ORIGINAL RESEARCH

The Multi-dimensional Effect of Household Debt on Urban Individual Well-Being in Klang Valley Malaysia

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Abstract

Debt is beneficiary to individuals and households when their consumption can be extended with credit. However, the benefits gained from availability of credit have negative implications, and research on indebtedness has become a focus of many scholars from different fields of study. Therefore, this research sought to explore the implications of household debt on individuals' social and economic well-being by using 407 sample data collected from the urban households in Klang Valley, Malaysia. Several regression models were applied to investigate the impact of household debt on individual's well-being from various aspects such as economic, psychological, physical health and family relationships. The principle finding was that the impact of household debt extended beyond the economic aspect to all the other three dimensions as well. However, the analysis shows that there are differences with regard to the extent of the impact across the four aspects. The highest impact is on the psychological well-being, compared to other dimensions of well-being. Furthermore, the research also found there is a clear difference between the effect of secured loan and unsecured loan on the social and economic well-being.

Keywords Household debt · Multi-dimensional Well-being · Malaysia

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1 Introduction

The ability to borrow enables households to expand their purchasing power and increase their utility through higher consumption. However, the increase in utility through higher current credit consumption may not prevail indefinitely as portions of future incomes will need to be allocated for debt repayments. Subsequently, the continuous build-up of debts will expose debtors to greater financial vulnerability (Lindner, 2013; Yusof et al., 2015) and financial risk (Böheim & Taylor, 2000; Gross & Souleles, 2002; May & Tudela, 2005; Whitley et al., 2004). An indebted household may become more vulnerable when there are external shocks such as increase in interest rate, reduction in housing prices, reduction in income, and domestic recession. More severely, micro-level indebtedness may also amplify to macro-level by generating risk of general financial instability (Mian et al., 2017).

Apart from financial pressure, scholars from different fields of study have found that the effect of household debt extends to economic and psychological well-being, as well as physical health and family relationships. Research on household well-being shows that household debt not only causes financial stress (Worthington, 2006), but also negatively impacts financial wellness (Plagnol, 2011; Xiao & Yao, 2014), deprives consumption (Bunn & Rostom, 2014; Kukk, 2016), and impacts work productivity (Kim & Garman, 2004; Kim et al., 2006). Beyond economists' perspectives, psychologists have also paid close attention to the impacts of household debt. Psychological studies have showcased the association of indebtedness to various psychological problems namely depression (Bridges & Disney, 2010), anxiety (Drentea & Reynolds, 2012), mental disorder (Meltzer et al., 2012), compulsive buying (Koran et al., 2006), psychotic disorder (Jenkins et al., 2008), and suicide-related disorder (Chen et al., 2006, 2007; Kidger et al., 2011; Meltzer et al., 2011). Psychological studies into the relationship between household debt and health-related behaviour also suggest that higher household debt raises the risk of poor general health (Lee et al., 2007): obesity and alcohol drinking (Webley & Nyhus, 2001), back pain (Ochsmann et al., 2009), smoking (Grafova, 2011), and drug dependency (Jenkins et al., 2008; Meltzer et al., 2012). Household debt has also been linked to aspects of family relationship such as declining marital satisfaction (Dew, 2008), likelihood of divorce (Dew, 2011), poorer child relationship (Conger et al., 1992, 1993), and marital conflict (Dew, 2007).

However, studies performed to examine the effect of household debt across different dimensions are still limited as the impact of debt beyond economic dimensions rarely concerns economic studies. While previous studies have confirmed the impact of debt on individual dimensions of well-being namely economic well-being, psychological well-being, health, and family relationships, no study is done to evaluate the effect of household debt on all four dimensions yet. Hence, it is difficult to draw a general conclusion on how debt influences an indebted individual in all four dimensions of well-being. This is because different studies examine the impact of household debt using different sets of respondents; the debt measurement and sample focus vary between studies. Previous studies have analysed indebted respondents (Bridges & Disney, 2010; Brown et al., 2005; Gathergood, 2012a) based on debt status (Drentea & Reynolds, 2012; Meltzer et al., 2012), with foreclosure experience (Cannuscio et al., 2012), and with recession experience (Bunn & Rostom, 2014; Kukk, 2017). Therefore, this study aims to examine the effect of household debt on variables in all four dimensions of well-being using only one set of respondents. This extends the scope of previous studies from one dimension to multiple dimensions of well-being.
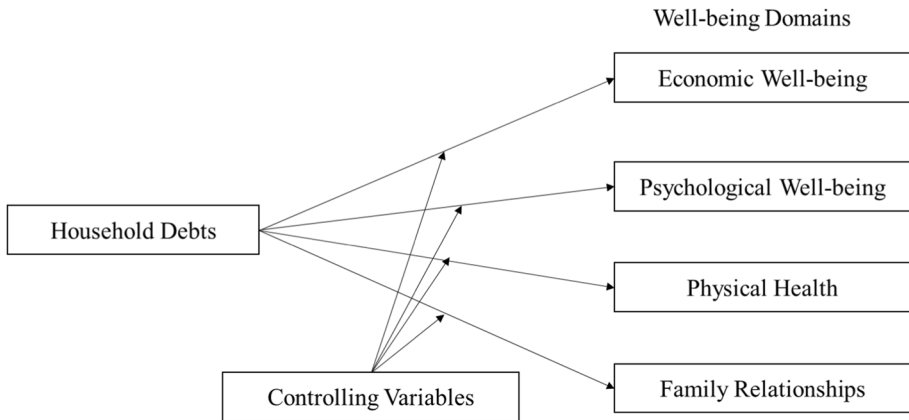
Fig. 1 Conceptual model linking household debts to variables from different aspects of well-being

In addition, despite the rising household debt in Malaysia, very few studies actually focus on the impact of household debt on Malaysian households. Previous works emphasize on the causes rather than the consequences of debt to Malaysian households, where the latter are only limited only to issues related to bankruptcy (Hilmy et al., 2013; Nazni, et al., 2012), vulnerability (Yusof et al., 2015), and financial wellness (Delafrooz & Paim, 2013). Studies on the implications of household debt on various dimensions of well-being have yet to be attempted.

2 Conceptual Model of Household Debts Affecting Well-Being

Scholars commonly agree that an individual's well-being can be viewed from multiple aspects and that the effects of debt are also multidimensional (Dominko & Verbič, 2019; Duncan, 2005). The relationship between household debts and the four dimensions of well-being can be presented in Fig. 1. Household debts may affect an individual in the aspects of economic well-being, psychological well-being, physical health, and family relationships.

Based on the conceptual model, household debt represents the debt situation of the individual or the household that can be measured either objectively or subjectively. Household debt can be objectively measured via the amount of total debt, debt-to-income ratio, or debt service ratio. Studies that measure debt subjectively argue that subjective measurement is more important than objective measurement due to its ability to gauge the extent of debt burden (Tay et al., 2017). Objective measurement of debt amount may not help individuals understand their debt burden. This may be due to the amount of debt borrowed that is influenced by the income or asset level. However, the influence of income or assets can be solved by using the objective measurement of debt which is related to income. The debt-to-income ratio or debt service ratio is frequently used to measure indebtedness in studies (Dynan & Edelberg, 2013; Ntsalaze & Ikhide, 2016, 2017). In contrast to objective measurement of debt, subjective measurement may be affected by the expectations of the personal economic situation and several non-financial factors (Keese, 2012). More importantly, policies on the implication of debt may not be easily implemented with the subjective debt burden as it is harder for policymakers to measure and control the subjective debt

burden. In this case, the impact of objective measurement of debt is more suitable to solve such challenges.

In terms of the relationship between household debts and variables representing the different aspects of well-being, several theories are supportive of such effects. Unlike the positive effect of wealth on well-being (Brulé & Suter, 2019), a model from the perspective of financial vulnerability has provided an explanation on the negative impact of household debts on variables from the economic aspect (Bunn & Rostom, 2014; Kukk, 2016). This view suggests that households with higher level of indebtedness face higher financial vulnerability. Unexpected negative shocks such as loss of job, increase in interest rate, reduction in housing price, or recession attacks may lead to the reduction of economic well-being. The view also suggests that financially vulnerable debtors may take more precautionary steps compared to less financially vulnerable debtors. In order to cope with future uncertainties, they may cut off their spending when faced with higher leverage (Kukk, 2016). Such actions will lead to further reduction of household economic well-being. Therefore, household debts may negatively impact an individual's economic well-being with regards to financial wellness (Baek & DeVaney, 2004), work productivity (Kim & Garman, 2004), and consumption (Bunn & Rostom, 2014; Kukk, 2016), leading to payment problems (May & Tudela, 2005), arrears (Bridges & Disney, 2004), and bankruptcy (Athreya et al., 2018).

A recent study by Tay et al. (2017) proposed a conceptual model for the relationship between debt with overall subjective well-being. This conceptual model is depicted from two perspectives on how debt affects the overall well-being. The bottom-up spill-over perspective suggests that subjective debt burden affects the domain of financial subjective well-being (Diener et al., 1999), and is likely to exert spill-over effects that influence other life domains such as leisure and marriage. This is because financial well-being is one of the key life domains which undergirds opportunities and costs for a variety of life domains. Another is from the resource perspective which considers debt as a strain, the depletion of resources such as debt creates uncertainty and stress because individual strives to maintain and protect their resources (Hobfoll, 2002).

Besides that, the family stress model[1] (Conger et al., 1999; Dew, 2007; Dew & Yorgason, 2010; Mistry et al., 2008) also provides an explanation on the relationship of economic pressure with psychological well-being. This model suggests that financial difficulties predict feelings of economic pressure and bring distress and worries over one's finances. Such worries on one's finances may result in psychological problems such as depression (Dew, 2007; Gathergood, 2012a), anxiety (Drentea, 2000; Drentea & Reynolds, 2012), stress (Kaji et al., 2010), and suicide-related issues (Chen et al., 2006, 2007; Kidger et al., 2011; Meltzer et al., 2011).

Other than the impact of debt on economic and psychological well-being, Keese and Schmitz (2014) explained that debt may affect one's physical health for two reasons. Firstly, high debt payment may provoke psychosomatic conditions, consequently deteriorating physical health. Secondly, medical care and health protection may become secondary due to the financial strain. On top of that, junk food which are less expensive may be more heavily consumed compared to healthy food which are generally pricier. In terms of health-related behaviour, psychological literatures provided models on how smoking correlates with psychological problems (Grafova, 2011; Ockene et al., 1981; Tomkins, 1966).

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[1] Because the family stress model suggests the linkage from economic pressure, to psychological stress, and to marital conflicts.

Tomkins (1966) suggested in his earlier study that smoking is one of the ways in minimizing negative emotional reactions. Therefore, the impact of debt on one's physical health is negatively related to health and positively related to unhealthy behaviours.

Lastly, the impact of household debt on family relationships has also been explained by the family stress model. This model suggests that perceived financial difficulties heighten emotional distress, which in turn increase conflictive marital interactions and decrease positive marital interactions (Dew, 2007; Dew & Yorgason, 2010). Debt also directly impacts marital conflict as financial issue is one of the key family matters (Dew & Dakin, 2011; Dew & Yorgason, 2010). In a family, the impact of debt to marital relationship may extend to the parent-children relationship. The family process model by Conger et al. (1992, 1993) concluded that consistency in the relationship between economic distress and parent psychological distress can be further associated with both marital conflict and poor parenting skills.

As literatures and theories support the impact of debt on each aspect of well-being, the conceptual model constructed in Fig. 1 illustrates how household debts may affect all four dimensions of well-being as discussed earlier. However, each theory and study only provide supports and evidence for one dimension. The impacts of debt on all four dimensions are not present in one single literature. There is also no specific theory explaining the impact of debt on all four dimensions of well-being. Does household debt affect variables from all four aspects of well-being? How do different household debts affect variables from different aspects of well-being? This work aims to provide answers to these questions.

3 Methodology

3.1 Data and Sample

In this study, the data was collected through self-administrated surveys which were sent through house visits. To ensure randomness and representativeness, the selection of sample in this research was based on the sampling frame provided by the Department of Statistic Malaysia 2010 Census which uses a multistage sampling method. Over 600 randomly selected households' addresses from Klang Valley, Malaysia[2] were visited by fieldwork workers. The questionnaires were handed to either the head of household, or to the financial decision-maker of the household, depending on who was reachable. Every respondent was requested to fill up and answer the questionnaire alone during the house visit. After visiting all 600 households, a total of 407 questionnaires were accepted as the data for this research.

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[2] Klang Valley is one of the most developed regions in Malaysia and has experienced fast economic and population growth in the past few decades (Ariffin & Zahari, 2013). Klang Valley is also known as one of the largest urban centres in Malaysia in comparison to other urban areas such as Penang and Johor Bahru. According to the Department of Statistics Malaysia (DoS Malaysia), the total population in Klang Valley was estimated at around 6.39 million in 2017 which is equivalent to more than one-fifth of the total Malaysian population alone. Based on the household number, this region alone has around 1.59 million households, equivalent to one-third of the total Malaysian urban household.

Table 1 List of variables employed for the analysis

Dependent Variables	Items	Measurement
Economic Aspect		
Consumption Deprivation	C1. Daily Meal	0 month to 6 months
	C2. Utilities (e.g., water, electricity)	0 month to 6 months
	C3. Fruits	0 month to 6 months
	C4. Transportation (e.g., petrol, toll payment)	0 month to 6 months
	C5. Clothing	Never to Always
	C6. Medical service	Never to Always
	C7. Vacation	Never to Always
	C8. Leisure activities (e.g., hobbies, entertainment)	Never to Always
	C9. Child education	Never to Always
Financial Wellness	F1. Financial situation of your household at the moment	Income to expenses
	F2. Keeping up with your bills and other financial commitments	Ability to pay
Work Productivity	W1. Late for work for personal reason	Never to Always
	W2. Take leave from work for personal reason	Never to Always
	W3. Miss the deadline of your work assignment	Never to Always
Psychological aspect		
Depression	D1. I cannot seem to experience any positive feeling at all	Never to Always
	D2. I find it difficult to find the initiative to do things	Never to Always
	D3. I am unable to become enthusiastic about anything	Never to Always
	D4. I feel I am not worth much as a person	Never to Always
	D5. I feel that life is meaningless	Never to Always
Anxiety	A1. I experience dryness of my mouth	Never to Always
	A2. I experience breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	Never to Always
	A3. I experience trembling (e.g., in the hands)	Never to Always
	A4. I am worried about situations in which I might panic and make a fool of myself	Never to Always

Table 1 (continued)

Dependent Variables	Items	Measurement
	A5. I feel scared without any good reason	*Never to Always*
Stress	S1. I find it hard to relax	*Never to Always*
	S2. I tend to over-react to situations	*Never to Always*
	S3. I feel that I use a lot of nervous energy	*Never to Always*
	S4. I find myself getting anxious	*Never to Always*
	S5. I feel that I am rather overly sensitive	*Never to Always*
Physical health		
Health status	H1. Experienced any health problem?	*Never to Always*
Smoking behaviour	H2. Do you smoke?	*Yes or No*
Alcohol drinking behaviour	H3. Do you drink alcoholic beverage?	*Yes or No*
Family relationships		
Marriage satisfaction	M1. How satisfied are you with your marriage?	*Extremely Dissatisfy to Extremely Satisfy*
Child Relationship (For child below 18 years old only)	R1. If upset, my child will seek comfort from me	*Does not apply at all to Definitely Apply*
	R2. My child easily becomes angry with me	*Does not apply at all to Definitely Apply*
	R3. Dealing with my children drains my energy	*Does not apply at all to Definitely Apply*
	R4. My children openly share his/her feelings and experience with me	*Does not apply at all to Definitely Apply*
Independent variables	Measurement	
Household debts		
L1. Total household debt	Total household debt service ratio	
L2. Secured loans	Secured debt service ratio	
L3. Unsecured loans	Unsecured debt service ratio	
Demographics		
Age, gender, marital status, education, no. of dependent children, employment, and household income		

3.2 Measurement

The list of variables measured in the survey and applied in this study is presented inTable 1. The variables were divided into dependent variables (DVs) and independent variables (IVs). DVs were the variables from the four aspects of well-being which included consumption deprivation, financial wellness, and work productivity from the economic aspect; depression, stress, and anxiety from the psychological aspect; health problem, smoking, and alcoholic drinking from the physical health aspect; marriage satisfaction and parent–child relationship from the family relationships aspect.[3] IVs on the other hand were comprised of variables ranging from the households' debts to demographics. For variables measured based on multiple items, composite indexes[4] were calculated for later analyses.

3.2.1 Consumption Deprivation

Most of the literatures that investigate the effect of household spending focus on general or overall spending cut of the household (Andersen et al., 2016; Dynan & Edelberg, 2013; Gathergood, 2012b). However, this work which adopted and modified the method proposed by Conger et al. (1999) examined the impact on spending for various categories of household needs. Nine common household consumption category items were selected to determine the extent of consumption deprivation of a household. These items were divided into two groups based on the frequency or occurrence of spending as shown in Table 1. The first group included expenditures on daily meal (C1), fruits (C2), utilities (C3), and transportation (C4) which occur on a regular basis. The second group incorporated occasional expenditures such as clothing (C5), vacation (C6), medical service (C7), leisure activities (C8), and child education (C9).

For the first group, the respondents were asked as follows: "In the past 6 months, how many months do you cut spending on …." -for each item. Choices of "0" to "6" months were given as the options. The month(s) chosen by the respondents indicated the number of month(s) the respondents reduced spending on the particular item. The higher the number of months the household chooses in reducing spending, the greater the consumption deprivation. For the second group, the respondents were asked as follows: "In the past 6 months, how often do you cut spending on …." -for each item. The choices for the responses are on a 1–5 Likert-type scale, where "1" indicates "Never", "2" indicates "Rarely", "3" indicates "Sometimes", "4" indicates "Often", and "5" indicates "Always". Larger values indicate higher levels of consumption deprivation.

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[3] Several factors were considered in the selection of variables to represent various aspects of well-being. For instance, for economic variables which are impacted by household debt, the selected variables cover the different aspects of economic well-being which include consumption, finance, and work life. Other economic variables like delinquency and bankruptcy are not considered in this study because the analysis focuses on the impacts of debt for the general population rather than on specific financial distressed groups for which the latter variables apply. Another factor is the challenge in data collection for some variables. This is particularly for psychological variables that require clinical techniques, such as mental disorder, self-harm, and physical health. Another consideration is the focus of study. This study is focusing on the implication of household debt on an individual's general well-being on various aspects. There is a tradeoff between deepness and wideness. The wider the scope or aspects to consider, the lesser the depth that needs to be compromised. Nevertheless, it is hoped that the choices of variables are appropriate and suitable to represent the various aspects of well-being.

[4] The method of summing up or averaging of Likert scale for composite index was applied in this study. This can be found in statistic literatures like Boone & Bonne (2012) and Logio et al. (2014).

For every consumption item, the score was normalized based on the standard normalization formula of *(score – min) / (max –min)*. The mean score calculated by averaging the normalized score of all consumption items was identified as the index for consumption deprivation. For most of the respondents, the average score was calculated based on the nine items listed above. However, 35 respondents who did not have children had no spending on child education. Thus, their mean score was based on eight items with spending on child education excluded. A higher score for this consumption deprivation index indicates a higher level of deprivation in consumption.

3.2.2 Financial Wellness

Financial wellness was measured subjectively using the InCharge Financial Distress/Financial Well-Being Scale developed by Prawitz et al. (2006). The measurement of financial wellness was based on the financial situation of the households and their ability to meet their financial commitment. The first question (F1) in this section was "How is the financial situation of your household at the moment?". Respondents were required to compare their expenses with their income. The responses to the question were labelled on a scale of "1" to "5": "1" which indicates "Expenses are much higher than income", to "5" for "Expenses are much lower than income". Lower scores show lower levels of financial wellness while higher scores indicate higher levels of financial wellness.

In the second question (F2), respondents were asked as follows: "In the past 6 months, which of the following statements best describes how well you and your immediate family have been keeping up with your bills and other financial commitments?". The choices of response provided were "3" indicating "Able to pay all bills and financial commitments without any problem", "2" indicating "Able to pay all bills and financial commitments, but it is sometimes a struggle" and "1" indicating "Having a real financial problem and falling behind with bills or credit commitments".

Based on the answers from these two questions, the financial wellness index was generated by averaging the normalized scores of F1 and F2.[5] The minimum score "0" represents the lowest level of financial wellness and the maximum possible score "1" represents the highest level of financial wellness.

3.2.3 Work Productivity

The measurement of work productivity was adapted from the multiple indicators used in the study by Kim, (2000) to measure work productivity. Several dimensions of work productivity were considered: "late for work", "missing from work", and "unable to meet the deadline for their work". The questions started with "In the last 6 months, how often do you…." and at the end of the sentence, the scenarios of "late for work", "missing from work", "unable to meet the deadline for their work" (W1, W2, W3 in Table 1) were given. The answers for each question were based on a 5-point Likert-type scale from "Never" (5), to "Rarely" (4), to "Sometimes" (3), to "Often" (2), to "Always" (1). The composite index of work productivity was calculated based on the summation of the three items above

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[5] Due to unequal number of measurement categories for F1 and F2, same normalization formula was applied for each item *(score – min)/(max –min)*. Then, the average of two scores was calculated to indicate the level of financial wellness.

(W1 + W2 + W3) with the overall score ranging from 3 to 15. Higher scores indicate higher work productivity.

3.2.4 Depression, Anxiety, and Stress

The well-known subscale, Depression Anxiety Stress Scale (DASS), was used to measure depression level in this study. The 15-item from DASS was used to measure levels of depression, anxiety, and stress. The psychological questions which were used to measure depression, anxiety and stress are listed in Table 1 and labelled as D1 to S5. The responses to every question were based on a Likert-type scale from "Never" (1), to "Rarely" (2), to "Sometimes" (3), to "Often" (4), and lastly to "Always" (5). A composite score was calculated based on the summation of scores of the respective items for that psychological effect (for example, D1 + D2 + D3 + D4 + D5 for depression). The overall score ranges from 5 to 25. A smaller score indicates a lower level of psychological impact and vice versa.

3.2.5 Health Problem

The impact on health was measured based on the question, "In the past 6 months, have you experienced any health problem?". The choices of response were based on a 5-point Likert-type scale from "Never" (1), "Rarely" (2), "Sometimes" (3), "Often" (4), to "Always" (5). A smaller score indicates a lower frequency of health problem and better health status while a larger score indicates a higher frequency of health problem and poorer health status. Although this measurement is not able to isolate a specific health problem, it helps to measure the general level of health problem among the respondents.

3.2.6 Smoking Behaviour

The measurement of smoking was only focused on distinguishing between smoker and non-smoker. It was obtained from the question, "Do you smoke?", where respondents could answer "1" for "Yes" and "0" for "No" (See Table 1).

3.2.7 Alcohol Drinking Behaviour

A simple question was asked to the respondents as follows: "Do you consume alcoholic beverages?". The choices of answers were labelled as "1" for "Yes" and "0" for "No". Table 1 shows the item (H3) used to measure alcohol drinking behaviour.

3.2.8 Marriage Satisfaction

In this section, the respondents were asked to rate their overall marriage satisfaction by answering the question as follows: "Overall, please rate your level of satisfaction with your marriage?". Table 1 demonstrates the item (M1) in measuring marriage satisfaction. The choices of responses were scaled from "1" to "10". "1" indicates "extremely dissatisfied" while "10" indicates "extremely satisfied".

3.2.9 Parent–Child Relationship

This section adopted the Child-Parent Relationship Scale (CPRS) (Driscoll & Pianta, 2011) to measure the parent–child relationship. Two subscales were used corresponding to two features: the closeness and conflict of the parent–child relationship, with each feature consisting of two items (see Table 1). The two items used to measure closeness between the parents and children were labelled as R1 and R4. The first item (R1) enquired the respondent with a statement as follows: "If upset, my child will seek comfort from me" and the statement of the second item (R4) as follows: "My children openly share his/her feelings and experience with me". The choices of response for items R1 and R4 were rated by using the 5-point Likert scale from "1" as "definitely does not apply" to "5" as "definitely applies". Smaller score indicates lower level of closeness while larger score indicates higher level of closeness.

As for the conflict aspect, the two items used were labelled as R2 and R3 as shown in Table 1. Respondents were asked whether the following statement was applicable to them: "My child[6] easily becomes angry at me" (R2) and "Dealing with my children drains my energy" (R3). The choices of response for items R2 and R3 were rated by using the 5-point Likert scale from "1" as "definitely does not apply" to "5" as "definitely applies". Smaller score indicates higher level of closeness; larger score indicates lower level of closeness. Due to the opposite direction in measuring closeness between R1, R4 and R2, R3, the scores for items R2 and R3 were recoded to "5" as "definitely does not apply" to "1" as "definitely applies". In this way, the higher scores of R2 and R3 will have the same direction as R1 and R2 in which smaller score indicates lower level of closeness and larger score otherwise. The Parent–Child relationship index score was computed based on the summation of scores of all the four items (R1 + R2 + R3 + R4). The overall score ranges from 4 to 20, where smaller score indicates a lower level of closeness of the relationship and larger score indicates a higher level of closeness.

3.2.10 Household Debts

Household debt is one of the key components of this research. The three variables listed in Table 1 were required to study the relationship between household debt and socioeconomic well-being. These three variables were Total Household Debt (L1), Secured Debt (L2), and Unsecured Debt (L3). In the survey, respondents were asked: "How much are you paying every month for the loan listed below?". Respondents were required to state the actual amount of loan payment monthly for each type of household debt listed. The options were housing loan, property loan, vehicle loan, personal loan, and other loans (except for credit card loan). As some of the respondents shared part of the household debt payment with their spouses or partners, another question was asked as follows: "How much is your spouse paying every month for the loan listed below?". The purpose of the second question was to capture the amount of household debt paid by the spouse or partner.

To obtain the secured loan repayment and unsecured loan repayment, firstly, the amount of housing loan payment and property loan payment for the household were summed up to generate the amount of secured loan repayment of the household. Then, the amount of unsecured loan repayment of the household was also generated by summing up the amount

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[6] Child refers to the eldest child below the age of 18 years old.

of vehicle loan payment, personal loan payment, and other loans paid[7] by the household. Finally, by summing up the secured loan repayment and unsecured loan repayment, the monthly average amount of total debt repayment was obtained.

Thus, with the above loans accumulated, the debt service ratio for loan variables (L1, L2, and L3) were calculated. The overall debt to service ratio (L1) was calculated by overall debt payment to income. The debt service ratio for secured debt (L2) was calculated by secured debt repayment to income. The unsecured debt service ratio (L3) was generated by unsecured debt repayment to income.

3.2.11 Demographics

The demographic of the respondents was obtained by enquiring the following features from the respondents: age, gender, marital status, education, number of dependent children (< 18 years old), employment status, and household income. A dummy variable of marital status was created due to its categorical nature compared to other demographic features.

3.3 Method

To analyse the impact of household debt on well-being, multiple regressions using ordinary least square regression and logistic regression were applied with respect to each dependent variable. According to existing literatures on the relationship between household debts and socioeconomic factors which utilize ordinary least square regression (Dew, 2008; Drentea & Lavrakas, 2000; Garrett & James III, 2013; Ogawa & Wan, 2007; Reading & Reynolds, 2001) and logistic regression (Drentea & Reynolds, 2012; Ochsmann et al., 2009; Rutherford & Fox, 2010; Webley & Nyhus, 2001), both methods have been frequently used for cross-sectional data. The general model applied for all the analysis is presented below:

$$\begin{aligned} SOCV_i = & DEBT_i + GENDER + AGE + D_{DIVORCE} \\ & + D_{SINGLE} + EDUCATION + EMPLOYMENT \\ & + DEPENDENTS + HH_{INCOME} + C + \varepsilon \end{aligned} \quad (1)$$

$SOCV_i$	Consumption deprivation, Financial wellness, Work productivity, Depression, Anxiety, Stress, Health problem, Smoking behaviour, Alcohol drinking behaviour, Marriage satisfaction, Child relationship
$DEBT_i$	Total household debt service ratio, Secured debt service ratio, Unsecured debt service ratio
GENDER	Gender
AGE	Age
$D_{DIVORCE}$	Dummy variable for Divorce
D_{SINGLE}	Dummy variable for Single
EDUCATION	Education
EPLOYMENT	Employed or not
DEPENDENTS	Number of children who are below 18 and dependent

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[7] Credit card debt was not included in the analysis of the unsecured loan. This is due to the different payment scheme credit card debt has compared to vehicle loan, personal loan, and so on.

Table 2 Characteristics of demographic (N=407)

Demographics		N (407)	%
Position in the household	Household Head	209	51.4
	Spouse/Partner	142	34.9
	Others	56	13.8
Marriage status	Married/Living together	330	81.1
	Separated/Divorced/Widowed	12	2.9
	Single	65	16
Gender	Male	214	52.6
	Female	193	47.4
Age group	Below 25 years old	16	3.9
	25–34 years old	110	27.0
	35–44 years old	124	30.5
	45–54 years old	111	27.3
	55+	46	11.3
Education	Secondary and below	161	39.6
	Diploma Vocational/College	116	28.5
	Bachelors/Professional Degree	91	22.4
	Master's /PhD Degree	39	9.6
Employment status	Not Employed	54	13.3
	Employed	353	86.7
Household income	Less than RM 1000	1	.2
	RM 1000 to RM 2000	23	5.7
	RM 2000 to RM 3000	61	15.0
	RM 3000 to RM 4000	50	12.3
	RM 4000 to RM 5000	73	17.9
	RM 5000 to RM 6000	59	14.5
	RM 6000 to RM 8000	40	9.8
	RM 8000 to RM 12,000	65	16.0
	RM 12,000 and above	35	8.6

HH_{INCOME}	Household income level
C	Constant
ε	Error term.

3.4 Demographic Characteristics

The demographic characteristic of the sample data is presented in Table 2. The sample data shows that most of the selected respondents were the head of the household with a percentage of 51.4%. These respondents were involved in the household financial decision making which corresponds to the objectives of this research. The other respondents who participated were either the spouse, partner of the head of the household, or the person who oversees the household financial decision making. Moreover, most of the respondents were married (81.1%), while the others were either unmarried (16%), separated, divorced, or widowed (2.9%). Out of the 407 respondents, more than half of the respondents were male (53%) and the rest were female (47%).

Table 3 Summary of household debt impact on multi-dimensional well-being

Variable	Economic Aspect			Psychological Aspect		
	Consumption Deprivation (N=407)	Financial Wellness (N=407)	Work Productivity (N=353)	Depression (N=407)	Anxiety (N=407)	Stress (N=407)
	Coe	Coe	Coe	Coe	Coe	Coe
Household Debt	0.054	−0.154**	−0.818*	2.150**	2.040**	3.273**
Gender	0.008	−0.009	−0.097	0.193	−0.300	−0.370
Age	−0.002	0.001	0.034**	−0.003	−0.003	0.011
Divorce	−0.015	−0.180*	−0.430	−0.989	1.538	1.371
Single	0.026	0.007	0.137	1.277*	0.526	0.939
Education	−0.024*	0.028**	0.140	0.088	−0.085	−0.162
Employment	−0.019	0.026	−0.625	−0.606	−0.092	0.410
No. of Child	0.024**	−0.025**	−0.137*	−0.024	−0.063	−0.010
HH Income	−0.003	0.022**	0.004	−0.002	−0.032	−0.100
C	0.507**	0.309**	6.221**	8.162**	9.448**	11.147**
R-Squared	0.054	0.167	0.054	0.054	0.041	0.079
Prob	0.013	0.000	0.027	0.008	0.050	0.000

Variable	Physical Health			Family Relationships	
	Health Problem (N=407)	Smoke[1] (N=407)	Drink[2] (N=407)	Marriage Satisfaction (N=310)	Child Relationship (N=230)
	Coe	Coe	Coe	Coe	Coe
Household Debt	−0.185	1.681**	1.655**	−1.058*	−1.068
Gender	−0.066	3.124**	0.602*	0.097	−0.551
Age	0.013**	−0.014	0.023	−0.003	−0.089**
Divorce	0.477	0.506	−0.078		
Single	0.010	0.456	0.196		
Education	−0.045	−0.362**	0.012	0.132	0.106
Employment	−0.032	0.383	2.062**	−0.477	−0.385
No. of Child	−0.039	−0.004	−0.335**	0.115	0.288
HH Income	−0.005	−0.047	0.151	−0.017	0.057
C	2.110**	−1.871**	−6.163**	8.558**	18.159**
R-Squared/Pseudo R2	0.043	0.262	0.093	0.037	0.093
Prob	0.038	0.000	0.002	0.057	0.003

$^{*}p<5\%$, $^{**}p<1\%$

[1] and [2] were both using logistic regression model

The age distribution of the survey respondents were adults between the ages of 21 to 77 years old with the mean age of 47 years old. The age distribution of the respondents was considered quite even. Adults between the ages of 35 to 44 years old had a slightly higher proportion at 30.5%, while the other two age groups of 25 to 34 years old and 45 to 54 years old had similar proportions at 27.0% and 27.3% respectively. As for the age group

Table 4 Summary of secured and unsecured household debt impact on multi-dimensional well-being[1]

Variable	Economic Aspect			Psychological Aspect		
	Consumption Deprivation (N=407)	Financial Wellness (N=407)	Work Productivity (N=353)	Depression (N=407)	Anxiety (N=407)	Stress (N=407)
	Coe. (OLS)	Coe. (OLS)	Coe. (OLS)	Coe. (OLS)	Coe. (OLS)	Coe. (OLS)
Secured Debt	0.028	−0.139*	−0.748	1.795*	1.605*	3.217**
Unsecured Debt	0.109*	−0.224**	−1.108*	2.768**	2.777**	3.810**

Variables	Physical Health			Family Relationships	
	Health Problem (N=407)	Smoke[2] (N=407)	Drink[3] (N=407)	Marriage Satisfaction (N=310)	Child Relationship (N=230)
	Coe. (OLS)	Coe. (Logit)	Coe. (Logit)	Coe. (OLS)	Coe. (OLS)
Secured Debt	−0.151	1.654*	1.840**	−1.118	−2.014*
Unsecured Debt	−0.194	1.451	1.238	−0.928	0.521

* $p<5\%$, ** $p<1\%$

[1] All regressions were applied with the same control variables: Gender, Age, Divorce, Single, Education, Employment, No. of Child, Household Income

[2] and [3] were both using logistic regression model

of 55 years old and above, the percentage was 11.3% and the age group below 25 years old was 3.9% (Table 3).

The education level of the survey respondents ranged from secondary school and below to master's degree and above. Table 4 shows that nearly forty percent (39.6%) of the respondents were in secondary education and below. Half of the respondents had attained a college diploma or a bachelor's degree with a percentage of 28.5% and 22.4% respectively. The other 9.6% of the respondents had earned a master's degree or a Ph.D.

As for the employment status, most of the respondents were employed, making up 86.7% of the total sample. The employed respondents were categorized into employed permanently or with long-term contract (71.0%), works in own business (17.8%), and free professions (11.2%). As for respondents who were not employed, they were further divided into groups of people who were unemployed, doing unpaid housework, and retirees.

Results show that the respondents' income level ranged from less than RM 1000 per month to more than RM 20,000 per month. Table 4 demonstrates that more than two-thirds of the respondents had an income lower than RM 6000 (65.6%). Surprisingly, the household income level between RM 8000 to RM 12,000 (16%) was higher than the household income level between RM 6000 to RM 8000 (9.8%). The top household income group which is above RM 12,000 per month contributed to 8.6% of the total sample. The mean household income in the sample which was calculated from the mean range selected by the respondents was around RM 5000. However, based on the "Report of Household Income and Basic Amenities Survey 2014" by Department of Statistic of Malaysia (DoS Malaysia), the average household income level in Selangor is RM 6214 in 2014.

Overall, the characteristics of the sample are able to represent the urban population in Klang Valley, Malaysia. The results of age, education, and income shown in Table 2 are quite similar to the population distribution reported in DoS Malaysia Report (Department of Statistics Malaysia, 2011) and other studies that have used the same sampling method (Yusof et al., 2015). Therefore, the results shown in Table 2 suggest that the sample of this research may be able to represent the urban population of Malaysia.

4 Result

The objective of this research is to investigate the extent of the impact of household debt on variables from the economic aspect, psychological aspect, physical health, and family relationships. To achieve part of this objective, the results of the 11 regressions conducted are presented in Table 3. Based on the results from the four dimensions of well-being, the analyses suggest that the total household debt service ratio is significantly associated with certain variables from every dimension of well-being in the case of urban households in Klang Valley, Malaysia. This result is supportive of previous studies that examine variables from the individual dimensions of well-being. The household debt does show effect across four aspects of well-being even from a single group of individuals. From the data of urban households in Malaysia, household debt is significantly associated with financial wellness, work productivity, depression, anxiety, stress, smoking behaviour, drinking behaviour, and marriage satisfaction.

For the economic aspect, the results suggest that the effect of household debt does have significant impacts on financial wellness and work productivity for Malaysian urban households. The negative sign on financial wellness shows that households which are more indebted tend to be less financially well. This negative relationship aligns with most of

the researches which have examined the relationship between indebtedness and financial wellness (Joo, 2008). In terms of the effect on work productivity, the significant level is weaker, but the relationship is also negative. It implies that households with higher level of indebtedness tend to be affected on their work productivity. Among the psychological variables, the findings correspond with results from most of the studies that confirm the impact of debt on depression (Drentea & Reynolds, 2012; Gathergood, 2012a; Hojman, 2013; Richardson et al., 2013). Limited research has looked into the impact of anxiety and stress (Drentea, 2000; Ford et al., 2010). However, the results of significant association are found for the case of urban Malaysian households. The impact on physical health is mainly shown in health-related behaviour rather than health status. The health-related behaviour, which was measured by smoking and alcohol drinking behaviour, all showcase a positive association with the total household debt service ratio. Lastly, the effects of household debt on family relationships demonstrate a concrete impact on marriage but not on child relationship.

Among the four dimensions which are impacted by household debt, psychological well-being shows the most concrete evidence. The three psychological well-being indicators namely depression, anxiety, and stress, portray significant relationships with the total household debt service ratio. These are the different outcomes compared to the impact of household debt on variables from other aspects of well-being. For the other three dimensions, the result prove that household debt does have an impact on other aspects of well-being. However, unlike studies on individual dimensions which found significant impact, the result from one set of respondents in this study suggests that the effect may be significant to only certain indicators rather than to all indicators.

The reason for the mix results of this study compared to the uniformly negative impact of debt from previous literatures may be due to the debtor's financial situation. As previous literatures used data on debtors which experience various financial situations (Brown, et al., 2005; Bridges & Disney, 2010; Cannuscio et al., 2012; Gathergood, 2012b; Bunn & Rostom, 2014; Kukk, 2016), this study collected data from the general public and was examined under a non-specific economic situation. Generally, the effect of household debt still exists in all dimensions of well-being but is only significant in certain indicators besides psychological well-being. The general household indebtedness may not suffer severe financial pressure to result in significant impacts on certain indicators from the economic aspect, physical health, or family relationships. The financial circumstances of the debtor (Tay et al., 2017), economic situation (Kukk, 2016), or personal preference (Andersen et al., 2016) may mediate the relationship in between.

This study also attempts to determine whether the extent of the impact differs between secured and unsecured household debt. To achieve this objective, 22 regressions have been analysed with the same control variables to observe any indicators from each dimension of well-being. All the 22 regressions are combined and presented in Table 4. From the overall results, it is clear that both secured and unsecured debt have different impacts on well-being in general. The secured debt significantly affects the indicators from the economic aspect of well-being, psychological aspect, physical health, and family relationships. In this case, the evidence of the impact is relatively strong on the psychological aspect. The secured debt service ratio is significantly related to all three psychological variables. The result also shows that in households with higher debt service ratio for secured debt, the head of the household tends to be a smoker and a drinker. They may be relatively less well financially compared to household with lower secured debt service ratio. Households with higher indebtedness on secured debt may also experience poorer relationship with their child.

Unlike secured debt, unsecured debt relates negatively to all variables from the economic aspect and psychological aspect at a significant level. Higher unsecured debt service ratio may lead to higher frequency of consumption cut, poorer financial wellness, and poorer work productivity for individuals in urban households in Klang Valley, Malaysia. Similar with above overall indebtedness, the common finding is that the impact of both types of debt are consistently strong on the psychological aspect. Regardless of secured or unsecured debt, both show significant relationships with all variables from psychological well-being. The objective of debt is to function as a financial tool to ease the borrower's financial burden, however, the borrowers need to bear the potential burden from the psychological aspect.

5 Discussion and Conclusion

The current trend of financialization which is led by the banking sector extends its focus towards individual consumers rather than corporations (Lapavitsas & Powell, 2013; Nakornthab, 2010). The focus on individual consumers' involvement not only increases the indebtedness level of households in many developed and developing countries, but also the household's dependence on debt financing (Lapavitsas & Powell, 2013). The increased debt is beneficial to individuals and households when their consumption can be extended with credit. However, besides the benefits gained from the availability of credit, the negative implications of indebtedness have also captured attention of scholars from different fields of studies. The multi-aspect implications of debt have never been investigated with a single group of individuals. Therefore, 407 sample data were collected from urban households in Klang Valley, Malaysia, and several regression models were applied to investigate the household debt implications on different aspects of human well-being. The aspects of well-being covered in this study are economic aspect, psychological aspect, physical health, and family relationships. The overall results in previous studies found that household debt has a negative impact on variables from an individual's well-being in different dimensions. This means that the increasing level of indebtedness tends to be associated with poorer well-being from different dimensions. However, the significant results on the impact of debt for each dimension were proven based on debtors who had experienced different financial situations. In this study, when variables from four dimensions of well-being are examined based on a single group of general respondents in Klang Valley, Malaysia, the evidence of the impact of household debt is also shown in all four dimensions. However, the level of the evidence differs in terms of the dimension.

The evidence from this study suggests that the impact of household debt is more concrete on psychological well-being compared to other dimensions of well-being. Household debt is significantly related to all psychological well-being indicators. Such an effect does not only cover stress, but also depression and anxiety. For the other three dimensions, the result shows that household debt does have an impact on other aspects of well-being. However, the effect may not be significant to all indicators of well-being, but rather on certain indicators. The impact on the economic aspect is mainly shown in financial wellness and work life, but not in consumption deprivation. On physical health, the impact is more on health behaviour rather than health status. For family relationships, the impact of household debt is mixed where overall indebtedness affects only on marriage satisfaction, but not on child relationships. Instead, the secured loan shows a relationship with child relationships.

As different types of debt have different interest or payment terms and different legal consequences for default; this leads to specific types of debt having different impacts (Fitch et al., 2011). This study finds that the impact for both types of debt is consistently strong on the psychological aspect. However, it shows a disparity on indicators from economic aspect, physical health, and family relationships. Secured debt shows a relationship with certain indicators from the four dimensions of well-being. On the other hand, unsecured debt shows a strong evidence of impact only on economic wellbeing, but not on physical health and family relationships.

Lastly, the implications of household debt may be more complex than what this study tries to examine. For the objective of targeting more dimensions, this study has been limited to the same control variables for every regression. This may be one of the reasons for the low R-squared values for most of the regression analyses. Future studies should extend this limitation by increasing explanatory variables for each dimension of well-being. Unlike this study, the impact of credit card should also be considered. Additionally, future research should also analyse the implications of household debt from the interaction of different dimensions. This study has only focused on the direct relationship between household debts with four dimensions of household well-being. The indirect effects of household debt with other dimensions of well-being can also be researched as studies have found that household debt functions as a mediator between age and anxiety (Drentea, 2000), unemployment and health (Lau & Leung, 2014), recession and mental health (Jenkins et al., 2009), etc. More complex interactions between household debt and different dimensions of well-being can be explored. The direct and indirect linkage between household debt and different variables can also be researched.

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