

June 5, 2020

III. Demand for Consumer Credit

1. Reasons for Credit Use
2. Neoclassical Economic Theory of Consumer Credit Demand
3. Behavioral Theory and Neoclassical Economic Theory of Consumer Credit Demand

III. DEMAND FOR CONSUMER CREDIT

And so, the previous chapter showed that credit use by individuals is as old as recorded history and its regulation is just as old, but that credit today labeled "consumer credit" became widespread domestically only in the twentieth century and especially after World War II. Review of consumer credit conditions by the National Commission on Consumer Finance took place shortly after modernization in the 1920s and full maturation of consumer credit markets in the early postwar era. At the time, the Commission produced a list of recommendations for updating existing credit processes and regulations to help consumers, the relevant institutions, and the legal environment work better together.

The NCCF did not spend a great deal of time in its report discussing underlying individual economic motivations for consumer credit use, known in economics as credit demand. Apparently the Commission believed that by this time the reasons were fairly obvious. The Commission found that some credit use was by "necessitous" borrowers down on their luck (and often without much discretionary income, i.e. often poor), but most modern consumer credit use was much more mainstream. This matched the developing economic theory of consumer credit during the credit-modernization period and its support by empirical evidence.

To preview further discussion here of credit demand, the economic study of the use of consumer credit extends at least to the beginnings of its modern era in the 1920s when economists determined that consumer credit supported household capital formation. Empirical evidence such as the Surveys of Consumer Finances have shown that most credit use arises with household investment spending: acquisition of consumer durable goods and services like transportation assets (vehicles), appliances and furniture, home repairs and modernizations, substantial hobby and recreation items, higher education, and mitigation of emergencies. These are precisely the kinds of purchases that provide lasting household services in the form of additional future consumption, not merely a shifting of consumption from the future to the present as commonly believed in the past. Consumer investments provide a consumption return over time that can easily exceed the cost of the credit used in acquisition.

Further, there is a visible life-cycle effect in the use of consumer credit: Credit use is more frequent among younger consumers

(especially married with children at home). This is the time in the life cycle when asset holdings typically are low and the rate of return upon acquiring them is high. It also is the time when ready credit availability likely is lowest due to family incomes that have not yet grown, and families have not yet demonstrated to potential lenders the ability to manage credit use successfully.

Reasons for Credit Use

The NCCF was aware of this economic theory and evidence. Concerning specific reasons for credit use, the NCCF stated (page 5): "The reasons for this increased use of consumer credit may be found in the natural adaptation of consumer and business changes to changes in the ability and willingness of consumers to incur debt, as well as to a continued shift toward the ownership of assets." In the next few paragraphs the Commission mentioned a number of specific factors. They included increasing and more stable household incomes in the postwar period, increased urbanization of the population, changing population age distribution toward younger families, more women in the workplace necessitating changes at home, and enhanced willingness of creditors to lend. The Commission also discussed trends in the sale of household durable goods and then closed this brief section by returning to the importance of increased asset ownership (p. 6):

The shift to asset ownership also reflects a decision by consumers to substitute the use of consumer-owned capital goods for the use of commercially-owned capital goods. Thus the purchase of an automobile substituted, perhaps unfortunately, for daily fares on street cars and buses, the home washing machine and dryer for payments at the laundromat, and the television set for the admission price to movies and other forms of entertainment. Even if the auto or appliance were purchased on credit, the monthly installments paid for it over a much shorter interval than the period of time over which services were received. In addition, quite often consumers also gained significant returns on their investment.

By itself, however, acquisition of assets (or satisfying necessitous situations) is not the complete answer to the question of underlying economic motivation leading to consumer-credit use. There actually is more to the story. Economists have thought about the essentials of motivation for more than a century.¹

¹See Irving Fisher, *The Rate of Interest: Its Nature, Determination, and Relation to Economic Phenomena* (New York: Macmillan, 1907) and especially Edwin R. A. Seligman, *The Economics of Installment Selling: A Study in Consumers' Credit* (New York: Harper, 1927, two volumes). The foundational economics is discussed in considerably more detail than here in Durkin, et al., *Consumer Credit and the American Economy Consumer Credit and the American Economy* (Oxford and New York: Oxford University Press, 2014), Chapters 3 and 4, which this discussion draws upon, and in the many references there. See also Gregory Elliehausen, "Behavioral Economics, Financial Literacy and Consumers' Financial Decisions," in Allen E. Berger, Philip Molyneux, and John O. S. Wilson, *The*

For descriptive purposes, it is common to say that consumers use consumer credit for such and such a purpose, most notably for purchase of costly assets. Nonetheless, a little reflection quickly shows that buying autos, household repairs and furnishings, major hobby items, and educations is only part of the fundamental economic behavior that gives rise to these classifications of debt.

Rather, it is useful to recall that a significant component of the underlying, basic economic demand motivation for consumer credit use is the desire by consumers to change both the size pattern and the timing of their resource inflows and outflows. Credit markets arise to change the lumpiness of the patterns, particularly of the outflows for purchasing housing and durable goods or for necessities, and to bring household capital investment transactions forward in time to the present instead of far off in the future.

In more detail, most purchases on credit could be accomplished by accumulating cash first and then buying the item later, but this often is not the time pattern consumers prefer. Significantly, for many goods, accumulating cash first could mean doing without the item or paying for more expensive substitute services for a period that might amount to years, both of which are costly. Not managing some emergency situation could prove even more costly. Waiting to make these adjustments frequently is not the preferred option in societies where there is an alternative. The types of credit we observe in the marketplace in large part come about because they are the least costly ways of providing an acceptable alternative.

Specifically, inflows from salaries and wages that comprise the income of most employed workers in a modern economy typically are quite regular for many consumers, and credit offers the opportunity to smooth the outflows. Lumpiness in outflows can occur during the course of the period between paychecks, but it certainly will occur during the course of longer periods like a year, within a particular life cycle stage, or over a consumer's or family economic unit's whole lifetime.

For example, for many families expenditures increase during selected seasons like vacation periods, back to school time in September, and around the year-end holidays. Then in some years there also are bigger, investment-type purchases, such as an automobile or a new home. A few years later there may be need for another auto or a larger home and later still for college educations for children. Purchase of a vacation home or a large recreation item like a boat may occur once or twice in a lifetime. Sometimes there are emergencies.

Oxford Handbook of Banking (Oxford: Oxford University Press, 2019), Chapter 25. For discussion of cultural aspects of development of consumer credit in the twentieth century and its institutions, see especially Lendol C. Calder, *Financing the American Dream: A Cultural History of Consumer Credit* (Princeton: Princeton University Press, 1999) and other historical references noted in a footnote in Chapter 2 above.

Credit facilitates all these transactions by enabling households to use future regular inflows for the saving necessary to pay for lumpy expenditures made today. Consumers have shown that they are willing to pay a price in the form of interest and finance charges for the possibility of changing the time pattern of saving to a preferred one: employing the relevant asset and the return advantages it provides now, thereby obviating the need for costly substitutes while undertaking the saving.

This picture of inflow and outflow/expenditure patterns illustrates how it often is not really correct to say that credit arises solely for the purpose of purchasing specific items. The purchases could often be made anyway, just on a different schedule. The accumulating (saving) could be done first, although this would also mean postponing the benefits of the investments (or not solving the emergency situation) and often paying for substitutes in the meanwhile, often for a long time, both of which are costly. The correct interpretation is that credit markets arise to increase consumers' overall well-being by changing the time pattern of saving and expenditure outflows (typically for lumpy, large purchases) to a preferred one.

The classification by usage problem is especially obvious for an individual purchasing a \$35,000 automobile or truck on credit but who simultaneously holds \$35,000 or more in a savings account, IRA or some other financial asset. In some significant sense this individual is not really using credit only to purchase the vehicle. Rather, the underlying motivation for credit use is to avoid some combination of not buying the car or truck now entailing costs in not being able to undertake transportation, not giving up some other current purchases either, not paying taxes and penalties for liquidating assets held in retirement accounts, and not reducing reserves stored in other financial assets. Risk-averse consumers may well prefer not to reduce their reserves, which are valuable to them and replacing them is costly. Credit obviates the need to do things consumers think are disadvantageous, like giving up substantial current consumption or running down financial reserves, while matching the pattern of outflows (payments) better to inflows (paychecks).

Certain kinds of credit associated with specific sorts of investment purchases arise because they permit changing the flow pattern in the least-cost manner. Credit is often associated with automobile purchase transactions, for example, because the associated expenditure is large and since relatively large amounts of credit at relatively low cost are readily available to those who are willing to offer the auto or truck as collateral for the loan. Such loans are so common that "automobile credit" has become a large industry by itself. Credit generated in the process of making home improvements and buying automobiles, durable goods, and educations, and a variety of other transactions including payment of taxes, debt consolidation, etc. are all well-known types of consumer credit. Advertising for each usage is

common and many financial institutions memorialize these distinctions by separate departments and personnel, even separate subsidiaries and companies.

For the most part, official figures of the volumes of credit for many "uses" are no longer assembled by the government's statistical mills, largely for the conceptual reasons mentioned, and because of the practical difficulties with collecting necessary data from creditors to generate meaningful statistical aggregates according to consumers' use of the credit.² The only practical way to produce an estimate of consumer credit purposes is to design statistically reliable surveys of consumers like the Surveys of Consumer Finances, ask respondents about their credit experiences, and then in some manner extrapolate from their experiences to the broader public using statistical weighting procedures (see Chapter 2 of this Task Force report for further discussion of the Surveys of Consumer Finances and findings about credit use).

Neoclassical Economic Theory of Consumer Credit Demand

Consistent with these ideas, neoclassical economics, sometimes referred to as "mainstream economics," begins its exploration of demand for consumer credit from underpinnings of its central concepts of demand and supply. In neoclassical economics, demand for anything arises from its usefulness or "utility." Supply, in turn, depends on production costs and the potential opportunities for gains over production cost (profits) among potential suppliers. Interaction of demand and supply in markets produces exchange at prices reflecting the utility and production-cost characteristics of the products exchanged. Prices tend toward equilibrium where demand equals supply. Competition can lower prices to the lowest level consistent with covering production costs and profitability just sufficient to bring capital into the industry.

Economists have examined these notions of demand, supply, prices, equilibrium, and competition for decades, even centuries for some products. In these explorations, few areas have a richer history than credit demand and supply. Analysis of credit and credit markets has become a mainstream area of economics known today as "finance." And so, this chapter looks first in more detail at the basic question of the motivations for using consumer credit in the first place, the concept of credit demand in mainstream financial economics.

²In the past, the Federal Reserve Board collected information on amounts of consumer credit by usage in its monthly survey of credit volume at granting institutions, but the Board discontinued the usage collection decades ago, except for automobile credit and student loans. Before that time, the monthly surveys asked lending institutions to report credit according to whether it was for automobiles, durable goods, home improvement, or other, but even classifying credit into a few broad categories became increasingly difficult with the advent of open end credit like revolving credit cards where lending institutions knew little or nothing about specific uses of the accounts.

The next chapter then discusses credit supply, but not before the second part of this chapter moves to more recent ideas about the range of motivations that might influence credit demand. This latter discussion arises from suggestions for possible enrichments to mainstream economics that have arisen from a branch of the field known as behavioral economics. Suggestions here concerning credit use have not always been useful or demonstrated empirically, however, as discussed further in the next section.

Today, most close observers of consumer credit find that much of it clearly serves useful purposes by allowing individuals to purchase and use goods and services while simultaneously undertaking the saving to pay for them through the loan repayments. For many individuals, this allows a change in timing of purchases to a more favorable schedule. Importantly, it also avoids the necessity of purchasing expensive substitutes in the meantime while the saving is taking place. People could take often-expensive urban and suburban mass transit to work for years, for instance, while also foregoing the mobility they prefer by saving first rather than using auto loans. Likewise they could exercise the high opportunity cost of years with a lesser-paying (and possibly less satisfying) job while saving for college instead of employing a student loan.

The modern economics of credit use essentially began with the classic works of Yale University economist Irving Fisher in the early twentieth century (Fisher 1907, 1930). Subsequently extended to consumer credit by Seligman (1927), Hirshleiffer (1958), and Juster and Shay (1964), Fisher's work provides the basic framework of the neoclassical economic theory of consumer credit use.³

The basic idea of the mainstream theoretical explanation for credit demand derived ultimately from Fisher is that individuals have available to them opportunities that provide a desirable future return. Examples include consumer durable asset purchases that provide a return over a future period. Opportunities also include services, such as educations, and cost-reducing actions that mitigate the effects of emergencies.

These opportunities permit individuals to invest current resources to provide a return over time while saving for the purchase through loan repayments. The optimal amount of investment is undertaken when the rate of return on the next investment (declining as the more promising investments are undertaken earlier) just equals

³This is the same Robert P. Shay of Columbia University who was an economic consultant and, in effect, the Chief Economist of the National Commission on Consumer Finance in 1971-2. F. Thomas Juster was Director of the large Institute for Social Research at the University of Michigan where much of the early research work on psychological and behavioral analysis of credit demand took place around the same time. Both were veterans of the National Bureau of Economic Research (NBER), then in New York and now in Cambridge, Massachusetts, where Shay had been full-time head of the consumer-credit research program in the 1960s and Juster the NBER's president.

the available interest rate on the next investment (rising as lender risk increases).

Investments that provide a return over time use current resources, however, possibly large amounts. If individuals prefer more current consumption than allowed by the remaining resources still available from current income, they can borrow resources to finance the assets and still maintain preferred levels of current and future consumption through employing future saving to make the repayments. In other words, as they undertake the investment process that requires current resources and interferes with current consumption, they can borrow against future income in a way that advances both goals: 1) facilitating household investment with its returns and 2) preferred pattern of consumption.

Development of this theory demonstrated that the optimal investment decision with borrowing opportunities available can involve greater levels of investment and higher returns than otherwise. It also permits a more highly-valued intertemporal pattern of consumption than the optimal investment without borrowing opportunities. This important result for consumer credit (discussed first by Seligman in 1927) countered the widespread belief held in the late nineteenth and early twentieth centuries, and still existing today in some quarters, that all or much of consumer credit use is merely profligacy. (Sometimes the profligacy notion of consumer credit used to be called disparagingly by some observers the "home economics" theory of consumer credit.)

Of course, there are exceptions to this general rule that credit use is not necessarily profligate, as there are to almost any such general statement. It is easy enough to cite many examples of individuals who borrow when they probably should not. Many bad outcomes are even predictable in advance when repayment commitments visibly become too large for a satisfactory outcome.

But other bad outcomes from credit use come about because of events that arise only subsequently to the credit decision and were not predictable at the outset. They include credit failures that arise from economic problems such as job loss or other emergencies that reduce or eliminate expected future income. This involves the concept of risk. To limit these situations, creditors themselves have an interest in preventing too much credit expansion: Losses can ensue when credit for any individual becomes too high. Creditors guard against such situations by requiring initial equity in assets (through down payments), raising the price of credit as risk increases (higher interest rates), and by limiting credit all together at some point (rationing).

Consumers may not fully understand all the components of the demand process outlined, but the economic theory derived ultimately from Fisher and Seligman is consistent with empirical evidence. (The supply process is discussed here further in Chapters 4 and 5.)

Evidence shows that much of consumer credit use comes about in the process of acquiring consumer assets that provide a return over time. Such credit generation includes automotive credit, student loans, durable goods and large recreational goods credit, and credit involving home repairs and modernization. All of these involve larger purchases that provide a return over time with payment patterns that do not eliminate current consumption either.

Another component of credit generation involves mitigating emergencies. Reducing or solving an emergency situation amounts to an investment addressing some cost-causing event, for example an automobile repair need or a health emergency. Eliminating or mitigating the emergency situation without also drastically changing the pattern of current consumption can reduce costs of the emergency, again providing a net positive return over time. In the case of a health emergency, the cost reduction (return) versus not fixing the problem could be substantial. In any of these events, focusing only on the cost of the credit without looking at the return is incomplete.

Another empirical finding described earlier in Chapter 2 and mentioned earlier in this chapter is that consumer credit use is more frequent among younger consumers, especially younger families with children, than among older consumers. Younger consumers have had less time and older consumers a longer time to undertake investments and acquire productive consumer assets including transportation and educations. This suggests that the younger consumers will often find remaining investment opportunities with higher returns than older consumers, and younger consumers will often be more willing to borrow to change the pattern of future consumption than their older compatriots. This has led to a life-cycle formulation of the pattern of consumer credit use.

Analysts such as Hirshleiffer (1958) and Juster and Shay (1964) followed in Fisher's and Seligman's footsteps by relaxing some of the theoretical contentions especially relevant to consumer credit in the earliest manifestations of neoclassical finance theory.⁴ Hirshleiffer explored the situation where rates that consumers can borrow are higher than rates at which they can lend. This led to the conclusion that there are situations when consumers will borrow (rate of return is greater than their borrowing-cost rate), lend (rate of return is less than their lending rate), or do neither (rate of return is between their borrowing rate and lending rate). All of these possibilities are observable among differently-situated consumers, with the younger ones most likely willing to borrow. Hirshleiffer also explored the implications of rising borrowing rates for consumers as they take on more debt. He concluded that rising rates would reduce

⁴Jack Hirschleiffer, "On the Optimal Investment Decision, *Journal of Political Economy*, August, 1958); F. Thomas Juster and Robert P. Shay, *Consumer Sensitivity to Finance Rates: An Empirical and Analytical Investigation* (New York: National Bureau of Economic Research Occasional Paper Number 88, 1964).

the amounts of investments and borrowing as rates rise, and that this does not invalidate the basics of the theory.

Even armchair empiricism suggests the reasonableness of Hirschleifer's conclusions. Many individuals will borrow when presented by attractive opportunities (returns are high), but they are less likely to continue borrowing at higher debt levels because interest rates rise and the protection of current consumption is smaller due to greater repayments. That is, underlying rates of return fall due to higher interest rates and repayments. At some point rates of return no longer exceed borrowing costs and new investment ceases. Consumers in this situation may neither borrow nor lend or they may lend in financial markets or through financial institutions. Thus, looking at the consumer borrowing life cycle, borrowing at a young age, and then later limiting borrowing and eventually switching over more to lending rather than borrowing as rates of return on further investments fall reflects the situation of many consumers as they age.

Juster and Shay's further extensions of the theory accounted for contract terms that reflect the unwillingness of many consumer lenders to finance the entire cost of consumer durables (i.e. require down payments) and the existence of specialized lenders offering small amounts of unsecured credit at relatively high interest rates. Their conclusions also are consistent with empirical experience.

Consumer credit is generally offered on an installment basis, with a repayment schedule of periodic (typically monthly) payments. Since the funds for repayment depend on the consumer's uncertain ability to have available future income for payments, lenders commonly limit the amount of credit and adjust repayment terms. On nonrevolving credit that was the common sort of consumer credit available when Juster and Shay were writing, creditors limited the amount of credit by requiring an initial down payment and a repayment term that was less than the expected economic life of the asset.

Consumers who prefer more credit than primary lenders are willing to offer, or who are unable to borrow at all from primary lenders because of risk, may be able to borrow from supplemental lenders who provide additional credit at rates higher than primary market rates. Supplemental lenders' willingness to extend additional credit is limited by the amount of consumers' income available to service unsecured debt (for instance, credit cards, consumer finance cash loans, and payday loans) or in some cases the market value of some asset securing the loan (pawn and vehicle title loans). Consumers may sequentially increase borrowing from additional lenders that are willing to accept greater default risk, but the amounts are ultimately limited because ultimately no lender will make loans that are certain to default.⁵ This is the basis of the idea of credit rationing (see Chapter 5 for further discussion of credit rationing).

⁵See also Bizer and DeMarzo 1992.

Much has changed since Juster and Shay were writing in the early 1960s. For instance, advances in information availability through credit reporting agencies (CRAs, widely known as "credit bureaus") and in the technology to manage and analyze large amounts of information have improved ability of creditors to assess risk, making them on balance more willing to lend. Credit reporting through the credit bureaus is now much closer to comprehensive and new information about individuals with little prior credit experience is under exploration. This has the potential to make overall predictions of future payment performance better still. Development of generic credit scores by the credit bureaus has made statistical evaluation relatively inexpensive and readily available to virtually all lenders. Marketplace competition has also relaxed lenders' equity requirements, as terms to maturity have lengthened for credit advances and down payment requirements have grown less frequent and smaller. Today, many consumers are more able to finance a greater proportion of household investment through primary (low-rate) lenders than in the past.

At the same time there are more secondary (higher-rate) lenders who are willing to lend supplementary amounts beyond the willingness of primary lenders. The National Commission on Consumer Finance extensively studied the operations, costs, and credit supply of one group, traditional installment cash lenders (known then as small loan companies or licensed lenders). There also were pawnshops at the time of the NCCF, but they were uncommon enough that the Commission barely mentioned them. There also were considerable amounts of consumer credit available from retail stores and dealers that the Commission also discussed at some length. This latter kind of consumer credit has dwindled greatly over the decades since then with the growth of bank credit cards.

Further, unsecured credit on bank credit cards is now more widely available, and many borrowers today use them in much the same way that Juster and Shay described borrowers using unsecured personal loans.⁶ Competition has extended availability of bank credit cards to many consumers who in the past would have had difficulty qualifying for them. Because bank-card rates are generally lower than other unsecured consumer credit rates, unsecured credit is now available to more consumers at a lower cost than in the past.

Nonetheless, there also are more pawnshops nationwide than existed at the time of the NCCF, and also whole new classes of secondary lenders. They include so called "payday lenders" and vehicle-title lenders (sometimes called title pawns). Despite better technology and relaxed standards among primary lenders, there still are many individuals unable to borrow from primary lenders who necessarily rely upon secondary lenders or who have no institutional credit available at all, including from secondary lenders.

⁶See Bizer and DeMarzo, 1992, and Brito and Hartley, 1995.

Chapter 2 of this report showed that interaction between relative benefits and costs of credit has led to a lot of credit use over time. Further, although there is always a lot of discussion about conditions where credit arrangements go wrong, the Surveys of Consumer Finances show that the difficult cases are not in the majority. For instance, in the 2016 survey (the most recent available at the time of this writing), 13.5 percent of consumers with any debt indicated being behind in any payments in the previous year but only 5.8 percent behind by 60 days.⁷ Undoubtedly, at least some of these accounts paid off and produced a positive outcome, even if slow. According to the 2016 Survey, 3.0 percent of households had declared bankruptcy in the previous five years. This is not to minimize the woe that results from cases that stumble in using consumer credit, but rather to point out that these are not the norm.

Measuring rates of return on consumer assets empirically is difficult in large part because circumstances and needs of credit-using consumers vary so widely, and outcomes differ as well. It seems difficult to argue, though, that returns can be anything other than positive, for the most part, of the sort contemplated by Seligman, Hirschleiffer, and Juster and Shay. It seems that benefits and costs of credit use are too well known not to be the result of deliberation in most cases. It is not especially difficult for consumers to contemplate either the potential benefits or costs, and this would be especially true following their initial experiences, and consumers continue to use credit over their life cycles. Truth in Lending, passed in 1968 and implemented the following year, was an attempt to simplify understanding of the costs. Evidence suggests that many consumers use this information, annual percentage rates (APRs) for larger amounts of credit for longer periods of time, and dollar finance charges for small amounts for shorter periods (see Chapter 7 below).

Seligman discussed flows of utilities from consumer investment in durable goods as early as 1927, and there have been attempts at direct empirical measurement at least since the time Juster and Shay were writing. For instance, in 1964 Poapst and Waters published their estimates of rates of return on consumer durable goods in the prestigious *Journal of Finance*.⁸ Using methodology basically similar to how an investment analyst would study a commercial investment opportunity, they estimated rates of return on an automatic washer and dryer and a television set "for different rates of usage and periods of investment" (p. 673). Costs of acquisition and operation were estimated with care and their equations showed that discounted returns were quite high with reasonable estimates of usage and length of

⁷Jesse Bricker, et al., "Changes in U.S. Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, September 2017, pp. 29-30.

⁸J. V. Poapst and W. R. Waters, "Rates of Return on Consumer Durables, *Journal of Finance*, December, 1964

ownership. This would encourage household investment in durable goods using credit under many common circumstances. In their words, "Under such circumstances, the relatively minor variations in consumer loan interest rates that general monetary policy might be able to produce are not likely to markedly alter the volume of consumer investment" (p. 677).

The NCCF was aware of this approach and commissioned Professors Dunkelberg and Stephenson of Stanford University Business School to examine it further.⁹ In addition to looking at discounted flows of returns and costs together as a financial analyst would do (and Poapst and Waters did), they explicitly also discussed how discounted net returns would also determine the pattern of acquisition of durable goods, namely, those with highest returns would likely be purchased first. This order could vary substantially among different consumers and households due to preferences and could vary over time, depending upon life-cycle stage. Due to the difficulties of ascertaining individual preferences, Dunkelberg and Stephenson directed their attention first to discounted net returns for a washer and dryer under varying usage conditions, similar to Poapst and Waters.

They then used their own analysis of returns on this particular pair of consumer durable goods as a benchmark. They found (like Poapst and Waters) that returns on an owned washer-dryer could be quite high in many cases and they concluded that returns on some other durable goods must be even higher. They discussed how return estimates would be difficult to make for other durable goods but that ownership patterns suggested many other goods, like refrigerators, were even more important than washers and dryers. If they were more important, this meant they provided even higher discounted returns (data on appliance holdings were from the 1967 Survey of Consumer Finances). Dunkelberg and Stephenson acknowledged and discussed the analytical difficulties with this conclusion (such as differences between home owners and renters), but in their words findings "suggest that such an approach could provide considerable insight into the purchasing behavior of consumers, when combined with data about the cost and availability of capital for various population subgroups" (p. 46).

More recently, analysts at Georgetown University have used a similar approach to rank colleges according to graduates' returns from attendance, taking college costs and student loan costs into account.¹⁰ Although similar in underlying methodology to the earlier studies, the Georgetown study also includes simplified description of the

⁹William C. Dunkelberg and James Stephenson, "Durable Goods Ownership and the Rate of Return," *Technical Studies of the National Commission on Consumer Finance*, Vol. VI (Washington: Government Printing Office, 1975).

¹⁰Anthony P. Carnevale, Ban Cheah, and Martin Van Der Werf, "A First Try at ROI: Ranking 4500 Colleges," Georgetown University Center on Education and the Workforce, 2019. Other studies referenced there have also used the same basic approach.

underlying methodology for those less familiar with financial analysis.

On the first page of the Introduction, this report lays out the essence of the issue about credit: "However, while much has been written about student debt, not all debt is bad.... In addition, they [students] should consider the net present value (NPV) of their potential earnings, weighing the costs of investing in college now against the potential gains over time." The report goes on to use data from the U. S. Department of Education's College Scorecard, its online database providing information on earnings and debts of attendees at post-secondary schools across the country, to rank these institutions by net return on investment.

The approach in the education study is basically the same as undertaken by Poapst and Waters and Dunkelberg and Stevenson, but with much more extensive data. The methodology of any such study requires care in properly stating gains and costs, and all these studies discuss what they have done. The Georgetown study necessarily works with medians whereas the earlier studies of durable goods looked more at the range of individual outcomes under varying circumstances rather than medians. The education also study provides footnotes to some other studies with some differences in their underlying estimating equations (like different discount rates), but for the purposes here, the interesting aspect involves its basic conclusions, even though changing the underlying data assumptions could lead to some variations in the specifics of the outcomes.

In particular, the conclusions are certainly more favorable and optimistic than the conventional wisdom. It seems there exists a widespread view that there is a student-loan debt "crisis" due to high costs and unfavorable economic outcomes associated with much of higher education today. Certainly, the nature of medians is that they are the center of the range of outcomes. There necessarily are going to be better and worse outcomes than the medians. Some will be much worse (and some much better). But the notable finding of the study is positive net present value of attendance at virtually *all* of the institutions, even given the possibility of taking on debt: "Our findings buttress the idea that college is a worthwhile investment. Moreover, we take the position that college should be seen as a long-term investment" (p. 4).

Clearly, investors in such undertakings (students and parents) should consider the potential benefits and costs, as with any investment. Even then, this is not to say that an outcome much worse than the median might occur in individual situations. Potential variation in outcomes involves the concept of risk, which is a characteristic of all investments. And certainly, no one ever liked a debt, due to undertaking an investment or not, but this does not mean the investment should not be undertaken.

The message in this section of this report chapter is that development of the neoclassical economic theory of consumer credit suggests a number of important ideas and that empirical evidence is consistent with them:

1) Consumers will be willing to borrow, depending upon rates of return and cost of borrowing available to them.

2) Borrowing will tend to be related to household investment undertakings like purchase of durable goods, acquiring human capital, capital improvements and repairs, and emergencies when credit use can be cost saving (or sometimes even life-saving).

3) There would be a life cycle effect in credit use, since rate of return would be higher in most cases for younger consumers who had not developed a stock of assets.

4) Since credit involves an unknown future, there are risks in using it.

5) There will be both primary (lower-rate) and secondary (higher-rate) lenders that develop (in the absence of regulation to the contrary, not discussed here yet in any detail).

6) Secondary lenders supplement available credit for some borrowers and provide it to others for whom credit is not available from primary lenders.

7) There is also risk in lending and so there is an absolute lending limit even for secondary lenders due to economic credit rationing. This means that there are some individuals who have only higher-rate credit available or no institutional credit available at all. Credit rationing is discussed further in Chapter 5.

Empirical evidence is broadly consistent with these conclusions but this does not mean these conclusions complete the theory of demand for household credit or that they are not controversial. The next section looks at this question in still more detail.

Behavioral Theory and Neoclassical Economic Theory of Consumer Credit Demand

Todd has said he will provide a draft of this next section.