياس درجة الاستقلال الاقتصادي لبنغلاديش باستخدام بيانات السلاسل الزمنية ما بين 1990 و 2016. وتستخدم الدراسة مؤشر الاستقلال الاقتصادي لقياس قدرتها على البقاء بشكل انفرادي. ويتم استخدام ستة مؤشرات في إطار الأبعاد الثلاثة التي يقوم عليها الاستقلال الاقتصادي. وباستخدام أعلى وأدنى قيمة تاريخية لكل مؤشر، فإنها تعمل على

[1]Department of Economics, Shahjalal University of Science and Technology, Sylhet, Bangladesh.
E-mail: iftekharfakhruddin@gmail.com.
[2]Department of Economics, Shahjalal University of Science and Technology, Sylhet, Bangladesh.
E-mail: hannan-eco@sust.edu. (corresponding author).
[3] School of Social Work, Monmouth University, New Jersey, USA.
E-mail: gmathbor@monmouth.edu.

تطبيع كل مؤشر. ثم تقوم بتقدير المؤشر المركب باستخدام أوزان محددة مخصصة لكل مؤشر ولكل بُعد. وتبلغ درجة المؤشر في المتوسط 0.57 و 0.46 عندما يؤخذ الأرز والقمح كغذاء رئيسي، على التوالي. وتشير القيمة التقديرية إلى أن الدولة قد حققت استقلالا اقتصادياً بشكل معتدل. ومع ذلك، فإن القيمة المقدرة توفر أداة لحكومة الدولة لتحديد اتجاه وحجم العمل المطلوب لتحسين مستوى استقلالها الاقتصادي.

ABSTRAITE

L'objectif de l'étude est de mesurer le degré d'indépendance économique du Bangladesh en utilisant des données de séries chronologiques de 1990 à 2016. L'étude utilise un indice d'indépendance économique pour quantifier sa capacité à survivre de manière unilatérale. Six indicateurs sous les trois dimensions qui sous-tendent l'indépendance économique sont utilisés. En utilisant la valeur historique la plus élevée et la plus basse de chaque indicateur, il normalise chaque indicateur. Ensuite, il estime l'indice composite en utilisant des pondérations définies attribuées à chaque indicateur et à chaque dimension. Le degré d'indice est en moyenne de 0,57 et 0,46 lorsque le riz et le blé sont considérés comme l'aliment principal, respectivement. La valeur estimée indique que le pays a acquis son indépendance économique de manière modérée. Cependant, la valeur estimée fournit un outil au gouvernement du pays pour déterminer la direction et l'ampleur de l'action requise pour améliorer son niveau d'indépendance économique.

Keywords: Autarky, Economic independence, Bangladesh, Time series data

JEL Classification: A12, C82, F10, H11, O50

1. Introduction

The vision of decolonization contained the desire to gain economic independence. Sometimes, it is hard to achieve economic independence immediately for any decolonized country (Ramose, 2006). Parliaments and Constitutions are symbols of complete power and authority to carry out decisions on the prospect of the state. The execution of the powers of an authority is determined by whether the authority has the resource capacity. Hence, economic independence implies local ownership of resources and the means of production for the utilization of natural wealth like land, mineral, forestry, solar energy etc. Thus, local ownership of resources or wealth is essential to having the common will of the citizens being expressed through a political authority (Namarong, 2012).

Evidence shows that although some countries entered onto the path of political independence, they did not secure their economic independence. Gradually they became weaker as an independent nation. On the verge of independence, these countries assumed that political autonomy and economic independence go hand in hand (Guevara, 1960). However, the economic benefits of independence, like growth in real GDP that boost up per capita income, are not sometimes seen (Rodríguez-Pose, 2014). Conversely, a number of states have managed to change their economic status from underdeveloped to well-developed countries with high-income and a good quality of life (Kowalczyk, 2017). Trade in goods and services comprise a large portion of their GDP (Leogrande & Thomas, 2002). Moreover, they might move to a market economy (Millar, 2019).

There are a large number of evidences in favor of globalization like increased economic integrity, world trade and enormous wealth. Besides, the globalization has a large risk to promote holistic, sustainable and fair development. The effects of this kind of platform are uneven and allow some countries like the rich and strong to benefit greatly at the expense of others countries like poor and weak. Thus, the globalization is seen as a conquest of one nation by another like inequality between countries, environmental, influence of multinational companies, downfall of local production and industries and job insecurity for local people (Jalil, Islam & Islam, 2020). The recent WTO report says that the globalization makes connected countries more vulnerable to short term shock (Garver, 2021).

There are some practical problems connected with national economic independence, like the national production of economic requirements and access to supplies of essential raw materials (McClure, 1927). Such independence may logically be considered for conserving the national well-being and maintaining a steadily rising standard of living for the masses of the people. For this process, the continuing and securing use of the material things are required. If these material goods are imported, their usage is obviously connected with the open channels of international trade and markets for the exports necessary to pay for imported commodities. Thus, the principle of equality of trade is of the highest importance in the consideration of national economic independence.

Few African countries, like Ghana, Kenya, Zaire, and Nigeria, had much effective control of their economies. At the same time, foreign and alien minority interests were dominant (Beveridge, 1974). Indeed, the policies

of the replacement of aliens with locals were seen as a prerequisite to economic independence (Ghai, 1973). Thus, four basic factors were required to be resolved to seek greater economic independence, like inadequate resources to assure basic needs; imposition of economic sanctions; alien rights of a country's useful wealth; and the burden of external debt posing a threat to the country. The more unaffected a state becomes to these weaknesses, the more economically independent it is (Helmy, 2017).

The political independence of developing countries like Bangladesh never assures economic independence or resilience in the face of pressure from stronger political and economic powers. The country achieved political independence about five decades ago. Bangladesh has made significant development supported by sustained economic growth. The GDP per capita was evidenced at $1203.20 in 2018 which is almost double than the previous decade (WB, 2020b). This result indicates the economic benefit of the self-government increases over the years (Rodríguez-Pose, 2014).

Despite being one of the most populous countries in the world, the achievement account of Bangladesh is undeniably notable. The total population was more than 65 million in 1971, with fertility rate 6.9, births per women. In 2020, the total population increased to more than 165 million with the declined fertility rate of 2.0 births per women. This success is even more inspiring given that it was mostly accomplished as the country was in the middle of tackling serious economic and social challenges. With the speed of fertility decline picked up and the increase in GDP per capita, the country reduced the rate of poverty from 44.2 percent to 14.8 percent in 1991 and 2017, respectively (WB, 2020a). The evidence demonstrates that declining fertility rates can develop human capital, diminish the rate of poverty and impel economic augmentation. In the smaller families, parents can endow more resources in health and education of their children. This human capital accumulation can derive economic growth and makes the country wealthier, while combined with policies that create good jobs for large numbers of the working age population (Ashraf & Wilde, 2013). However, the country attained an acceleration of economic growth, agricultural production, the higher rate of import and export growth, stable rise of remittances received, high rate of foreign direct investment and the steady rise of foreign currency reserves, among others, during the past few decades. Besides, the macroeconomic performance was satisfactory, when considered in the

context of market-oriented liberalizing policy reforms (Mahmud, 2010). Furthermore, the life expectancy, literacy rates and per capita food production have increased significantly. Rapid growth enabled the country to achieve the lower middle-income country rank in 2015. In 2018, Bangladesh satisfied all three eligibility criteria for graduation from the UN's LDCs list for the first time and is on track for graduation in 2024 (WB, 2020a). On the other hand, based on the recent trend of its macroeconomic performance, the world famous platforms are forecasting that Bangladesh is one of the 5 fastest rising nations on the earth. The country will be the 28th largest economy of the world by 2030 and 23rd largest economy by 2050 (Abdin, 2020).

However, the martyrs of the country laid their life for achieving the political autonomy as well as economic independence. Now it is established that the country has achieved political independence for about five decades.

The country needs to achieve sustainable and inclusive economic growth to survive in the current worldwide economic recession due to pandemic, trade war or other. An integrated effort is necessary to conserve independence and defensive integrity by protecting national maritime; air spaces, including land from where economy acquires its fuel (Roof, 2020).

Thus, the issue of economic independence is increasingly becoming a main concern for policy makers of the country. It can be raised a question whether the country has achieved its economic independence. The objective of this study is to measure and evaluate the recent degree of economic independence of the country. To quantify the economic independence, this study uses the Economic Independence Index developed by Helmy (2017). From a national economic perspective, Helmy (2017) employed three dimensions of economic independence: one meaning of economic independence containing "self-supporting" would mean having sufficient resources to satisfy some basic needs (Dimension 1); "not contingent or influenced by something" would mean the ability of a country to face or survive economic sanctions (Dimension 2); and "not governed by a foreign power or self-governing" would mean a country's control over its domestic assets (Dimension 3). Hence, these three dimensions of the economic independence index carefully confine the explanation of economic independence. For each dimension, Helmy

(2017) selected various indicators based on the country's coverage, measurability and relevance that could best reflect each specific dimension (like food security and energy and fuel security for dimension one, GDP dependence on domestic expenditure and total reserves in months of imports for dimension two, national ownership of productive resources and having a veto right in the UN Security Council for dimension three), then normalized each indicator by identifying and using its highest and lowest goalposts. Finally, a composite index using definite weights assigned to each dimension is estimated.

Considering the existence of democratic government in the country and availability of data for all indicators, this study employed time series data from 1990 to 2016, about three decades, while Helmy (2017) used a short period covering from 2010 to 2013. This study estimates the index using a double indicator for food security, rice first and then wheat, as the people have both items interchangeably and produce them domestically. The findings of the study provide an essential direction to evaluate the extent of government policy needed for achieving economic independence.

The paper starts with an Introduction containing background information followed by giving an overview of the Bangladesh economy in Section 2. Section 3 presents the review of literature. The methodology used is discussed in Section 4. Section 5 demonstrates the findings of the study and the paper ends with a discussion of the finding and conclusion in Section 6.

2. An Overview of Bangladesh's Economy: Some Selected Indicators

To estimate the economic independence index, Helmy (2017) used some macroeconomic indicators, like having adequate assets to meet essential requirements. A country must become at least food-sufficient, like rice or wheat, and energy sufficient, like oil or gas, because a deficiency of these goods would paralyze the country. Thus, main macroeconomic data used to estimate an indicator or a sub-indicator are presented in Table 1. These data provide a general trend of each indicator over the years, which can help to understand how the country steps forward.

The country has extensively enhanced its crop production and almost achieved food autarky. As the size of the economy is growing, the contribution of the agricultural sector in the percentage of GDP is going down over the years, 51% in 1971 and 13% in 2017. The total production of the sector has been ever-increasing yearly (Abdin, 2020). For example, rice production, the main staple food of the Bangladeshi people, increased to more than double in 2016 compared to 1990. The fluctuation of rice production is also noticed in several years. The country needed to import rice to fill the gap between domestic demand and supply. However, the country was able to export for consecutive three years from 2014 to 2016 for the first time in the history of rice production, though the amount was very low (25, 4, 4 respectively, 1000MT). This trend means that the country attained autarky in rice production. In the case of wheat, the second staple food, an opposite scenario was noticed. The import of wheat was greater than production in 1990 (Import and production 1457 and 1004 [1000MT] respectively). However, production of wheat was larger than import from1992 to 1998. Then, import of wheat was more than the production of wheat in a greater amount. The matter of concern is that imports are increasing at a higher rate, whereas production of wheat is almost in constant position from 2012 to 2016. As a whole, the country is producing about 35 million tons of food grain per year to ensure food security of the citizens. This huge food grain production indicates the country is self sufficient in food grain production (Abdin, 2020).

Continuous economic growth of the country has rapidly increased the demand for energy like gas, petroleum and other fuel. Depletion of gas reserves and the dependence on imports are the main two reasons behind the risk to energy security of the country. Firstly, electricity is considered as the most typical form of energy in the country that depends on gas. Due to limited reserve of gas, the economy largely depends on imported petroleum. Secondly, imported petroleum is now affecting foreign exchange reserves. Energy imports in the percentage of energy used in 1990 were 15.52%. It has remained almost the same (16.68%) in 2016, although there were many fluctuations in the net energy import percentage of energy utilization. The remarkable high value of energy imports was 21.59% in 1998, and the historically low value was 12.35% in 2009.

The country's domestic expenditure is measured by subtracting GDP from the total of exports and imports, which indicates the expenditure made on the territory by its economic agents. Domestic expenditure has

increased from 1990 to 2016, whereas the percentage of contribution to GDP has decreased at that time. The amount of domestic expenditure in 1990 was around 25 billion dollars. In 2016, it stood at 133 billion dollars, which was a historic high value. Thus, the bigger GDP dependence on domestic expenditure indicates a country's ability to survive has enhanced. A country can also survive sanctions on its exports or imports if it has adequate amounts of foreign reserves to cover its imports. Thus, a second important indicator is a country's total reserves in months of imports. A total reserve month of import in Bangladesh in 1990 was around for 2 months. Up to 1994, it was increasing and reached to around 7 months of import. However, for the ten years from 2006 to 2016, there was seen fluctuation in the data. In 2016, total reserve months of import were at the historic value of 7.6 months of import, which indicates that reserves are adequate to maintain more than seven months' expenses of imports.

Table 1: Overview of Bangladesh Economy (Some Selected Indicators)

Year	Total reserve (in months)	Rice Production (1000MT)	Rice import (1000MT)	Wheat Production (1000MT)	Wheat Import (1000MT)	GDP dependence on domestic expenditure ($ billions)	Contribution of domestic expenditure in GDP (%)	Energy import (% of energy use)
1990	1.91	17852	11	1004	1457	25.591	80.98	15.52
1991	3.98	18250	39	1065	1457	24.957	80.61	13.6
1992	5.16	18340	10	1176	1051	24.994	78.82	14.24
1993	6.16	18041	100	1131	1065	25.411	76.61	14.55
1994	6.84	16833	1300	1245	707	25.165	74.52	14.77
1995	3.66	17687	1140	1370	1243	26.028	68.6	19.65
1996	2.93	18882	46	1454	957	34.288	73.83	18.95
1997	2.40	19854	1200	1803	839	35.137	72.83	21.59
1998	2.84	23066	2500	1988	2032	35.949	71.91	21.33
1999	2.13	25086	400	1673	1624	36.051	70.31	18.18
2000	1.81	24310	672	1610	1293	36.764	68.88	17.00
2001	1.56	25187	243	1510	1565	36.746	68.05	18.82
2002	2.18	26152	955	1253	1335	38.491	70.33	18.05
2003	2.75	25600	850	976	1945	41.851	69.56	18.47
2004	2.87	28758	725	820	2058	44.406	68.2	16.02

Year	Total reserve (in months)	Rice Production (1000MT)	Rice import (1000MT)	Wheat Production (1000MT)	Wheat Import (1000MT)	GDP dependence on domestic expenditure ($ billions)	Contribution of domestic expenditure in GDP (%)	Energy import (% of energy use)
2005	2.123	29000	514	740	2034	43.478	62.6	15.04
2006	2.61	28800	769	1200	1731	42.272	58.85	13.72
2007	3.05	31200	2047	849	1500	45.317	56.92	13.63
2008	2.63	31000	732	850	2882	49.071	53.55	12.82
2009	5.06	31700	92	972	3353	60.611	59.14	12.35
2010	4.32	33700	1308	996	3951	65.772	57.05	14.52
2011	2.78	33700	563	996	2039	63.458	49.33	16.53
2012	3.85	33820	35	1260	2725	66.729	50.03	17.79
2013	4.91	34390	780	1280	3354	76.477	50.08	14.97
2014	5.58	34500	1251	1300	3929	92.07	53.25	16.84
2015	6.83	34500	217	1290	4720	112.961	57.9	16.68
2016	7.60	34578	75	1250	5556	133.713	60.39	16.68

Source: Rice productions and imports, wheat productions and imports all are collected from indexmindi (www.indexmundi.com /facts/ bangladesh). GDP dependence on domestic expenditure and total percentage of contribution of domestic expenditure in GDP are calculated by author. Total reserves in the months of imports and energy imports (% of use) data are collected from World Bank data site.

3. Literature review

The independence of a nation expresses as political, economic, cultural and societal independence. Completeness of political independence judges itself in the way that political power is exercised by the citizens of a country. To apply these supremacies, the country must have larger political capital than any other organization, institution or foreign authority. If the citizens of a country have less political capital, the country is not purely a politically independent state. Announcement of liberty and the formation of parliaments are merely symbols of the wish of a state to have complete power and the ability to carry out decisions about the future of their state. Parliaments and Constitutions are symbols of that kind of authority (Namarong, 2012). In addition, the execution of the powers of an authority is determined by whether the authority has the resource capacity. If the authority has its own resources, it exercises its own powers. If the authority controls its own resources and considers its peoples' needs, then it may express the will of the people of its own. However, political power is based upon the ownership of resources. Namarong (2012) argued that economic independence indicates ownership of resources locally and the means of production for the utilization of natural wealth. Thus, local ownership of resources or wealth is essential to having the common will of the citizens being expressed through a political authority. Political independence, however, is founded upon economic independence. Economic independence is a necessary predecessor for the creation of a politically independent nation. A nation for the people and by the people is only possible where the people are in charge of the economy of the nation.

Ramose (2006) argued that the view of the decolonization contained the goal of economic independence. Sometimes, it is hard to achieve economic independence immediately for some decolonized countries. One of the major reasons for the failure to realize the political and moral imperative for economic independence is Nkrumah's thesis that states 'seek the political kingdom first and the rest shall be added unto you'.

McClure (1927) pointed out some of the practical problems thoroughly connected with national economic independence, specifically, national production of economic requirements, and access to supplies of essential raw materials. Such independence can plausibly be considered as based upon the ongoing and securing use of the material things essential for

preserving the national safety and maintaining a steadily growing standard of living for the masses of the people. If these material things are imported, their use is obviously connected with the maintenance of open channels of international trade; and of markets for the exports necessary to pay for imported commodities. Thus, the principle of equality of trade is the highest importance in the consideration of national economic independence.

Beveridge (1974) mentioned that few African countries like Ghana, Kenya, Zaire, Nigeria had much effective control of their economies. At the same time, foreign and alien minority interests were dominant. The policymakers had announced policies aimed at increasing indigenous control of the economy. Such policies and programs were seen as an affirmation of economic independence. In fact, the policies of the replacement of aliens with locals were seen indeed as a prerequisite to economic independence (Ghai, 1973).

Guevara (1960) pointed out that Cuba achieved its political independence first. Subsequently, it started to win economic independence. In the colonial period, Cuba was a model as a monocultural export economy, dependent upon the production of one primary commodity, sugar, for sale to one principal trade partner, the former USSR. After four decades, Leogrande and Thomas (2002) examined Cuba's post-1959 mission of economic independence and reported that the government's initial accomplishment proved untenable in the 1980s as the structural factor led Cuba into dependence on sugar and on one principal trade partner. Subsequently, Cuba attempted to include its economy into the global market in the aftermath of the Cold War by exporting sugar, nickel ore, biotechnology or tourist service. At the beginning of the current century, for the first time in its history, it faced the world market without a benefactor. As a small country, the contribution of trade in goods and services of Cuba comprised a large portion of its GDP. During the turn of the twenty-first century, Cuba has been read as one of the last sites of resistance to neoliberalism and globalized capitalism. Moreover, it has moved to a market economy (Millar, 2019).

Rodriguez-Pose (2014) provided evidence, from the former Yugoslav republics, that the economic benefits of self-government, like growth in real GDP, were nowhere to be seen. On the other hand, a number of the former socialist states in Europe were able to change their economic status

from underdeveloped to well-developed countries with high-income and a good quality of life (Kowalczyk, 2017).

Helmy (2017) identified four crucial issues supporting a state's economic dependence and attempted to search for greater economic independence. They are: inadequate resources to assure essential requirements, imposition of economic sanctions, foreign ownership of a country's productive resources, and the burden of external debt posing a threat to the country. The more unaffected a state becomes to these weaknesses, the more economically independent it is. In addition, Helmy (2017) discussed three different definitions of economic independence: self-supporting, not contingent and self-governing. Three dimensions were set based on these definitions. He argued that these three dimensions of the economic independence index safely capture the interpretations of economic independence. Subsequently, the indicators were selected to quantify best each specific dimension, like food security, energy and fuel security, for having sufficient resources for basic needs. Then each indicator is normalized by using its highest and lowest historic goalposts. Finally, using specific weights assigned first to each indicator and second to each dimension, composite index for economic independence was estimated for 112 countries. In addition, Helmy's (2017) study contributes a test to such countries on where they stand economically with flexibility and how much risk they face if they were to stand unaided economically, or practice policies that are uninvited from the perspective of economically more powerful countries.

4. Data, Variables and Analysis Technique

4.1. Data Source

National ownership of domestic resources is one component of economic independence. It is measured by gross national income (GNP) divided by gross national product (GDP). For other components, total reserve (in month), total rice and wheat production and import and energy import are used to measure economic independence index. Time series data are chosen for this study from 1990 to 2016. Data are taken from World Bank (WB) website and indexmundi website.

4.2. Economic Independence Index

Six indicators for three dimensions are used to measure economic independence index. Three dimensions are: 1) Aggregate self- sufficiency indicator (ASSS), 2) Economic sanctions resilience sub-indicator (ESRS), 3) Self-governance sub-indicator (SGS) or National control sub-indicator (NCS). Each dimension has two categories. Firstly, Aggregate self - sufficiency indicator (ASSS) is classified into adapted cereal import dependency ratio (ACIDR) and adapted energy import dependency ratio (AEIDR). Secondly, economic sanctions resilience sub-indicator (ESRS) is categorized into GDP dependence on domestic expenditure and total reserves in months of imports. Thirdly, self-governance dimension, denoted by national control sub-indicator (NCS) is broken down into national ownership of productive resources and having veto rights in the UN Security Council. For normalization of the indicators, historic maximum and minimum value are chosen as goalposts (Commission, 2008; Helmy, 2017).

According to Helmy (2017), Y(c) is the composite index for the country (c), I (q , c) is the normalized sub indicator (q) for country c, W(q) is the weight assigned to each sub indicator and x(q, c) is the actual value of the indicator (q) for country c. The combined index is written as follows:

$$Y_C = \sum_{q=1}^{Q} I_{q,c} W_c \quad Where, I_{q,c} = \frac{x_{q,c} - minimum(x_q)}{Maximum(x_q) - minimum(x_q)} \qquad (1)$$

Higher value represents a better degree of independence. The indicator for where higher value implies lower levels, the calculated value is deducted from one since subtracting the result from 1 produces the same result which uses the inverse of the equation 1 (Helmy, 2017).

Helmy (2017) measured self-sufficiency by creating aggregate self-sufficiency sub indicator (ASSS). The ASSS is created by assigning 50 percent weight to each indicator; adapted cereal import dependency ratio (ACIDR) and adapted energy import dependency indicator (AEIDR). Adapted cereal import dependency ratio shows the food security of a country. Here we take rice or wheat instead of cereal. So it becomes adapted rice import dependency ratio (ARIDR) and adapted wheat import dependency ratio (AWIDR). It is computed by the ratio of net rice(or

wheat) import and total rice (or wheat) demand, i.e. (rice or wheat production + rice or wheat imports). Zero for all negative values, as exporters do not face any threat. To do normalization procedures, we go through the following formula:

$$Normalization\ of\ adapted\ cereal\ import\ ratio = \frac{(maximum - x)}{Maximum - minimum)} \quad (2)$$

Maximum value is 1 and the minimum value is 0. Index ranges between zero and one. A higher value indicates that countries are more economically independent.

Adapted energy import dependency ratio (AEIDR) shows energy and fuel security. Net energy imports (% of energy use) are used as representation of adapting energy import dependency ratio. Net energy import (% of energy use) is defined as energy use less production. All negative values will be considered as zero value; as such, exporters do not face any threat. Normalization procedure is same as mentioned earlier. Index value will be found between 0 and 1. The higher value is a sign of higher economic independence.

Helmy (2017) suggested that economic sanctions resilience sub-indicator (ESRS) represents "non-contingency" - ability to survive economic sanctions. A country's ability to survive economic sanction depends on 'GDP dependence on domestic expenditure' and 'Total reserves in months of imports'. Two indices are assigned with 50-percent weight to create economic sanctions resilience sub-indicator (ESRS).

GDP dependence on Domestic Expenditure measures the degree of openness in the economy. It is measured by the following formula

$$\text{GDP dependence on Domestic Expenditure} = \frac{(Export, X + Import, M)}{GDP} \quad (3)$$

Maximum value is seen as 458.33% in Hong Kong, whereas minimum value is found as 1.86 % in Somalia. To measure the level of closeness rather than openness and to make a higher value better, normalization measure is used as follows:

$$Level\ of\ closeness = \frac{(Maximum\ value - X)}{Maximum\ value - minimum\ value} \quad (4)$$

Total Reserves in Months of Imports are used as an indicator of survival sanction. Helmy (2017) argued that if there are enough amounts of foreign reserves to cover its imports, then a country will survive sanction on its imports and exports. Normalization is done by using the following formula:

$$Survival\ sanction = \frac{(x - minimum\ value)}{(Maximum\ value - minimum\ value)} \quad (5)$$

Maximum value is 79.237 found for Libya, 79 months of imports, and minimum value is 0.016 for Luxembourg. However, two indicators of national control sub-indicator (NCS) are used to represent self-governance of a country's economy. One is national ownership of productive resources. Another is having the veto right in the UN Security Council. First is assigned with 80% weight, and second one is assigned with 20% weight.

National Ownership of Productive Resources indicator is equal to GNP/GDP. Maximum value is 4.94 for Timor-Leste, minimum value is 0.441 for Equatorial Guinea. Normalization is done by using the following formula:

$$Ntional\ Ownership\ of\ Productive\ Resources = \frac{(x - minimum\ value)}{(Maximum\ value - minimum\ value)} \quad (6)$$

Having Veto Right in the UN Security Council is not required in this study, as Bangladesh has no veto right in the UN Security Council. Thus, the final indicator for economic independence is measured by the following as used by Helmy (2017):

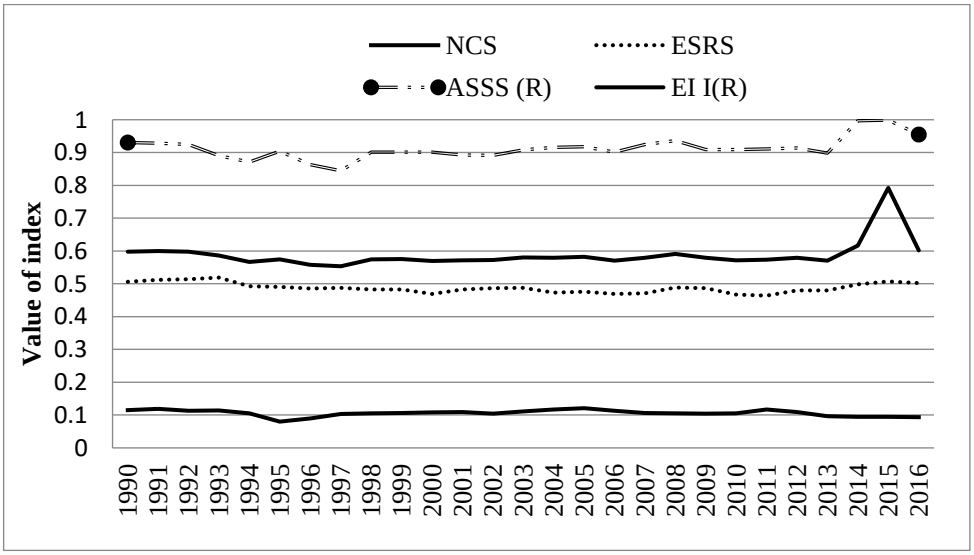
$$\begin{aligned}&\textit{Economic Independence Index}\\&= 0.4[\text{adapted self sufficiency sub} - \text{indicator (ASSS)}]\\&+ 0.4[\text{Economic sanctions resilience sub} - \text{indicator (ESRS)}]\\&+ 0.2[\text{national control sub}\\&- \text{indicator (NCS)}]\end{aligned} \quad (7)$$

5. Findings of the study

5.1. Economic Independence Index for Bangladesh

Economic Independence Index (EII) of Bangladesh from 1990 to 2016 is on an average 0.57 when rice is taken as main food criteria portrayed in Figure 1 [Detail Economic Independence Index of Bangladesh by year is given in Appendix A]. Adapted self sufficiency composed of adapted rice import dependency ratio and adapted energy import dependency ratio is on average 0.90. Economic resilience sanction sub-indicator which is composed of GDP dependence on domestic expenditure and total reserves in months of import is on average 0.48. Self-governance sub-indicator, composed of national ownership of productive resources and having veto rights in the UN Security Council, is on average 0.10.

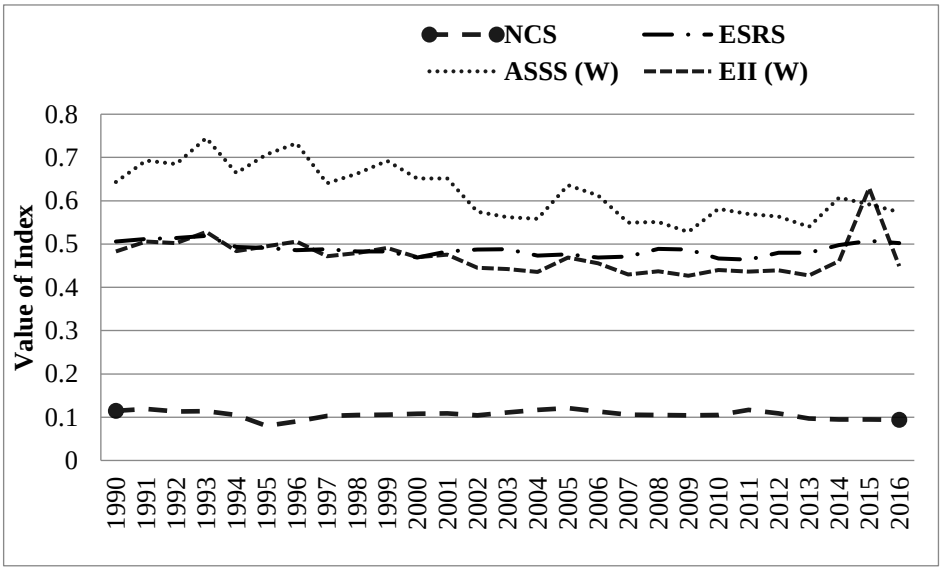
Figure 1: Economic Independence Index (Rice as Main Staple Food)



Source: Authors' calculation

From 1990 to 2016, the economic independence of Bangladesh is on average 0.46 when wheat is considered as main food criteria shown in Figure 2. Adapted Self-Sufficiency Sub-Indicator is on average 0.61 which is measured from adapted wheat sufficiency indicated and adapted energy import dependency ratio. The rest of the two sub-indicators (economic resilience sub-indicator and self-governance sub-indicator) are of the same value as mentioned above.

Figure 2: Economic Independence Index (Wheat as Main Staple Food)



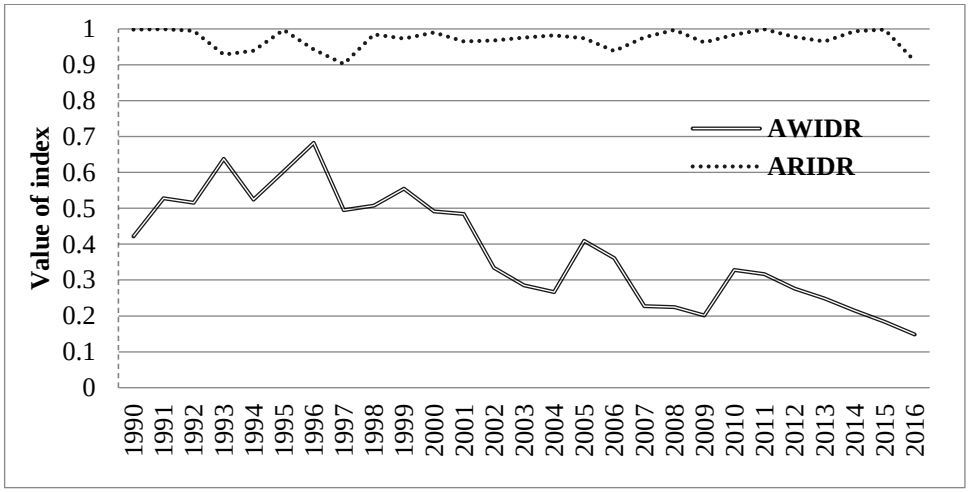
Source: Authors' calculation

5.2. Adapted Self-Sufficiency Sub Indicator (ASSS)

5.2.1. Adapted Food Import Dependency Ratio (ARIDR and AWIDR)

From 1990 to 2016, the value of ARIDR was 0.97 on an average shown in Figure 3, which indicates production was always in the self-sufficient level and import was decreasing over the years. There is some fluctuation but they were never lower than 0.9. Considering AWIDR, the calculated value was on average 0.39. Lower value indicates that dependency on wheat import was remaining and increasing.

Figure 3: Adapted Food Import Dependency Ratio for Bangladesh

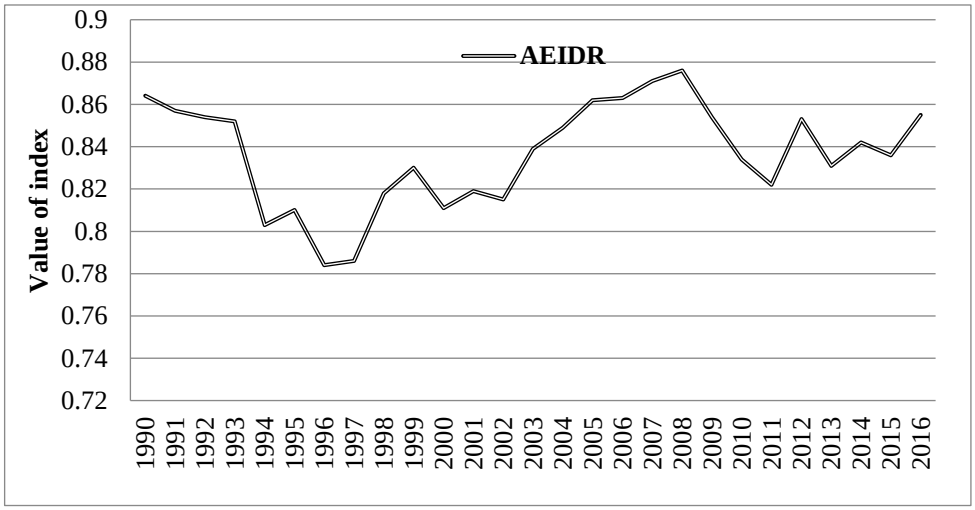


Source: Authors' calculation

5.2.2. Adapted Energy Import Dependency Ratio (AEIDR)

The calculated value of AEIDR was 0.83 on average during the sample period. The natural gas reserve was supporting its energy security, but the result shown in Figure 4 portrayed a lot of fluctuation. However, the energy security never went down below 0.75.

Figure 4: Adapted Energy Import Dependency Ratio (AEIDR)



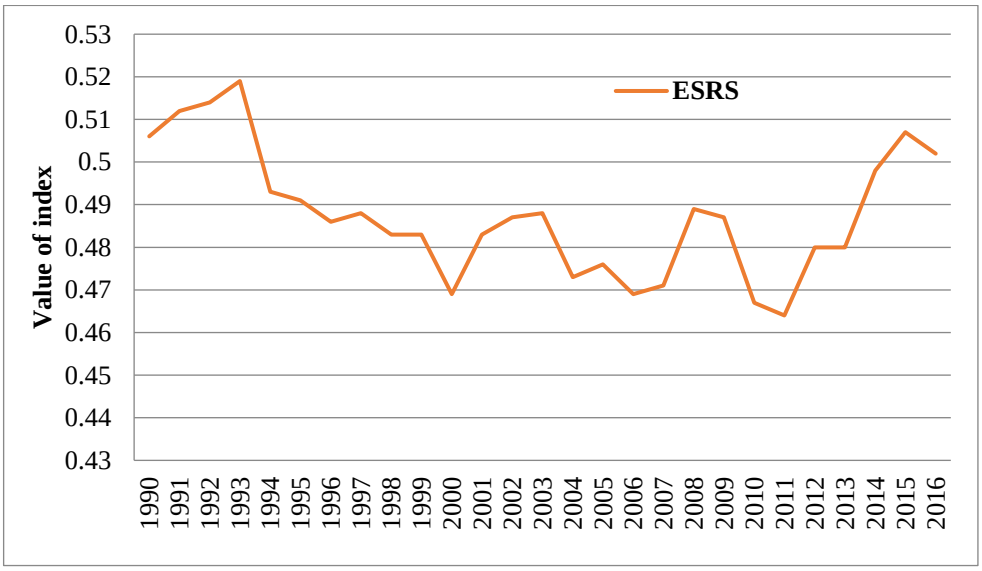
Source: Authors' calculation

5.3. Economic Sanctions Resilience Sub-Indicator (ESRS)

5.3.1. GDP Dependence on Domestic Expenditure

GDP dependence on domestic expenditure indicates average closeness for Bangladesh. The estimated value is 0.92, which means the country is in good position. The estimated value started from 0.96 (1990), and it reached to 0.90 in 2016, as shown in Figure 5. The values indicate that Bangladesh economy is integrating with world economy slowly. Compare to Hong Kong's openness degree (458% of GDP), Bangladesh's vulnerability risk is low (34% of GDP on an average).

Figure 5: Level of closeness for Bangladesh

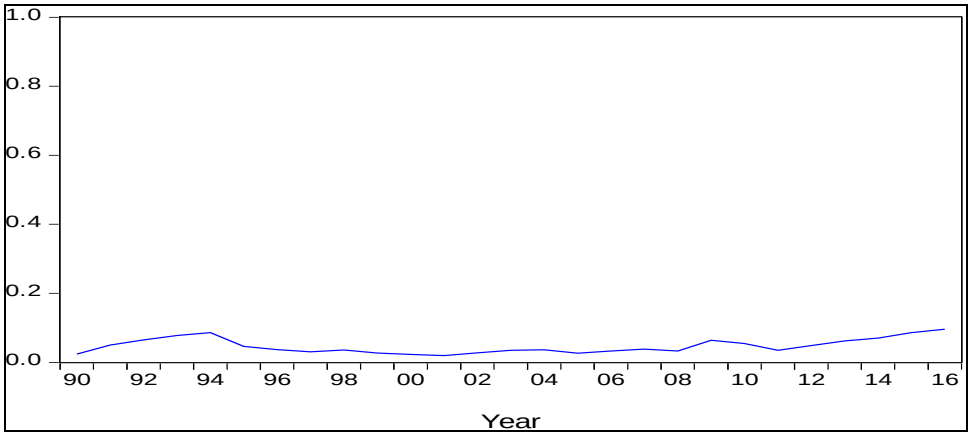


Source: Authors' calculation

5.3.2 Total Reserves in Months of Import

The estimated result shown in Figure 6 lies between 0.02 (1990) to 0.09 (2016). The result indicates that the country usually has reserves for 2-9 months. The country is in poor position comparing similar countries like Libya, which has seventy nine (79) months of reserve.

Figure 6: Normalization of Total Reserve in the Months of Import



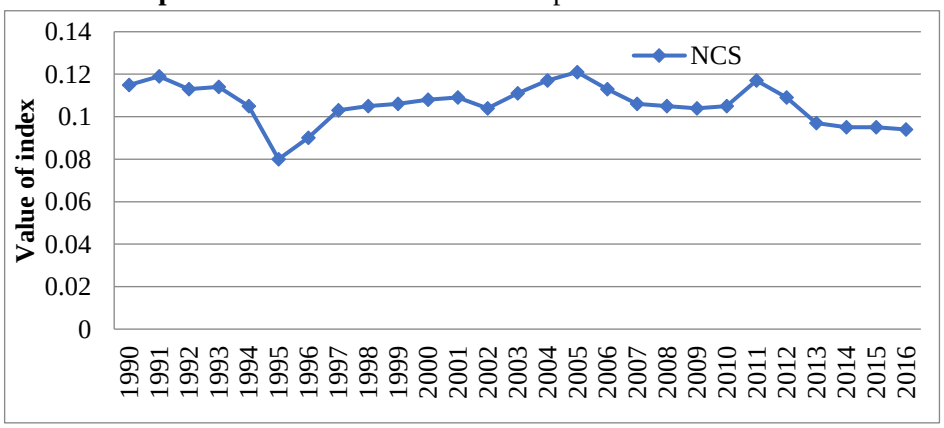
Source: Authors' calculation

5.4. Self-Governance Sub-Indicator or National Control Sub-indicator (NCS)

5.4.1. National Ownership of Productive Resources

The estimated value for national ownership of productive resources which is denoted by National Control Sub-Indicator (NCS) is 0.133 for the time period from 1990 to 2016 as shown in Figure 7. The estimated value of this sub-indicator has gone through a lot of fluctuation starting from 0.13 (1990) to reach at 0.11(2016). The maximum value in the world is found in Timor-Leste, which is 4.94.

Graph 7: Normalization of Ownership of National Resources



Source: Authors' calculation

6. Discussion and Conclusion

The estimated results of the economic independence index reveal the degree of economic independence. By breaking the index down to its components, these can be used to identify weaknesses of a country's economic independence, self-sufficiency, non-contingency and self-governance. A country which scores low on the index can be treated as economically vulnerable because it is energy-dependent, has low levels of foreign reserves, and broadly relies on trade related to other sectors of its economy (Helmy, 2017). The estimated value of adapted self - sufficiency sub-indicator (ASSS) for Bangladesh is 0.97 while rice is considered as a staple food and 0.39 if wheat is treated as chief food. This value of ASSS is higher than Helmy's estimation (2017) because the sample period of this study was larger. The estimated value of Economic Sanctions Resilience Sub-Indicator (ESRS) and National Control Sub-Indicator (NCS) is similar as Helmy (2017) found. However, in the case of wheat production, the country is largely dependent on imports. Energy import remains constant around 15%. The GDP dependence on domestic expenditure has decreased from 1990. Total foreign reserves increased, but a lot of fluctuation is being observed. National ownership of domestic resources was more volatile over the years, and more recently, it tends to fall. The degree of economic independence index on an average is 0.57 when rice is taken as the main food. The estimated value indicates that the country has acquired economic independence moderately. This value is very close to Helmy's (2017) finding (0.56). In addition, the country's economic independence is similar to Nepal (0.573), India (0.559) and Pakistan (0.566).

After achieving political independence in 1971, Bangladesh is self-independent in food production now. Energy security may be fallen in question in the near future. GDP dependence on domestic expenditure has decreased during the sample periods. Total reserves in months of import and national ownership of domestic expenditure have gone through fluctuations that would be alarming in the case of economic sanctions and desire to self-govern situations. Therefore, the relative roles of market and government are important. The classical approach in economics argues for market economy that achieves an optimal allocation of productive resources under certain conditions about market structure and information. Thus we require to open the country's economic gates to manage and influence own advantages of all productive resources.

Dependence largely on trade may cause an economic risk for the country if the country's bargaining power is weak or the country is unable to gain comparative advantages. Sometimes trading partners may decide to punish the country for several superficial offenses by totally or partly impeding to trade with it. This kind of economic risk is required to evaluate frequently so that the country could change its policies as the country is not independent to meet its essential requirements for all kinds of foodstuff and energy.

The government intervention might necessitate allocating productive resources efficiently as some misallocations generate from inefficiencies, externalities and market failures. Subsidizing agriculture production towards food security, increasing remittances earning from exporting human capital to invest and increase national wealth and mitigate financial shocks, pursuing multinational corporations (MNCs) to ensure maximum gain and increasing ownership in sea resources might be a priority for the country toward economic independence.

Acknowledgements

Authors are grateful to anonymous reviewers for their helpful comments and suggestions.

References

Abdin, M. J. (2020), "Evolution of Bangladesh economy, The Independent," Available from http://m.theindependentbd.com/home /printnews/240426.

Ashraf, Q. H., Weil, D. N., and Wilde, J. (2013), "The effect of fertility reduction on economic growth," *Population and development review*, 39(1), 97-130. Available at https://doi.org/10.1111/j.1728-4457.2013.00575.x.

Beveridge, A. A. (1974), "Economic independence, indigenization, and the African businessman: Some effects of Zambia's economic reforms," *African Studies Review*, 17(3), 477- 490.

Garver, R. (2021), "A More Connected Global Economy Is a Double-Edged Sword," *The Economy*, VOA. Retrieved from https:// www.voanews.com/a/a-more-connected-global-economy-is-a- double-edged-sword-says-wto-/6317876.html.

Ghai, D. P. (1973), "Concepts and strategies of economic independence," *The Journal of Modern African Studies,* 11(1), 21-42.

Guevara, E. (1960), "Political Sovereignty and Economic Independence," *Che: Selected Works of Ernesto Guevara*, 214-229.

Helmy, H. E. (2017), "The Index of "Economic Independence": A new measure of an economy's ability to survive unilaterally," *Journal of Economic Issues*, 51(3), 782-812.

Islam, M. K., Rahaman, M., and Ahmed, Z. (2018), "Blue economy of Bangladesh: Opportunities and challenges for sustainable development," *Advances in Social Sciences Research Journal*, 5(8), 168-178.

Jalil, M. A., Islam, M. Z., and Islam, M. A. (2020), "Risks and opportunities of globalization: Bangladesh perspective," *Journal of Asian and African Social Science and Humanities*, 6(4), 13–22. Retrieved from https://aarcentre.com/ojs3/index.php/jaash/article/ view/216.

JRCEC. (2008), [Joint Research Centre-European Commission], "Handbook on constructing composite indicators: methodology and user guide," OECD publishing.

Kowalczyk, M. (2017), "Between wealth and poverty: Former Yugoslavia 25 years after the breakup," Available at https://www.obserwatorfinansowy.pl/in-english/ macroeconomics/ between-wealth-and-poverty-former-yugoslavia-25-years-after-the-breakup/.

Leogrande, W. M., and Thomas, J. M. (2002), "Cuba's quest for economic independence," *Journal of Latin American Studies*, 34(2), 325-363.

Mahmud, W. (2010), "Country strategy note: IGC-Bangladesh growth research programme," International Growth Centre, London School of Economics, London.

McClure, W. (1927), "National economic independence in the light of the international economic conference," *The American Journal of International Law*, 21(4), 668-684.

Millar, L. (2019), "Introduction: Cuba and the Global South," *The Global South*, 13(1), 1-11.

Namarong, M. (2012, 12 July), "The Story of independence – Economic and political independence," Retrieved from https:// ourpacificways. wordpress.com/2012/07/19/the-story-of-independence-economic-and-political-independence-pt-1/#:~:text=Economic%20indepen dence%20is%20the%20control,(aka%20our%20natural%20resources)%E2%80%9D.

Ramose, M. (2006), "Philosophy and Africa's struggle for economic independence," *Politeia*, 25(1), 3-17.

Rodríguez-Pose, A. (2014), "Does independence make countries wealthier?" Available at https://www.weforum.org/ agenda/2014/11/does-independence-make-countries-wealthier/.

Rouf, M. A. (2020), "Bangladesh National Security Outlook in the 21st Century," *NDC E-Journal*, 1(1), 17-30. Retrieved from https://ndcjournal. ndc.gov.bd /ndcj/index.php/ndcj/ article/ view/297.

World Bank. (2020a), "Bangladesh: Overview," Retrieve from https:// www.worldbank.org/en/country/ bangladesh/ overview#1.

World Bank. (2020b), "Trading Economics," Available from https://tradingeconomics.com/bangladesh/gdp-per-capita.

Appendix A: Economic Independence Index of Bangladesh

Year	NCS	ESRS	ASSS (W)	ASSS (R)	EI (W)	EI (R)	AWIDR (W)	ARIDR	AEIDR
1990	0.115	0.506	0.6431	0.9309	0.4826	0.5977	0.4222	0.9978	0.864
1991	0.119	0.512	0.6928	0.9285	0.5057	0.6000	0.5280	0.9994	0.857
1992	0.113	0.514	0.6847	0.9244	0.5020	0.5979	0.5150	0.9944	0.854
1993	0.114	0.519	0.7450	0.8903	0.5284	0.5865	0.6378	0.9283	0.852
1994	0.105	0.493	0.6639	0.8714	0.4837	0.5667	0.5243	0.9394	0.803
1995	0.08	0.491	0.7067	0.9040	0.4951	0.5740	0.6030	0.9975	0.810
1996	0.09	0.486	0.7332	0.8635	0.5057	0.5578	0.6824	0.9430	0.784
1997	0.103	0.488	0.6406	0.8444	0.4720	0.5535	0.4945	0.9022	0.786
1998	0.105	0.483	0.6628	0.9012	0.4793	0.5747	0.5074	0.9843	0.818
1999	0.106	0.483	0.6922	0.9015	0.4913	0.5750	0.5545	0.9731	0.830
2000	0.108	0.469	0.6514	0.9011	0.4697	0.5699	0.4910	0.9904	0.811
2001	0.109	0.483	0.6518	0.8921	0.4757	0.5718	0.4841	0.9647	0.819
2002	0.104	0.487	0.5747	0.8915	0.4454	0.5722	0.3341	0.9678	0.815
2003	0.111	0.488	0.5623	0.9076	0.4423	0.5804	0.2849	0.9754	0.839
2004	0.117	0.473	0.5581	0.9160	0.4358	0.5790	0.2667	0.9825	0.849
2005	0.121	0.476	0.6361	0.9183	0.4690	0.5819	0.4094	0.9739	0.862
2006	0.113	0.469	0.6125	0.9010	0.4552	0.5706	0.3614	0.9384	0.863
2007	0.106	0.471	0.5497	0.9243	0.4295	0.5793	0.2277	0.9769	0.871
2008	0.105	0.489	0.5506	0.9368	0.4368	0.5913	0.2247	0.9971	0.876
2009	0.104	0.487	0.5280	0.9087	0.4268	0.5790	0.2013	0.9626	0.854
2010	0.105	0.467	0.5814	0.9091	0.4403	0.5714	0.3281	0.9835	0.834
2011	0.117	0.464	0.5691	0.9105	0.4366	0.5732	0.3161	0.9989	0.822
2012	0.109	0.48	0.5632	0.9140	0.4391	0.5794	0.2762	0.9778	0.853
2013	0.097	0.48	0.5401	0.8983	0.4274	0.5707	0.2486	0.9650	0.831
2014	0.095	0.498	0.6073	0.9968	0.4611	0.6169	0.2146	0.9937	0.842
2015	0.095	0.507	0.5918	0.9989	0.6295	0.7923	0.1836	0.9978	0.836
2016	0.094	0.502	0.5741	0.9553	0.4492	0.6017	0.1483	0.9107	0.855

Note: NCS= National Control Sub -indicator, ESRS=Economic Sanctions Resilience Sub-indicator, ASSS(W)=Adapted Self-Sufficiency Sub-Indicator (wheat), ASSS(R)=Adapted Self-Sufficiency Sub Indicator (rice), EI(W) =Economic Independence (Wheat), EIR=Economic Independence (Rice) AWIDR= Adapted Wheat Dependency Ratio, ARIDR= Adapted Rice Import Dependency Ratio, AEIDR=Adapted Energy Import Dependency Ratio.