Mitigating homelessness and creating market participants by pursuing interest-free *Qard Hasan* based monetary policy

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ABSTRACT

This paper investigates how the problems of homelessness can be solved by pursuing interest-free *Qard Hasan* (QH) based monetary policy (MP) and examines its impact on equilibrium output, employment, inflation rate, expansion of the market size and on major macroeconomic variables. The nationwide issue of homelessness can be addressed and mitigated by pursuing QH based MP from a theoretical perspective by employing the macroeconomic general equilibrium model where homeless people will be new participants in the market and as a result, the aggregate demand curve will shift to the right. In interest-free MP, based on the principle of QH, the Central Bank (CB) lends to homeless people on QH or interest-free basis and thus directly transforms homeless individuals into homeowners. People who used to live on streets, jungles, train, and bus stations without proper amenities of life will suddenly find an honorable living space which they can call sweet home. The marketing and sales of homes will increase. This unprecedented transformation will not only change economic, health, and social conditions of such poor homeless cohort of the population but will also have a positive impact on the overall performance of the economy through the increase in aggregate expenditures. In addition, it will also create housing boom which will eventually shift the aggregate supply curve to the right. Simultaneous rightward shift in both aggregate demand and long run aggregate supply curves will increase potential equilibrium income, employment, and prosperity. The problems of homelessness are real and vivid and a clear failure of the contemporary

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conventional economic systems. The current study is perhaps one of the most recent and new approaches to solve such enormous problems by pursuing QH based interest-free MP which Socialism, Capitalism or any other conventional interest-based systems failed to do so. The QH based interest-free MP can provide perfect solutions to the problems of homelessness, and it does immediately and without much cost, debts, and deficits.

ملخص

يتناول هذا المقال كيفية حل مشاكل التشرد من خلال اتباع سياسة نقدية خالية من الفوائد في قرض حسن (QH) وتدرس تأثيرها على توازن الناتج والعمالة ومعدل التضخم وتوسع حجم السوق وعلى متغيرات الاقتصاد الكلي الرئيسية. ويمكن معالجة قضية التشرد على الصعيد الوطني والتخفيف من حدتها من خلال اتباع سياسة نقدية قائمة على القرض الحسن من منظور نظري من خلال استخدام نموذج التوازن العام للاقتصاد الكلي حيث سيكون المشردون مشاركين جدد في السوق ونتيجة لذلك، سيتحول منحنى الطلب الإجمالي إلى اليمين. وفي السياسة النقدية بدون فوائد، بناء على مبدأ القرض الحسن، يقرض البنك المركزي (CB) الأشخاص المشردين على أساس القرض الحسن أو بدون فوائد، وبالتالي يحول الأفراد المشردين مباشرة إلى مالكي منازل. والأشخاص الذين اعتادوا العيش في الشوارع والأدغال والقطارات ومحطات الحافلات دون وسائل الراحة المناسبة للحياة سيجدون فجأة مساحة معيشة كريمة يمكنهم تسميتها بالمنزل الخاص. وسيزداد تسويق ومبيعات المنازل. ولن يؤدي هذا التحول غير المسبوق إلى تغيير الظروف الاقتصادية والصحية والاجتماعية لمثل هذه الفئة الفقيرة من السكان المشردين فحسب، بل سيكون له أيضا تأثير إيجابي على الأداء العام للاقتصاد من خلال زيادة النفقات الإجمالية. بالإضافة إلى ذلك، سيخلق طفرة في الإسكان والتي ستحول في النهاية منحنى العرض الإجمالي إلى اليمين. وسيؤدي التحول المتزامن نحو اليمين في كل من الطلب الإجمالي ومنحنيات العرض الإجمالية على المدى الطويل إلى زيادة التوازن المحتمل للدخل والعمالة والازدهار. وإن مشاكل التشرد تعتبر حقيقية ومهمة وفشل واضح للنظم الاقتصادية التقليدية المعاصرة. وربما تكون الدراسة الحالية إحدى أحدث الأساليب الجديدة لحل مثل هذه المشاكل الضخمة من خلال اتباع سياسة نقدية بدون فوائد قائمة على القرض الحسن والذي فشلت الاشتراكية أو الرأسمالية أو أي أنظمة تقليدية أخرى قائمة على المصالح في القيام بذلك. ويمكن للسياسة النقدية بدون فوائد قائمة على القرض الحسن تقديم حلول مثالية لمشاكل التشرد، وهو أمر يحدث على الفور وبدون تكبد تكلفة كبيرة وديون وعجز.

ABSTRAITE

Ce document étudie comment le problème des sans-abri peut être résolu en appliquant une politique monétaire (PM) sans intérêt basée sur le Qard Hasan (QH) et examine son impact sur la performance d'équilibre, l'emploi, le taux d'inflation, l'expansion de la taille du marché et sur les principales variables macroéconomiques. Le problème national du sans-abrisme peut être abordé et atténué par la mise en œuvre d'une politique monétaire basée sur le QH d'un point de vue théorique en utilisant le modèle d'équilibre général macroéconomique dans lequel les sans-abri seront de nouveaux participants sur le marché et, par conséquent, la courbe de la demande globale se déplacera vers la droite. Dans le cadre d'un PDE sans intérêt, basé sur le principe de QH, la Banque centrale (BC) prête aux sans-abri sur une base QH ou sans intérêt et transforme ainsi directement les sans-abri en propriétaires. Les personnes qui vivaient dans les rues, les jungles, les gares ferroviaires et routières sans les commodités nécessaires à la vie trouveront soudain un espace de vie honorable qu'elles pourront appeler "sweet home". La commercialisation et la vente de logements augmenteront. Cette transformation sans précédent ne changera pas seulement les conditions économiques, sanitaires et sociales de cette cohorte de sans-abri pauvres, mais aura également un impact positif sur les performances globales de l'économie grâce à l'augmentation des dépenses globales. En outre, elle créera un boom immobilier qui finira par déplacer la courbe de l'offre globale vers la droite. Le déplacement simultané vers la droite des courbes de la demande globale et de l'offre globale à long terme augmentera le revenu d'équilibre potentiel, l'emploi et la prospérité. Les problèmes du sans-abrisme sont réels et éclatants et constituent un échec patent des systèmes économiques conventionnels contemporains. L'étude actuelle est peut-être l'une des approches les plus récentes et les plus nouvelles pour résoudre ces énormes problèmes en poursuivant la MP sans intérêt basée sur QH, ce que le socialisme, le capitalisme ou tout autre système conventionnel basé sur l'intérêt n'a pas réussi à faire. La MP sans intérêt basée sur QH peut fournir des solutions parfaites aux problèmes des sans-abri, et ce immédiatement et sans coûts, dettes et déficits particuliers.

1. Introduction

There are millions of people who are homeless around the globe. It is estimated that about 150 million people are homeless in this world[3] and most of the homeless people live in the least developed and in developing countries. Unfortunately, the problems of homelessness also exist in developed countries. For example, the Canadian government spends billions of dollars annually to mitigate the problems of homelessness, but the incidence of homelessness is not decreasing any time soon. The problems of homelessness in LDCs and in developing countries are increasing at an alarming rate and creating paupers, Criminal gangs, Unsafe places, *Shanti* towns and substandard living conditions in run-down places around the urban and sub-urban areas.

In an interest-based economic system, only the people who have secured jobs or business and solid collaterals can proceed to buy homes through mortgage payments. Such mortgage payments can often range from 15 to 30 years. During such long payments period, if the homeowner fails to make instalment payments for two or more consecutive periods, he or she may lose their home even though they have made payments for last 25 years for a 30-year mortgage payment contract. Once the homeowner loses the home to the interest-based banks because of foreclosure, the homeowner virtually becomes homeless and unfortunately, his or her family disintegrates. Every family member may move away from each other, life becomes unbearable, lonely, and poverty strikes hard on them.

There are *Shariah-compliant* modes of financing, such as *Ijara* based diminishing *Musharaka* (Selim 2020), *Murabaha*, and *Ijara Muntahia bi Tamlik* or rent to own modes of financing (Selim et al. 2022) by which individuals or families who have modest income may hope to own homes and often they do succeed but individuals who are truly homeless and cannot even rent a place and virtually they are not participants in the market because they live in abject poverty with nearly zero income, the hope of owning homes by this cohort of population is nearly zero. This is indeed the motivation of this study and how such homeless people can be transformed into true homeowners. This unfortunate cohort of the population who share the living space under the open sky with animal and

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[3] https://yaleglobal.yale.edu/content/cities-grow-worldwide-so-do-numbers-homeless

dangerous insects' kingdom with virtually no protection and often this poverty-stricken people and their children become the victims and foods of Mosquitos, Snakes, Scorpions, and even the wild animals may prey on them. The situations of such homeless people in urban areas are even more dangerous, they live in or around sewer pipes, urban mosquitos, rats, insect-infested environmentally degraded open sewer, or garbage dumping areas. Therefore, this study seeks answers to the research questions: Are there any ways that the cohorts of the helpless, homeless population with nearly zero income, no matter they are nomads, refugees, domestic beggars, Gypsies or any race, clans or class, can be saved and transformed from homeless to homeowners and thus they will have the honor like other members of the society and finally they will see the lights of civilization and will be integrated as true market participants and they will again start a normal life and start to buy goods and services from the market?

There are non-government organizations (NGOs) who often claim that they are helping the helpless people but in fact, they are bogged down with their vested agenda. Canadian government pours billions of dollars every year to Canada Mortgage and Housing Corporation (CMHC)[4] for solving housing problems which unfortunately does little to reduce homelessness, and the crisis of homelessness keeps on growing.

This study attempts to provide answers for protecting this cohort of the population by transforming them from homeless to homeowners by pursuing *Qard Hasan* based interest-free Monetary Policy and thus transforming to market participants and solves the problems of homelessness immediately without creating huge debts and deficits for the governments of the world. Even the homeless people in recent earthquakes in Turkey and Syria can own homes if the CBs of Turkey and Syria pursue Qard Hasan based monetary policy for mitigating their homelessness.

Therefore, to avoid all such calamities and precarious circumstances, *Qard Hasan* (QH) based interest-free monetary policy (MP) is proposed through which the central bank (CB) will lend to each homeless individual through its branches in different states and with the collaboration and

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[4] www.cmhc-schl.gc.ca › corporate-reporting › cmhc-an.

supervision of commercial banks and other financial institutions. Such supervisory services will not only help them to own a home but will also provide training and guidance for further success.

1.1 Theoretical Foundation of Qard Hasan from the Quran and Sunnah:

In this study, the mitigation of homelessness is based on the application of Qard Hasan as an important and dynamic tool of Islamic Monetary policy. Monetary policy (MP) is indeed a powerful tool that CB can use to end homelessness if CB lends to the homeless people on QH or interest-free basis. *Riba* (usury) is prohibited (*Haram*) in Islam but lending based on QH is highly rewarded. QH is an interest-free loan, often called beautiful or goodly or benevolent loans, and given to the poor and destitute, and anyone in need for only seeking the rewards from the Almighty Allah, the most High, and Exalted and may Glory be to Him. Such QH loans will be given directly to the homeless people part of which the homeless individuals or family will buy a sweet home and the remaining part will be used to create self-employment or any economic activities which will create permanent and continuous flow of income for the homeless individuals or families and thus the homeless cohort of the population will permanently be integrated as new consumers in the economy.

The Almighty Allah, may He be Exalted, says in the Quran (the approximate meaning):

"Who will loan Allah a goodly loan so that He may multiply it for him many times over? And it is Allah who withholds and grants abundance, and to Him you will be returned" **(Qur'ān, 2:245).**

Both men and women will be given multiple and noble rewards for lending beautiful loans to Allah, may He be Exalted (Qur'ān, 57:18). Extending goodly loans are in addition to paying Zakat. Allah, may He be Exalted, asked us to give goodly loan in addition to Zakat or poor-due and rewards for such beautiful loans will be the best and richest and it will be stored with Allah, may He be Exalted, when the person may need it the most, as mentioned in the Quran:

"Establish the Salat (prayers) and pay the Zakat and give to Allah a goodly loan. Whatever good you may send forward for yourselves; you shall find it with Allah. That is best and richest in reward. Seek forgiveness from Allah; indeed, Allah is All-Forgiving, All-Merciful" **(Qur'ān, 73:20).**

Prophet Muhammad, may peace and blessings of Allah be upon him, practised QH during his lifetime and blessed the lenders and he said:
"May Allah, may He be Exalted, bless your family and your wealth for you. The reward for lending is repayment and words of paradise." **(Sunan Ibn Majah, Vol. 3, Book 15, Hadith No. 2424).**

Relieving the believers from the difficulties, especially from financial distress is extremely rewarding both in this world as well as in the hereafter. One of the famous companions, Abu Hurairah, may Allah be pleased with him, narrated that the Prophet Muhammad, may the peace and blessings of Allah be upon him, said:

"Whoever relieves a believer from difficulty in this world, Allah will relieve him from his difficulty and Allah will facilitate him in this world and world hereafter" (al Muslim).

The rewards of QH are eighteen times but the rewards for *Sadaqah* or deeds of Charity are ten times (Ibn Hisham & Ibn Majah), and therefore, QH is much more rewarding and its overall impact in the society is indeed, dynamic, expansionary, and much greater in creating real and positive impact.

A homeless person is in need, and obviously, QH can be given to such homeless individuals. Individual efforts will help but if it is institutionalized and CB takes the lead and circulate money supply (*MS*) not through big banks and financial institutions rather through such needy homeless destitute individuals as ordered by Allah, may He be Exalted, the effects will be much more expansionary and robust. It is mentioned in the Quran as follows:

"What Allah has bestowed on His Messenger from the people of the townships, - belongs to Allah, - to His Messenger and kindred and orphans, the needy and the wayfarer; in order that it may not (merely) make a circuit between the wealthy among you. So, take what the

Messenger assigns to you, and deny yourselves that which he withholds from you. And fear Allah; for Allah is strict in punishment" **(Qur'ān, 59:7).**

Therefore, if the CB circulates money supply (*MS)* through the poor, needy, destitute homeless people, still that money will eventually be circulated in the economy. Since the circulation of *MS* starts with the homeless individuals, they will use this money to own homes, but finally, the money will be circulated to the sellers of homes and the other agents in the economy and at the end of each day, the same money will be deposited in the commercial banks and financial institutions.

1.2 Changes in the Direction of Monetary Policy from the CB to Commercial Banks to CB to ***"Allah, - to His Messenger and kindred and orphans, the needy and the wayfarer……'*** **(Qur'ān, 59:7): Theoretical Foundation for Changing the Directions of Monetary Policy.**

The above verse Qur'ān, 59:7 changes the direction of Islamic monetary policy where the circulation of money supply will flow from CB to among others, to the poor and needy cohort of population and then to the market or in the economy while in conventional interest based system the circulation of money supply flows from the CB to the rich Commercial Banks and then again to the rich merchants and wealthy borrowers who are relatively rich and have proven collaterals for borrowing funds. The above verse in the Qur'ān, 59:7 clearly prohibits such traditional and conventional practices, ***in order that it may not (merely) make a circuit between the wealthy among you. So, take what the Messenger assigns to you, and deny yourselves that which he withholds from you. And fear Allah; for Allah is strict in punishment"*** **(Qur'ān, 59:7).**

Therefore, the newly created wealth or money supply by the CB should not be circulated among the rich cohort of population but the true ownership of such newly created money or wealth belongs to ***'Allah, - to His Messenger and kindred and orphans, the needy and the wayfarer……'*** **(Qur'ān, 59:7).**

1.3 Flexibility in Qard Hasan Loans and its rewards

Banks and financial institutions will start to create deposits and extend loans, and the expansion of the loans will be equal to the simple deposit multiplier, denoted by θ, times the initial deposits where the simple deposit multiplier (θ) can be defined as the ratio of the required reserves as stipulated by the CB. Lower required reserve ratio (τ) yields a higher value for the simple deposit multiplier (θ), which will lead to relatively higher deposit expansion and loan creation in the economy which in turn will increase aggregate expenditures, and equilibrium income will increase.

According to the hadith, Prophet of Islam, may peace and blessings of Allah be upon him, stated:

"There is no Muslim who lends something to another Muslim twice, but it will be like giving charity once." (Sunan Ibn Majah, Hadith no. 2430).

Besides, Prophet may peace and blessings of Allah be upon him, further emphasized that extending the time for loan payment when the person is in difficulty or financial hardship is equivalent to the act of charity. The Prophet, may peace and blessings of Allah be upon him, said:

"Whoever gives respite to one in difficulty, he will have (the reward of) an act of charity for each day. Whoever gives him respite after payment becomes due, will have (the reward of) an act of charity equal to (the amount of the loan) for each day." (Sunan Ibn Majah 15:2418).

Extending the time for loan payment and even reducing the burden of loans for the poor often earns the forgiveness from Allah, may He be the Exalted. Prophet Muhammad may peace and blessings of Allah be upon him, said that a person was forgiven because he used to give time to the rich to repay the debt and used to deduct part of the debt of the poor (Al Bukhari 3:41:576).

The model of mitigating homelessness is based on the QH based expansionary MP, and such QH is given interest-free, and it is given in seeking the pleasure of Allah, may He be Exalted. On the contrary, *Riba* or interest is prohibited, or *Haram* and there will be severe consequences and punishment for those who insist on indulging in *Riba* (Qur'ān, 2:275-276).

Allah, the Almighty orders the people to extend the time for repayment of loans in case the debtor is in real difficulties. Allah, may He be Exalted, has said:

"And if the debtor is in a hard time (has no money), then grant him time till it is easy for him to repay" **(Qur'ān, 2:280).**

If a person faces extreme hardship, and if his or her loans are forgiven, such act of charity may multiply the rewards for the lenders many times. Allah, may He be Exalted, (interpretation of the meaning), said in the Quran as follows:

"But if you remit it by way of charity, that is better for you if you did but know" **(Qur'ān, 2:280).**

This noble act is also highly praised in *Hadith*. Abu'l-Yasar, may Allah be pleased and have mercy on him, reported that the Prophet Muhammad, may peace and blessings of Allah be upon him, said:

"Whoever allows more time for a debtor who is in difficulty or waives the debt, Allah will shade him with His shade." (Al Muslim, Hadith No. 3014.)

QH is not only given for a short period, but also for a long time or forever. This notion of eternal nature of QH is confirmed when Abu Ad-Dahdah Al-Ansari **gave his garden of six hundred date trees as Qard Hasan forever to Allah, may He be Exalted** (Imam al-Bayhaqi (n.d). Shu'ab al-Iman, Hadith no. 3452).

Therefore, Qard Hasan is highly praised in the Quran and in the Hadith and immense rewards have been promised, and if Qard Hasan is employed as tool of Islamic Monetary policy for mitigating homelessness, it will solve homelessness, minimize income inequality, improve social cohesion, alleviate poverty, and bring overall prosperity in this world and truly a great success in the hereafter.

Section 1 develops the research questions and establishes the theoretical foundations of Qard Hasan from the perspectives of the Quran and the Sunnah as well as the changes in the direction of Monetary policy. Section 2 of this paper reviews the literature on the different aspects of

homelessness as well as on *Sharia-compliant* modes of financing, including QH, examples of Qard Hasan loans and research gap and how the current study will bridge the research gap. A theoretical model for mitigating homelessness is developed in section 3. Section 4 provides an analysis of the model, findings, and derives theorems. Section 5 focuses on the impact and transmission mechanisms of QH based MP for mitigating homelessness and market expansion. Section 6 provides practical implications of this study and finally, Section 7 presents concluding remarks.

2. Literature Review

In literature, exactly, there are no direct previous work and research on mitigating homelessness by pursuing QH or interest-free monetary policy. However, there are previous works and research on different aspects of homelessness and the importance of QH, as well as *Sharia-compliant* modes of financing and, therefore, all such research works and the importance of QH, will be evaluated.

Homelessness has multi-dimensional aspects. One of the aspects of such homelessness is overwhelmingly relatively more young people are homeless. Kuskoff (2018) rightly argues that relatively more young people are homeless and for reducing the homelessness for such young cohort of the population, they must be included in policy formulation so that they will be able to make the smooth transition from homelessness to homeowners.

For ending homelessness, it is important to understand and to evaluate different approaches to solve homelessness. Bernie et al. (2014) attempted to provide methodological guidance by using case studies and theory-based approaches to evaluate different types of interventions and actions for ending homelessness.

Many countries set priorities on housing as 'housing first' for ending homelessness. Gaetz et al. (2013) has emphasized that housing should not only be the priority, but it is the 'most realistic, humane and effective way' to end the homelessness.

There are certain standard policies, universally adopted by many countries for ending homelessness but each country should focus its unique and

peculiar characteristics to address this complex issue. Parsell et al. (2013) have explained that even though Australia follows social and strategic policies to reduce homelessness like the UK and the USA, yet Australia has certain unique strategies for sustainable reductions in homelessness. In other words, every country or society or community must address certain unique local characteristics for a permanent reduction in homelessness.

Providing own home for homeless people is the most effective and direct way to end homelessness. Busch-Geertsema (2012) points out the evidence that the program of reducing homelessness will be relatively more successful if the people are provided with their own homes.

Often direct financial assistance to a homeless person may not necessarily solve his or her problems or change the situation. Loehwing (2010) provides evidence that direct financial assistance of $100,000 to a homeless person may not solve his problems because he may not know how to utilize it. Therefore, a homeless person should be given a home and necessary support for improving his or her skills and quality of life for sustainable and permanent change from homelessness to homeowners.

Drug abuse, alcohol and mental health problems are some of the major causes of homelessness, and persons in such cohort of the population need help, both financial and social services and if the government does not fund such services, it is most likely more people will be homeless and such problems will be much more complicated and the solutions will be far reached. Kiesler (1991) argues that cuts in funding in housing create problems of homelessness for children and youth. If proper services are not provided for alcohol, drug use and mental health problems, it is expected that the incidence of homelessness will continue to grow. Verdouw et al. (2018) emphasize that the solution to chronic homelessness must focus on "Housing First."

Many government housing programs are simply subsidized housing and the people who are in imminent risks of becoming homeless, such programs fail to address their issues. Early (1998) argues that the subsidized housing program fails to accommodate those who are in the highest risk group of becoming homeless and thus, such policy does little to prevent the homelessness.

Certain demographic and race factors work as signals for becoming homelessness and in ending homelessness, the policymakers should pay special attention to these factors or indicators. Early (2004) outlined that gender, age as well as race are important factors related to homelessness and suggested that for reducing homelessness, housing assistance should target such risk group.

In this paper, it is proposed that the problems of homelessness should be solved by pursuing QH or interest-free MP. Qard Hasan based interest free MP is relatively more effective compared to interest-based tools of MP (Selim 2019). Pursuing expansionary MP and increasing money supply through the traditional channels of big banks and financial institutions only contributes to further increase in their profits and does little to the poor and others, with little or no collaterals (Chulho and Ryu, 2017).

Goodhart (2015) argues that even when CB cuts bank rate, still the economy remains stagnated and does little to economic recovery, simply because a significant cohort of the population may not have any access or share to such expansionary MP.

Among the pioneers, Chapra (1996) argues that the CB should finance budget deficits on QH basis with the newly created money while Arrif (1996) proposes that a certain proportion of the demand deposits of the financial Institutions should be given as QH.

Awad (2015) proposes a profit-sharing ratio as a tool of MP while Selim (2013) suggests *Mudarabah* based MP for fighting recession. Besides, Selim (2015) finds that *Sukuk* are effective tools of MP.

Siddiqi (1982), Chapra (1982), Kahf (1982) and Khan et al. (1989) proposed different *Sharia-compliant* modes of financing including open market operations with securities that may yield variable rates of return. However, if variable rates of return are indexed to LIBOR or involve excessive *Gharar* then such tools are unacceptable from Islamic points of view.

MP based *on Sharia-compliant* modes of financing will lead to the growth of the real sector (Farahani and Dastan, 2013).

Aderemi et al. (2023) have found that Qard Hasan is a viable financing instrument for crowdfunding, especially for financing microenterprises in Malaysia. Similarly, Qard Hasan can be employed as a viable financial instrument for providing effecting financing for the homeless people.

By analyzing the data from the World Bank and Islamic Financial Services Board (IFSB) for 21 countries for the periods of 2013 to 2018, Hasan et al. (2021) have found that Qard Hasan can play an effective and decisive role for ensuring global sustainable development. In addition, Qard Hasan can be included as an effective Shariah compliant financing tool for fostering sustainable development.

Widiyanto et al, (2011) have discovered that Qard Hasan financing model is very effective in empowering and promoting economic activities for the poor and needy cohort of population. Furthermore, by using Zakat and Sadaqa funds, Qard Hasan model has the potential for alleviating poverty in the society.

Ismal (2011) has suggested that *Ijara* based securities can be used as tools of MP and CB can buy and sell such securities in open market operations.

Mariam (2016) has found unfairness, unequal treatment, and complexities when interest-based MP is applied in an economy where Islamic Banks are deprived of the access to borrowing and the lender of last resort (LOLR) service of the CB. Islamic banks cannot borrow based on interest but in QH based MP, borrowing services will be provided for all banks - interest-free and interest based, and all banks will have equal access to the lender of last resort service of the CB.

Central Bank can extend interest free loans both in the binary and Islamic economy and this will contribute to expand the real sector of the economy (Shakespeare and Harahap, 2009). However, the current study proposes that Qard Hasan based interest free monetary policy can be employed to mitigate the homelessness problems across the nations and thus it can bridge the research gap by adding a new dimension in the literature that Qard Hasan based monetary policy can indeed, contribute to effectively mitigate the homelessness without creating debts and deficits.

For solving the homelessness and street begging, the province of Yogyakarta in Indonesia adopted the Resolution of countermeasures, but

the Researchers found that such "coercive strategy criminalizes the homeless people and beggars and 'prevented strategy' incurred huge costs in the budget" (Rahman and Mu'allim, 2021) but our present study adopts soft, humane, holistic, effective Qard Hasan based compassionate approach where CB will follow the heavenly revealed guidance in the Qur'ān, 59:7, according to which the newly created wealth by the central bank must flow to those who need the most, and thus this study bridges another research gap for policy effectiveness in mitigating homelessness in real world.

2.1 Examples of Interest free Monetary Policy and Interest Free Loans

Selim et al. (2019a) have examined that many members of the OECD countries pursued zero interest rate or negative interest based monetary policy which is similar to Qard Hasan or interest free monetary policy. In the same study Selim et al. (2019a) also proved that the members of the OECD countries which pursued interest free monetary policy performed better compared to the countries which pursued positive and relatively higher interest rate based monetary policy and the results were statistically significant at the 5% level.

Often western governments offer interest free loans to certain companies for mitigating financial difficulties. For example, Canadian Federal Government offered C$372.5 million interest free loans to Bombardier[5]. New Zealand offers interest free loans to low-income population[6].

2.2 Research Gap

From the above literature review, it is clear that Qard Hasan is a viable financing instrument (Aderemi et al. 2023), decisive tool for sustainable development (Hasan et al. 2021), an effective tool for monetary policy (Selim 2019) and a potential tool for poverty alleviation (Widiyanto et al. 2011) but so far no one has suggested or developed that Qard Hasan based monetary policy can effectively mitigate the massive problems of homelessness. This is perhaps the first attempt to employ Qard Hasan

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[5] https://www.reuters.com/article/canada-bombardier-idUSL4N1FS59S
[6] https://www.finder.com/nz/interest-free-loans

based monetary policy for solving the problems of homelessness without creating major debts and deficits, and thus this study attempts to bridge the above research gap in the literature.

3. The Model

If CB plans to pursue and focus on QH based MP to mitigate homelessness and estimates that in the entire economy, the estimated number of homeless people (HLi) can be written as follows:

$$HLi = HL1, HL2, HL3, ..., HLn \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . (1)$$

In Equation 1, HLi is a finite number, and $HL1$ is a homeless individual 1, $HL2$ is a homeless individual 2 and so on. Now suppose, each homeless individual may need Ki amount of funds for owning or building an honorable home. Therefore, the total funds required can be written as:

$$\sum_{i=1}^{n} KiHLi = K1(HL1) + K2(HL2) + K3(HL3) + \cdots \ldots$$
$$+ Kn(HLn) \ldots \ldots \ldots \ldots . (1a)$$

In Equation 1a, the total increase in additional money supply (MS) equals $\sum_{i=1}^{n} KiHLi$ where $\sum_{i=1}^{n} KiHLi$ is the total funds required to buy or build new homes for all homeless individuals. Therefore, the increase in additional MS will be equal to $\sum_{i=1}^{n} KiHLi$, as shown in Equation 2 as follows:

$$\Delta MS = \sum_{i=1}^{n} KiHLi \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . . \ldots \ldots \ldots \ldots \ldots . . . \ldots . (2)$$

Now if $Ki = K1 = K2 = \cdots \ldots \ldots \ldots \ldots \ldots Kn$ =BD100,000
and HLi =1, 2, ………………, 80,000 then,

$$\Delta MS = \sum_{i=1}^{n} KiHLi = BD100{,}000x80{,}000$$
$$= BD8{,}000{,}000{,}000 \ldots \ldots \ldots . . (3)$$

Therefore, the CB will increase money supply an additional BD8 billion, where BD is Bahraini Dinar and 1 BD=US$2.65. The increase in MS by

BD8 billion will increase investment spending by BD8 billion if the additional MS is directed to build new homes. Expenditures on building new homes are considered investment spending.

3.1 The Justification and Effects of pursuing Qard Hasan based Expansionary Islamic Monetary Policy by increasing an additional BD8 billion for mitigating homelessness.

The true objectives of monetary policy are designed to control both inflation rate (P) and unemployment rate (U) and the sum of inflation rate and unemployment rate can be defined as discomfort index or misery index (MI) and can be written as follows:

$$MI = P + U \ldots \ldots \ldots \ldots \ldots (4)$$

In Equation 4, the economic performance of an economy will improve if MI decreases and vice-versa. If CB pursues expansionary monetary policy and increases money supply by BD8 billion and the entire amount will be spent to increase the supply of houses, either new or renovating old houses or both, the total value added on houses will likely to be higher if and only if the entire amount of BD8 billion will be spent to increase the supply of houses. CB can increase money supply (MS) and thus can pursue expansionary MP for mitigating the homelessness problems and it is expected that it will not create inflation because the value of new goods produced as new homes or houses ($P\Delta H$) will be greater than the additional money supply (ΔM), i.e., $P\Delta H > \Delta M \quad or, \ \Delta H > \frac{\Delta M}{P}$, where ΔH is the additional increase in the supply of housing units. If $P\Delta H > \Delta M$, the price level (P) will fall and vice-versa. Therefore, pursuing expansionary monetary policy for building new homes (ΔH) will create value added in production or in real GDP. The above fact can be proved by employing Fisher's Equation of Exchange or the quantity theory of money (Warburton 1953) as follows:

$$MV = PT$$
$$or, MV = PH$$
$$or, PH = MV$$
$$or, P = \frac{MV}{H} \ldots \ldots \ldots \ldots \ldots (5)$$

In Equation 5, M is quantity of money, V is velocity of money M, P is the price level, T is total final goods and services produced in the economy

during a certain period of time and H represents new houses, both new construction and renovations of old houses. Since additional money supply will be used to produce H and therefore, H is substituted for T in above equation. In the short run, V is constant, but H is allowed to change as M increases. Now in Equation 5, if M increases an additional BD8 billion and if the entire BD8 billion will be used to build new houses or for upgrading old houses, it is most likely that the value-added total production of H will exceed the additional increase in M and as a result, P will fall, and inflation rate will decrease. In addition, increase in H will increase real GDP and employment and therefore, unemployment rate (U) will fall. Both decrease in P and decrease in U will lower MI and economic performance will improve and the true objectives of the monetary policy will be realized. However, the success of lowering MI depends on the assumption that the CB must ensure that the entire amount of additional BD8 billion will be spent in the production of H and Islamic Monetary policy is expected to achieve this goal because CB will be more vigilant and will make sure additional assets in the form of H are produced because Islamic Monetary policy will always be asset-based development and will always strictly adhere to asset based production without any leakages in additional increase in the money supply. Now one may ask the question why the total value added in H will exceed the additional increase in money supply which has been considered as BD8 billion in the current study. The total value added in the production of H will be higher than M because of the economies of scale in the production, increasing labor productivity when latest technology will be employed in well-funded residential development and for positive linkage effects in the economy. Therefore, additional increase in BD8 billion will only create positive and beneficial effects in other n-1 sectors of the economy nor any crowding out or negative effects as it may happen in interest based conventional monetary policy when additional borrowing for an additional task will drive interest rate higher and will crowd out other potential investment spending in other sectors.

3.2   Agency in Charge for granting QH Loans for Mitigating Homelessness

In this respect, the model will be very practical, the central bank (CB) and its different branches in different states or provinces or in federal administrative district will be in charge. However, CB will select all the commercial banks, including Islamic banks, and the entire commercial

banking network in the country will work together for further enhancing, monitoring and for providing support services for homelessness program as part of the services rendered to the local communities. Such services, often called corporate social responsibilities (CSR) and Banks often pursue such strategies and usually consider excellent assets for promoting business, minimizing costs for loans and for securing more and more market share in specific localities as well as in home and abroad (Goss and Roberts, 2011). Also, there will be additional profits both for the Commercial banks and Islamic Banks from the newly created Accounts by the Cohort of Homeless people. When the Homeless people will deposit their Qard Hasan cheque issued by the CB which may equal or exceed BD100,000, both Islamic banks and Commercial banks can lend the excess cash reserves and can earn reasonable rates of return. Even when the Homeless people buy their sweet home, they will turn into new market participants because they will still have enough money for running their own business and their bank accounts will remain with both Islamic and commercial banks and all banks will earn normal economic profits from such financial transactions. Therefore, there will be always built-in incentives for all commercial banks, including Islamic banks to welcome and assist the cohort of Homeless people as new potential clients.

3.3 The Homelessness Issues: Micro and Macroeconomic Perspectives

The homelessness problem can be analyzed from micro and macroeconomic perspectives. In microeconomic perspective, by employing Hicks-Allen's indifference curve techniques (Samuelson, 1974), it can be portrayed that the typical consumer maximizes utility when he or she buys the combination of two commodities, "home or housing", denoted by H which can be measured on the horizontal axis and the "other commodities" denoted by OC which will be measured on the vertical axis in Fig 1 below. For a homeless individual, the value of H is close to zero or merely some positive values if he or she manages to have some shack or temporary shelter. Suppose the homeless consumer is in equilibrium at point E1 where he or she consumes 0.9 units of other goods, OC and 0.6 units of home by merely name but in real world perspective, it is a shack or some sort of temporary shelter. In other words, at point E1, the bundle of commodities the homeless consumer can afford is 0.9OC+0.6H and he or she is on Indifference curve IC1. At point E1, the homeless consumer is extremely poor, and therefore, consumption

bundle of 0.9OC+ 0.6H seems to fall short of basic necessities of life or basic needs. Now suppose, Central Bank pursues Qard Hasan based monetary policy and provides interest free financing for sweet homes to such homeless cohort of population who will eventually pay off the interest free Qard Hasan home loans over time. Now the homeless consumer suddenly becomes homeowner, and as a result, the new homeowner's new equilibrium point will shift to a higher indifference curve IC2 where the consumer will be better off than before and will consume full 1 unit of home at point E2 and will also consume full 1 unit of other goods. Now the consumer is better off and enjoys new home and can afford little bit more of other goods from 0.9 to 1 than before. This new equilibrium for the homeowner is microeconomic equilibrium resulting from the macroeconomic Qard Hasan based interest free monetary policy which enables the homeless consumer to afford a beautiful, sweet home and thus saves from the abject poverty, insecurity, helplessness, and homelessness.

Now the new homeowner will be able to organize the life, prepare for employment, education and for other opportunities. Gradually, income will tend to increase, and the homeowner will shift to equilibrium point E3 where the homeowner consumer will be able to buy more of both goods but will focus mainly on other goods and will buy 1.4 units of other goods from just 1 unit of other goods at point E2. The homeowner consumer will also buy furniture and other amenities for the sweet home to make it more comfortable and as such will consume 1.2 units of home, H compared to just 1 unit at point E2. Now the homeowner consumer is no more under poverty line and thus solving homelessness will also help to eradicate poverty from the society. Therefore, the microeconomic analysis of homelessness and its macro solutions are interwind, closely connected and must be jointly pursued for more effectiveness, and for long term permanent solutions as well as for the greater success without *Riba*, debts, and deficits, and both solutions are designed for the consumers as well for the central bank, government, and all other policy makers across the globe. It is clear from this analysis that when a homeless individual or a household will be transformed into a true homeowner by pursuing Qard Hasan based MP, the new homeowner will shift on higher indifference curve and will consume more of both commodities and therefore, this model can also be extended for eradicating poverty, malnutrition as well as for increasing life expectancy in the long run. This model can also be applied for promoting economic development for the

poor, destitute, and land less peasants in LDCs. However, the model is equally applicable for all homeless people in all nations.
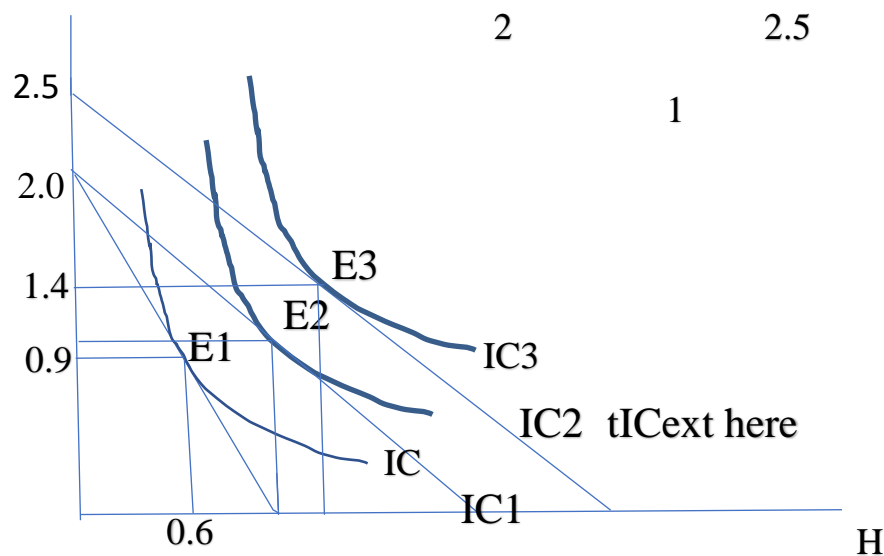
Fig 1: Micro and Macroeconomic Analysis & Solutions of Homelessness

The homelessness solution and micro and macroeconomic analysis portrayed in Fig1 is realistic and if pursued millions of homeless and poverty-stricken cohort of shelter less population will rediscover the true life and will integrate as active consumers in the society and will immensely contribute to the development process of the nation and will be the new driving force where they will no longer be the burden, liabilities, and shame for the nation rather will be assets for themselves as well for the country in the days to come.

3.4 Repayment Process of QH Loans and Issues with Implementations

Each homeless individual will open an account in his or her local commercial bank and the QH cheque from the CB will be deposited there for purchasing new homes and the local bank will provide guidance, advice, and support services at no cost as part of the corporate social

responsibility (Goss and Roberts, 2011). Once the home is purchased and the new homeowner will use the remaining money to create a business for himself or for herself or for improving skills for new jobs, their income will tend to increase. From the income of the new business or jobs, the homeowner will just deposit 10% of his or her profits or income and will only pay against the original borrowed QH amount and since it is QH, there will be no interest, no fees, and no service charges will ever be added. Furthermore, the new homeowner will be able to borrow additional funds if needed for limited term on QH basis from the money he or she has already deposited against the total QH amount. Such process will not only create an incentive to pay back the QH amount, but it will also help them to pursue new opportunities by taking QH loans from the same account. Such built-in incentives will not only transform the homeless people into new homeowners but will also improve their standard of living steadily and gradually. These are simple logical steps and there will be no issues for implementing this noble idea for mitigating homelessness by providing QH interest free loans.

3.5 *Shari'ah* Measures, *Maqasid Al Shari'ah* and Mitigating Homelessness

This study employs Qard Hasan based MP for mitigating homelessness and Qard Hasan is one of the best measures and solutions emphasized in the heavenly guidance in the Qur'ān, 2:245, 73:20, 57:18, and in many other verses in the Qur'ān as well as in the Hadith, and both of which are the primary sources of *Shari'ah*.

Maqasid Al Shari'ah emphasizes (1) the protection of Religion (*hifz al Deen*), (2) the protection of Soul (*hifz al Nafs*), (3) the protection of Reasoning or wisdom (*hifz al Aql*), (4) the protection of progeny or offspring (*hifz al Nasl*), and (5) the protection of wealth or property (*hifz al mal*), (Rahman and Mu'allim, 2021), and the protection of all of the above five elements of the *Maqasid Al Shari'ah* require the possession of a modest home where an individual or a family can effectively and successfully protect all of the elements of the *Maqasid Al Shari'ah*. A homeless individual or a family may miserably fail to properly protect the above five elements in *Maqasid Al Shari'ah* and therefore, mitigating homelessness is an urgent need from the point of *Maqasid Al Shari'ah*.

When CB will increase QH loans, aggregate expenditures for the jth country, denoted by Ej will increase and will shift up where Ej can be written as follows:

$$Ej = Cj + Ij + Gj + Xj - Mj \dots \dots \dots . \dots \dots \dots \dots . (6)$$

In Equation 6, aggregate expenditures function (Ej) is defined as the total expenditures by all the agents in the economy, where $Cj=$ Consumption expenditures, $Ij=$Investment spending, $Gj=$Government expenditures, $Xj=$ Exports, and $Mj =$Imports and net exports $(Xnj) = Xj - Mj$. Now Ij function can be written as follows:

$$Ij = \text{Io} - \alpha r + \beta QHmh + \mu Y \quad \alpha < 0; \quad \beta > 0;$$
$$\mu > 0; \dots \dots \dots . (7)$$

In Equation 7, Investment spending Ij is positively related to QH based MP to mitigate homelessness $(QHmh)$, and the effect of $QHmh$ on Ij can be calculated as follows:

$$\frac{\partial Ij}{\partial QHmh} = \beta > 0 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots . . (8)$$

In Equation 8, other things remaining the same, if $QHmh$ increases by BD8 billion, Ij will increase by BD8 billion if the value of $\beta = 1$. However, if $\beta > 1$, it implies that BD8 billion investment spending may trigger further investment spending in the economy. If $\beta < 1$, it may indicate that there will be less than BD8 billion investment spending in the economy and it may occur when all BD8 billion will not be used to build new houses rather some of the potential new homeowners may prefer to buy old houses.

Also, in Equation 7, Investment spending Ij is negatively related to interest rate and such effect is shown as follows:

$$\frac{\partial Ij}{\partial r} = \alpha < 0 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots . . (9)$$

In an interest-based economic system, the interest rate hurts or negatively affects investment spending. If an economy follows QH based MP for

mitigating homelessness, $r = 0$ and as such, the negative effect of interest rate on investment spending can be eliminated.

In Equation 7, QH based expansionary MP for mitigating homelessness will increase equilibrium income, $Y,$ because of the upward shift in aggregate expenditure line, and as Y increases Ij will increase further and such effect can be estimated by partially differentiating Ij w.r.t. Y as follows:

$$\frac{\partial Ij}{\partial Y} = \mu > 0 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (10)$$

Equation 10 portrays that the expansionary QH based MP will not only mitigate homelessness, but it will also increase equilibrium income through the dynamic effects of multiplier-accelerator.

The expansionary QH based MP for mitigating homelessness will also increase total consumption expenditures (Cj) in the economy because the building of new homes for the homeless individuals, all the factors of production which have been employed, will receive factor income. For example, the workers will receive labour income, entrepreneurs or builders will receive profits, land, lumber, and raw materials sellers will also receive income. As income increases, other things remaining the same, the consumption expenditures will also increase. Therefore, the consumption function (Cj) can be written as follows:

$$Cj = Co + bYd - lr; \quad Yd = Y - Za; \quad Za = \Omega(Y - Zn) \dots \dots \dots (11)$$

In Equation 11, Co =Autonomous consumption, Yd =Disposable Income, Za =Zakat, Ω =Zakat rate=2.5%, Zn =Nisab amount for Zakat. Considering Gold standard, the individual will pay Zakat on the amount above \$5594.35 =\$63.95x87.48, calculated based on the current market price of \$63.95 per gram of gold and the value of 87.48 grams of gold as of 22 April 2023. In other words, the amount of the deductions for which the individual will not pay Zakat is \$5594.35. Therefore, incorporating Zakat, the Cj function can be written as

$$Cj = Co + b(Y - \Omega(Y - Zn) + vmh - lr$$
$$or, \quad Cj = Co + b(Y - \Omega Y + \Omega Zn) + vmh - lr$$
$$or, \quad Cj = Co + b(1 - \Omega)Y + b\Omega Zn + vmh - lr \dots \dots \dots \dots (12)$$

Equation 12 indicates that as income, Y, increases because of QH based expansionary MP for mitigating homelessness, it will also increase Cj. Increase in Cj will shift the Ej line up and equilibrium income Y will continue to increase through the multiplier-accelerator process.

Expansionary MP for mitigating homelessness (mh) will increase both income and employment. Increase in income and employment will also directly increase consumption expenditures. Partially differentiating Cj w.r.t. mh from Equation 10 above yields:

$$\frac{\partial Cj}{\partial mh} = v > 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. (13)$$

It is also evident from Equation 12 that interest rate negatively affects consumption expenditures, as shown below in Equation 14.

$$\frac{\partial Cj}{\partial r} = -l < 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. (14)$$

It is most likely that expansionary QH based MP for mitigating homelessness (mh) will increase government expenditures for infrastructure development by the rate φ. Besides, an increase in income resulting from the expansionary MP may also increase government spending at the rate of g. Incorporating the above two effects, government spending function, G, can be written as follows:

$$Gj = Go + \varphi mh + gY - nr ; \quad \varphi > 0; \ g > 0; n < 0. \dots\dots (15)$$

In Equation 15, Go is autonomous government expenditure but if the CB pursues expansionary QH based MP for mitigating homelessness(mh), its impact on G will be positive as shown below:

$$\frac{\partial Gj}{\partial mh} = \varphi > 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. (16)$$

Expansionary QH based MP for mitigating homelessness will increase Y, and as Y increases, government spending will also increase because the demand for government services will increase as real GDP increases and government must supply and provide additional services, and

consequently government spending will increase as shown by partially differentiating G w.r.t. Y as follows:

$$\frac{\partial Gj}{\partial Y} = g > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (17)$$

Equation 17 exhibits that G will continue to grow as Y increases and as G increases Ej line will shift up and Y will continue to grow further.

Often Government incurs spending by borrowing. It is most likely that government borrowing will decrease when the interest rate increases. The negative effects of the interest rate on government spending can be estimated by partially differentiating government spending function in Equation 15 w.r.t. r as follows:

$$\frac{\partial Gj}{\partial r} = -n < 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (18)$$

Equation 18 clearly shows that if the government needs to borrow money for increasing government spending, the potential government spending will be less and vice-versa.

Expansionary QH based MP for mitigating homelessness will increase investment spending in inputs for home building sectors in general, as well as in other sectors of the economy. Increase in domestic production may increase exports because of the surplus output in the form of prefabricated houses, especially, such portable prefabricated houses can be exported to earthquake devasted zones and to other areas where emergency shelters are needed and therefore, the export equation can be written as follows:

$$Xj = Xo + aY \qquad a > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (19)$$

Besides, expansionary MP for mitigating homelessness will increase output as mentioned above because the entire amount of additional *MS* will be used in the production. With value-added, the total output produced will be higher than the additional increase in MS. As a result, the overall price level may fall. A fall in the aggregate price level will increase the comparative advantage of the economy and consequently,

exports (X) will increase, and such positive relationship can be portrayed as follows:

$$Xj = \mathrm{X}o + aY + cmh - qr \qquad a > 0, c > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots (20)$$

In Equation 20, it is evident that expansionary MP to mitigate homelessness (mh) will increase Y and the twin factors will contribute to increasing exports (X). The effect of mh on X is shown below by partially differentiating Xj w.r.t. mh.

$$\frac{\partial Xj}{\partial mh} = c > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (21)$$

Similarly, the effects of the increase in Y can be calculated by partially differentiating X w.r.t. Y s follows:

$$\frac{\partial Xj}{\partial Y} = a > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (22)$$

From Equations 21 and 22, the effect of expansionary MP on exports will be positive, and exports will increase directly by an increase in $mh,$ and indirectly by an increase in Y. As the interest rate rises, it will have a negative impact on real GDP and the exportable surplus will fall and therefore, exports will fall, and this fact is clear in the following Equation 23:

$$\frac{\partial Xj}{\partial r} = -q < 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (23)$$

The effects of expansionary MP for mitigating homelessness will be both positive and negative on imports. For example, some smart entrepreneurs for building new houses may choose to produce some inputs or products which have earlier been imported from other countries. In other words, domestic production will increase because of expansionary MP for mitigating homelessness (mh) which will eventually reduce imports as shown below:

$$Mj = \mathrm{M}o - emh \qquad e < 0 \ldots\ldots\ldots\ldots\ldots (24)$$

However, as Y increases, people will buy more imported goods and as a result, imports, M will increase and the final import function can be written as follows:

$$Mj = Mo - emh + pY \qquad e < 0; \ p > 0. \ldots \ldots \ldots (25)$$

When the interest rate rises, it will reduce domestic output or Y. To make up this shortage, the country may need to increase imports. In other words, if interest rate increases, imports may increase because the increase in interest rate will depress domestic production and may increase shortages of goods in the domestic economy. To make up the domestic shortages, imports may increase. Therefore, the import function in Equation 25 can be written as follows:

$$Mj = Mo - emh + pY + ur \qquad e < 0; \ p > 0; u > 0. \ldots \ldots \ldots (26)$$

In Equation 26, actual imports will fall if $e > (p + u)$ and vice-versa. Now the aggregate expenditure function, Ej can be written from above equations 7, 12, 15, 20 and 26 as follows:

$$\begin{aligned} Ej = {}& Co + b(1 - \Omega)Y + b\Omega Zn + vmh - lr + Io - \alpha r + \beta mh + \mu Y \\ & + Go + \varphi mh + gY - nr + Xo + aY + cmh - qr \\ & - (Mo - emh + pY + ur) \ldots \ldots \ldots \ldots \ldots . (27) \end{aligned}$$

$$\begin{aligned} or, \quad Ej = {}& Co + b(1 - \Omega)Y + b\Omega Zn + vmh - lr + Io - \alpha r + \beta mh \\ & + \mu Y + Go + \varphi mh + gY - nr + Xo + aY + cmh - qr \\ & - Mo + emh - pY - ur \end{aligned}$$

$$\begin{aligned} or, \quad Ej = {}& Co + b(1 - \Omega)Y + b\Omega Zn + vmh - lr + Io - \alpha r + \beta mh \\ & + \mu Y + Go + \varphi mh + gY - nr + Xo + aY + cmh - qr \\ & - Mo + emh - pY - ur \end{aligned}$$

$$\begin{aligned} or, \quad Ej = {}& [Co + b\Omega Zn + Io + Go + Xo - Mo] - r[l + a + n - u] \\ & + b(1 - \Omega)Y + \mu Y + gY + aY - pY] + [vmh + \beta mh \\ & + \varphi mh + cmh + emh] \ \ldots (28) \end{aligned}$$

The economy will be in equilibrium when the aggregate output (Y) equals aggregate expenditures (Ej). Now from Equation 28, the macroeconomic equilibrium condition can be written as follows:

$$Y = Ej$$

$$or, \quad Y = [Co + b\Omega Zn + \mathrm{I}o + Go + Xo - Mo] - r[l + a + n - u]$$
$$+ b(1 - \Omega)Y + \mu Y + gY + aY - pY] + [vmh + \beta mh$$
$$+ \varphi mh + cmh]$$

$$or, \quad Y - b(1 - \Omega)Y - \mu Y - gY - aY + pY]$$
$$= [Co + b\Omega Zn + \mathrm{I}o + Go + Xo - Mo]$$
$$- r[l + a + n - u] + mh[v + \beta + \varphi + c$$
$$+ e] \ldots \ldots \ldots \ldots \ldots \ldots . (29)$$

$$or, \quad Y[1 - b(1 - \Omega) - \mu - g - a + p]$$
$$= [Co + b\Omega Zn + \mathrm{I}o + Go + Xo - Mo]$$
$$- r[l + a + n - u] + mh[v + \beta + \varphi + c$$
$$+ e] \ldots \ldots \ldots \ldots \ldots \ldots . (30)$$

$$or, \quad Y = \frac{1}{(1 - \delta)} . (A - Br + Dmh) \ldots \ldots \ldots (31)$$

In Equation 31 above, $\delta = b(1 - \Omega) + \mu + g + a - p$; $A = Co + b\Omega Zn + \mathrm{I}o + Go + Xo - Mo$; $B = l + a + n - u$; and $D = v + \beta + \varphi + c + e$ and it is evident that the equilibrium income depends on the multiplier, denoted by $\frac{1}{(1-\delta)}$ times autonomous expenditures, $(A - Br + Dmh)$. Increase in the value of multiplier or the increase in autonomous expenditures or both will increase equilibrium real GDP, employment, and prosperity.

4. Analysis of the Model, Findings, and the deductions of theorems

In Equation 31, the slope of aggregate expenditure(Ej) line is given by:

$$\delta = b(1 - \Omega) + \mu + g + a - p \ldots \ldots \ldots \ldots \ldots \ldots . . (32)$$

And the intercept is:
$$A - Br + Dmh \ldots \ldots \ldots \ldots \ldots \ldots . (33)$$

In Equation 31, A is derived from above Equation 30 as follows:

$$A = Co + b\Omega Zn + \mathrm{I}o + Go + Xo - Mo \ldots \ldots \ldots \ldots (34)$$

In Equation 31, part of the intercept is Br where B can be written from Equation 30 as follows:

$$B = l + a + n - u \,...\,...\,...\,...\,...\,...\,...\,...\,...\,...\,...\,...\,..\,(35)$$

Also, in Equation 31, part of the intercept is Dmh where D is written from equation 30 as follows:

$$D = v + \beta + \varphi + c + e \,...\,...\,...\,...\,...\,...\,...\,...\,...\,...\,...\,..\,(36)$$

Finally, the reduced form equilibrium of the economy can be written as:

$$or, \qquad Y = \gamma.(A - Br + Dmh) \,...\,...\,...\,...\,...\,..\,...\,...\,...\,(37)$$

In Equation 37, γ is the multiplier where $\gamma = \dfrac{1}{(1-\delta)}$.

Now based on Equation 37, we can postulate the following theorem:
Theorem 1: In Expansionary QH based MP for mitigating Homelessness(mh), the slope of the Ej is (δ) and it will be higher when mh>0. When mh=0, ($\mu + g + a + e$)=0 and the slope will be smaller. The higher the value of the slope (δ) of Ej, the higher will be the value of γ, and the increase in Y and employment will also be higher, and vice-versa.

If the CB pursues expansionary QH based MP for mitigating homelessness, the slope of aggregate expenditure line will be steeper, and the value of the multiplier will be higher, the economy will be in full employment or close to full employment, and the MP will be most effective. However, in the absence of such MP, the slope of the aggregate expenditure function will be flat because the slope will be only $b(1 - \Omega) - p$, and the value of the multiplier will be smaller, and the MP will be less effective.

Now the above Equation 37 can be rewritten as follows:

$$Y = \gamma.(A - Br + Dmh)$$
$$or, \qquad Y = \gamma.A - \gamma.Br + \gamma.Dmh \,...\,...\,...\,...\,(38)$$

Now partially differentiating Equation 38 w.r.t. mh yields,

$$\frac{\partial Y}{\partial mh} = \gamma D$$
$$or, \qquad \partial Y = \gamma D. \partial mh$$

$$or, \quad \Delta Y = \gamma D. \Delta mh \,...\,...\,...\,...\,...\,..\,(39)$$

Now putting the values for $D = v + \beta + \varphi + c$ from equation 36 into Equation 39 yields,

$$or, \quad \Delta Y = \gamma(v + \beta + \varphi + c + e)\Delta mh \dots \dots \dots \dots \dots \dots \dots (40)$$

In Equation 40, increase in equilibrium income (ΔY) will be equal to the multiplier(γ) times increase in money supply (Δmh) resulting from the expansionary MP for mitigating homelessness, times ($v + \beta + \varphi + c + e$). Therefore, an additional increase in equilibrium output will increase many times more than the additional increase in money supply and as a result, the economy will be in full employment without inflation. Now the second theorem can be stated as follows:

Theorem 2: Expansionary QH based MP for mitigating Homelessness (mh) will positively impact on C, I, β, G, X and M, and the total effects will be $\gamma(v + \beta + \varphi + c + e)\Delta mh$ on the change in equilibrium income. Since $\gamma(v + \beta + \varphi + c + e) > 1$, increase in money supply by Δmh, $\rightarrow Y \uparrow \rightarrow \Delta Y > \Delta mh \rightarrow$ Inflation rate$(P) \downarrow \rightarrow (Y \rightarrow Yf)$ where $Yf = $ full employment Y.

It is evident from the above theorem that mitigating homelessness by pursuing QH based expansionary MP will not only solve the problems of homelessness, but it will also create positive effects and bring the economy to full employment without inflation.

The reduced form equilibrium Equation 38 indicates that the interest rate has a negative effect on equilibrium income and employment. Higher the interest rate, the lower will be the equilibrium income and employment, and vice versa. By partially differentiating Equation 38 w. r. t. interest rate (r) yields,

$$\frac{\partial Y}{\partial r} = -\gamma B$$
$$or, \quad \partial Y = -\gamma B. \partial r$$
$$or, \quad \Delta Y = -\gamma B. \Delta r \dots \dots \dots \dots \dots \dots (41)$$

In Equation 41, $B = l + a + n - u$ as derived in Equation 35. Substituting the values for B in Equation 41, the negative impact of r on ΔY can be calculated in the following Equation 42, as follows:

$$or, \quad \Delta Y = -\gamma(l + a + n - u)\Delta r \dots\dots\dots\dots\dots\dots..(42)$$

Equation 42 indicates that any additional increase in interest rate (Δr) will decrease ΔY by $-\gamma(l + a + n - u)$. Now if the CB plans to pursue QH based MP for mitigating homelessness instead of interest-based MP, then $r = 0$ and $Br = 0$ in Equation 37, and therefore, the new intercept will be $A + Dmh$ instead of $A - Br + Dmh$ and as a result, the intercept of the aggregate expenditure line Ej will shift up and equilibrium income and employment will increase. Based on the above findings, the third theorem can be stated as follows:

Theorem 3: If the CB pursues QH based expansionary MP for mitigating Homelessness(mh) and abandons interest-based MP, then $Br = 0, \rightarrow$ the negative effects of r on (C, I, G, Xn) at the rates of (l+a+n-u)=0→ (A+Dmh)>(A-Br+Dmh) → Ej shifts up → Y ↑→ Yf.

From above theorem 3, it is evident that if $r = 0$, Ej shifts up; r is indeed holding the economy down, creating unemployment and pulling the economy away from full employment. This is indeed manifested in the words of Allah, Glory be to Him, may He be Exalted:

 "Allah will destroy interest and bless Sadaqah or Charity" (Qur'ān, 2:275-276).

Allah, Glory be to Him, may He be Exalted provided the best alternatives to interest-based system by permitting trade and commerce and forbidding *Riba* or interest (Qur'ān, 2:275-276).

The reduced form macroeconomic equilibrium model as derived in Equation 38 is robust enough to explain the fiscal policy effects of increasing government expenditures for mitigating homelessness (mh) problems as well. Putting the values for autonomous expenditures (A) in Equation 38 yields,

$$Y = \gamma.A - \gamma.Br + \gamma.Dmh$$
$$or, \ \ Y = \gamma(Co + b\Omega Zn + \ Io \ + Go + Xo \ - Mo) - \gamma.Br$$
$$+ \gamma.Dmh \dots \dots \dots \dots (43)$$

By partially differentiating Y w.r.t. Government spending (G), the fiscal policy effects can be evaluated as follows:

$$\frac{\partial Y}{\partial G} = \gamma$$
$$or, \qquad \partial Y = \gamma \, \partial G$$

$$or, \quad \Delta Y \ = \gamma \, \Delta G \dots \dots \dots \dots \dots \dots .. (44)$$

Equation 44 indicates that if the government increases additional government spending (ΔG), for mitigating homelessness, additional equilibrium income will increase by $\gamma \, \Delta G$. However, often the government incurs government spending by borrowing on interest and consequently, public borrowing will shift the supply of loanable funds curve to the left, and interest rate will increase. Such an increase in interest rate will cancel out private investment spending, and additional income (ΔY) will decrease by $(\gamma \, \Delta I)$. This phenomenon is often called "Crowding-out Effect". Eventually, such fiscal measures will only add to public debts and deficits without truly mitigating homelessness problems in the economy.

4.1 Comparing MP and fiscal policy (FP) for mitigating the problems of homelessness.

In mitigating homelessness, QH based MP is relatively more effective for the following reasons:

Additional increase in *MS* by CB through QH based expansionary MP for mitigating homelessness will eventually be paid back to CB by the homeless individuals who are now new homeowners. Such loan repayments will be made easy, flexible, and affordable instalments without any interest or finance or administrative charges. Even if such monthly instalment is BD20, still for 200,000 homeless persons, it is expected that the CB will collect about BD20x200,000=BD2 million per month. Instead, if FP is employed, such recovery of QH loans will not be possible at all.

If QH based expansionary MP for mitigating homelessness is employed, it has much more expansionary effects compared to FP actions. QH based expansionary MP for mitigating homelessness has multiple spillover positive effects in the economy while the FP will create negative impacts, including crowding-out effects and increase in interest rates and, therefore, will create debts, deficits, and recessions in the economy.

In addition, allocating funds from government spending budget for the purpose of mitigating homelessness will reduce funding for important services such as education, health care, infrastructures and for other essential services and as a result, such services will suffer in the long run.

Because of the expansionary QH based MP for mitigating homelessness, it is expected that it will create a housing boom in the economy and thus it will cause an increase in the long-run potential real GDP. Homeless people are now homeowners and as such, they are now new consumers in the economy and the size of the economy will expand and potential income and employment will continue to increase.

In the next section, the impact and transmission mechanism of expansionary QH based MP for mitigating homelessness on equilibrium income, housing, homelessness, employment, unemployment rate, and price level will be analyzed.

5. Impact and Transmission Mechanism of QH based MP for mitigating homelessness, and market expansion.

The impact and transmission mechanism of QH based MP for mitigating homelessness can be explained as follows in Equation 45:

$$QHL \uparrow \rightarrow CIH \uparrow \rightarrow DD \uparrow \rightarrow LOE \uparrow \rightarrow MS \uparrow \rightarrow Ej \uparrow \rightarrow Ej \gg up$$
$$\rightarrow (Y, EMP) \uparrow \rightarrow UR \downarrow \cdots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (45)$$

When CB will directly change the transmission mechanism and flow of monetary policy channels from big commercial banks and financial institutions according to the verse in Qur'ān, 59:7 and MS will flow to the homeless people directly and cheques will be issued to them by the branches of CB, the QH loans (QHL) will increase. As QHL increases, cheques issued to homeless people (CIH) will increase and they will deposit such cheques to banks and other Islamic financial institutions. The demand deposits (DD) with the commercial banks and Islamic financial

institutions will increase and all such financial institutions will keep required reserve ratio (τ), by the amount (τDD) and the excess cash reserves, $(DD - \tau DD)$ $or, DD(1 - \tau)$ will be given as loans and the total loan expansion (LOE) in the economy will increase and money supply (MS) in the economy will go up and, and (Ej) line will shift up. Consequently, the equilibrium income (Y) and employment(EMP) will increase, and the unemployment rate (UR) will fall.

QH based MP for mitigating homelessness will also increase the demand for goods and services, including the demand for homes $(Dgsh)$, which in turn will cause an expansion in market size (Em) and therefore, such transmission mechanism can be written as follows in Equation 45A:

$$QHL \uparrow \to CIH \uparrow \to Dgsh \uparrow \to Em \uparrow \to (C, I, G) \uparrow \to Ej \uparrow \to Ej \gg up \\ \to (Y, EMP) \uparrow \to UR \downarrow \cdots . (45A)$$

As QHL increases, cheques (CIH) will be mailed or directly given to the homeless people, and the demand for goods and services and demand for new and old homes $(Dgsh)$ will increase. As the demand for goods and services including homes will increase, producers will also respond by supplying more, and the expansion of the market (Em) will further increase consumption expenditures (C), Investment spending (I) and government spending (G). As a result, aggregate expenditure (Ej) will increase and (Ej) line will shift up, equilibrium income (Y) and employment (EMP) will increase and unemployment rate (UR) will tend to decrease.

5.1 Transmission Mechanism of QH based MP on marketing and sales of housing units (MHU) and housing boom (HB)

The transmission mechanism of QH based expansionary MP for mitigating homelessness and its impact on marketing and sales of housing units and housing boom on equilibrium income and employment is explained in Equation 46 as follows:

$$QHLmh \uparrow \to DHOmh \uparrow \to HPn \uparrow \to HPo \uparrow \to ExH \uparrow \to MHU \uparrow \to HB \uparrow \\ \to Ej \uparrow \to Ej \gg up \to (Y, EMP) \uparrow \to UR \downarrow \cdots . (46)$$

As the CB increases Qard Hasan loans $(QHLmh)$ for mitigating homelessness to the cohort of designated homeless people, the demand for homeownership by homeless people $(DHOmh)$ will increase. The

purchase of new homes (HPn) by the homeless people will increase. Also, the purchase of old homes (HPo) will increase because some of the homeless people will buy old homes. Increase in demand for both new and old homes will create shortages of homes and home prices will increase. As a result, new homes will be built, and old homes will be renovated. As a result, total expenditures on new and old homes (ExH) will increase and the marketing and sales of housing units (MHU) will increase which will create a boom in the housing market (HB), like the American housing boom which has led to the greatest peacetime expansion in the US economy. Increase in expenditures on new and old homes and housing boom will increase aggregate expenditures (Ej) and (Ej) line will shift up which will further increase equilibrium output (Y) and employment (EMP) and reduce unemployment rate (UR).

5.2 The transmission mechanism of QH based MP on the reduction of homelessness and improvement in the standard of living.

The transmission mechanism of QH based expansionary MP for mitigating homelessness on the homeownership by homeless individuals and the standard of living is explained in Equation 47 as follows:

$$QHLH \uparrow \rightarrow DHhl \uparrow \rightarrow HOhl \uparrow \rightarrow NHL \downarrow \rightarrow HLS \uparrow \rightarrow SDD \downarrow \rightarrow LS \uparrow \rightarrow LEx \uparrow \cdots \qquad (47)$$

As the CB pursues expansionary QH based MP for mitigating homelessness and increases QH loans to homeless people ($QHLH$), the purchasing power of homeless people will increase and the demand for housing by homeless people ($DHhl$) will increase. The homeless people will instantly buy new homes and homeownership by homeless people ($HOhl$) will increase because they have been suffering from homelessness since their birth. As a result, the homeownership by homeless people will increase and the number of homeless people (NHL) will fall. As a result, healthy living space ((HLS) for the homeless people will increase and sickness, diseases, and early death (SDD) for this cohort of the population will decrease because they will have access to the shower, clean and running water, place to prepare food and for taking rest. As a result, the standard of living (LS) will improve, and it is expected that eventually the life expectancy (LEx) of such cohort of the population will increase and may catch up with the rest of the population or may even exceed.

5.3 Supply Side and Aggregate Demand Side Effects of QH based expansionary MP for mitigating homelessness.

As the investment in housing sector increases and there will be a housing boom, and consequently, the size of the economy will increase. As a result, the productive capacity of the economy will increase, and the long-run supply-side expansion will take place. As the homeless people now turn to homeowners, the demand side expansion will also be in effect by rightward shift in the AD curve. The impact, as well as the transmission mechanism of QH based expansionary MP for mitigating homelessness, is explained below in Equation 48:

$$\uparrow QHLmh \rightarrow IH \uparrow \rightarrow NHU \uparrow \rightarrow SSi \uparrow \rightarrow LRAS \gg Right \rightarrow (Y,E) \uparrow \rightarrow \\ \downarrow U \ldots \ldots \ldots. \qquad (48)$$

Equation 48 indicates that as the QH loans for mitigating homelessness($QHLmh$) increases, investment spending in the housing sector (IH) will increase, and number of housing units (NHU) will increase, all of which will cause an expansion in supply-side(SSi), and the increase in the productive capacity of the economy and there will be a rightward shift in the long-run aggregate supply curve ($LRAS$) and both equilibrium income (Y) and employment (EMP) will continue to rise and unemployment rate (UR) will fall. The transmission mechanism on the increase in aggregate demand (AD) is explained in Equation 49 as follows:

$$\uparrow QHLmh \rightarrow IH \uparrow \rightarrow NHU \uparrow \rightarrow HWS \uparrow \rightarrow LS \uparrow \rightarrow AD \gg Right \\ \rightarrow (Y,EMP) \uparrow \rightarrow \downarrow UR \ldots \ldots \ldots. \qquad (49)$$

On the aggregate demand side, when the Qard Hasan based expansionary monetary policy($QHLmh$) is pursued to mitigate homelessness, investment in housing (IH) will increase, and the number of housing units (NHU) will increase, and more and more homeless people will now become homeowners (HWS), the standard of living (LS) will increase, the purchasing power will increase, and all of which will cause a rightward shift in the AD curve. Consequently, equilibrium income (Y) and employment (EMP) will increase, and unemployment rate (UR) will fall as shown in Equation 49 above.

6. Practical implications of this Study

Solving the massive problems of homelessness for the entire nation may require enormous resources on continuous basis and only the Qard Hasan based Islamic monetary policy can successfully and permanently solve this problem without incurring much debts, deficits and interest expenses because the recipients of the Qard Hasan loans will repay such Qard Hasan loans to the CB within reasonable number of periods and with added incentives, the Qard Hasan loans are expected to be repaid even faster as stipulated in Section 3.4 above. Solving the homelessness problems by pursuing Qard Hasan based monetary policy will be truly a miracle for a nation and it will also eliminate mass poverty, increase the literacy, and labor force participation rates, as well as the life expectancy of this homeless cohort of population and thus will practically restore their dignity, honor, and respects in the society.

7. Conclusion

For mitigating homelessness if QH based interest-free expansionary MP is pursued, it will not only reduce, and eventually eliminate the multidimensional complex problems of homelessness, but it will also restore full employment income without inflation, and thus will make the economy more competitive. If fiscal policy is conducted for mitigating homelessness, as many countries currently do, it will be less effective because of the crowding-out effects and the country will end up with huge public debts and deficits, and the urgent problems of homelessness may be partially solved or will remain unsolved for most of the homeless people, and such national problem of homelessness will continue to haunt the policymakers in the years to come. Besides, QH based MP will also integrate the new homeowners and transform into new market participants and the demand for goods and services will increase and the real economy will indeed expand, and potential real GDP will increase. Therefore, QH based interest-free expansionary MP is the least cost and most effective way to end homelessness, and at the same time, such MP can take the economy to a new height of full employment income, high standard of living and continuous prosperity for the entire nation, and such findings have been clearly established through the transmission mechanism of Qard Hasan based MP for mitigating homelessness.

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