



## **UNDERSTANDING CHARITY: THE MARKET MODEL - EVIDENCE FROM MALAYSIA**

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### **ABSTRACT**

This study theorizes a charity market model. Using the model, measure of necessities (*daruriyyat*) and charity equilibrium have been identified. The developed model offers a practical tool for policymakers to formulate policies regarding poverty eradication, minimum wage, and welfare programs. The proposed model is novel since it incorporates the third-sector economy, where charity (*zakāt* and voluntary charity) is instrumental in empowering society to meet its needs. This study constructs and estimates a theoretical demand and supply model of cash charity, examining determinants such as income, age, education, gender, marital status, household size, location, and job types. The estimations identify the market clearing level of charity, offering a practical approach to determine the threshold level of income for basic needs fulfilment.

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### **1. INTRODUCTION**

Rising economic disparities and the expanding role of the third sector in addressing societal needs require systematic analysis of charitable activities in contemporary economies (Arshad, 2022). The development of robust theoretical frameworks becomes essential to evaluate the socio-economic impact of third-sector interventions. Research on charitable giving within capitalist economies presents

distinct philosophical and analytical challenges (Tridico and Walter, 2018) since charitable behavior is counter-intuitive to conventional self-interested actors (Saccardo et al., 2021).

To address the analytical challenges, this study develops a market-based model to analyze charitable behavior and measure basic needs (*daruriyyat*) from an *Islāmic* economic perspective. The study pursues three primary objectives: (i) constructing a theoretical framework that captures the supply of, and demand for charity; (ii) estimating the equilibrium level of charity that indicates the threshold for basic needs fulfilment, and (iii) providing empirical evidence using Malaysian household dataset to support the developed theory and to demonstrate the policy implications. These objectives offer a systematic approach to understanding charity and providing practical insights for welfare policy consideration.

*Daruriyyat* encompasses the essential elements required to fulfil Shariah objectives, comprising preservation of religion, protection of life, safeguarding of intellect, continuation of progeny, and security of wealth. These components form the *Maqāṣid* of *Sharī'ah* framework, encompassing multi-dimensional *Islāmic* perspectives on development and well-being (Ibrahim and Ismail, 2015). While Yusof et al. (2019) constructed an index to measure individual holistic development using this framework, the charity market approach proposed by this study offers a practical alternative for quantifying *daruriyyat* through observable charitable behaviors. This study provides a more direct, monetary valuation-based measure of *daruriyyat* compared to the Yusof et al. approach. Although the *maqāṣid*-index offers an assessment for each *maqāṣid* element, the proxies used, particularly for measuring faith-related components, face methodological criticisms. The index approach requires extensive resources for survey implementation, data collection, and analysis, making it costly and time-consuming to develop.

The study by Aziz et al. (2015) provided a critical analysis of development indices through an exhaustive literature review, revealing fundamental limitations that justify the need for alternative measurement approaches. The authors identified several critical challenges, namely, data constraints, improper indicator selection, narrow dimensional focus, exclusion of non-material aspects, weighting and aggregation issues, lack of well-defined frameworks, and limited practical applicability. These limitations particularly affect the practical use of the *Islāmic* development indices, where measuring abstract concepts such as faith and values presents further complexities. While Aziz et al. (2015) advocated for more integrated,

holistic indices with well-articulated frameworks and suitable indicators, this study takes a different approach by utilizing market behavior as an observable proxy for *daruriyyat* measurement. The market-based approach addresses several limitations identified by Aziz et al. (2015) through its use of readily available economic data, a clear measurement framework, and practical applicability across different contexts.

This study advances *Islāmic* economic theory by developing a market-based model of charitable giving. The model aligns with fundamental *Islāmic* principles of wealth circulation and poverty alleviation through its treatment of charity as an economic mechanism. The incorporation of *zakāt* into disposable income calculations integrates a key *Islāmic* distributive scheme into mainstream economic analysis. The model's identification of equilibrium income levels provides quantifiable measures for basic needs (*daruriyyat*) fulfillment, supporting *maqāṣid of shari'ah* objectives of protecting essential human welfare. Building on Arshad and Haneef's (2016) framework, the analysis demonstrates how third-sector activities complement market forces in wealth redistribution and poverty reduction. The empirical findings offer practical policy applications that advance *Islāmic* economic objectives of social justice and equitable distribution.

This study is organized as follows. Section 2 reviews theoretical and empirical literature on market-based charity. Section 3 develops the theoretical framework for charity demand, supply, and equilibrium concepts. Section 4 presents the methodology for estimating charity equilibrium. Section 5 discusses empirical results and their implications. The final section concludes with key insights and future research directions.

## 2. LITERATURE REVIEW: THE ECONOMICS OF CHARITY

Over the past decades, the economics of charity has gained significant traction as a research topic, hailed as an essential aspect for understanding societal welfare (Salamon, 2010). Charity extends beyond monetary donations (Einolf and Chambre, 2011). It involves three main components, namely, monetary donations, in-kind donations, and volunteer time. These various forms of charity weave the social fabric by enhancing societal well-being and cohesion (Putnam, 2000). The international landscape has witnessed an upsurge in charitable contributions (Wit and Bekkers, 2017). The surge,

however, is not consistent globally; the degree of growth differs significantly across countries given the interplay of varied factors such as economic conditions, cultural attitudes, and the level of institutional backing.

Charity possesses distinct economic characteristics setting it apart from conventional goods and services. As a moral good, charity operates under unique market principles. Andreoni (1990) conceptualizes charity as an economic good with distinctive attributes that align with public goods theory. This classification stems from key characteristics identified by Cornes and Sandler (1994). The non-excludability of charity means social benefits generated by charitable acts extend beyond direct donors and recipients, creating positive externalities for the broader community. The non-rivalry aspect, on the other hand, implies that benefits derived from charitable actions do not diminish as more people benefit from them, unlike traditional private goods. These characteristics create a unique economic framework where standard market mechanisms of supply and demand operate differently. The public good nature of charity influences both giving behavior and social welfare outcomes in ways that traditional economic models struggle to capture.

Rubin (1987) argues that a comprehensive examination of charity requires careful investigations into both the economic and ethical dimensions, because of the intertwining of moral, social, psychological, religious, legal, and aesthetic elements within the realm of giving, and receiving. He suggests that a comprehensive understanding of charitable behavior can only result from an investigation of both its economic and non-economic components.

For that, the conventional tools of economic analysis can be limited to unfold the complexities of charitable giving. List (2011) discovered a pattern in religious giving that was resistant to economic fluctuations. The correlations between variations in religious donations and changes in the S&P 500 were weak, suggesting that religious giving may be insulated from broader economic trends. In contrast, contributions to other major sectors, such as education, were more closely aligned with S&P 500 fluctuations. These findings prompted List (2011) to theorize that the motivations guiding religious donations may differ from those governing other charitable contributions, because of the consideration of social insurance and belief in the afterlife.

Based on past trends in charitable giving, there exists a notable correlation between economic prosperity and the scale of charitable contributions, as observed in Wiepking and Handy (2015). Their

findings suggest that giving tends to increase with the rise in disposable income. This notion is further supported by the data provided by Giving USA (2021), which highlights the relationship between socioeconomic conditions and philanthropy. Specifically, during periods of economic downturn, there is often a decrease in charitable donations following a reduction in disposable income. Conversely, periods of economic growth stimulate philanthropic activities. At the same time, empirical evidence suggests that in times of societal disruptions such as natural disasters or pandemics, there is a significant surge in giving as an immediate response to these crises, displaying the inherently compassionate nature of the act.

The phenomenon of demographic transitions also leads to significant changes in the pattern of charitable donations. Wiepking (2010) demonstrates how shifts in societal makeup, including the rise of digital natives and an aging population, give rise to unique trends in charitable behavior. For instance, the millennial generation exhibits a strong inclination toward supporting specific causes and utilizing digital platforms for making donations. This has resulted in a notable departure from traditional practices of charitable giving.

The analysis of charitable organizations through demand and supply theory reveals distinct market characteristics. Bekkers and Wiepking (2011) demonstrate that this theoretical framework, while primarily used for traditional goods markets, offers valuable insights into the charitable sector. This approach enables a framework for a systematic analysis of factors influencing charitable market operations (Einolf and Chambre, 2011). The charity market exhibits unique properties that differentiate it from conventional goods markets. These distinctions stem from the altruistic nature of giving and the public good characteristics of charitable services. The interrelationships between donors, beneficiaries, and charitable organizations create specific market conditions. Ackerman (1996) notes that charitable organizations face competitive pressures: attracting donations and delivering effective services to beneficiaries. Therefore, understanding the economics of charity requires recognizing these distinctive market features and operational mechanisms.

## 2.2 DEMAND FOR CHARITY

The demand for charity, as discussed in this paper, pertains to welfare needs. In general, charity demand may arise from two main sources: non-government organizations and households requiring assistance. The literature presents two distinct streams of research on charity

demand. The first stream systematically investigates charity demand by non-government organizations that offer welfare assistance. The second stream examines household-level charity demand, focusing on how poverty compels households to seek charitable support. The proposed model in this study aligns with the second stream, analyzing charity demand at the household level.

Research on charitable giving has identified multiple determinants that influence the demand for charity. Brehm and Saving (1964), and Sandoval, Rank, and Hirschl (2009) highlighted that income is the primary determinant of charity demand. Income insecurity, a situation where individuals or households face potential substantial losses in income (Cummins, 2000), has a direct effect on charity demand. This relationship explains the reality that financial precariousness often leads individuals and households to seek support from charitable entities. Hence, the relationship between poverty and the need for charitable support is positive (Taylor-Gooby, Gumy, and Otto, 2015). Poverty, characterized by an inability to fulfill essential human needs, invariably increases the demand for charitable aid. This heightened need for assistance is further compounded by the ongoing cycle of poverty (McLaughlin and Rank 2018), which leads to a recurring reliance on charity. Therefore, interventions aimed at alleviating poverty play a vital role in reducing the demand for charity.

Brehm and Saving (1964) established a fundamental theory showing a negative relationship between income and charity demand through a downward sloping demand curve. Charette and Meng (1994) expanded this framework by examining welfare participation among female-headed households in Canada. Their analysis of 1986 Census data identified several key determinants: expected wages, welfare benefit levels, implicit tax rates, age, education, and number of dependents. The findings demonstrated that welfare participation decisions reflect complex socioeconomic factors, suggesting effective programs must balance support with incentives for self-sufficiency. This theoretical insight continues to guide modern analysis of charity demand.

### 2.3 SUPPLY OF CHARITY

The supply of charity is a function of various factors that motivate people toward charitable giving. Andreoni's seminal work in 1990 proposed fundamental motivations for charitable giving based on impure altruism, as opposed to the argument of pure altruism. Pure altruism refers to the complete selflessness in wanting to help others,

whereas impure altruism connects the desire to help others to one's personal satisfaction, derived from the positive feeling of giving known as the warm-glow effect. Based on Andreoni's findings, donors are more inclined to contribute to charity if they can donate directly rather than indirectly through taxes given the warm-glow effect. Tax deductions for charitable donations, for example, can effectively enhance the level of charitable giving. These policies make it financially feasible for donors to contribute to public welfare, while simultaneously intensifying the emotional satisfaction derived from giving.

In conceptualizing charitable giving, Yen (2002) approached donations as an element within consumer goods, where altruistically driven households determine the extent of their donations in conjunction with other expenses, thereby aiming at optimizing utility given the constraint of a budget. Yen's study found a positive relationship between income and charitable giving, demonstrating that, for the United States, an incremental one percent surge in income propels the probability of donating by 0.39 percent. Besides income, age, education, religious affiliation (Bekkers and Schuyt, 2008), and number of children are significant variables in affecting donor giving.

List (2011) echoed this positive relationship between income levels and propensity to donate, revealing that when household earnings exceed \$130,000, over 90 percent of households engage in giving, a stark contrast to the less than 40 percent of households that donate when earning \$20,000 or less. This positive income-donation correlation has been substantiated by many studies including those by Hargaden and Duquette (2024), Arshad (2016), Hall (2001), Jones and Posnett (1991), Kitchen (1992), Lankford and Wycko (1991), and Reece (1979), thereby affirming the positive influence of income on charitable donations.

Andreoni and Payne (2013) expand understanding of charity supply by examining how tax policies and socioeconomic conditions affect giving patterns. Their analysis reveals that charitable behavior responds to multiple influences. Tax incentives shape donor decisions through direct financial effects. Social norms and cultural values create giving expectations within communities. Psychological factors, such as altruism and warm-glow effects, motivate individual donations. This complex donor behavior requires further understanding to formulate effective giving and altruistic behaviors.

### 2.3 CONCEPT OF EQUILIBRIUM IN THE MARKET FOR CHARITY

The concept of equilibrium, a basic principle of economic theory, has distinct implications in the context of charity markets (Biederman, 2013; Roberts, 1984; Ruffin and Leigh, 1973). This equilibrium arises when the supply of charitable donations effectively meets the demand for them. The market forces naturally work toward this state of balance, and deviations from it can stimulate adjustments in both the behavior of donors (supply-side) and recipients (demand-side).

Despite existing literature having extensively explored charitable giving determinants and market characteristics, there remains a significant gap in understanding charity through an integrated market equilibrium framework, particularly from an *Islāmic* economic perspective. Previous studies have largely focused on either supply-side or demand-side analyses in isolation, without examining their simultaneous interaction in determining market-clearing levels. Additionally, while research has explored various measures of basic needs, few studies have attempted to quantify *daruriyyat* through observable market behavior. This study addresses these gaps by developing a comprehensive market model incorporating both *zakāt* and voluntary charity, providing a novel approach to measuring basic needs through charity market equilibrium. The proposed framework offers practical tools for policy formulation while enriching *Islāmic* economic theory through empirical analysis of Malaysian household data.

## 3. THEORETICAL FRAMEWORK

From a market perspective, the demand for charity primarily arises from the poor segment of society, and the supply comes from the affluent demographic. Economic, demographic, and societal variables, such as changes in income levels, taxes, welfare programs, ages, religious belief and wealth distribution patterns, may influence both charity demand and supply, among others. To analyze these relationships, we present a market model of charity in this section.

Personal charity manifests in two primary forms: monetary contributions and volunteered time (List, 2011). This study focuses exclusively on cash donations for several analytical and practical reasons. First, cash charity offers inherent measurability advantages, enabling precise quantification and tracking within a market model framework. This quantifiable nature facilitates direct analysis of how

factors such as income levels influence charitable giving patterns (Brown, Dimmock et al., 2012).

Cash charity provides distinct practical advantages. Its immediate liquidity allows for swift deployment to meet current needs, providing donors with tangible evidence of their charitable impact. Cash donations also can be channelled into capital formations, such as cash *wāqf*, generating sustainable income streams for long-term charitable objectives (Mohsin, 2013). These capital donations, while usually more restrictive in their application, can have a more significant impact over time by creating sustainable income sources for the receiving party.

### 3.1 THE CHARITY DEMAND

The theoretical framework for household charity demand is developed in this section. The model assumes households seek monetary charitable assistance to fulfill basic needs when their resources are insufficient. Income inadequacy represents a fundamental driver compelling households to seek charitable support.

Disposable income ( $I$ ) plays a crucial role in determining household consumption expenditure. For households, disposable income is derived by deducting personal income tax ( $T$ ) from personal income ( $Y$ ). In the *Islāmic* context, where *zakāt* ( $Z$ ) payment is obligatory, disposable income ( $I$ ) equals personal income minus both personal income tax and *zakāt*, expressed as:

$$(1) \quad I = Y - (T + Z)$$

For households below the poverty threshold, their low-income level exempts them from both *zakāt* (on income and saving) and tax obligations (under a progressive tax system). Since both *zakāt* ( $Z$ ) and tax ( $T$ ) equal zero for these households, their personal income equals their disposable income ( $Y = I$ ).

Notice that *zakāt* (compulsory charity) has been considered in calculating disposable income. Therefore, the analyses here primarily deal with modelling the demand and supply of voluntary charity. Since voluntary charity is done at the free will of households, the market for voluntary charity is therefore posited. Given the level of the disposable income, households can either consume ( $M$ ), save ( $S$ ) or give it as charity ( $C$ ), or:

$$(2) \quad I = M + S + C$$

The household demand for charity can be expressed as a function  $D(C)$ , where  $C$  represents the quantity of charity demanded. While many socioeconomic factors affect charitable demand, this analysis focuses on disposable income ( $I$ ) as the primary determinant, with other variables held constant. Although additional factors could enhance the model's complexity, disposable income provides a fundamental foundation for developing the market model for charity. Thus, the demand function for charity is expressed as:

$$(3) \quad D(C) = f(I)$$

The relationship between disposable income and charity demand is negative, where the lower the level of disposable income, the higher the demand for charity by a household, or:

$$(4) \quad \partial D(C)/\partial I < 0$$

where a change in disposable income (increase or decrease) would result in a change in charity demand in an inverse relationship, *ceteris paribus*. For example, an increase in disposable income would reduce the demand for charity as households become more self-sufficient.

Expressing the charity demand function [(equation (3))] into a linear form, yields:

$$(5) \quad D(C) = a + bI + e$$

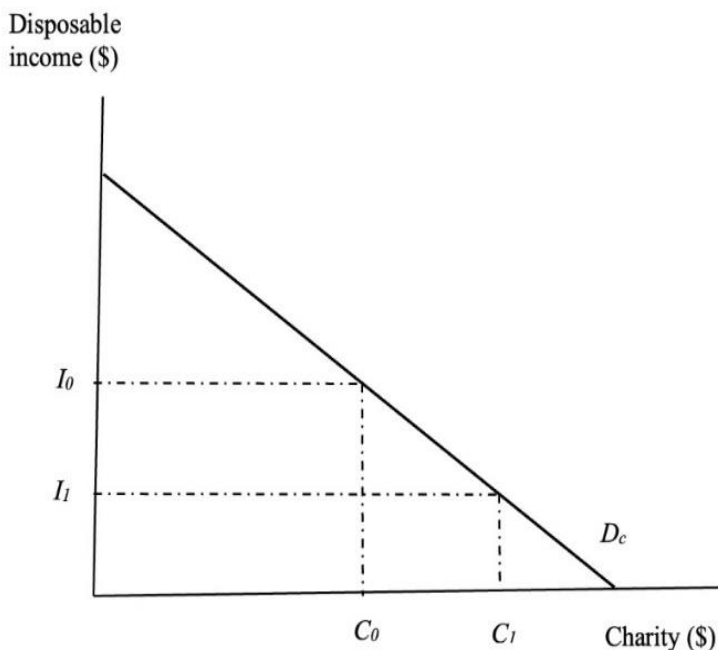
where  $a$ ,  $b$ , and  $c$  represent coefficients to be estimated, and  $e$  is the error term. It is important to note that this representation of the charity demand model is a simplified version. Depending on the specific context, research questions, and data availability, additional variables capturing cultural, social, or demographic factors, could also be introduced into the model.

The relationship between disposable income and charity demand can be represented as a downward sloping curve, as shown in Figure 1. As indicated in the figure, the horizontal axis measures the level of cash charity,  $C$ , in dollars (\$) while the vertical axis measures the level of disposable income,  $I$ , in dollars (\$).

Line  $D_c$  in Figure 1 is a downward sloping curve. It implies a negative relationship between quantity demanded for charity and disposable income level. The level of charity demanded is high given a lower income level, *ceteris paribus*. As indicated in Figure 1, a household with income of  $I_0$ , would demand for  $C_0$  level of charity. As

income level decreases, for example, to  $I_1$ , the quantity demanded for charity declines to  $C_1$ , ceteris paribus. By joining the identified points  $C_0$  and  $C_1$ , the demand for charity that corresponds to disposable incomes,  $I_0$  and  $I_1$  respectively, can be represented by a downward sloping curve. The downward slope implies the negative relationship between the level of income and the quantity of charity demanded.

FIGURE 1  
Charity Demand Curve



The demand for charity responds to various non-income factors that could shift the demand curve. Inflation could constrain household purchasing power, thereby increasing their need for charity, leading to an upward shift in the demand curve. Complementary income, such as that provided by a working spouse, could lower the demand for charity, triggering a downward shift in the curve. The number of dependents in a household also significantly influences charity demand (Bekkers and Wiepking, 201). After exploring the factors influencing demand for charity, the next section examines the supply side of charity.

### 3.2 THE CHARITY SUPPLY

To formulate a supply function for charity, it is vital to consider the determinants of charitable giving. For that, the supply of charity, denoted as  $S(C)$ , could be affected by numerous variables. In this section, the simplified model of charity supply function is expressed as a function of disposable income ( $I$ ), or:

$$(6) \quad S(C) = f(I)$$

It is observed that the supply of charity tends to rise as donors' income increases (recall Section 2.3). The expected positive relationship can be expressed as:

$$(7) \quad \partial S(C)/\partial I > 0$$

The charity supply function in Equation (6) can be specified in a linear form as:

$$(8) \quad S(C) = a + bI + e$$

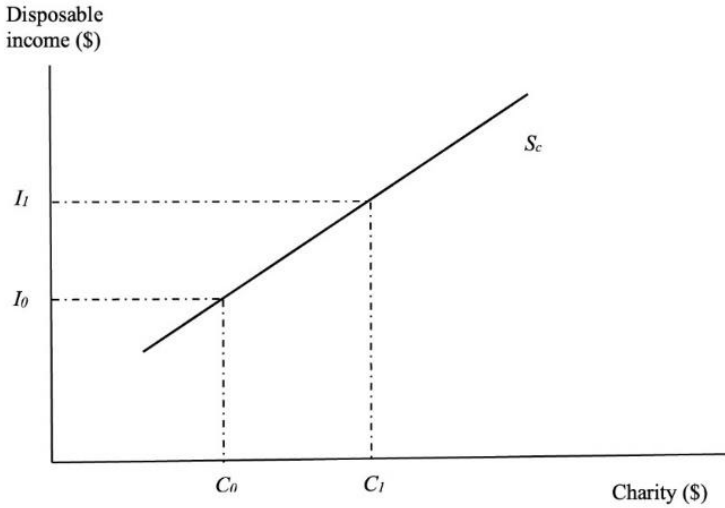
where  $a$  is the intercept  $b$  is the coefficient to be estimated (with the expected positive sign) and  $e$  is the error term.

As illustrated in Figure 2, the positive relationship between disposable income and quantity of charity supplied is captured by the upward sloping curve. Referring to Figure 2, as the level of household income rises, the level of charity supplied also rises, *ceteris paribus*. A household with low disposable income, such as  $I_0$ , would supply only  $C_0$  level of charity. As the income rises to  $I_1$ , the quantity of charity supplied increases to  $C_1$ , *ceteris paribus*. These points form the upward-sloping charity supply curve, representing the systematic relationship between household income and charitable giving.

Apart from disposable income, many factors can influence charitable giving, such as inflation and complementary income. Changes in these factors can shift the charity supply curve either rightward or leftward. For instance, lower inflation rates, which enhance purchasing power, could potentially spur an increase in charitable giving (hence shifting the charity supply curve rightward). Additional household income, known as complementary income, can also increase the supply of charity (the charity supply shifts to the

right), since households with multiple income streams often exhibit a higher propensity for giving. With a clear understanding of the factors influencing the supply of charity, we now transition to examine the interplay between demand and supply in the charity market.

FIGURE 2  
Charity Supply Curve



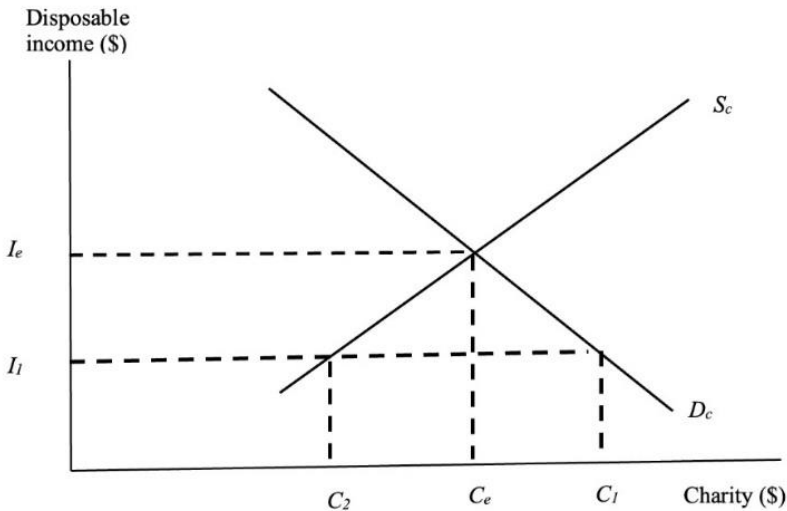
### 3.3 THE CHARITY MARKET

Figure 3 illustrates the market for charity. The aggregate demand for charity is constructed by the horizontal summation of every household’s demand for charity at every level of disposable income. The aggregate demand curve for charity is downward sloping, reflecting the inverse relationship between the overall value of charity demanded in response to increase in disposable income in the economy, *ceteris paribus*. The Y-intercept of the demand curve (D) represents the maximum value at which recipients are willing to receive charity when the disposable income is zero, signifying a high need for charity.

The aggregate supply of charity is derived from the horizontal sum of household charity supplied at each level of disposable income. This upward slope of the supply curve signifies a direct relationship between the value of charity and disposable income in the economy, assuming other factors remain constant.

As shown in Figure 3, the market for charity is in equilibrium when the aggregate demand and supply intersect. At the equilibrium point, the quantity (dollar) demanded for charity is equal to the quantity supplied of charity. The corresponding charity level is the equilibrium level of charity ( $C_e$ ) or the market-clearing charity. The equilibrium charity ( $C_e$ ) can be interpreted as the average monetary value that society places on providing and receiving charity. The corresponding income ( $I_e$ ) is the equilibrium income for basic needs fulfilment. This point has several economic implications, to be discussed now.

FIGURE 3  
Charity Equilibrium



In a steady-state market, any deviation from the equilibrium point would result in forces that push the market back toward equilibrium. For instance, if the demand for charity were to increase because of a decline in the disposable income, the increased need for assistance would put upward pressure on the monetary value of charity (e.g., more beggars in the street and more calls for donations). This would, in turn, incentivize more donors to provide support, moving the market back toward equilibrium.

The model posits that any income below  $I_e$  is insufficient for satisfying basic needs. For instance, at the income level of  $I_l$ , the aggregate demand for charity,  $C_1$ , surpasses the aggregate supply of charity,  $C_2$ , indicating a charity shortage where the need for charity

outstrips its provision. As previously underlined, the equilibrium point denotes the income level necessary to meet basic needs, thereby offering a monetary representation of *daruriyyat*. This model provides a more pragmatic method in quantifying *daruriyyat* than, for example, the *maqāsid*-index approach as developed by Yusof et al. (2019).

The equilibrium point serves as a vital reference for policymakers evaluating the efficacy of their interventions in the charitable sector. For instance, the impact of tax incentives or government social welfare programs can be gauged by examining their effects on the equilibrium value and quantity of charity. Policies propelling the market toward equilibrium are deemed more successful in addressing recipient needs and encouraging donor willingness to give. Moreover, determining the equilibrium income ( $I_e$ ) is essential in poverty eradication efforts. This reference measure aids in shaping welfare programs such as public transfer programs, minimum wage policy, and poverty or *zakāt* collection and distribution (Ahmad and Ma'in, 2014).

#### 4. METHODOLOGY

This section presents empirical tests of the theory proposed in Section 3, focusing on estimating the equilibrium level of charity. As previously argued, this exercise is crucial in identifying the equilibrium point, which also serves as a measure of the level of necessity or *daruriyyat* within the economy.

##### 4.1 ESTIMATION MODELS

To estimate the charity and basic needs equilibrium levels, the econometric empirical model of demand for charity is expressed as:

$$(9) \quad \ln receive_i = \alpha + \beta_1 \ln earn_i + \sum_{k=2}^K \beta_k X_{ki} + \epsilon_i$$

where  $\ln receive_i$  denotes natural log of demand for charity (charity received) by household  $i$  ( $i = 1, 2, \dots, I$ ),  $\alpha$  is the intercept,  $\ln earn_i$  represents the natural log of earnings of household  $i$ , and  $X_{ki}$  ( $k = 2, 3, \dots, K$ ), are other variables deemed important to have influence on demand for charity,  $\beta$ s are parameters to be estimated and  $e_i$  is the error term.

$age_i$  represents the age of household  $i$ ,  $X_{ki}$ , ( $k = 3, 4, 5, \dots, K$ ), are other variables deemed important to have influence on demand for charity,  $\beta_s$  are parameters to be estimated and  $\varepsilon_i$  is the error term.

Then, the empirical model of supply of charity is expressed as:

$$(10) \ln give_i = \gamma + \delta_1 \ln earn_i + \sum_{k=2}^I \delta_k X_{ki} + e_i$$

where  $\ln give_i$  denotes natural log of supply of charity (charity given) by household  $i$  ( $i = 1, 2, \dots, I$ ),  $\gamma$  is the intercept,  $\ln earn_i$  represents the natural log of earnings of household  $i$ , and  $X_{ki}$ , ( $k = 2, 3, \dots, K$ ), are other variables deemed important to have influence on supply of charity,  $\delta_s$  are parameters to be estimated and  $e_i$  is the error term.

This study uses private transfer payments received as a proxy for the demand for charity and private transfer payments made as a representation of the charity supply. The selection of these proxies stems from the unavailability of specific charity received and given data in the utilized Household Income Survey data. The use of private transfers as a stand-in for charity aligns with common practice in empirical studies, as stated by Cox and Jimenez (1990).

The independent variables,  $X_{ki}$ , for both equations include age, marital status, gender, education level, employment activities/sector, ethnicity and geographical location (Bekkers and Wiepking, 2011; Arshad 2016). The variables notations and descriptive statistics of the samples are provided in Appendix 1 and 2. Both equations (9) and (10) are then estimated using least squares techniques.

## 4.2 DATA COLLECTION

The present study utilizes the 2009 Household Income Survey (HIS) data from the Department of Statistics, Malaysia. The HIS represents Malaysia's primary source for household income statistics, conducted bi-annually to monitor the nation's income distribution patterns and household economic well-being. While employing more recent HIS data would ideally render the estimations more current, the 2009 data was the most recent available to the author at time of model testing. Despite the dated data, this dataset successfully fulfills the intended objectives of the study.

The estimations involve 22,780 observations representing Malaysian households. While this sample constitutes approximately 0.34% of the total 6.6 million Malaysian households in 2009, the

dataset employs a stratified random sampling methodology ensuring representativeness across geographic regions (13 states and 3 federal territories), urban-rural divisions (56.35% urban households), ethnic composition (71.36% Bumiputera, 20.63% Chinese, 6.47% Indian, 1.54% Others), and income groups (bottom 40%, middle 40%, and top 20%).

The survey captures comprehensive household information such as household income, private transfer payments (received and given), demographic characteristics (age, gender, marital status), socioeconomic indicators (education, employment, industry), geographic location (state, urban/rural classification), and household composition and relationships. Each respondent has a unique identifier. The variables used in the empirical analysis are summarized in Appendix 1 and 2, providing detailed descriptive statistics. The dataset's comprehensive variable coverage and substantial sample size of 22,780 observations meet the methodological requirements for robust empirical analysis of charitable behavior.

## 5. ESTIMATION RESULTS AND DISCUSSION

Results of the estimations of equations (9) and (10) are presented in Table 1. Since the purpose of running the estimations is to find the equilibrium charity level, the focus of the discussion will be dedicated to explaining how the results fit into the proposed theory (refer to Section 5.1). This sub-section only provides a brief discussion on the overall estimation results.

As shown in Table 1, household income has a significant positive effect on charity given (supply of charity) while it has a significant negative effect on charity received (demand for charity). The positive relationship between income and quantity of charity supplied means that as income level rises, the contribution toward charitable giving will also rise (as illustrated in Figure 2). On the other hand, in the case of charity received, the inverse relationship between income and charity means as income rises, less charity will be demanded (refer to Figure 1). The findings therefore support the theoretical frameworks established in Section 3.

TABLE 1  
Estimation Results

Variables	(Based on Eq. 10)	(Based on Eq/ 9)
	Charity supply $\ln(give)$	Charity demand $\ln(receive)$
<i>lnearn</i>	1.033*** (0.013)	-0.312*** (0.012)
Age	-0.016*** (0.001)	0.047*** (0.001)
Male	-0.100*** (0.019)	0.167*** (0.024)
Married	0.024 (0.027)	0.449*** (0.029)
Chinese	0.196*** (0.022)	0.118*** (0.027)
Indian	0.385*** (0.036)	-0.170*** (0.046)
Others	-0.027 (0.095)	-0.385*** (0.087)
Urban	0.348*** (0.019)	0.174*** (0.022)
Constant	-2.600*** (0.126)	6.538*** (0.119)
Observations	21,663	16,732
R-squared	0.464	0.319

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Age has a negative relationship with charity supply while it has a positive relationship with charity demand. The negative relationship implies that charitable giving is high among the young, but it is low for the much older persons in Malaysia. Concern over life after retirement could be the reason for the trend. On the other hand, the positive difference between age and demand for charity shows the rising need for charitable donations among older households. As one gets older, the need for charity also rises, *ceteris paribus*. Again, this trend could be related to the issue of social security among older people in Malaysia. It has been estimated that, in Malaysia, retirees on average exhaust their EPF savings within four years of retirement. Unless they have a pension, or complementary family income, this group might need to depend on charity.

While previous studies such as Arshad (2016) and Brown and Ferris (2007) found evidence of an inverted U-shaped relationship between age and charitable giving, this study employs a linear specification of age for several reasons. First, diagnostic tests confirm that the linear specification meets model specification requirements. Second, the linear form effectively achieves the primary objective of identifying the market-clearing level of charity without introducing additional complexity that would arise from including age-squared terms. The current model shows age has a negative effect on charity supply (-0.016) and a positive effect on charity demand (0.047). Nonetheless, future research could explore potential non-linear age effects in the Malaysian context to provide deeper insights into how charitable behavior changes across different life stages.

The effect of marriage is insignificant on the supply of charity. Marriage, however, has a significant positive effect on the demand for charity. The need to support family is one possible reason for this relationship. As shown in Model (2), married households need 52% (the calculation is given by  $100[\exp(0.419) - 1]$  since the dependent variable is logged and the dependent variable is a dummy) more than household headed by a single, *ceteris paribus*. The results in Table 1 also shows that all the demographic variables such as gender, race and geographical location have significant effect in explaining the supply of and demand for charity in Malaysia.

Now the discussion turns to the estimation of charity equilibrium. Following the estimation in Table 1, the base model for both demand and supply of charity, assuming other things constant, is now given:

$$(11) \text{ Supply of charity: } \ln(\textit{give}) = -2.6 + 1.033\ln(\textit{earn})$$

$$(12) \text{ Demand for charity: } \ln(\textit{receive}) = 6.538 - 0.312*\ln(\textit{earn})$$

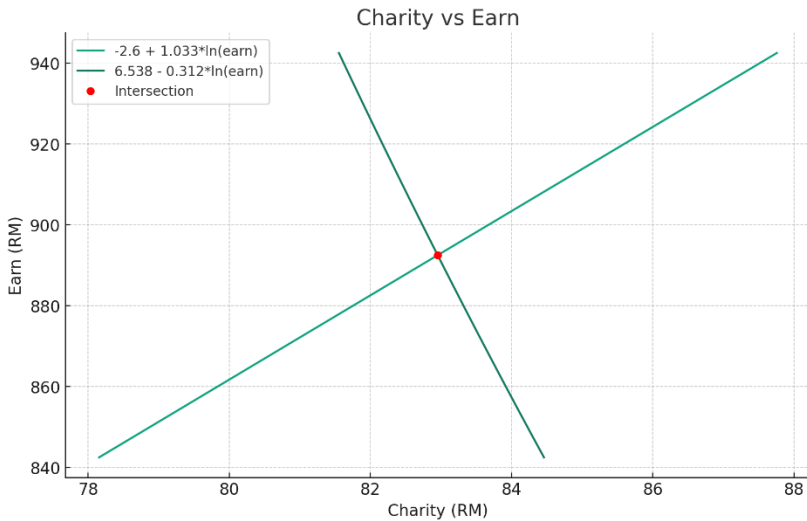
Figure 4 illustrates the intersection of charity supply and demand curves derived from equations (11) and (12). The equilibrium indicates the market-clearing point where charity supply equals demand. At this point, the estimated equilibrium level of disposable income can be calculated as:

$$\begin{aligned} -2.6 + 1.033\ln(\textit{earn}) &= 6.538 - 0.312\ln(\textit{earn}) \\ 1.033\ln(\textit{earn}) - 0.312\ln(\textit{earn}) &= 6.538 - (-2.6) \\ \textit{earn} &= \text{RM}892.52 \end{aligned}$$

Now, the charity equilibrium level can be calculated as:

$$\ln(\textit{charity}) = -2.6 + 1.033*\ln(892.52) = \text{RM}82.95$$

FIGURE 4  
Estimated Charity Equilibrium



From the above calculations, the equilibrium levels of disposable income and charity are RM892.52 and RM82.95 per month, respectively. The value of RM892.52 (monthly) signifies the equilibrium disposable income for the charity market to clear. This value represents the threshold of disposable income. It refers to the minimum amount of money a person needs to earn before they feel comfortable giving some of it away to charity. When people reach this income level, it encourages more donations, which boosts the charity market. The value of RM892 represents the average cost of fulfilling necessities for impoverished households. This amount also serves as a threshold for welfare provision in efforts to eradicate hardcore poverty. From the donor's perspective, the value indicates the marginal benefit of charity, where the utility gained from each ringgit donated up to RM892 equals or exceeds the associated sacrifice. Also, the equilibrium value provides a critical reference point for tax incentives, where RM892 marks the minimum charitable contribution qualifying for tax deductions. This measure establishes a basis for analyzing how tax policies affect charitable giving patterns in future research.

Another derived value is the equilibrium charity level of RM82.95 (monthly). It is calculated by substituting the equilibrium disposable income (RM892.52) into the estimated supply equation. This value represents the market-clearing amount where charitable

giving and receiving achieve balance in the Malaysian economy. At this equilibrium point, the quantity of charity supplied by donors exactly matches recipients' demands, creating an efficient distribution of charitable resources. The RM82.95 figure reflects society's collective valuation of charitable support, capturing the aggregate monetary value that Malaysian society places on charitable transactions. This amount indicates the average monthly charitable transfer required to complement household incomes up to the basic needs threshold of RM892.52. For policymakers, this equilibrium charity level serves as a quantitative benchmark, suggesting the natural level of charitable support needed in the economy to maintain market balance at the basic needs income threshold.

This finding complements other approaches to measuring basic needs, such as Bank Negara Malaysia's living wage concept introduced in 2018 (Chong and Adam, 2018). The living wage concept estimates the income required for a household to afford a "minimum acceptable" living standard in Malaysia, which ranges from RM2,700 to RM6,500 monthly depending on household location and composition. While Bank Negara's living wage framework estimates comprehensive household needs, the market-clearing charity level of RM892.52 identified in this study establishes a critical minimum threshold. This alignment between market-determined charitable needs and the living wage concept strengthens the case for incorporating living wage considerations into Malaysian economic policy discourse. These two independent approaches, one based on market behavior and another on needs and wants assessment, suggests that current policy discussions may benefit from greater attention to both measures as tools for addressing household economic security.

## 6. CONCLUDING REMARKS

The present study situates itself within the broader discourse on the charity market model. It introduces a novel theoretical approach to *Islāmic* economics by incorporating *zakāt* to measure the *daruriyyat* level. The proposed model has been backed by empirical estimations using data based on Malaysia. The identified charity equilibrium level offers robust comparison with conventional socio-economic indicators. For comparison, based on data drawn from the 2009 Household Income Survey (HIS) conducted by the Department of Statistics Malaysia, the median monthly income for households was noted at RM2,841, whereas the average monthly income was

RM4,025. These figures establish a significant reference point for analyzing changes in charity equilibrium.

For instance, in 2009, the relative poverty in Malaysia, calculated by households earning less than half of the median income, was set at RM1,420 per month, while the hardcore poverty line, determined as half of the relative poverty line, was estimated at RM710 per month. The disposable income equilibrium level, defined as a crucial threshold for necessity, was determined at RM892. This figure is slightly higher than the hardcore poverty line. Nevertheless, it offers a comparable measure of hardcore poverty estimated using the proposed model.

In 2013, the minimum wage law was first introduced in Malaysia. The minimum wage rates were set at RM900 per month for Peninsular Malaysia and RM800 per month for East Malaysia, providing another comparable reference against the computed charity equilibrium level of RM892.

Identification of the equilibrium level has provided a viable method for an alternative measure of necessity. This approach is significantly different from the commonly used index approach in *daruriyyat* measures. The charity equilibrium framework offers a quantitative tool for analyzing socioeconomic conditions in Malaysia. The findings offer substantive insights to guide empirical research and policy formulation.

This study offers an innovative approach to the understanding and measurement of charitable giving within an economic framework, and its role as a barometer for necessities. The exploration began by conceptualizing charity as a market activity, subject to the laws of supply and demand. The study further substantiated the charity market model by rigorously analyzing both supply and demand factors using econometric models. The development of a quantitative model to interpret these influences represents a noteworthy addition to existing literature and further enriches the current understanding of the charity market's complexities.

The findings of this research bear significant implications for policymakers striving to make data-driven welfare decisions. The proposed model is useful for identifying the necessities level (*daruriyyat*), which can serve as a reference for welfare programs, minimum wage rate determination, poverty eradication efforts, and more. The equilibrium point serves as a vital reference for policymakers evaluating the efficacy of their interventions in the charitable sector. For instance, the impact of tax incentives or government social welfare programs can be gauged by examining

their effects on the equilibrium value and quantity of charity. Policies propelling the market toward equilibrium are deemed more successful in addressing recipient needs and encouraging donor willingness to give. Moreover, determining the equilibrium income ( $I_e$ ) is essential in poverty eradication efforts. This reference measure aids in shaping welfare programs such as public transfer programs, minimum wage policy, and poverty alleviation programs or *zakāt* distribution. Notably, the  $I_e$  point can also serve as the poverty line income.

While the model demonstrates robustness and offers profound insights, it acknowledges inherent limitations, such as in the use of slightly outdated HIS 2009 dataset for the empirical estimations. Nonetheless, it has laid an intuitive foundation for future research, inviting refinement and expansion by incorporating additional variables and recent dataset.

This study utilizes 2009 HIS data because of data access constraints during research. Since then, several developments warrant investigation using more recent datasets. Malaysia's household income structure has evolved significantly, with median household income increasing from RM2,841 in 2009 to RM6,338 in 2022 (Department of Statistics Malaysia, 2023). Recent economic shocks, particularly the COVID-19 pandemic, have likely altered charitable giving patterns and basic needs requirements. Future research using newer HIS datasets could validate the market-clearing charity model's robustness across different economic conditions and examine how rising living costs and income inequality affect charitable behavior. Extending the analysis to individual-level data could provide deeper insights into personal charitable decisions, complementing the household-level findings presented in this study. Such expanded analysis would enhance understanding of the charitable market in contemporary Malaysian society at both household and individual levels, providing updated policy implications, especially when integrated with current frameworks such as Bank Negara Malaysia's living wage concept.

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**APPENDIX 1**

## Descriptive Statistics of the Dependent Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>moneygive</i>	2780	3242.496	6761.992		207370
<i>INCS05</i>	2780	1714.602	4707.471		125500

**APPENDIX 2**

## Descriptive Statistics of the Independent Variables

Variables	Variable notation	Definition	Statistics	All
Earnings	Earn	Yearly earnings (RM)	Mean Std dev Min Max	25,937 29,034 120 1,102,000
Age	Age	Age	Mean Std dev Min Max	35.3 12.9 16 60
Married	Marry	Married (=1 if married)	No %	22,751 69.04
Male	Male	Male (=1 if male)	No %	16,264 49.35
Bumiputra	Bumi	Base category	No %	23516 71.36
Chinese	Chinese	Dummy (=1 if Chinese)	No %	6800 20.63
Indian	Indian	Dummy (=1 if Indian)	No %	2132 6.47
Other ethnics	Others	Dummy (=1 if other ethnics)	No %	506 1.54
Urban	Urban	Dummy (=1 if urban)	No %	18568 56.35