

## Studies on Household Financial Vulnerability based on Literature Review

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### Abstract

The fast growth economy and the increasing variety of its financial markets have led to household financial vulnerability becoming a significant risk factor that impacts both financial and social stability. Understanding the financial vulnerability and risk resistance of households can help inform macroeconomic policy and microeconomic decision-making and promote sustainable social development. This study utilizes literature analysis to investigate household financial vulnerability from the macro level to the household level. The study defines the concepts and measurement methods of household financial vulnerability. Additionally, it explores the primary factors that influence household financial vulnerability. This study offers theoretical insights for further research on household financial vulnerability.

### Keywords

Financial Vulnerability; Household Finance; Literature Analysis.

### 1. Introduction

Originally, the term "vulnerability" was used to describe the examination of meteorology, geology, hydrology, and other natural phenomena. Over time, it was also included into the realms of psychology, economics, and finance. Vulnerability is characterized by the presence of risk. When the economy experiences fluctuations, it can initiate a sequence of events known as a debt crunch, ultimately resulting in a financial crisis (Feldkircher, 2014; Lee, Posenau, & Stebunovs, 2020). Financial vulnerability has increasingly been employed as a means of assessing the financial well-being of households since the late 20th century. The subprime crisis in the U.S. in 2007 brought attention to the impact of household financial risk on the macro-financial system. Since then, both governments and financial institutions have started to focus on financial risk issues, leading to increased attention and research by scholars on household financial vulnerability.

### 2. Definition of Household Financial Vulnerability

Generally, financial vulnerability is related to financial distress, financial over-indebtedness, and financial debt burden. In previous studies, most scholars often use "Financial Vulnerability" and "Financial Fragility" as the same meaning. The concept of financial vulnerability originates from Minsky's (1982) "The Financial Instability Hypothesis", which provides an intuitive explanation of financial vulnerability in terms of the instability of the financial system, and specifies in detail that certain enterprises with high indebtedness for investment and business operations have a higher probability of failure. Bonin and Huang (2001) proposed a broader definition of financial vulnerability, which refers to a financial state that tends to be highly risky,

and generally refers to the accumulation of risk in all areas of financing. In recent years, many studies have extended the concept of vulnerability from the national and corporate levels to the household and individual levels, labeling them collectively as "financial vulnerability".

There is no uniform definition of financial vulnerability at the micro level such as households (Leika & Marchettini, 2017). Jappelli, Pagano, and Di Maggio (2013) are the early scholars to focus on the financial vulnerability of households and define household financial vulnerability as the sensitivity of a household's default rate to the household's indebtedness in their study. Since then, a considerable number of scholars have conducted extensive research on household financial vulnerability. Household financial vulnerability is considered to be closely related to household borrowing behavior (Leika & Marchettini, 2017) and is the eventual inability to repay financial liabilities (Jappelli et al, 2013), with a focus on low-income households (Michelangeli & Pietrunti, 2014). The concept of household financial vulnerability from a liability perspective approximates debt burden (Ottaviani & Vandone, 2018), debt backlog (Dyanan, 2012), and over-indebtedness (French & McKillop, 2016; Lusardi & Tufano, 2015), among others. However, such definitions are limited to overemphasizing the importance of indebtedness at the neglect of other financial decisions, and financial behaviors of households. Merton (1975) has suggested that capital income, labor income, longevity, investment opportunities, and relative prices of commodities are sources of household economic instability. The omitted components included in this definition are therefore also important for household financial vulnerability.

The concept of household financial vulnerability should include both household over-indebtedness and household financial instability. This definition implies that, in addition to the inability to pay off financial debts, other factors that contribute to the decline of a household's ability to access liquid assets are also indicators of household financial vulnerability (Anderloni et al., 2012). Brunetti, Giarda, and Torricelli (2016) highlighted that households experiencing financial difficulty typically encounter more pronounced liquidity limitations, and that the vulnerability of household finances is primarily rooted in these liquidity constraints. Households should be considered vulnerable if their stock of assets is not sufficient to help them easily offset their debts, or if their level of income is not sufficient to help them make repayments on time in the face of unexpected income shocks, meet basic living expenses (Michelangeli & Rampazzi, 2016; Brunetti et al., 2016). There is also literature that defines financial vulnerability from a consumption perspective, which focuses on changes in the household's ability to consume, such as lack of money to ask for help from family and friends (Lusardi, Schneider, & Tufano, 2011; Sherraden, Birkenmaier, & Collins, 2018), difficulty in maintaining a normal life when there are unforeseen circumstances (Yusof et al., 2015), and inability to survive unexpected events (Daud et al., 2019).

Most studies have pointed out that household financial vulnerability denotes the likelihood of a household experiencing financial hardship in the event of a financial shock, including but not limited to poor households (Terraneo, 2018). Financial vulnerability refers to the likelihood of an individual or household experiencing financial distress, which means they are unable to maintain a basic standard of living. This risk applies even to groups with high levels of income and wealth (O'Connor et al., 2019).

In summary, the current research defines household financial vulnerability in three distinct ways. Household financial vulnerability leads to financial suffering for households. Financial distress in this context pertains to the incapacity of households to fulfill their basic financial requirements and repay their debts promptly or fully. This includes a decline in their ability to access cash or even a complete insolvency. Furthermore, household borrowing, indebtedness, or risk shocks are the primary factors contributing to household financial vulnerability. Multiple definitions pertain to the borrowing habits and level of debt that households have, which can result in financial difficulties. Furthermore, the capacity to manage and adapt to

uncertain and potentially harmful events is a crucial aspect of the susceptibility of households to financial instability. The term "vulnerability" is defined as the extent to which anything or someone is susceptible to being harmed or affected by unexpected events or shocks. Therefore, when seen from this standpoint, household financial vulnerability should be capable of measuring the stability or risk tolerance of household finances following exposure to an uncertain event.

### 3. Measurement of Household Financial Vulnerability

At present, scholars have not formed a unified definition of household financial vulnerability, and therefore the indicators for measuring household financial vulnerability are not consistent. The existing literature mainly use both objective and subjective indicators to measure household financial vulnerability (Bialowolski & Weziak-Bialowolska, 2014; Fernández-López et al., 2023). Objective indicators are based on a household's ability to cope with unexpected risk shocks, focusing on the household's debt ratio, asset liquidity, income and expenditure, and other financial conditions directly related to the household's ability to cope with unforeseen events, while subjective indicators usually measure the household financial vulnerability based on the household's subjective evaluation of key financial indicators.

#### 3.1. Objective Indicators of Household Financial Vulnerability

Objective indicators are more widely used in empirical research, which are determined by objective financial data of households and can be subdivided into single and composite indicators. The single indicator is divided into two aspects: debt and liquidity. Household debt is mostly concerned with debt repayment capacity, and the evaluation indicators applied include the debt to asset ratio (Albacete & Linder, 2013), debt to income ratio (Banbula et al., 2016), and debt service to income ratio (Dey, Djoudad & Terajima, 2008; Karasulu, 2008; Djoudad, 2010). Of these, the debt to income ratio is the most frequently used, as it reflects both the overall magnitude of household debt and the liquidity risk that households face as a result of their indebtedness. Valentina Michelangeli and Mario Pietrunti (2014) used the debt service to income ratio of 30 per cent as a measure of household vulnerability, and a household is vulnerable if its debt service to income ratio exceeds 30%. While Albacete, Fessler, and Propst (2020) used household debt service to income ratio of 40% as a measure of household vulnerability. Household indebtedness can reflect households' long-term financial stress, but the use of such indicators to analyze households' short-term financial vulnerability lacks accuracy (Leika & Marchettini, 2017), as highly indebted households do not necessarily have low short-term debt repayment rates, and some studies have even found that the higher the debt, the lower the short-term debt default rate of households (Lombardi, Mohanty, & Shim, 2017). Liquidity reflects the ability of households to meet their financial obligations as they fall due. The adequacy of a household's liquid assets to meet unanticipated household expenditures is an important indicator of a household's financial vulnerability (Brunetti et al., 2016). In addition, household emergency savings is an important liquid asset for households, which also helps households to mitigate household liquidity constraints and maintain current living standards in the face of risky shocks. It is commonly pointed out in scholars' studies that a household is considered vulnerable if its emergency savings are not able to support the household's living expenditures for three months (Loke, 2017; Babiarcz & Robb, 2014).

Scholars have also proposed the use of financial margin as an indicator of household financial vulnerability (Albacete et al., 2013; Gross & Poblacion, 2017), with the financial margin being the amount of income plus liquid assets minus living expenses and debt servicing, and this indicator is a good proxy for the household's liquidity level. When a household is unable to maintain its living expenses and its income after deducting the household's basic living expenses is less than what the household owes i.e. the household's financial margin is less than

zero, the household should be considered as financially vulnerable (Christelis, Jappelli, Paccagnella, & Weber, 2009; Ampudia et al., 2016). However, the IMF report mentions that the debt servicing capacity can only reflect the household's long-term financial stress, whereas the financial margin focuses too much on the household's short-term financial situation and ignores the household's long-term coping potential, and it can also be subject to chance. Anderloni et al. (2012) and Noerhidajati et al. (2020) use nonlinear principal component analysis composite indicators constructed by selecting indicators of debt situation, liquidity situation and considering two factors reflecting the household's ability to cope with risk, namely, the period of time that the household has no income to maintain a basic livelihood and the amount of temporary expenditure that it can now cope with at the most.

### 3.2. Subjective Indicators of Household Financial Vulnerability

Subjective indicators have been used relatively little in empirical research. O'Connor et al. (2019) argued that household financial vulnerability does not depend only on objective data, but that households' perception of vulnerability affects their decision-making and thus the level of household financial vulnerability, and therefore propose a subjective household vulnerability indicator. Anderloni et al. (2012) and Noerhidajati et al. (2020) developed subjective household financial vulnerability indicators based on nonlinear principal component analysis using data from household questionnaires with questions such as "whether there is an imbalance between income and expenditures". Brunetti et al. (2016) categorise households as financially vulnerable with the help of households' subjective reports of difficulty in maintaining a balance between income and expenditure, pressure to repay loans, and the ability to come up with the necessary funds if they experience an unexpected shock.

Yusof (2018) presented that the use of objectives or subjective is still a debate as to the result produced by each of them differ slightly. This is because they analyses different aspects concerning financial vulnerability. In the end, most of the measurement used of financial vulnerability will be set forth according to the definition and limitations of data obtained. This study considers that the objective household financial vulnerability indicator reflects the actual debt or income and expenditure risks faced by households and their ability to cope with risky shocks, which is a more reasonable measure of household financial vulnerability; whereas the subjective household financial vulnerability indicator expresses the financial risks faced by households from the perspective of their subjective evaluations, which may lead to a misalignment of the results of the measurement due to the subjective answers given by the interviewees, and does not reflect the financial vulnerability of the households very well.

## 4. Influencing Factors of Household Financial Vulnerability

Noerhidajati et al. (2021) found that socio-economic characteristics, household financial situation, resilience to economic shocks, and income management skills are crucial elements that contribute to financial vulnerability. Several scholars have examined the factors that influence household financial vulnerability by developing indicators to measure it. These factors include internal characteristics of the household such as social and economic attributes (French & Mckillop, 2016; Brunetti et al., 2010; Terraneo, 2018), as well as external factors like macro financial markets, financial economy, and other household-related factors (Daud & Marzuki, 2019; Lusardi & Tufano, 2009).

### 4.1. Influence of Internal Household Factors on the Household Financial Vulnerability

The existing research on the effects of household financial vulnerability primarily focuses on internal elements within the home, including social and economic features. Household social features encompass several elements such as age, gender, marital status, education, household

size, and financial literacy. On the other hand, household economic factors mostly revolve around household income and asset levels.

In general, the head of the household is both an important generator of household labor income and the main maker of household economic decisions, and individual characteristics such as age, gender and marriage of the head of the household can have an impact on household financial vulnerability. Noerhidajati et al. (2020) found that the age of the head of household can significantly affect household financial vulnerability. Households led by older elders are less vulnerable to potential financial vulnerability than households with younger heads (Daud et al., 2018). However, an empirical study by Zhang et al. (2020) found that household financial vulnerability increases with the age of the household head. In contrast, the study by Chen and Gong (2021) found that the age of the head of household is significantly negatively related to household financial vulnerability, while the quadratic of the age of the head of household is significantly positively related to household financial vulnerability, suggesting that there is a U-shape relationship between household financial vulnerability and age of the head of household. In addition, Breunetti et al. (2016), based on household data from a number of countries, including the United States, found that financial vulnerability is likely to be lower for households headed by men, and the same conclusion was reached in a study by Lusardi et al. (2011). If the head of the household is female, the probability of the household being in a household vulnerability distress is greater than if a man is the head of the household (SABRI et al., 2021; Ampudia et al., 2016). In terms of marital status, households with divorced, single or widowed heads tend to have higher financial vulnerability compared to married households (Mwakalila, 2023; Kim, Lee, & Son, 2014; Brunetti et al., 2016). The health status of the head of the household and the risk of death are also widely recognised as important factors affecting household financial vulnerability (Codagnone et al., 2020; Lin & Grace, 2007). In addition, the level of education of the household head has a significant impact on financial vulnerability. Higher education of the head of the household, especially higher education, significantly reduces the risk of household vulnerability (Yang & Guo, 2020; Nguyen, Raabe, & Grote, 2015), and those with financial or economic training have a higher capacity to cope with risky shocks (Clark, Lusardi, & Mitchell, 2021; Lusardi & Tufano, 2009).

Household financial vulnerability is also constrained by the level of employment, nature of work and job stability of the main labor force in the household, including the head of the household (Kesar et al., 2021). Compared to employees with fixed employment contracts, labourers in casual jobs have insecure incomes, and household income is more unstable and vulnerable to financial distress; moreover, unemployment is a major shock to the household, and the financial situation of the household is not promising if a family member loses his or her job (Mikolai, Keenan, & Kulu, 2020; Albacete et al., 2020). Further, the larger the household size, the greater the consumption needs in daily life, especially those households with a higher proportion of children or the elderly, and the higher the cost of education and health care that the household has to bear, which also increases household financial vulnerability (Lusardi et al., 2011; Anderloni et al., 2012). In addition, household financial literacy is one of the determinants of household financial vulnerability (Anderloni et al., 2012; Yusof et al., 2015), and financial literacy plays a positive role in reducing household financial vulnerability (Anderloni et al., 2012; Li & Zhu, 2020; Zhang et al., 2020). Household financial literacy can be improved by increasing households' understanding of financial products and services, the outcomes of investment and borrowing decisions, and risk awareness (Anderloni et al., 2012). Increased household financial literacy is conducive to mitigating over-indebtedness (Loke, 2017; Daud et al., 2019) and reducing the degree of household financial vulnerability.

The level of income and asset of a household also significantly affects household financial vulnerability. The higher the level of income, the lower the degree of household financial vulnerability (Noerhidajati et al., 2021; Anderloni et al., 2012; Zhang et al., 2020). Moreover,

the level of financial vulnerability of households with high economic levels is more sensitive to changes in income, with each additional unit of income at the middle and high economic levels being able to reduce household financial vulnerability to a greater extent than for households with low economic levels (Noerhidajati et al., 2021). Low-income households, due to their financial difficulties, need to borrow more money to cover basic household expenses in case of an emergency, which can lead to over-indebtedness and financial vulnerability of households (Yusof et al., 2015). Yang and Stanley (2012) found that at the micro level, bank lending to the poor can do more harm than good to the poor, as the loans taken will accumulate and will lead to a greater probability that the poor will fall into debt, further impoverishing them, which then creates a vicious circle, or over-indebtedness of households as a result of multiple borrowing by the poor.

Households' asset allocation and credit behavior are closely related to household financial vulnerability. The share of financial assets can significantly affect the financial vulnerability of rural households, and the degree of financial vulnerability of rural households with higher financial asset allocation is weaker, which suggests that investment experience can help rural households to improve their ability to resist risk (Chen & Gong, 2021). Anderloni et al. (2012) also found that households with insurance policies have a weaker degree of financial vulnerability. In addition, households with fixed assets have weaker financial vulnerability (Noerhidajati et al., 2021), thus households without fixed housing or renting have high vulnerability (Anderloni et al., 2012; Albacete et al., 2013)

#### **4.2. Influence of Household External Factors on Household Financial Vulnerability**

There are few studies on the impact of household external factors on household financial vulnerability. A financial crisis in the macro-financial system worsens the financial vulnerability of families (Daud & Marzuki, 2019), and having a specific amount of financial assets can enhance households' ability to deal with unexpected events. Well-established financial markets can improve households' capacity to manage unexpected events, hence decreasing their financial vulnerability (Lusardi & Tufano, 2009). Furthermore, Jappelli et al. (2013) discovered, using data from Italy, that an elevated level of income inequality leads to an augmented susceptibility of households to financial instability.

### **5. Conclusion**

Household financial vulnerability refers to the likelihood of households experiencing financial difficulties. Existing studies primarily examine the internal factors that contribute to household financial vulnerability, specifically focusing on the demographic and economic characteristics of households. However, there is a need to enhance research on the external factors that also impact households. Furthermore, home financial vulnerability is a term that is subject to change and is influenced by both the life cycle of the household and external events such as the economic cycle. Hence, it is worth considering the exploration of dynamic monitoring models in order to measure household financial vulnerability. These models can effectively detect any abnormal changes in household financial conditions and provide timely and effective strategic recommendations to household decision makers and policymakers.

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