



ASSETS MATTER TO POOR PEOPLE

But What Do We Know
about Financing Assets?

Consultative Group to Assist the Poor

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EXECUTIVE SUMMARY

IN THE WAKE OF ADVANCES IN TECHNOLOGY AND BUSINESS MODELS, an increasing number of poor households are gaining access to financing for physical assets ranging from smartphones to solar panels. However, even as poor people increase their borrowing for these assets, their impact on people’s livelihoods—and how debt affects the benefits of asset ownership—remains poorly understood. CGAP has undertaken a comprehensive review of the available evidence to understand (i) how asset ownership can lead to improvements in well-being for poor households and (ii) whether obtaining an asset through a loan or lease as opposed to a transfer, grant, or outright purchase affects the benefits associated with ownership.

The review focuses on recent evidence on physical assets like household appliances, livestock, machinery, and mobile phones, but does not include land. It also excludes financial assets like savings and intangible assets like social networks. The term “financing” is broadly used to include credit and leasing.

Evidence Suggests Impact for Some Asset Types

Evidence suggests that physical assets can improve the well-being of poor households through income generation, livelihood diversification, risk mitigation, and creation of access to markets and essential services. The authors articulate this impact by mapping the evidence onto a theory of change (ToC) for asset ownership. The review is somewhat limited because evidence to date focuses squarely on specific assets such as livestock, mobile phones, kitchen equipment, and solar home systems. Furthermore, the evidence is largely centered on households that received assets through grants, and results may not hold true where households finance or pay for assets outright.

Further research is needed to understand the impact of other income-generating assets, such as vehicles, and emerging technologies like solar water pumps, among others. The impact of assets that do not generate income but enhance quality of life—for example, furniture and home appliances—is also not covered by the available literature. Importantly, even when evidence is available, it is often limited to certain segments and geographies and often does not consider differences in impact across groups such as women, youth, or smallholder farmers. Also, there is a lack of research on the impact of services that allow customers to pay for temporary use of an asset (e.g., renting), which may offer viable alternatives to asset ownership for some segments of the poor.

Evidence on Financing Remains Elusive

Because of a conspicuous lack of research, a question remains on whether asset financing is a viable means for poor households to accumulate assets. It is reasonable to assume that financing terms (e.g., tenor, interest, fees, and repayment schedules) and asset characteristics (e.g., useful life and depreciation) will affect the benefits flowing from asset ownership. However, most impact evidence focuses on asset transfers and grants—not on credit—and it does not consider how financing may affect the impact of asset ownership.

A Call to Address Evidence Gaps

The review identifies important gaps in evidence. Further research on the impact of a range of assets, including consumer durables, and on the role of financing on expanding asset ownership will be crucial to guiding aid organizations, policy makers, funders, and financial services providers considering support for asset accumulation in poor households. It will improve understanding of the preconditions needed for assets and asset financing to have meaningful impact and, in turn, support the design and delivery of asset financial products and services tied to assets that target poor households.

SECTION 1

INTRODUCTION

POVERTY TRADITIONALLY HAS BEEN VIEWED THROUGH THE LENS OF household income and expenditures. But incomes alone are not a complete indicator of household well-being. Among other factors, lack of foundational capabilities such as education, health, and social safety nets; lack of access to essential services; and vulnerability in the face of catastrophic risks can contribute to household poverty.

Definitions of poverty increasingly look beyond income, and recent advances in the literature have indicated that asset ownership is an important driver of household well-being (Carter and Barrett 2006; Brandolini, Magri, and Smeeding 2010). Assets have been defined as a “stock of financial, human, natural or social resources that can be acquired, developed, improved and transferred across generations” (Ford Foundation 2004) and also as a “stock of productive, social, and locational resources used to generate wellbeing” (Siegel 2005, paraphrased from De Janvry and Sadoulet 2000; Rakodi 1999; and Carney 1999).

In economic thinking, household assets are considered drivers of sustainable growth that lead to better economic, social, political, psychological, and intergenerational outcomes (Siegel 2005). Assets promote the economic well-being of households by generating income, creating additional stocks of assets (e.g., animal husbandry), smoothing consumption during periods of uncertainty and hardship, and building resilience in the face of external shocks. Beyond such economic benefits, they provide personal and social benefits, including improvements in education, health, future orientation, and political participation.

However, poor households typically are constrained by low quantity and quality of assets, as well as adverse contextual factors such as distance from markets and low-quality public infrastructure that limit their ability to maximize the benefits of asset ownership. This has consequences for their long-term growth and poverty reduction (Valdés and Mistiaen 2001; Dorosh et al. 2011). Because these households anticipate economic shocks to their livelihoods and face barriers to acquiring financing and other market services that may help them cope with such shocks, they tend to invest in low-risk economic activities which, in turn, yield low returns. Vulnerable households that are unable to improve their incomes or increase asset stocks often get caught in an “asset poverty trap” (Carter and Barrett 2006). Consequently, they cope with shocks through adverse strategies such as liquidating productive assets, taking children out of school, or reducing consumption of food or essential services. This leads to further depletions of their stock of assets and pushes the household into structural and permanent poverty (Zimmerman and Carter 2003; Carter and May 1999).

Access to assets may help poor people escape the poverty trap and increase their asset stock to a viable minimum. There are several ways to facilitate access. Governments, nongovernment organizations, and the international development community sometimes use grants or asset transfers to promote asset ownership for poor households. However, while the impact of asset transfer schemes such as graduation programs is proven, they may be difficult to scale due to high costs and reliance on public funding.¹

Financial services are an alternative means for promoting asset ownership. Technological innovations such as global positioning systems, remote sensing, alternative credit scoring, and the internet of things increasingly enable new business models and allow financial services providers to reach lower income customers who previously have been excluded from financing. These innovations, in turn, allow low-income customers to acquire, for the first time, assets ranging from solar home systems and irrigation equipment to mobile phones and motorbikes.

Recognizing the importance of asset ownership to poor households, CGAP set out to better understand how assets impact the lives of poor people and the role financial products such as loans and leases can play in promoting asset ownership. While the work could have focused on a range of asset types, we examined recent evidence on productive assets and quality-of-life-enhancing assets. Since this literature review is focused on financing for movable, physical assets, it excludes land, financial assets, and intangible assets.²

Further, we also excluded:

- Asset types for which the evidence is highly contextual (e.g., farm equipment and farm tools, whose impacts are highly specific to geography, crop type, use of complementary inputs, etc.).
- Evidence on intermediate outcomes not considered in our theory of change (e.g., impact of using tractors on use of complementary inputs, distribution of time and labor).
- Evidence on general approaches that does not focus on specific types of assets (e.g., impact literature on farm mechanization that does not differentiate between types of tractors used, literature that focuses on availability of irrigation water rather than delivery mechanisms like pumps, sprinklers, or canals).

1 Pioneered by the Bangladesh-based international development organization BRAC, the graduation model is a multifaceted livelihood program targeted to ultra-poor people who earn less than \$1.25 per day. The approach is a large-scale intervention with many components to help ultra-poor households “graduate” from extreme poverty: a productive asset to kick-start livelihoods, as well as training, coaching, access to savings, and consumption support. CGAP, in partnership with the Ford Foundation, supported 10 pilots in eight countries: Haiti, Pakistan, Ethiopia, Yemen, Peru, Honduras, Ghana, and India. The studies found the series of interventions to be extremely successful, with meaningful increases in ultra-poor household income and consumption, assets, food security, and health (Banerjee et al. 2015b). For more information, see the CGAP-Ford Foundation Graduation Program blog series, <https://www.cgap.org/blog/series/cgap-ford-foundation-graduation-program>.

2 Based on how assets improve well-being, they may be classified into productive assets or quality-of-life-enhancing assets. Productive assets like land, livestock, and farm equipment are physical and have income-generating potential because they can be used as part of a livelihood or lent out for a fee. Quality-of-life-enhancing assets such as lighting, toilets, and home appliances (refrigerators, washing machines, stoves, televisions, etc.) may not directly produce income for their owners. Nevertheless, they may increase a person’s subjective concept of well-being by reducing time and effort spent on routine tasks; free up time for leisure, caregiving, and other productive activities; and increase social standing in the community.

The paper begins by articulating a theory of change (ToC) for how asset ownership impacts the livelihoods of poor people (El-Zoghbi, Holle, and Soursourian 2019). The authors then review the evidence to determine whether it supports the ToC, and ask whether any impact identified also holds true when households use financing (e.g., a loan or lease) to obtain a given asset. The paper concludes by identifying evidence gaps and proposing opportunities for further research.

Theory of Change

A theory of change is a structured way of thinking about the impact or change envisioned by an organization, program, or intervention. It describes how and why change happens, showing all the different pathways that may lead to impact. It is often graphically represented as a diagram or chart, and can be used as a tool for both planning and evaluating the success of a program or intervention.

A theory of change is built by working backward—from long-term goals to the most immediate changes that need to occur for impact. It begins by defining the long-term goal of an intervention, which is the change or impact sought within a target population of beneficiaries as a result of the intervention. It then describes intermediate outcomes, which are the short-term changes beneficiaries will experience that lead to long-term goals. Further, it outlines “preconditions” (also known as assumptions), i.e., things that must happen for an intervention to lead to desired intermediate outcomes. Some preconditions may, in turn, have further preconditions. Eventually, all preconditions lead back to the intervention, which is defined by a set of activities to be performed using a specific mix of inputs. The causal linkages from intervention to impact are commonly called “impact pathways,” and are used to describe the expected trajectories of change as the result of an intervention.^a

a For further reading on theory of change, see Brown (2016); Harries, Hodgson, and Noble (2014); and Center for Theory of Change, <https://www.theoryofchange.org/what-is-theory-of-change/how-does-theory-of-change-work>.

SECTION 2

A THEORY OF CHANGE FOR ASSET OWNERSHIP

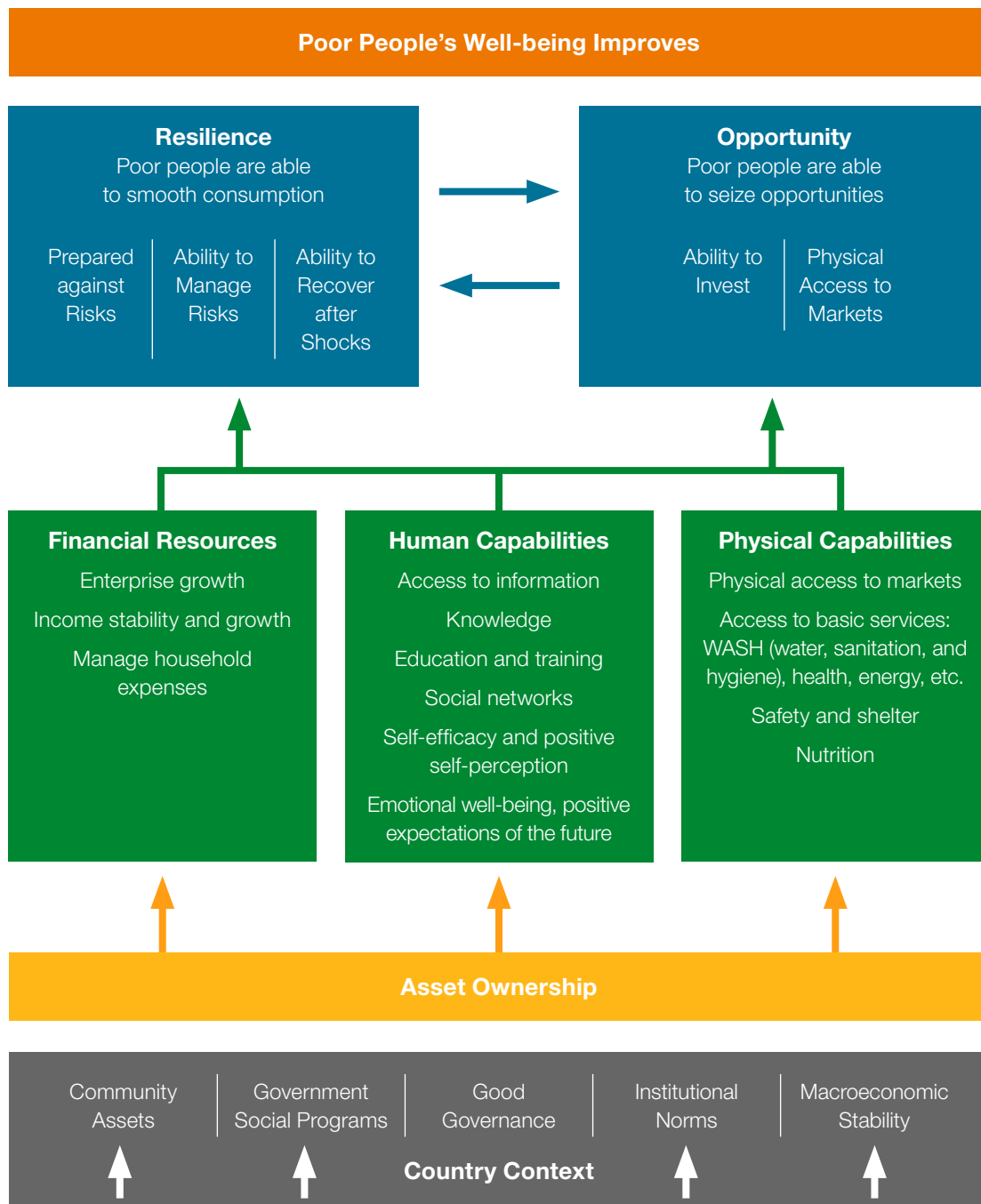
SEVERAL RECENT STUDIES HAVE TRIED TO ASCERTAIN THE IMPACT of financial inclusion on the lives of poor people—with mixed and often contradictory results.³ Despite intense debate and decades of evidence gathering, there is no clear narrative to explain how access to and use of financial services improves well-being across different customer segments and geographies. Recognizing that financial services are only a means to achieving outcomes such as increased incomes, greater food security, better healthcare, and children’s education, CGAP is developing a ToC that proposes several pathways through which the use of financial services can lead to improvements in well-being for poor people.⁴ This paper adapts CGAP’s ToC for financial inclusion and proposes a ToC for asset ownership, hypothesizing pathways to improvements in well-being.

The ToC for asset ownership begins by hypothesizing that the ultimate impact of assets on poor people’s lives would be improvements in well-being. It then describes the outcomes that poor people strive to achieve through asset ownership, namely increased resilience and increased opportunities to improve well-being. Next, it identifies the preconditions necessary for achieving these outcomes, including having the ability to prepare for risks, recover from shocks, invest, and access markets. Finally, it describes the specific interventions that can create these preconditions. The ToC for asset ownership, schematically represented in Figure 1, should be read from the top down: from impact (orange box) to outcomes and preconditions (blue boxes) to foundational capabilities (green boxes). The yellow box represents direct outcomes of interventions, such as asset transfers or asset finance, while the grey box represents macro-level factors that are outside an individual’s control but can either limit or enhance the impact of asset ownership.

3 For literature on the mixed impacts of financial inclusion, see Klapper (2019); Dupas et al. (2018); Duvendack and Mader (2019); Banerjee et al. (2015a); Banerjee, Karlan, and Zinman (2015); Banerjee (2013); Roodman and Morduch (2014); and Persson and Hernandez (2019).

4 For a detailed description of CGAP’s emerging ToC, see the CGAP.org topic, Reflections on the Impact of Financial Services, <https://www.cgap.org/topics/collections/reflections-impact-financial-services>.

FIGURE 1. A Theory of Change for Asset Ownership



Outcomes

The ToC hypothesizes that when poor people own assets, they improve their well-being by building resilience and capturing opportunities.

Preconditions

Households are resilient when they (i) are prepared against future risks, (ii) can manage current risks and respond to shocks, and (iii) can recover from shocks and rebuild their lives. Similarly, the preconditions for households capturing opportunities include their ability to make investments in welfare-improving opportunities and access to markets.

Drivers of Impact: Foundational Capabilities

According to the ToC, three types of foundational capabilities create the preconditions for resilience and opportunity among poor people: financial resources, human capabilities, and physical capabilities.

Financial resources. The financial portfolio of a household comprises financial resources such as cash and assets; financial social safety networks of families, friends, and neighbors; access to social protection programs; and access to financial solutions like credit, savings accounts, insurance, and payment systems. These resources help poor households to make productive investments, while also offering strategies to prevent, cope with, and recover from shocks.

The amount of financial resources at an individual's disposal depends on their present and future mix of assets and liabilities, income, household expenses, and family obligations. These are determined by whether the individual generates income through wage employment or self-employment. They also depend on education, skills, training, and other human capabilities (El-Zoghbi et al. 2019).

Human capabilities. Human capabilities are the skills and abilities individuals can leverage to build their resilience and seize opportunities to improve well-being. They are mediated by factors such as level of education, training, and access to information; psychological factors like self-confidence, self-efficacy,⁵ and emotional well-being; and external factors such as social norms and social networks, among others (El-Zoghbi et al. 2019).⁶

5 Self-efficacy is the belief in one's capacity to succeed at tasks. Self-efficacy beliefs determine how people feel, think, motivate themselves, and behave. For more on self-efficacy, see Bandura (1978).

6 Social norms refer to the rules and accompanying behaviors that govern social behavior, perceptions, and conduct, such as following local traditions and customs; speaking local languages; contributing to and participating in communal activities like festivals, holidays, and marriages; etc. Social norms shape how people behave and how they expect others to behave. For more on social norms, see Burjorjee, El-Zoghbi, and Meyers (2017).

Physical capabilities. Health status and autonomy can impact the opportunities available to individuals while also enhancing or limiting their resilience in the face of shocks. Access to essential services such as energy, water, and sanitation; healthcare; shelter and physical safety; food and nutrition; and physical access to markets are some determinants of physical capabilities.

Country Context

Country context comprises factors beyond (and greater than) individual interventions that create the preconditions for asset ownership to improve the well-being of poor people. They broadly include macroeconomic stability, good governance, institutional norms, existence of government social protection programs, and community assets.

SECTION 3

ACCESS VS. OWNERSHIP

IN SOME SITUATIONS, THE ABILITY TO USE AN ASSET WITHOUT OWNING

it outright (e.g., renting or paying for a service) may produce benefits for a poor household.

Assets such as tractors, farm equipment, and warehouses are expensive and used only seasonally or infrequently. In these cases, returns generated may not be enough to cover the costs of owning and operating an asset. Similarly, a customer may not be able to afford the down payments and installments associated with financing. In these cases, on-demand access to an asset—for example, renting a tractor to plow a field before the rains begin or paying a mill operator to grind maize into flour—may make better economic sense. While research predominantly focuses on asset ownership, there is a need for further research into the impact of pay-for-use models. This study, therefore, focuses exclusively on the impact of asset ownership.

SECTION 4

MAPPING THE IMPACT EVIDENCE FOR ASSET OWNERSHIP ONTO THE THEORY OF CHANGE

THIS SECTION DESCRIBES THE PATHWAYS THROUGH WHICH ASSET ownership can create foundational capabilities among poor households: financial, human, and physical. Next, for each capability, evidence that supports the pathways to impact is discussed.

Assets Create Financial Resources that Poor Households Use to Improve Well-being

In the proposed ToC, assets create financial resources for poor households by (i) increasing incomes, (ii) diversifying income sources, (iii) mitigating risks within livelihood activities, and (iv) liquidating assets to cope with shocks. We find evidence of impact of assets for livestock, mobile phones, irrigation pumps, treadle pumps, and milling machines. Only one study evaluated the impact of financing on the acquisition of livestock assets. (See Table 1).

PRODUCTIVE ASSETS CAN INCREASE INCOMES

When poor people invest in a productive asset, it can generate income and spur enterprise growth. Income may be used to manage household expenses, increase consumption, or save and further invest in new opportunities related to financial, human, and physical capabilities.

Evidence shows that access to assets affects the livelihoods of very poor people. A study in Ethiopia gave some ultra-poor households livestock grants up to \$200 (including supplementary training and support) and gave others credit up to \$350 (proceeds of which

TABLE 1. **Summary: Evidence of the Impact of Asset Ownership on Financial Resources**

Pathway to Impact	Number of Studies	Assets Covered	Segments Covered	Examines impact of finance?
Productive assets can increase incomes of poor people	3	Livestock, mobile phones, treadle pumps	Ultra-poor, women, smallholder farmers	Yes (1)
Productive assets can diversify income streams of poor people	2	Livestock	Agricultural households	No
Productive assets can mitigate risks within livelihood activities	1	Irrigation pumps, milling machines	Smallholder farmers	No
Households can liquidate nonproductive assets to cope with shocks	-	-	-	-

were invested in livestock, cattle, and off-farm enterprises such as beekeeping and petty trades). After one year, grant recipients had made an average gross return of about \$100 on their investment while credit recipients had made about \$170. The average capital growth rate, which measures the extent of asset accumulation and is an indicator of a household's ability to escape poverty, was 42 percent for grant recipients and 47 percent for credit recipients. Approximately 30 percent of both cohorts invested proceeds into their businesses, about 20 percent invested in human capital such as skills training and education, and about 7 percent saved for the future (Tadesse and Zewdie 2019).

After controlling for household characteristics, households receiving grants earned higher returns on their investment than those that received credit. Tadesse and Zewdie hypothesized that the difference may be explained by the fact that, unlike those borrowing credit, grant recipients did not have to repay their grants and therefore were able to generate higher incomes and accumulate assets faster. Beyond demonstrating the income- and livelihood-generating potential of assets, results suggest we cannot assume that the benefits coming from asset transfers or grants will hold true when the same assets are obtained through borrowing.

Further evidence can be found in Bangladesh, where ultra-poor women who received asset transfers of livestock shifted their primary occupation from low-wage casual labor to livestock rearing.⁷ Four years after the transfer, the amount of time devoted to livestock rearing increased nearly fourfold while hours devoted to agricultural labor and domestic maid services went down by 17 and 36 percent, respectively (Bandiera et al. 2017). This study further finds that overall, the amount of time worked increased by 25 percent, earnings increased by 37 percent, and per capital household expenditure increased by 10 percent. There is strong evidence that the increased incomes and savings were not used for consumption alone but were invested in productive and quality-of-life-enhancing assets. The value of cows owned by households that received livestock transfers increased by 208 percent, and the value of household durables, which include jewelry, sarees, radios, televisions, cell phones, bicycles, and furniture, increased

7 These assets were transferred as part of a graduation program that also included mentoring, coaching, health support, and consumption support for the first 40 weeks. The strong impacts observed in this study suggest that for very poor people, asset ownership alone may not always improve well-being. Coupling asset ownership with capacity-building interventions like training, mentoring, and coaching, as well as providing access to markets, may be a prerequisite to impact in some cases.

by 57 percent. Importantly, these households were 15 percent less likely to fall back into extreme poverty (below \$1.25 per day), suggesting that productive assets like livestock have durable effects that make poor households more resilient.

A study in the Philippines showed that farmer households from the poorest municipalities that adopted mobile phones saw their farm incomes rise as a result of greater access to market information, which allowed them to strike better deals with their trading partners. Additional income was used to improve overall household welfare, leading to an 11 to 17 percent increase in the percentage growth rate of household-level per capita consumption (Labonne and Chase 2009).

Irrigation assets, like treadle pumps,⁸ have also demonstrated positive and meaningful impacts on incomes.⁹ When farmers in Ghana were surveyed, they reported that adoption of treadle pumps improved productivity and saved time compared to traditional irrigation methods like ropes and buckets. The difference in income between households that adopted treadle pumps and those that did not was \$393 per hectare of farmland, and about 10 percent of treadle pump adopters graduated to motorized pumping. In the same study, it was also found that about 21 percent of households that used treadle pumps stopped using them when they broke down—emphasizing the importance of after-sales servicing (i.e., repair and maintenance) in enabling asset ownership (Adeoti et al. 2009). Evaluations of treadle pump adoption have found similar increases in average annual incomes elsewhere, e.g., \$100 in South Asia (with some farmers receiving up to \$500) (Shah et al. 2000) and \$277 in Mali, which was the equivalent of doubling annual cash income (Bishop 2002). In Malawi, treadle-pump-adopting households earned four times more than households that did not adopt (\$387 versus \$88) (Mangisoni 2008).

Anecdotal evidence suggests that other assets can have an impact on livelihoods; however, further evaluation and research are required. For example, Tugende, an asset financing company in Uganda, helps *boda boda* (motorcycle taxi) drivers buy their *boda* using a rent-to-own approach.¹⁰ Although there are over 100,000 *boda* drivers in Kampala, Uganda, only 20 to 30 percent own their vehicles. Tugende has financed nearly 17,000 *bodas* to over 7,000 drivers, many of whom were previously considered a credit risk. While lease payments are generally higher than the standard rental fees paid by drivers, the company asserts that those who complete payments (at around 82 weeks) can double their take-home earnings compared to those who rent (Waldron 2016).

8 Treadle pumps are manually powered suction pumps commonly found in parts of Africa, South Asia, and South East Asia. They are operated by farmers pedaling on long treadles, which are connected to pumps. Since these pumps involve human effort, they can be used for irrigating small plots of land (an acre or less) and for sucking water out of shallow wells (depths of 7 meters or less). Since their cost is relatively low (under \$100) and they are less expensive to operate, treadle pumps are economically attractive to poor smallholder families.

9 There is a large body of literature examining the impacts of irrigation systems on crop yields, productivity, incomes, and poverty, among other factors. In general, studies find that irrigation leads to increased output, increased use of complementary inputs like fertilizers and high quality seed, decreases in poverty, and improvements in health and nutrition outcomes. These studies have mostly focused on large-scale irrigation projects and public assets like canals and reservoirs, although recent studies are focusing on smaller, household-level assets like treadle pumps, motor pumps, tube wells, and sprinkler systems. For a review of over 500 studies on the impacts of irrigation systems, see Giordano et al. (2019).

10 For more on Tugende, see <https://www.gotugende.com>.

Importantly, the evidence cited is mostly limited to asset transfers and grants targeting very poor households. It is difficult to extrapolate results onto those who do not live in extreme poverty or those who begin with greater asset wealth relative to study participants. Furthermore, literature to date mostly covers assets obtained through transfers and grants and generally does not look at the impact of borrowing. The one peer-reviewed study that examines the impact of financing finds a negative effect when compared to households receiving an asset at no cost (Tadesse and Zewdie 2019). While anecdotal evidence does suggest potential impact for some assets obtained through financing, further research is required to confirm these claims.

PRODUCTIVE ASSETS CAN DIVERSIFY INCOME STREAMS

Relying on only one income source increases vulnerability to risks from economic shocks such as loss of livelihood. When poor people obtain livestock, sewing machines, hand carts, and other productive assets, they can engage in new revenue-generating activities and diversify income sources. For example, agriculture-dependent households that expand into off-farm business activities decrease their exposure to agricultural vulnerabilities such as seasonal income, crop disease, drought, flooding, etc. (Asfaw et al. 2017). A diverse portfolio of income sources is an important strategy for poor households seeking to improve resilience to shocks.

In rural Laos, higher socioeconomic status among poor agricultural households (as measured by ownership of livestock, cattle, hand tractors, motorbikes, and TVs, among a variety of other assets) was linked to increased livelihood diversification. However, it was not only the quantity of assets owned, but also the variety, that led to greater income diversification (Martin and Lorenzen 2016). This suggests that poor households may need to acquire several kinds of assets to diversify their livelihoods.

An older but nonetheless influential study that surveyed households experiencing frequent and devastating famines in Ethiopia found that households owning a greater amount of livestock and nonfarm assets were able to diversify their livelihoods and emerge from famines with higher-than-average levels of income and consumption, as compared to households with only one source of income (Block and Webb 2001).

Still, much of the literature on livelihood diversification is focused on asset ownership at the community or village level and looks at assets such as natural resources, education/skills training, and access to markets (Alobo Loison 2015; Ansoms and McKay 2010). Further, studies do not examine the role of financing in acquiring such assets. More research is needed to understand how productive assets lead to diversification of income sources at the household level and the impact of financing.

PRODUCTIVE ASSETS MITIGATE RISKS WITHIN LIVELIHOOD ACTIVITIES

People adopt risk mitigation practices within the various income-generating activities they pursue. These may include improved agricultural practices (e.g., the use of drought-resistant seeds, intercropping, forest conservation), the use of new technologies such as rainwater harvesting, or the use of financial solutions such as insurance. Investment in productive assets may offer an additional risk mitigation strategy.

Agriculture is particularly prone to risk, and farmers in Sub-Saharan Africa face threats ranging from unpredictable weather to commodity price fluctuations. They often are unable to manage these risks because of financial constraints and lack of access to insurance. However, evidence suggests that subsidizing the cost of assets through grants can provide risk mitigation strategies for agricultural households.

A study in Nigeria found that farmers were willing to invest in productive assets as a risk mitigation strategy when offered matching grants that covered half the price of the asset. Farmers facing higher rainfall risks were 8.3 to 23.7 percent more likely to invest in irrigation pumps when matching grants were available since pumps ensure water supply even under erratic weather conditions. Similarly, farmers who face risks from fluctuations in cassava prices were 4.8 to 8.2 percent more likely to invest in milling machines when matching grants were available. By processing cassava into higher-value flour, they were better able to cope with fluctuating prices (Takeshima and Yamauchi 2012). In each case, matching grants reduced the cost of acquiring the assets; however, it is not known whether farmers borrowed to pay for their half of the costs. While this study provides evidence of assets offering a way to mitigate risk, it does not provide evidence on the impact of financing such assets.

NON-PRODUCTIVE ASSETS CAN BE LIQUIDATED TO COPE WITH SHOCKS

Poor households respond to shocks through the combination of coping strategies at their disposal, which may include using savings, selling assets, decreasing consumption of food and other essential services, or discontinuing children's education. Although these strategies have implications for future consumption, they help sustain current consumption levels. In the absence of financial solutions such as insurance or government solutions such as social safety nets, they are often the only available strategies. The ToC proposes that households with productive or quality-of-life-enhancing assets can be more resilient during shocks by liquidating the assets. However, the hypothesis on the role of assets as a store of value requires more research.

Assets Create the Human Capabilities with which Poor Households Improve Their Well-being

In the proposed ToC, assets create human capabilities by (i) providing access to information and knowledge, (ii) connecting households to their social networks, (iii) promoting education and training, and (iv) promoting psychological and emotional well-being. We have found evidence of the impact of assets such as mobile phones, livestock, farm equipment, kitchen equipment, and home appliances. But none of these studies examines the impact of financing on acquiring these assets. (See Table 2.)

TABLE 2. **Summary: Evidence of the Impact of Asset Ownership on Human Capabilities**

Pathway to Impact	Number of Studies	Assets Covered	Segments Covered	Examines impact of finance?
Assets can provide access to information and knowledge	6	Mobile phones	Agricultural traders, fish traders, smallholder farmers	No
Assets can connect poor households with their social networks	-	-	-	-
Assets can promote education and training	4	Home appliances, kitchen equipment, mobile phones	Youth, rural adult learners, agricultural households, poor households	No
Assets can promote psychological and emotional well-being of poor people	1	Livestock	Women, agricultural households	No

ASSETS CAN PROVIDE HOUSEHOLDS WITH ACCESS TO INFORMATION AND KNOWLEDGE

Poor households can leverage information and communication assets, such as radios, mobile phones, TVs, and computers, to obtain useful information that is otherwise unavailable or expensive. Examples include market prices, agricultural extension services, financial services, government assistance, and essential services such as healthcare.

For those who sell goods or services, barriers such as distance, time, and incomplete knowledge of market prices can lead to suboptimal trade deals and reduced incomes. Assets such as mobile phones circumvent these barriers by enabling access to timely information on market prices and increasing trader access to new markets. They may also speed up business transactions, decrease transaction costs, and increase revenue—which, in turn, leads to the greater financial resources that drive resilience and opportunity.

For example, agricultural traders in Niger traditionally travelled to markets to learn the prices of agricultural goods—incurring significant expense and limiting their knowledge of prices to only the markets they visit and not of those in surrounding areas. As mobile phones became affordable and traders adopted them, they were able to obtain prices more quickly and from more markets, decreasing price dispersion by as much as 10 to 16 percent (Aker 2010). Similarly, fishermen and wholesale fish traders in the South Indian state of Kerala who adopted mobile phones had increased access to markets and better and more timely communication of business information—resulting in a 75 percent reduction in price dispersion which increased sales revenues (Jensen 2007). When traders face lower price dispersion they can leverage real-time prices across various markets and sell their products in markets with higher prices, ultimately increasing their incomes.

Mobile phones have increased the speed of price transmission across maize markets in Ghana by 6 percent (Egyir, Al-Hassan, and Abakah 2011). Similar trends in Uganda are encouraging market participation by farmers in remote areas who produce perishable crops like bananas and were previously not connected to markets (Muto and Yamano 2009).

In Tanzania, interviews with farmers revealed that they are reaping the benefits of using mobile phones throughout the farming lifecycle for activities like collecting weather information and investigating seed prices before planting. Once crops were planted, they used their phones to coordinate and pool labor; collect and exchange information on rainfall, prices of inputs, and availability of extension officers; and locate affordable farming implements. During the harvest and post-harvest phase, mobile phones enabled farmers to communicate with each other, organize transport to warehouses, collect information about dealers, negotiate prices together, and make payments or receive transfers (Furuholt and Matotay 2011).

In Ghana, the benefits of owning a mobile phone—including shorter transaction times, cheaper costs of transactions, and more access to markets—extended to nonfarm enterprises of poor households, increasing nonfarm incomes by up to 42 percent. This also led to increases in household consumption. On average, poor households that had a mobile phone were 15 percent less likely to fall below the poverty line compared to other poor households (Danquah and Iddrisu 2018). Although mobile phones increased revenues of both rural and urban nonfarm enterprises, the effect on well-being and chances of being nonpoor decreased only for rural households, which suggests that urban households may be less reliant on access to mobile phones for well-being. This highlights the role of context and how the same productive assets may have different pathways of impact for different households.

ASSETS CAN CONNECT HOUSEHOLDS WITH THEIR SOCIAL NETWORKS

Beyond providing valuable market information, assets can help build and strengthen social relationships such as those with business partners, neighbors, friends, and family. Poor households may draw on these social networks for assistance during shocks (Mas and Gitau 2014). This pathway assumes that poor individuals and their households follow prevailing community norms and have been accepted by these social networks.

CGAP's ToC posits that assets can strengthen social ties in many ways:

- Making frequent physical contact possible (transportation assets).
- Increasing frequency and decreasing costs of communication (mobile phones).
- Bringing neighbors and the community together (assets such as televisions, radios, phones, computers).
- Enabling *quid pro quo* transactions (borrowing or using each other's farm tools, farm equipment, furniture, kitchen equipment, other assets).

This pathway needs to be validated through further research because evidence to date does not yet support the hypothesis.

QUALITY-OF-LIFE-ENHANCING ASSETS CAN PROMOTE EDUCATION AND TRAINING, BUT PRODUCTIVE ASSETS MAY INCREASE CHILD LABOR IN POORER HOUSEHOLDS WITH FEWER ADULTS

Quality-of-life-enhancing assets such as kitchen equipment, home appliances, and vehicles can decrease demand for physical labor at home and free up time—especially for women and children. It can lead to improvements in children’s education, childcare, and time available for leisure and/or other income-generating activities.

In Ghana, youth from households that owned at least one of five household items (TV, refrigerator, electric iron, electric or gas stove, kerosene stove) scored, on average, one point higher on English tests and quizzes throughout the academic year as compared to peers from households that did not own any of these items (Chowa and Masa 2013). Although a one-point increase may seem negligible, it can mean the difference between failing or passing exams and progressing to the next grade.

Mobile phones have also been found to improve adult educational outcomes by allowing adult learners to practice literacy skills outside the classroom through calls, text messaging services, and mobile money applications. In Niger, when a mobile phone-based component was added to a rural adult education program, writing and math test scores were 0.19 to 0.26 standard deviations higher and math scores on standardized tests remained high for seven months after classes ended. Further, the study found an increase in student interest and effort, evidenced in active use of mobile phones for learning (Aker, Ksoll, and Lybbert 2012).

Still, the impact on human capabilities across asset types widely varies. In Tanzania, household durables such as furniture and kitchen equipment decreased the demand for child labor and positively influenced the highest school grade completed by children in the family, especially for rural families and grain crop farmers (Kafle, Jolliffe, and Winter-Nelson 2018). On average, having more household assets was positively associated with modestly high levels of school attendance for children (around nine to 10 more days in school than children in households with no household durables, assuming a school year of 200 days). In contrast, having more agricultural assets like tractors, ploughs, and livestock was associated with slightly lower levels of school attendance for children (around two to four fewer days in school than children in households with no agricultural assets, assuming a school year of 200 days) (Kafle, Jolliffe, and Winter-Nelson 2018).

In a different study in the Philippines, productive assets were found to increase child labor. KASAMA, an asset transfer program, targeted poor households with child laborers to decrease the demand for child labor by increasing household wealth. Under the program, poor households were given a productive asset worth \$518, such as livestock, farming tools, inventory for vending snacks, or materials for producing home goods (e.g., candles or curtains), along with three days of business skills training. The program helped poor households start or expand home-based enterprises, increase household economic activity, increase food security, and improve child well-being (as measured by indicators such as child life satisfaction, feeling of care from parents, and depression, among others). Improvements in child well-being were concentrated among children who were already in child labor at the baseline (the beginning of the study) (Edmonds and Theoharides 2019). In contrast, the transfer of a productive asset

under the same program encouraged children who were not in child labor at the baseline to start working. Specifically, children were 8.3 percentage points more likely to be economically active. This effect was pronounced in households that already had an enterprise at the baseline but lacked sufficient adult labor. Children were 17 percentage points more likely to enter child labor and 22 percentage points more likely to enter hazardous child labor involving adverse working conditions such as working with loud noises or chemicals (Edmonds and Theoharides 2019). Such varied effects emphasize the importance of context and how the same asset may have different impacts for the same kind of beneficiaries in different circumstances.

ASSETS CAN PROMOTE PSYCHOLOGICAL AND EMOTIONAL WELL-BEING

Finally, asset ownership can lead to improvements in people's psychological and emotional well-being. In many communities across the world asset ownership is linked to enhanced social status, which can increase positive self-perception and self-confidence. The financial resources and physical capabilities that assets bestow can increase the self-efficacy, agency, and autonomy of poor people—especially for women. This could increase optimism about the future, encouraging people to take risks and make investments that lead to welfare improvements.

In the Indian state of Telangana, women who owned productive assets such as livestock and farm equipment were found to have higher agency and a greater say in household decisions on children's education, types of crops to be sown, and purchase of agricultural inputs, as well as financial decisions like opening a bank account or applying for a loan. They were also able to negotiate improved working conditions for themselves in the casual labor market in the form of higher wages and fewer tied obligations such as working exclusively for one employer or on one field or having the obligation to finish their husband's incomplete share of labor (Garikipati 2009).

Most of the literature on the impact of assets on emotional well-being and future orientation have focused on home ownership and financial assets such as savings accounts. These studies are largely limited to households in developed markets such as Europe and the United States (Shobe and Page-Adams 2001). Further research is needed to confirm this hypothesis for other assets and for populations in developing countries.

Assets Create the Physical Capabilities with which Poor Households Improve Well-being

In the proposed ToC, assets create physical capabilities for poor households by (i) creating physical access to markets, (ii) creating access to basic services, (iii) providing shelter and safety, and (iv) promoting nutrition. There is evidence of impact of assets for water, sanitation, and hygiene (WASH) and cookstoves, and anecdotal impact narratives for solar home systems. There is some evidence that financing (credit) improves ownership of solar home systems, WASH assets (toilets), and cookstoves. (See Table 3.)

TABLE 3. **Summary: Evidence of the Impact of Asset Ownership on Physical Capabilities**

Pathway to Impact	Number of Studies	Assets Covered	Segments Covered	Examines impact of finance?
Assets can create physical access to markets	-	-	-	-
Assets can create access to basic services	7	Solar home systems, toilets, improved cookstoves	Rural households	Yes (3)
Assets can provide shelter and safety	-	-	-	-
Assets can promote nutrition	-	-	-	-

ASSETS CAN CREATE PHYSICAL ACCESS TO MARKETS

Transportation assets like two wheelers, *tuk tuks* (auto rickshaws), and vans expand the geography of poor people's lives, helping them access new markets and travel to towns or cities to obtain better health, education, and other basic services. However, the literature on access to markets mostly covers community assets and infrastructure such as roads or public transport. Additionally, the impact of individual assets on a household's market access, as proposed in the ToC, is yet to be tested.

ASSETS CAN CREATE ACCESS TO BASIC SERVICES LIKE ENERGY, WASH, HEALTH, ETC.

Quality-of-life-enhancing assets can have transformative impacts on the health, safety, and lives of poor people. Off-grid solar home systems provide access to clean and affordable energy, expand the number of productive hours in a day, and enhance safety at night. CGAP's work on pay-as-you-go (PAYGo) solar found that poor households value access to electricity and lighting and are willing to invest in solar home systems, even if they do not directly impact income.¹¹

While there are few rigorous evaluations of the impact of off-grid solar home systems, in-depth interviews with customers reveal that solar home systems delivered clean, reliable overhead lighting that was of far better quality than available alternatives such as kerosene (Stojanovski, Thurber, and Wolak 2017). Solar home systems eliminated the risk of house fires and children burning themselves, produced no smoke or odor, and left no permanent residue on walls and roofing (Zollmann et al. 2017).

In India, households with access to solar home systems were 29 to 36 percentage points more likely to be electrified within a year compared to other households. Further, kerosene expenditure decreased by about 50 rupees a month (\$0.90); no significant changes occurred in household-level savings, spending, or time spent working or studying (Aklin et al. 2017). Another study in Uganda found that households that purchased PAYGo solar home systems saved \$1.40 a week, on average, on energy costs compared to households that did not and

11 For more on CGAP's work on PAYGo solar home systems, see the CGAP blog series, "Financial Inclusion and Energy," <https://www.cgap.org/blog/series/financial-inclusion-and-energy>.

accrued a savings of \$134 on energy expenditures over the five-year lifespan of the home system. The study also reported 9 percentage points fewer incidents of coughing at home (self-reported by household members) and a near complete elimination of fires and burns from lighting sources (Chen et al. 2017).

Anecdotal evidence suggests that financing has played an instrumental role in the proliferation of off-grid solar home systems, but there is an imminent need for further research. The flexibility of repayments offered by the PAYGo business model helps low-income households acquire solar lighting and home systems by spreading the cost of devices over time.¹² The Global Off-Grid Lighting Association (GOGLA) reports that in the first six months of 2019 alone, 4.11 million units of off-grid solar lighting products were sold globally. A quarter of the units—approximately 1 million—were financed through a PAYGo model (GOGLA 2019).

WASH outcomes enhance household health through assets like piped water that provides clean drinking water and toilets for safe sanitation. While on-site sanitation improvements like toilets promote modest toilet use and have mixed impacts on health (Patil et al. 2014; Clasen et al. 2014), the combination of sanitation interventions within houses and sewerage interventions at the community level have dramatic impacts on health, including a 30 to 50 percent reduction in cases of diarrhea (Duflo et al. 2015).

CGAP found that digital financial services like digital payments, pay-as-you-go service models, and digital credit are expanding access to WASH assets for the poor.¹³ A recent randomized control trial found that simply marketing microcredit as linked to specific welfare improvements can encourage households to invest in quality-of-life-enhancing assets. Two-and-a-half years after a sanitation loan was offered to residents in rural Maharashtra in western India, 18 percent of eligible borrowers had taken the loan—an encouraging uptake rate. Further, toilet ownership and use had increased by 9 percentage points in these communities—a significant and meaningful increase (Augsburg et al. 2019).

Even simple home appliances like improved cookstoves (solar, electric, gas, biomass-based, etc.) provide clean alternatives to conventional cooking fuels such as firewood and kerosene, reducing indoor household air pollution and promoting respiratory health, especially for women (Thomas et al. 2015; Agrawal 2012). A recent study in India found that people were more willing to invest in cookstoves when they were offered financing combined with home delivery and user demonstrations, increasing ownership by 28 percentage points (Pattanayak et al. 2019).

ASSETS CAN PROVIDE SHELTER AND SAFETY

A house or dwelling is one of the most valuable assets households across societies can aspire to because it provides them with a place of shelter and a sense of belonging. Research shows

12 The PAYGo model allows low-income households to acquire assets under a lease-to-own arrangement. The customer typically pays 10 to 20 percent of the value of an asset as a down payment and enters into a contract, usually for a year or more, to buy “units” of energy service in whatever amount they choose—daily, weekly, or monthly. Like prepaid airtime, if units run out, the system automatically shuts off until credit is topped up. Once the user has purchased the contractual number of units, the system permanently unlocks and ownership is transferred to the user.

13 For more on CGAP’s work in this area, see the CGAP blog series, “Financial Inclusion and Water,” <https://www.cgap.org/blog/series/financial-inclusion-and-water>.

home investment improves life satisfaction, civic participation in neighborhood affairs, and political engagement for low-income households (note that these studies are based on narrow population samples in the United States) (Rohe and Basolo 1997; Engelhardt et al. 2010). While home ownership is aspirational for many, it remains out of reach for poor people for several reasons, including limited access to credit, inability to save for a down payment, and lack of affordability (Goodman et al. 2017; King et al. 2017). Whether financing can unlock home ownership for the poor and under what conditions, and whether the benefits outweigh the costs relative to renting remain areas of debate with mixed views but little rigorous research and evaluation.

ASSETS CAN PROMOTE NUTRITION

Productive assets like tractors, irrigation equipment, and farm tools can mechanize agriculture and increase farm yields, leading to more food available for consumption by poor households and/or increased farm yields available for sale. This, in turn, can lead to improvements in a household's nutrition and food security status. However, evidence of links between assets and food security are inconclusive, and further research is required to validate this hypothesis (Silvestri et al. 2015; Guo 2011; Ritzema et al. 2017).

SECTION 5

EVIDENCE GAPS AND DIRECTION FOR FUTURE RESEARCH

THIS SECTION ADDRESSES EVIDENCE GAPS OBSERVED THROUGHOUT this review. For the pathways leading to improvements in financial resources, human capabilities, and physical capabilities as hypothesized by the TOC, Table 4 indicates the number of peer-reviewed studies available, assets covered by each, and whether the study examines the role of financing.

As Table 4 shows, the impact literature on assets is sparse. The few studies that exist are of modest or mixed effects—and for some pathways there is no evidence at all. Although evidence suggests that some assets matter in the lives of poor people, several hypotheses on how asset ownership leads to improvements in well-being are yet to be corroborated.

Often, research on productive assets narrowly focuses on land (which is excluded from this review), livestock, and mobile phones. The impacts of other productive assets like vehicles; pumps and irrigation equipment; microenterprise assets like sewing machines, kiosks, and handcarts; and transportation assets like *boda bodas* and *tuk tuks*, to name a few—remain poorly studied or understudied.

Similarly, there is a lack of research on quality-of-life-enhancing assets such as solar home systems and home appliances, including refrigerators, TVs, kitchen equipment, computers, furniture, etc. The evidence that these assets lead to physical and human capabilities remains anecdotal and diffuse. More rigorous research is required.

Evidence on hand derives from studies that cover specific contexts and segments of poor households, in some cases featuring small sample sizes. For this reason, it is not clear whether the benefits of asset ownership identified in many studies would hold true across geographies and segments (e.g., very poor vs. better off households, urban vs. rural households, youth vs. adults, subsistence farmers vs. export farmers). Finally, there is a lack of research on the effects of access to assets through renting or paying for an asset as a service, which may offer viable alternatives to ownership for some segments of the poor.

TABLE 4. **Summary: Evidence and Gaps**

Pathway to Impact	Number of Studies	Assets Covered	Segments Covered	Examines impact of finance?
A. Financial Resources				
Productive assets can increase incomes for poor people	3	Livestock, mobile phones, treadle pumps	Ultra-poor, women, smallholder farmers	Yes (1)
Productive assets can diversify income streams of poor people	2	Livestock	Agricultural households	No
Productive assets can encourage adoption of risk mitigation practices	1	Irrigation pumps, milling machines	Smallholder farmers	No
Households can liquidate nonproductive assets to cope with shocks	-	-	-	-
B. Human Capabilities				
Assets can provide access to information and knowledge	6	Mobile phones	Agricultural traders, fish traders, smallholder farmers	No
Assets can connect poor households with their social networks	-	-	-	-
Assets can promote education and training	4	Home appliances, kitchen equipment, mobile phones	Youth, rural adult learners, agricultural households, poor households	No
Assets can promote psychological and emotional well-being of poor people	1	Livestock	Women, agricultural households	No
C. Physical Capabilities				
Assets can create physical access to markets	-	-	-	-
Assets can create access to basic services	7	Solar home systems, toilets, improved cookstoves	Rural households	Yes (3)
Assets can provide shelter and safety	-	-	-	-
Assets can promote nutrition	-	-	-	-

Most studies do not consider the role financing plays in asset ownership. Whether and how obtaining an asset on credit affects the nature of benefits that flow from asset ownership to poor households remains inconclusive. When poor people acquire assets through transfers or grants that are part of graduation or social protection programs, they do not pay for them. They acquire assets with zero or few attached conditions and receive complementary skills training or market links to leverage the assets (Banerjee et al. 2016). Evaluations have highlighted the success of these methods and their durable effects on consumption, incomes, and asset building. Although cost-effective in terms of impact per dollar spent, asset transfer programs and grants nevertheless require significant resources and effective targeting, and may face obstacles to scale (Banerjee et al. 2015b). Financing, on the other hand, may be a more sustainable way to serve low- and middle-income populations at scale. However, differences in the impact of each approach remain poorly understood.

Among the studies discussed in this review, four considered the role of financing when examining the impact of asset ownership: Tadesse and Zewdie (2019), Chen et al. (2017), Augsburg et al. (2019), and Pattanayak et al. (2019). These studies, combined with CGAP's observations on the PAYGo solar sector, suggest that financing may play a positive role in asset accumulation for poor people. But results should be cautiously interpreted. The studies cover too few assets, have small sample sizes, and involve unique country contexts that may not be easily replicable. While loans and leases may allow borrowers to obtain assets they would otherwise be unable to afford, debt may lead to trade-offs in cases where households divert funds to meet repayment.

Understanding the role of debt in the impact of asset ownership is particularly important when it comes to quality-of-life-enhancing assets, which often do not directly impact household cash flows and may carry a greater risk of over-indebtedness for borrowers. Even in the case of a productive asset, high interest rates and fees may eat into the revenue generated. The evidence from asset transfer programs suggests that grants may be a more powerful mechanism to support asset accumulation among ultra-poor households. Unlike loans or leases, grants have no repayment obligations and are interest-free. Results also indicate that even grants may not be sufficient to drive impact, and efforts to promote asset ownership require important complementary capacity-building services like training, mentoring, and providing market links. This further underscores the need for more research into how financing affects the benefits of asset ownership and whether benefits depend on the inclusion of capacity building.

Implications

Funders increasingly position financial inclusion as a cross-cutting priority and seek synergies in programming to achieve both sustainable development goals and financial inclusion outcomes. Given the evidence on the importance of asset ownership in improving outcomes for households, asset finance may offer a pathway to impact for financial inclusion.

Studies to date only focus on a few assets like livestock, mobile phones, toilets, and kitchen equipment, and there is need for research on the impact of other productive assets like vehicles and newer technologies like solar water pumps. There is also an evidence gap on the impact

of assets and asset financing for quality-of-life-enhancing assets like furniture, electricity, and home appliances, among others.

Available research on the role of asset financing does not consider how changes in financing terms, such as interest rates, repayment schedules, or loan duration, affect the net benefits of asset ownership. Therefore, future studies should attempt to identify the effects of financing on the impact of asset ownership. Further, research should be conducted on how financial services other than credit, such as savings, may enable asset ownership among poor households.

Addressing these evidence gaps has important implications for aid organizations and policy makers, funders, and financial services providers that support asset accumulation in poor households as a pathway to well-being. Such work will improve our understanding of the preconditions needed for assets and asset financing to improve the well-being of poor people. It will also provide insights that support the design and delivery of asset finance, as well as related policies around delivery of training, grants, and other public services shown to be effective in maximizing impact.

As innovations and new business models expand access to asset financing for low-income borrowers, providers and funders alike need to understand the potential and limitations of these models. Despite the rise of asset finance, we still do not fully understand the impact of specific assets or the implications of providing assets through various financing approaches.

CGAP's theory of change lays out theoretical pathways on which evidence can be mapped and gaps identified to better understand the role that assets play in improving the lives of poor people. Available studies offer some answers but leave many unresolved questions. To complete the story, further research is needed, especially on a variety of productive and quality-of-life-enhancing assets, the role of credit, and alternative channels of impact.

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