

THE UNIVERSITY OF CHICAGO

SOCIO-ECONOMIC DISPARITIES IN PORTFOLIO COMPOSITION: THEIR HISTORICAL
CAUSES AND THEIR CONSEQUENCES FOR INEQUALITY IN AMERICA

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE DIVISION OF THE SOCIAL SCIENCES
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

DEPARTMENT OF SOCIOLOGY

BY

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CHICAGO, ILLINOIS

MARCH 2016

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Acknowledgements

This dissertation was realized with the financial support of the Social Science and Humanities Research Council of Canada, of the University of Chicago, and of the Mellon Foundation.

This dissertation was also realized with the precious help of a number of people, whom I would like to thank warmly. First, immense thanks to all the members of my dissertation committee: Monica Prasad, James T. Sparrow, and Linda J. Waite (I reserve special thanks to the chair for the end). I could not have realized this dissertation without their feedback on sometimes very early drafts, without their fine and always constructive criticism, and without the rich conversations I have had with each one of them. These conversations fueled my historical and sociological imaginations in ways so profound that they are difficult to account for. I would also like to thank Lara Janson for being a wonderful copy editor for this dissertation. I am a non-native English speaker, and many ideas expressed in this dissertation found their way to clear formulation only because of Lara's work.

I would like to thank, also, the incredible group of graduate students with whom I have had the pleasure to work and become friends during my time at the University of Chicago. In particular, thanks to Nora Taplin, Cayce Hughes, Kathryn Hendricks, Sanja Jagesic, Maria Akchurin, Nidia Banuelos, Eva Swyngedouw, Thomas Swerts, and Jonathan Rodkin for being such great friends (and hosts on a number of occasions). Many thanks, as well, to the faculty and staff of the Sociology Department. In particular thanks go to James A. Evans for all his advice,

encouragement, and for always pushing me to accomplish more, to Stephen W. Raudenbush, who has been a precious teaching mentor, and to Linnea Martin, the fantastic graduate studies administrator of the Sociology department. I also extend gratitude to Jean-François Côté, a former advisor who has always remained a precious intellectual interlocutor.

In addition, I would like to thank, as well, all of those who helped me manage my graduate career, emotionally. I extend gratitude to my parents, Lucie and Pierre, and to my brother Hugues, for always supporting me. I am thankful, also, for my sister Laurence who is, and always will be, my main inspiration. I thank my parents-in-law, Ginette and Pierre, who have been such enthusiastic supporters. Most importantly, I extend deep thanks to Yannick Rasmussen, my marvelous husband. He has helped me every step of the way, from financial to emotional support. But, mostly, I thank him for having been one of the main intellectual partners in this adventure.

Lastly, I would like to give special thanks to Andrew Abbott, the chair of this dissertation's committee. I am thankful for all the long conversations, for lifting me up when I was discouraged, and for always pushing me to develop my ideas further. Most of all, I thank Dr. Abbott for encouraging creativity in intellectual pursuits, for being so available to so many students at the same time, and for working so hard to create community among students. He is a wonderful advisor, and an incredibly inspiring mind.

Abstract

This dissertation first confirms a hypothesis long held by financial economists: that working- and middle-class families earn substantially lower incomes than upper-class families for each dollar they invest in capital markets, because they invest mostly in real estate assets in contrast to upper-class families, who invest more in corporate securities. As a result, and as this dissertation illustrates, high levels of investment in real estate assets among working- and middle-class families constitutes an important, but overlooked, source of income inequality in America. As this dissertation also shows, however, working- and middle-class families have not always invested in real estate assets as much as they do today. These families began doing so in the late 1940s, despite steadily increasing their investments in corporate securities in the 1920s and 1930s. This dissertation traces the cause of the 1940s shift in working- and middle-class investment practices to a change in the availability of installment credit options across asset classes that occurred between the mid-1930s and mid-1940s. During this period, installment credit options disappeared from securities markets and soared in real estate markets. Working- and middle-class families responded to this change in credit opportunities by turning away from corporate securities as wealth-building vehicles and turning instead to real estate assets, because these families valued relying on installment plans to acquire assets, as such plans constituted ways of committing to the project of wealth-building. By identifying the role of disparities in credit access across asset classes, as well as the importance of commitment to working- and middle-class saving strategies, this dissertation contributes both to the study of income inequality and to the sociology of asset choices.

Introduction

Portfolio choice theorists have long noticed that working- and middle-class families do not invest their wealth in the same ways as upper-class families do. While upper-class families typically invest large proportions of their wealth in corporate securities, such as stocks and bonds, working- and middle-class families tend to invest in real estate assets, whenever they own risky assets at all (on this topic, see in particular the work of Edward N. Wolff, who has been tracking trends in wealth ownership since the early 1980s. In particular, see Wolff, 1998; Wolff, 2010; and Wolff, 2014).

For portfolio choice theorists, this difference in the composition of *risky* assets across income and net worth groups should have important consequences for the distribution of income in America. Specifically, according to many financial economists, real estate assets, in which working- and middle-class families invest heavily, return smaller incomes than corporate securities *for each dollar invested* (Mehra & Prescott, 1985; Fama & French, 2002; and Shiller, 2005). As a result, working- and middle-class families are expected to earn smaller incomes than upper-class families *for each dollar they invest in capital markets*. In more technical terms, portfolio choice theorists and financial economists would describe this situation by saying that working- and middle-class families earn, on average, lower *rates of return to capital* than upper-class families, as a result of investing heavily in real estate assets (Keister, 2005 and Campanale, 2007). In turn, and since returns to invested capital represent an important part of national income, this socioeconomic disparity in rates of returns to capital, created by differences in the composition of risky assets across income and net worth groups, should have the effect of further

concentrating the distribution of total income in the American population. Indeed, if families with the highest wages and salaries are also those who possess the largest sums of invested capital, and if those families also are the ones earning the highest rates of return to capital, this should be a recipe for the fast concentration of income in a population.

In this dissertation, I show that portfolio choice theorists and financial economists are absolutely right in their contention that heavy investment in real estate assets among working- and middle-class families causes substantial socioeconomic disparities in rates of returns to capital and, by this mean, further concentration of income in the U.S. population¹. However, as I also show in this dissertation, portfolio choice theorists have not, on the other hand, correctly identified the main *causes* for the differences in the composition of risky assets across income and net worth groups. More specifically, for portfolio choice theorists, if working- and middle-class families invest so heavily in real estate assets, it is because the ownership of homes has, and always has had, immense advantages over both the occupation of rental units and the ownership of other kinds of assets. Homeownership, for example, is status enhancing in America, and according to many portfolio choice theorists, it is also a ticket to better schooling options, as well as a ticket to safer neighborhoods (Hendershott & Shilling, 1980; Denton, 2001; Flavin and Yamasita, 2002; Cocco, 2005; Garb, 2005; Shum and Faig, 2006; Ronald, 2008; and Diaz and Luengo-Prado, 2010). For portfolio choice theorists, therefore, working- and middle-

¹ For reasons I unpack below, the contention that working- and middle-class families suffer financially from investing heavily in real estate has so far been more of a hypothesis than a proven fact. In this dissertation, however, I test this hypothesis formally, using wealth and income micro-data, and I find that it is, in effect, validated. I find that important disparities in rates of returns to capital exist in the American population and that they are caused in large part by high levels of investment in real estate assets among working- and middle-class families. Furthermore, I also show that, though inequality scholars have not paid much attention to the issue of rates of returns disparities, these disparities seem, on first approximation, consequential for the distribution of income and economic power in the American population.

class families, like all other families, absolutely want to benefit from these advantages of homeownership and, consequentially, have always tended to choose to own homes as soon as they can financially afford it. For working- and middle-class families, however, homeownership generally implies an inability to own any other risky assets at all, since homes are risky assets themselves and bulky assets to buy; as such, they tend to crowd out other risky assets from the portfolios of low net worth families. In other words, then, according to most portfolio choice theorists, heavy investment in real estate assets among the working- and middle-classes is certainly unfortunate, as it causes disparities in rates of returns to capital, but it is also an eternal, unavoidable state of affairs, since homeownership possesses so many advantages that are other than financial from which families want to benefit, almost at any price.

As I show in this dissertation, however, while these other, non-financial advantages to homeownership certainly constitute part of the reason why so many families choose homeownership today, even at the price of owning no other assets at all, contrary to what portfolio choice theorists posit, working- and middle-class families have not *always* chosen homeownership and real estate assets as much as they do today over other, higher returning assets such as corporate securities. Working- and middle-class families, in fact, only began to do so in the late 1940s. Before then, as I show in this dissertation, these families were actually steadily catching up with upper-class ones regarding the extent of their investments in corporate securities, not regarding investments in real estate assets. More importantly, and also in contrast to what most portfolio choice theorists would argue, the reason why working- and middle-class families then suddenly began to invest massively in real estate assets has very little to do with the commonly recognized, non-financial advantages of homeownership, which are conceived to be at the heart of heavy investments in real estate.

As I show in what follows, working- and middle-class families indeed did not abandon increased investments in securities for increased investments in real estate because owned homes would have become more of a ticket to better schooling options in the late 1940s, or because owned homes would have become more of a ticket to safer, higher-quality neighborhoods. Rather, in the late 1940s, it is an entirely different kind of advantage that owned homes acquired over other assets: an advantage that owned homes still possess today, but which we do not generally recognize as such because we have become so accustomed to benefiting from it whenever we buy homes. The advantage that real estate assets acquired over all other assets in the late 1940s is installment buying credit. Indeed, in the late 1940s, real estate assets became, and to this day remain, the sole investment goods that can be bought on installment plans, using low down-payment, long-term, amortized credit instruments. And, in this dissertation, I argue that it is the possibility to access amortized credit instruments that first attracted swaths of the working- and middle-class populations to real estate assets.

To the contemporary ear, describing access to installment plan credit as an advantage of homeownership may sound uncanny. Such credit instruments have indeed been available for helping finance home purchases for so long that we typically attach to homeownership itself the benefits that, in reality, are afforded to us only because we rely on amortized credit to pay for our homes. For example, we often say that buying a home “forces us to save,” when, in truth, it is not buying a home that forces us to save and to build wealth over time, but the fact that mortgage payments are due to the bank every month. However, and though we do not conceive amortized credit to be a benefit anymore, during the inter- and postwar eras, American families, especially working- and middle-class ones, often explicitly conceived of installment plan buying of assets as an extremely useful tool in their wealth-building strategies. In fact, these families often

actively sought to use installment plan credit when buying assets, and they chose assets based on whether or not installment plan buying was available, and, this, precisely because it was a way for them to force themselves to save and accumulate wealth. Accumulating wealth, for these families, was indeed only done at the price of painful sacrifices in basics such as food and heat. These families thus appreciated having options at hand to help them make these sacrifices on a daily basis. Installment plan buying of assets, in this regard, was the best option they had, and they sought it actively.

In contrast to today, however, until the mid-1930s, working- and middle-class families could rely on installment plans to purchase all kinds of assets, not just homes and real estate assets (and of course other durables). As I show in this dissertation, stocks were also often sold to working- and middle-class families on the installment plan in the 1920s and early 1930s. During World War I, in fact, even the federal government sold its war bonds on the installment plan to its working- and middle-class populations. If anything, actually, before the mid-1930s, it was for real estate assets that installment plan buying options were harder to find, not for corporate securities. Indeed, until the National Housing Act of 1934, many mortgages were not of the installment plan kind; about 60% of all mortgages did not involve low down-payments and fixed monthly repayments over many years, but were rather for only 50% of the value of a home and had to be repaid in a lump sum after only six to seven years. Until the mid-1930s, therefore, working- and middle-class families who wanted to buy their assets using installment plan credit had plenty of options for doing so and they could choose among a large variety of assets, which included corporate securities.

Starting in the mid-1930s, however, sweeping and permanent changes occurred in the availability of installment plan credit options across asset classes. In large part because of

provisions included in the Securities Exchange Act of 1934, installment plan buying for corporate securities disappeared. Furthermore, primarily because of the National Housing Act of 1934, mortgage credit became almost entirely of the installment plan kind. As a result, by the end of World War II, when economic recovery finally took root and when income and savings of the working- and middle-class families could finally grow once more, installment buying of assets had not only become easily available for helping finance the purchase of real estate assets, but had in fact become available *only* for these assets (and for other consumer durables). For working- and middle-class families, therefore, and precisely because these families valued utilizing installment plan credit when buying assets, owned homes then acquired a major advantage over other risky, price-fluctuating assets, such as corporate securities. Owned homes (and other durables) became the only way to have access to installment plan credit in the context of assets purchases.

As I argue in what follows, therefore, if working- and middle-class families originally turned massively to investments in real estate and to owned homes in the late 1940s, it was in large part because of the sweeping change in amortized credit options across asset classes that occurred in the late 1930s, under the impulse of policy and regulatory changes. In other words, all the other, non-financial advantages commonly recognized by portfolio choice theorists and posited to be at the heart of mass homeownership in America certainly play a part in the decisions of contemporary American families to buy homes at the price of owning virtually no other assets at all. But the main cause for the decisive and perennial turn to real estate investments among working- and middle-class families that occurred in the late 1940s had nothing to do with these other non-financial advantages. Instead, the main cause for this initial turn to homeownership as the primary wealth-building vehicle during the late 1940s, was the

policy-led reorganization of credit relationships across asset classes, which brought about the disappearance of options for installment-buying of securities starting in the mid-1930s.

In this dissertation, I tell the story of this disappearance of installment-buying options for securities purchases, and I make this argument that, fundamentally, it is this disappearance that caused working- and middle-class families to invest so massively in real estate assets, in the late 1940s and still today. More importantly, I also suggest that the 1930s reorganization of opportunities for credit across asset classes is, in effect, among the fundamental causes of the deep socioeconomic disparities in *rates of returns* to capital that run through the American population. Indeed, in this dissertation, and before discussing the causes of the important differences in the composition of risky assets that exist across income and net worth groups in the American population, I also show formally that high levels of investment in real estate assets among working- and middle-class families are, in effect, and as many portfolio choice theorists hypothesize, an important cause of the quite substantial disparities in rates of returns to capital existing in the American population. Bringing together the two arguments this dissertation makes, therefore, I conclude that of socioeconomic disparities in rates of returns to capital are found in large part in the restructuring of credit relationships that New Deal era policies have inadvertently ushered in. As a result, this dissertation makes scholarly contributions to a number of fields of sociological inquiry.

First, because I validate the hypothesis according to which socioeconomic disparities in rates of returns are generated by high levels of investment in real estate assets among working- and middle-class families, I, in effect, highlight a new factor in income concentration that inequality scholars have so far overlooked. Most scholars of income inequality, indeed, have thus far focused on inequalities in returns to labor – in wages and salaries – and on inequalities in the

distribution of capital in the American population, but they have not paid as much attention to equally consequential inequalities in the distribution of rates of returns to capital (Goldin & Katz; 2010; Keister & Muller, 2000; Western, Bloom & Percheski, 2008; Kristal, 2013; Lin & Tomaskovic-Devey , 2010; and Nau, 2013). This dissertation fills in this gap.

Second, I also contribute to inequality and stratification research in another way, by illuminating some of the socio-structural conditions under which the current level of socioeconomic disparities in rates of returns to capital emerged and continues to persist. Indeed, I show in this dissertation that working- and middle-class families do not invest heavily in real estate assets only because they have a deep-rooted desire to own a single, detached family home, or because they do not understand or trust the stock market. I show that, crucially, working- and middle-class families became alienated from the stock market starting in the mid-1930s, because a certain kind of credit relationship – the installment-buying of assets -, which working- and middle-class families found useful as tools in their own wealth-building strategies, disappeared from securities markets and even became illegal in these markets under the U.S. federal apparatus for financial regulation.

Lastly, because this dissertation leads me to consider the roles of both class and credit relationships in wealth-building strategies, I also add to both theories of consumer demand for credit and to theories of asset choices in this dissertation. As I show in this dissertation, working- and middle-class families of the early 20th century, in contrast to upper-class families, found it difficult to save and to accumulate wealth, since saving for them entailed grave sacrifices in basic consumption. As a result, the possibility of financially committing to purchasing assets became central in working- and middle-class families' wealth-building strategies, since such commitment helped them actually make the necessary sacrifices for building wealth on a daily

basis. Certainly, the experience and meaning of class have changed greatly since the early twentieth century, and it may not be as dreadful as it used to be for working- and middle-class families to save some portion of their income for the purpose of wealth-building. As a result, the possibility of committing to asset purchases may not be as valued today among working- and middle-class families as it was a century ago. Definitely, therefore, future research should aim to discover whether the concern for commitment to asset purchases is still as salient today among working- and middle-class families as it once was. However, assuming for now that the concern for commitment is still important in today's working- and middle-class families wealth-building strategies and that families use credit relationship to satisfy their desire for commitment, this finding – regarding the importance of commitment to asset acquisition in working- and middle-class lives – holds two important consequences for theories of asset choice and theories of demand for credit.

On one hand, the concern for commitment to asset purchases found among working- and middle-class families suggests that, contrary to what many asset choice theorists would posit, all families do not value liquidity and fungible investments above all else (Douglas & Rajan, 2001). Portraying asset choices as involving choosing between opportunities as they present themselves and course-changing through the liquidity of markets in fact amounts to portraying the ways in which a minority of upper-class families perceive and choose assets. The vast majority of other families, this dissertation suggests, actually value being able to *constrain* their future options as they choose assets, so as to stay on a defined path of wealth-building, instead of remaining as free as possible to make new choices in the future, as opportunities pop up. This idea has important consequences both for theories of asset choice and for our understanding of how financial markets serve the needs and purposes of working- and middle-class families.

In addition, recognition of the fact that working- and middle-class families use credit relationships as a way to satisfy their desire for commitment to asset purchases also suggests important modifications to theories of consumer demand for credit. Most theories of consumer demand for credit currently posit that families and individuals demand credit mostly because credit allows them to utilize their assets before having fully paid for them (Durkin et al., 2014). However, findings from this dissertation indicate that another dimension exists to the demand for credit, which is at least equally important, particularly among working- and middle-class families. Working- and middle-class families enter into credit relationships not only for the purpose of using and benefiting from assets before they are fully paid for, but also as a way to discipline themselves, as a way to nudge themselves into the realization of major life-accomplishments. From this point of view, credit relationships are not, for working- and middle-class families, only a last resort for dealing with financial emergencies, but also one way that they use to empower themselves to realize dreams in the future. Research on the role of credit in modern economies should take this dimension of demand for credit into consideration.

In what follows, to make these contributions, I present results and conclusions I proceed in three steps. I begin, in Part 1, by validating the hypothesis proposed by asset choice theorists, according to which socioeconomic disparities in rates of return to capital exist and are caused by high levels of investment in real estate assets among working- and middle-class families. I estimate the overall size of socioeconomic disparities in rates of return to capital in the American population and show that high investment in real estate assets among working- and middle-class families is indeed the main cause for these disparities. I also illustrate the importance of rates of return disparities to the dynamics of income inequality more broadly conceived.

In Part 2, I show that, contrary to what most asset choice theorists implicitly contend, working- and middle-class families have not always invested heavily in real estate assets and lightly in securities. Through a cliometric analysis of savings and investments micro-data covering the 1918-2013 period, I show that, during the 1920s and 1930s, lower-income families had been in the process of increasing their investments in *corporate securities* and not their investments in real estate assets, but that, in the late 1940s, they suddenly changed paths and began to invest in real estate assets more and more intensively. As I show in Part II, therefore, the marked differences in the kinds of risky assets owned that are currently found across income and net worth groups in America, and the socioeconomic disparities in rates of returns to capital that they create, are in many ways the product of this 1940s shift in working- and middle-class investment practices.

In Part 3, I propose and defend my theory regarding the fundamental causes of this 1940s shift in working- and middle-class investment practices. Specifically, I show in Part III how options for installment plan buying of securities permanently disappeared in the mid-1930s, and how installment plan options for buying real estate assets, in contrast, began to soar during the same period. I then present evidence suggesting that, during the early decades of the 20th century, working- and middle-class families highly valued using installment plan buying for assets, in large part because, through installment-buying of assets, they could force themselves to build wealth. I also show how these families often even chose assets on the basis of whether or not installment buying was available, which strongly supports the idea that one main cause for the 1940s shift in working- and middle-class families was, indeed, the 1930s change in credit options across asset classes.

Part 1

Asset Choices and Income Inequality

Chapter 1

Mass Investment in Real Estate Assets: Consequences for Rates of Return to Capital and Income Inequalities

Portfolio choice theorists have long noticed that, whenever lower-income and lower networth families own risky, price-fluctuating assets, these families tend to own a very different mix of risky assets than their wealthier counterparts. While wealthier families tend to own a sizable share of their wealth in the form of corporate securities, lower-income and lower net worth families typically own the lion's share of their wealth in the form of real estate assets (on this topic see, in particular, the work of Edward N. Wolff, who has been tracking trends in wealth ownership since the early 1980s. In particular, see Wolff, 1998; Wolff, 2010; and Wolff, 2014).

As many portfolio choice theorists have argued, these differences in the composition of risky assets across income and net worth groups are likely consequential for income inequality in America. More specifically, differences in the composition of risky assets along socioeconomic lines likely translate into substantial socioeconomic disparities in *rates of returns to capital: in the incomes obtained for each dollar invested in capital markets*. As financial economists often argue, indeed, corporate securities, on average, return at higher rates than real estate assets, and since working- and middle-class families own virtually no securities at all, they are expected to earn a lower income than upper-class families for each dollar they invest in capital markets (Mehra & Prescott, 1985; Fama & French, 2002; Shiller, 2005; Keister, 2005; and Campanale, 2007).

Thanks to the work of financial economists and portfolio choice economists, therefore, we currently have some sense that differences in the composition of risky assets possessed by wealthy versus poorer American families generate socioeconomic disparities in rates of return to capital. However, research produced by these scholars has so far generated only a relatively poor understanding of the *scale* and the *relative importance* of disparities in rates of returns to capital. Indeed, if portfolio choice theorists have provided estimates regarding the size of socioeconomic disparities in rates of returns to capital created in the American population by differences in the composition of risky assets across income and net worth groups, these estimates are both imprecise and contentious, since they are based on average rates of returns to assets that have been computed using *asset price indexes*. The appropriateness of asset price indexes for estimating returns to assets is a hotly debated topic among financial economists, and, as a result, the estimates that we currently have for the size of disparities in rates of returns to capital that are, at best, coarse.

More importantly, we also currently lack knowledge of the *relative* weight of socioeconomic differences in the composition of risky assets as a generator of socioeconomic disparities in rates of returns to capital, when compared to other factors that may also create such disparities. Other scholars, for instance, have argued that factors other than the fact of working- and middle-class investment in real estate assets, including, for example, differences in risk-taking behavior across income and net worth groups, may also create systematic socioeconomic disparities in rates of return to capital. However, we do not possess an estimate for the relative strength of these factors in creating socioeconomic disparities in rates of return to capital. As a result, we do not possess a sense of whether the fact of high levels of investment in real estate assets among working- and middle-class families constitutes a major factor in creating rates of

return disparities in the American population, as portfolio choice theorists contend, or an entirely marginal one. Furthermore, since income inequality scholars have not paid much attention to the problem of disparities in rates of returns to capital, they also ignore the extent to which working- and middle-class investment in real estate assets contributes to income concentration, via its effect on rates of return disparities. Inequality scholars, indeed, have so far paid much attention to inequalities in the returns to labor – to inequalities in the distribution of wages and salaries – and to inequalities in the distribution of wealth, but not so much to the unequal distribution of rates of return to capital in the American population. As a result the relative importance of disparities in rates of returns to capital and of working- and middle-class investments in real estate assets in causing these disparities are poorly understood.

For these reasons, in this first dissertation chapter, and before I explore the causes for working- and middle-class investments in real estate assets, I endeavor to clarify the role of working- and middle-class investment in real estate assets in generating socioeconomic disparities in rates of returns to capital and, thereby, in generating increased income inequality. To this effect, I first propose an estimate for the full extent of disparities in rates of returns to capital that exist across income and net worth groups in America. Specifically, I propose an estimate that is not based only on average returns to capital by asset classes computed out of asset price indexes, but one that is based mostly on reported income and wealth micro-data. I also discuss, in this chapter, the practical implications of this socioeconomic disparity in rates of return to capital as I estimate and its effect on income inequality more broadly. This last discussion, however, is only illustrative and is not analytic or causal, since it would be beyond the scope of this dissertation to explore the question formally. Lastly, in this chapter, after I have estimated the size of socioeconomic disparities in rates of return to capital and explored their

implications, I also explore the relative importance of various factors in creating this overall estimated disparity, with special attention to the specific weight of working- and middle-class investment in real estate assets in generating these disparities.

To accomplish this, I rely on the Panel Study of Income Dynamics (PSID), which has surveyed a representative sample of American families regarding both their income and their wealth since 1984¹. Using information regarding income earned from invested capital reported to the PSID by sampled families between 1984 and 2011, I compute the rates of returns earned each year by each PSID family between 1984 and 2011, and I use these computed annual rates of returns to capital to estimate the effect of both income and net worth in predicting rates of returns earned during this period. I also use these same data to weigh the importance of various factors in generating these overall income and net worth effects on rates of returns to capital.

As I show next, findings from this analysis largely confirm what portfolio choice theorists have long argued regarding socioeconomic differences in the composition of risky assets and regarding working- and middle-class investments in real estate assets. The fact of high levels of investments in real estate assets among the low-income and low net worth families contributes in important ways to increased income inequality in America by producing very sizable socioeconomic gaps in rates of return to capital in the American population.

In what follows, I begin by reviewing the current literature on potential causes of socioeconomic disparities in rates of return to capital.

¹ The PSID was actually initiated in 1968, but it only began asking about wealth and investments in 1984.

Socioeconomic Disparities and Their Potential Causes

As I already argued in the introductory comments to this chapter, evidence already exists that high levels of investment in real estate among working- and middle-class families generates socioeconomic disparities in rates of return to capital. Portfolio choice theorists have indeed long argued that wealthier families likely earn higher rates of return to their invested capital than other families because they own more of the high-returning corporate securities than others (on this topic see, in particular, the work of Edward N. Wolff, who has been tracking trends in wealth ownership since the early 1980s. In particular, see Wolff, 1998; Wolff, 2010; and Wolff, 2014. See, also, Mehra & Prescott, 1985; Fama & French, 2002; Shiller, 2005; Keister, 2005; and Campanale, 2007). However, thus far, this literature has produced only an approximate understanding of how strongly differences in the composition of risky assets across income and net worth groups act as a factor in the generation of socioeconomic gaps in rates of return to capital.

Indeed, most portfolio choice theorists make the argument that poorer families earn lower rates of returns to capital due to their heavy investment in real estate assets by relying on average rates of return to capital for real estate and corporate securities that are computed based *on asset price indexes* (Mehra & Prescott, 1985; Fama & French, 2002; Shiller, 2005; Keister, 2005; Campanale, 2007; Belsky & Duda, 2007; and Rappaport, 2010). However, this approach to the comparison of rates of return earned by asset class is imprecise and, in fact, likely downplays the size of socioeconomic disparities in rates of return to capital caused by differences in the

composition of risky assets owned across income and net worth groups. Indeed, though stock price indexes are appropriate as proxies for returns earned from investments in corporate securities, home price indexes are poor proxies for returns yielded by real estate investments (Hill, 2013). More specifically, in contrast to stock price indexes, home price indexes control notoriously poorly for changes in the average quality of homes and for accrued capital investments in the housing sector. As a result, average returns to homes and to real estate that are computed out of home price indexes likely confuse new capital formation in the housing sector with increased market values, and returns to homes are thus likely over-estimated using this method. Furthermore, a second problem with using home price indexes to estimate returns earned by households on their real estate assets lies in the fact that most real estate-owning households own only one or a few houses, instead of a representative sample of real estate assets across the country. Home price indexes, however, are calculated based on a representative sample of real estate assets. For this reason, returns to real estate computed using home price indexes likely constitute poor proxies for the returns that specific families, owning specific pieces of real estate, earn in reality.

Stock price indexes, in contrast, are not plagued as severely by these same problems. Corporations are indeed required to produce detailed financial statements, which allow producers of stock price indexes to carefully control for new capital formation in the corporate sector. Furthermore, households owning corporate securities generally own them through mutual funds and are thus in fact usually exposed to a representative sample of the country's corporations in their own portfolio. Yet, since returns to real estate assets computed out of home price indexes are poor ways to proxy for true returns to real estate, it remains true that it is imprecise and likely to understate the matter largely to estimate the effect of differences in risky assets owned on

disparities in rates of returns to capital using average returns based on asset price indexes, as portfolio choice theorists have usually done thus far.

More importantly, in addition to having an imprecise estimate of the absolute size of disparities in rates of returns created by high levels of investment in real estate assets among working- and middle-class families, we also lack an estimate for the *relative* importance of this specific factor in creating disparities in rates of return to capital. Indeed, many scholars have highlighted other potential factors that could also contribute to socioeconomic disparities in rates of return to capital, notably differences in risk-taking. But these scholars have all tended to explore these factors in isolation and have thus not weighed them against each other, and especially not against working- and middle-class investments in real estate.

For example, aside from noting that wealthier families own, on average, a different mix of risky assets than lower-income and lower net worth families, portfolio choice theorists have also noticed that, having more resources to bear it, wealthier families tend to take more financial risks than other families: they tend to own more of their wealth in risky assets than others. According to portfolio choice theorists, such risk-taking could form another factor, aside from and different from the composition of risky assets, helping wealthier families earn higher rates of return to capital, since financial risk is often rewarded by higher returns to invested capital (see, for example, Zimmerman & Carter, 2003). However, these scholars have not weighed these two factors against each other.

In addition, portfolio choice theorists have also noted that higher-income families tend to have easier access to investment debt instruments, such as home mortgages, and that, as a result, these families tend to have more of what is known as *financial leverage* in their portfolios (Dynan, 2009). Leverage is defined as usage of credit to invest in assets. Whenever credit is used

to realize an investment, it will have the effect of magnifying the returns earned by a factor equal to the ratio of debt to assets in the investment. As a result, assuming wealthier families already earn, on average, higher rates of returns to capital, as a result of both risk-taking and the composition of their risky assets, leverage-taking should also constitute yet another factor helping these families systematically earn higher rates of returns to capital than others. However, these scholars have not explored either how access to leverage-taking instrument might fare as a cause of returns disparities compared to other factors, such as risk-taking and the composition of risky assets.

More importantly, aside from portfolio choice theorists, other scholars, the vast majority sociologists studying access to capital markets, have also suggested that wealthy families enjoy a variety of advantages that could help them earning better rates of returns even on similarly balanced portfolios, and within the different asset categories.

For example, a number of students of access to capital markets have suggested that higher-income and higher-wealth families have privileged access to better investment products than other families within asset markets. As a few sociologists, for instance, have shown, in fringe, poor, and socially unstable neighborhoods, home prices increase at rates that are below average, which means that richer families who can afford the homes located in expensive neighborhoods probably achieve higher rates of return to their real estate investments than other families (Edel, Schlar & Luria, 1984; and Flippen, 2004). Similarly, other scholars have argued that higher-wealth individuals often are allowed to buy certain financial products, such as shares in private equity firms, which lower-wealth families are legally prevented from owning (see Krippner, 2011 for a historical account of the regulation of access to financial products based on their price and the wealth of prospective buyers).

Furthermore, higher income families tend to possess higher levels of financial literacy than others. Indeed, according to a number of scholars, wealthy families, in contrast to poorer ones, tend to have access to networks of friends who are versed in financial matters. In addition, wealthier families also tend to have access to financial advice of superior quality (Chang, 2005 and Harrington, 2012). All of this makes them, on average, more financially literate than others, and, as a result these families may be able to earn higher returns than others within asset classes, not only out of privileged access to superior investment products, but also out of a capacity to pick them.

Lastly, other scholars, notably Piketty (2014), have suggested that wealthier and higher-income families also achieve higher returns than others, even on similarly balanced portfolios, because these families tend to benefit from economies of scale when investing their wealth. According to Piketty, for instance, the act of investment is largely about knowledge. As a result, investing involves important fixed costs, which makes investing large sums of wealth almost as costly as investing small amounts of wealth. For this reason, those who have large amounts of wealth to invest benefit from economies of scale; they pay smaller prices to invest their wealth and thus earn higher overall rates of return to capital. In the same spirit, other scholars have also argued that higher-income families are likely to borrow at lower interest rates than others, which means that higher-income families also benefit from lower overall investment costs whenever they use debt to finance investments (Jackson & Burlingame, 2007; Warren, 2010; and Goldstein, 2013).

In sum, then, there are a number of other factors, aside from working- and middle-class investment in real estate assets, which may also contribute to socioeconomic disparities in rates of return to capital. Chiefly, upper-class families also possess the material means to take more

financial risks and more leverage as they invest, and this should translate into higher returns to their capital. Furthermore, a combination of higher levels of financial literacy, of higher quality financial advices, of privileged access to investment goods, and of scale economies may also help upper-class families earning higher returns to capital within asset classes: even when owning similarly balanced portfolio as others.

However, we do not have much knowledge of the relative importance of these factors in generating overall socioeconomic disparities in rates of returns to capital. In particular, we possess no knowledge of the relative weight of high levels of investment in real estate assets among working- and middle-class families in generating these disparities. Furthermore, even estimates for the effect of this factor in absolute terms are relatively coarse. In what follows, therefore, in the interest of clarifying the role played by high levels of investment in real estate assets among working- and middle-class families in generating disparities in rates of return to capital, I propose an estimate for the overall socioeconomic disparities in rates of returns to capital in the American population, and I also explore the importance of working- and middle-class investment in real estate assets as a factor generating these disparities. To do this, I first specify a methodology that will permit accomplishing this, and I present results thereafter.

A Methodology for Estimating Socioeconomic Disparities In Rates of Return to Capital and Weighing their Causes

As I discussed in the previous section of this chapter, scholars have identified a number of potential causes of systematic socioeconomic disparities in rates of return to invested capital. These potential causes involve both differences in the types of assets owned across income and net worth groups and differences in returns earned within asset classes, on similarly balanced portfolios across these same income and net worth groups. As a result, in order to be suitable for the measurement of the full extent of disparities in rates of returns to capital existing in the American population and for the measurement of the relative weights of each factor in creating these disparities, a methodology should minimally be based on a measure of rates of returns that grasps all the sources of variations in rates of returns: those that exist within asset classes and between them. A group of scholars, constituted mainly by wealth inequality scholars, have produced a methodology that can satisfy this general criterion, provided it is slightly modified.

Scholars of wealth inequality have indeed studied extensively the main causes of inequalities in accumulated wealth across groups: across income, racial, and gender groups, for example. In these studies, wealth inequality scholars have often asked what factors lead certain families to accumulate wealth faster than others. These scholars have thus developed a methodology for computing and measuring the *rates* at which families accumulate wealth. To do this, these scholars typically rely on longitudinal wealth and income survey micro-data, chiefly on one specific data set, the Panel Study of Income Dynamics (see, for example, Shapiro & Oliver, 1997; Spilerman, 2000; Kesiter, 2000a; Keister, 2000b; Conley, 2001; Keister, 2005; and

Gittleman & Wolff, 2004. See also Herbert, et al., 2013 for an excellent review of recent studies in this area). To develop a methodology for computing and comparing rates of return earned on capital by different families, it is thus useful to build on the methodology devised by wealth scholars, but with a few modifications. Chiefly, the concept of rate of return to capital is indeed different than the concept of rate of wealth accumulation, and the main modification to the methodology will consist of a slight change to the measurement technique for the outcome variable.

Specifically, the difference between a rate of wealth accumulation and a rate of return to capital is the following: a rate of wealth accumulation is defined as the total difference in accumulated wealth possessed a family between time t and time $t+1$, divided by the amount of wealth that was possessed by the family at time t . To compute this rate, therefore, what is needed in terms of data is simply information regarding total amounts of wealth owned at two different time points. Wealth inequality scholars have often computed such rates of wealth accumulation for representative samples of the American population and pondered over the key determinants of differences in rates of wealth accumulation across groups. Is it that some families add more savings to their accumulated wealth, for example? Or is it that some of them receive intergenerational transfers? To do this, wealth inequality scholars have simply explored in regression analysis how factors such as amounts of savings, amounts of wealth possessed, age, etc. affect rates of wealth accumulation.

The notion of rate of return to capital is slightly different than the notion of rate of wealth accumulation, in that it is defined as the *total income earned* from an investment during a given period of time, divided by the initial amount of invested capital. Computing rates of returns to capital is thus similar in many ways to computing rates of wealth accumulation, and the

determinants of differences in rates of return earned can be explored using the same regression analysis techniques. However, computing rates of return to capital requires slightly more information than computing rates of wealth accumulation. Calculating a rate of return to capital indeed involves computing the total income generated by a sum of invested wealth during a given period of time and dividing this income by the amount of capital initially invested. As a result, calculating a rate of return to capital requires detailed income micro-data on top of detailed wealth information. The data set most commonly relied upon for computing rates of wealth accumulation, the Panel Study of Income Dynamics, does contain most of the necessary income information required to compute rates of return to capital, but some of this information is unavailable. As a result, I must rely on complementary sources of information, which I detail below.

In what follows, I first briefly describe the Panel Study of Income Dynamics and the other data sources I use to compute household-level rates of return to capital. I then present how I compute rates of return out of these data and the framework I use to evaluate the relative weight of various factors in predicting rates of return to capital.

Data Source and Unit of Analysis

I use data from the Panel Study of Income Dynamics (PSID) to compute and compare rates of return to capital at the family level. The PSID, as a longitudinal survey, was initiated in 1968. Since then, the survey has re-interviewed the same families every year regarding their

incomes, as well as children from originally sampled families, whenever these children have formed their own households. PSID began collecting detailed wealth and investment information in addition to income data in 1984, first at five-year intervals and, since 1999, at two-year intervals. Using the PSID, it is thus possible to compute annual rates of return earned for a representative sample of the U.S. population between 1984 and 2011, at five- to two-year intervals.

The unit of analysis for wealth data in the PSID is, as should be clear by now, the family. A family is defined in the PSID as being composed of one or more individuals living under the same roof and sharing their incomes and most of their expenses. For the remainder of this chapter, this is the definition I adopt for a family and the unit of analysis for all forthcoming analyses. I believe that the family is indeed the correct unit of analysis for an exploration of rates of return earned, since, as Gary Becker has highlighted, major financial decisions such as decisions to invest in assets are usually made at the family level, not at the individual one (Becker, 1981).

In comparison to data from other sources such as the National Longitudinal Study (NLS) or the Survey of Consumer Finances (SCF), which also offer wealth and income information in longitudinal settings, PSID data offers the most possibilities for measuring rates of return earned. First, while the NLS, like the PSID, contains longitudinal data regarding wealth and income over a long period of time, the PSID collects much more detailed information regarding wealth ownership by asset classes and regarding income earned from investments. As a result, more precision is obtained through the PSID when computing rates of return earned, and the PSID also permits weighing a broader range of causal factors against group differences in rates of returns earned in generating disparities in rates of return.

In addition, while SCF data is arguably even more detailed than PSID data regarding the breakdown of wealth owned by asset class, and while SCF data oversamples very wealthy families such as to observe their financial behavior, longitudinal data has been available in the SCF only since 2009. This leaves us with a window of time that is too short, and also to specifically in the aftermath of a major crisis, to fully grasp the existence of systematic socioeconomic disparities in rates of return to capital. For these reasons, I rely mostly on PSID data to compute and compare rates of return earned by American families possessing various levels of income and net worth, even though the estimate of the extent of socioeconomic disparities in rates of returns to capital is likely to be conservative in this sample, since very few top-wealth families are sampled in the PSID.

Furthermore, I mentioned that I rely *mostly* on PSID data to compute rates of return earned by families, because PSID data, for all its details regarding wealth owned and investment incomes earned, nonetheless lacks some necessary information for the computation of rates of return earned by families. For this reason, I rely on additional sources of data to complement PSID data. Chiefly, while PSID data does allow me to compute rates of return earned by each sampled family on their owned homes, PSID data does not contain all required information to allow me to compute rates of return earned by each family on their stock of corporate securities. For this reason, I also use the Wilshire Total Market Index in this study to estimate the rates of return earned by stock-owning families. As I have mentioned above, using asset price indexes to proxy returns earned to corporate securities is not as problematic as relying on asset price indexes to proxy returns earned on homes and real estate, because most families do own representative samples of the entire stock market through mutual funds and because stock price indexes do not overstate returns to stocks as much as home price index do.

However, it does remain true that using stock price indexes to estimate returns to stocks has its drawbacks. Chiefly, using stock price indexes to estimate returns earned instead of computing a true return earned for each family has the effect of removing some of the variability in returns earned to stocks. Specifically, using stock price indexes to estimate returns earned removes all between-family variability capital gains from stocks trading (leaving in the data, however, all variability induced by differences in dividends earned, which are reported by households). Furthermore, relying on stock price indexes also has for effect to remove differences in the cost of access to capital and thus, in that I have to make assumptions about the fees paid by each family to access the stock market. As a result, the estimate I produce here for the extent of socioeconomic disparities in rates of return to capital will still not be perfect and not entirely complete, in that it will still not provide us with a complete overview of socioeconomic disparities in rates of return that encompasses and takes into consideration all sources of variability in rates of return. Chiefly some of the advantages likely enjoyed by upper-class families and helping them earning higher returns within asset classes, on similarly balanced portfolios, are not taken into account.

Adding this last limit to the fact that PSID does not over-sample very wealthy families, It should thus be kept in mind that the estimate for rates of returns disparities I produce here is relatively conservative. As a result, the relative weight I attribute to the effect of real estate investments among working- and middle-class families here should be understood as the weight of this factor in a relatively conservative scenario regarding rates of returns to capital.

In a next section, I describe in details how I compute family specific rates of returns out of PSID data. Before I do so, however, I first outline the general modeling strategy I employ to estimate the effect of socioeconomic status on rates of return earned, as well as to parse out the

weight of working- and middle-class investment in real estate assets in generating disparities in rates of return to capital across income and net worth groups.

Modeling Strategy

As I mentioned earlier, PSID data has collected the wealth data necessary to compute rates of returns since 1984. Specifically, wealth data has been collected in 1984, 1989, 1994, 1999, 2001, 2003, 2005, 2007, 2009, and 2011 (2013 has just been released). For each period between survey waves, therefore, I can use PSID data to compute the annual rate of return to capital that was earned by each family in the sample during this period. I describe next how I compute those family-specific annual rates of return earned between each survey waves. For now, let me describe how I use these computed annual rates of returns in regression analysis.

I use two different sets of analyses in this study. On the one hand, I use the computed annual rates of return in a longitudinal framework of analysis. That is, I use a *standardized measure of annual rates of returns* earned by PSID families for each survey wave as outcome variable in family-by-year panel data framework, such as in (1) below.

$$StandardAnnualReturn_{i,t} = \beta_0 + \beta_1 Wealth_{i,t-1} + \beta_2 Income_{i,t-1} + \sum_k \beta_k C_{ki,t-1} + \varepsilon_i \quad (1),$$

Measurements of each variables are described at more length below, but briefly:

StandardAnnualReturn_{i,t-1} is the standardized annual rate of return earned by family *i* during year

t . $Wealth_{i,t-1}$ is the net worth of family i at the beginning of year t , and $Income_{i,t-1}$ is income earned by family i in during year $t-1$. CS_{ki} are a set of K control factors.

On the other hand, I use the family-specific *average of* annual rate of returns earned between 1984 and 2011 as outcome variable in cross-sectional model, such as in (2) below.

$$AverageR8411_i = \beta_0 + \beta_1 Wealth84_i + \beta_2 Income84_i + \sum_k \beta_k C_{ki} + \varepsilon_i \quad (2),$$

I describe measurement of each variable in details in the next section, but at a quick glance: $AverageR8411$ is the geometric mean of the annual rates of returns earned between 1984 and 2011 by family i . $Wealth84$ is the net worth of family i in 1984, and $Income84$ is the permanent income of family i in 1984. CS_{ki} are a set of K control factors.

Both sets of analyses, cross-sectional and longitudinal, have advantages and drawbacks for the question of interest here, and that is why I use them in combination. The longitudinal framework is the primary analytical framework, as it allows for a detailed exploration of the causal links between outcome and predictor variables, which can be lagged to establish clear temporal precedence. Using the longitudinal framework, I can also verify whether disparities in rates of returns to capital are persistent or only true in a certain period, by exploring if and how the income and net worth effects on rates of returns vary from year to year. I thus use this framework to verify whether income and net worth predict rates of returns and to explore through which mechanisms income and net worth have such effects: is it because of heavy working- and middle-class investments in real estate that income and net worth predict high rates of returns, for example, or because of high levels of risk taking among the upper-classes?

For all its benefits, however, the longitudinal framework has its drawbacks. For instance, do the same families consistently earn lower rates of returns? Do poorer families earn lower rates of returns than others over long periods of time? It is harder to answer these questions in a longitudinal framework. But the cross-sectional framework, though not useful for understanding the mediators of the income and net worth effects, can help answering the temporality and persistence questions. Indeed, by comparing the average annual rates of returns earned by sets of families over 27 years, we can develop a sense of how systematic are the estimated disparities in rates of returns to capital. For this reason, as I first estimate the size of the income and net worth effects using the longitudinal framework, I also produce an additional control over these estimates, by exploring to which extent income and net worth measure in 1984, at the beginning of a 27-year period extending to 2011, also predict rates of return earned throughout this 27-year period.

In sum, then, the modeling strategy I employ here involves the following two steps. I first compute the gross effects of income and wealth on rates of returns to capital, in both the longitudinal and the cross-sectional framework, and controlling for only basic demographic factors, such as education, family composition, marital status, and race (the measurement of which I detail below). Then, using the longitudinal framework, I explore how much of this gross effect is explained by risk-taking behavior, composition of risky and non-risky assets, leverage-taking, and ownership of superior investment products within asset classes, which I do by successively adding indicators for each of these mechanisms. To estimate the cross-sectional, average rates of returns model, I use maximum likelihood estimation and Taylor-linearized standard error estimation (to account for PSID's complex survey design). For the longitudinal, standardized annual rates of returns model, I use a generalized estimating equation approach to

fit a linear model for panel data, with unstructured correlations, and Huber-White standard errors estimates.

Measurements and Variables

Outcome Variables: Rates of Returns Earned

As I have noted before, I use two outcome variables in this study. First, I use a standardized measure of the annual rate of returns to equity that families have earned, for each year between 1984 and 2011. Second, I use a within-family average of annual rates of returns to equity earned between 1984 and 2011.²

To construct both of these outcome variables, the first step is to compute the annual rate of return families have earned each year between 1984 and 2011. Since this computation is relatively complex, I present the details in Appendix A. Briefly stated here, to compute annual rates of returns for each family, I compute income earned from investments in each asset class for any given year and divide that amount by the total amount of wealth initially invested in this asset class at the beginning of the year. (For some asset classes, such as stocks, I use average returns computed using asset price indexes instead of reported investment income, for reasons already explained above.) Once returns have been computed for each asset class, I compute the overall annual rate of return to equity for each family by using a weighted average of the returns earned by each family on the different asset classes it owns.

² Total equity is defined as total value of assets owned, minus any liabilities.

Once these annual rates of return have been computed for each year and each family, to generate the first outcome variable, I measure the distance of a family's rate of return from the grand mean of annual rates of returns for that year. I then divide this distance by the standard deviation of annual rates of return for this same year. To compute the second outcome variable, I compute the geometric mean of annual rates of returns earned by each family between 1984 and 2011³.

Main Predictor Variables: Family Income and Net Worth

I use two main predictor variables in these analyses: net worth and total family income, adjusted for family size. Net worth is defined as the total amount of assets owned, minus any liabilities. For longitudinal analyses using standardized annual rates of return, I use family net worth reported in the previous survey wave, which I standardize. In cross-sectional analyses featuring average rates of returns between 1984 and 2011, I use family net worth measured in 1984 (so it is measured only before returns are) and I use a series of dummy variables to

³ As I mention in Appendix A, it should be noted that, to portray the average of annual returns earned by each family during the 27-year period, a better indicator (or at least a more common indicator) than the geometric mean of annual returns would have been the *implicit interest rate* earned during the period. However, computing the implicit interest rate for the whole 27-year period would have required that each family report complete wealth data, on each survey wave. Most families have at least some missing values in their wealth data, on at least one survey wave. Therefore, using the implicit interest rate for the 27-year period would have had the effect of reducing sample size below usability. Computing the geometric mean of annual returns for each family, in contrast, does not necessitate a non-missing annual rate of return on every single survey wave and is therefore a better measure of average returns earned in this particular case, in the interest of conserving sample size.

represent this variable in regression analysis. I use dummy variables so that estimates of the net worth effect can be straightforwardly obtained. The baseline for this series of dummy variables is for families possessing $> \$200,000$ in net worth in 1984, and the dummies identify families possessing $< \$5,000$ in net worth, between $\$5,000$ and $\$30,000$, between $\$30,000$ and $\$90,000$, and between $\$90,000$ and $\$200,000$.

To indicate income, I use the total reported family income, from which I subtract any income earned from investments, such as rents, interests, dividends, and proprietor's income (total family income thus includes all wages and salaries and any transfers from the state or from extended family members and friends). Also, to account for family size, I divide this measure of total family income by the square root of the total number of family members (Western, et al., 2008). In cross-sectional analyses using average annual rates of returns, I use a measure of permanent family income, by getting a five-year average (1980 to 1984) of total income, adjusted for family size and minus any investment income. I also transform this variable using the logarithmic function, to prevent heteroskedastic residuals, since income is skewed in its distribution but does not contain zeros or negatives (in the regression sample). In longitudinal analyses, I use family income adjusted for family size reported in the previous survey wave, and I use a year-specific standardized measure of this income.

Also, to distinguish families who earn income mostly from returns to capital (and thus have a small non-investment income) from those who truly earn a very small total income, I add to all models a dummy variable that takes a value of one if the family has reported zero wages and salaries and a value of zero if wages and salaries are positive.

Portfolio Composition Indicators

To explore how important socioeconomic differences in composition of risky assets are, as a factor generating socioeconomic disparities in rates of returns, I use a variety of indicators for composition of portfolio and for returns earned within asset classes, which I successively add to regression models in the longitudinal framework, once I have explored the effect of income and net worth on rates of returns earned. More specifically, I generate indicators for composition of risky assets, but also for level of investment risk-taking, for amount of leverage in portfolio, and for returns to investments within asset classes. I compute these indicators at each survey waves and use their lagged value as predictors in the longitudinal framework to explore their relative weight.

To proxy investment risk-taking, I use the ratio of low-risk assets to total value of investment. In keeping with the literature on investment risk, I consider any cash, deposits, or government bonds as low-risk assets, and all other assets as risky ones (Christofferson, 2011).

To proxy the composition of risky assets and extent of investment in real estate assets, I use the ratio of home equity in the total value of invested wealth. I use this variable in combination with the ratio of low-risk assets to the total value of invested capital, and with ratio of private businesses to total value of invested capital so that it is a proxy for composition of *risky* assets.

To proxy the amount of leverage families have in their portfolios, I use the level of debt families have on their main residence (mortgage principal remaining, divided by total value of residence).⁴

Finally, to proxy ownership of superior investment products within asset classes and earning of superior investment returns within asset classes, I measure the difference between the rate of return earned by each family and the rate of return each family would have earned during a period between two survey waves, if this family had earned the average rate of return for each asset class of assets it owns, instead of the return it reported for each of these asset classes. Since this differences in returns earned within asset classes is likely to change from year to year in absolute value, I use a standardized version of this variable.

Control Variables

In the first models used to estimate the gross effects of income and wealth on rates of returns, I control for four additional factors that could potentially confound these effects. These factors are the following: reported race of family head; level of education of family head in 2011; marital status of family head; and whether the family has had access to a retirement pension from an employer in the past. Race and education are time-invariant in this study; they are measured

⁴ As I have mentioned before in Appendix A, home is actually the sole asset category for which I have both debt and asset value information. I have equity values only for all other asset classes. It is thus possible that leverage on homes does not proxy perfectly well the extent of leverage in portfolio, particularly for families who are business or real estate owners and are likely to have some leverage on these assets. Therefore, results should be interpreted with this limitation in mind.

similarly in all models. For time-variant control variables, differences exist between the cross-sectional and longitudinal models. Marital status and access to an employer pension are as reported in the previous survey wave in all longitudinal analyses. In cross-sectional, average returns analyses, marital status takes the value one if married on more than 70% of survey waves between 1984 and 2011, and having access to an employer pension takes the value one if respondents reported to have had access to an employer pension on at least one survey wave between 1984 and 2011.

Furthermore, in all cross-sectional, average returns models, I add an additional control variable, which is meant to adjust the model for when, during the 1984-2011 period, returns were observed and unobserved for each families.⁵ In some longitudinal analysis I also control for period by adding dummies for each survey wave year and interaction effects between these dummies and the income indicator.

It should be noted, finally, that following initial analyses in which I used a variable indicating birth cohort of family heads, ultimately I decided not control for it, since it never tested positively for statistical significance in any models. Instead, I use birth cohort as an

⁵ To compute this variable, I first determine whether each year between 1984 and 2011 was a year during which reported returns were mostly negative or mostly positive, by computing the grand mean average of rates of returns for each year in the sample. Then, for each year in which a family reported a non-missing rate of return, I determine whether it was during a mostly negative year or a mostly positive one. I then count the number of mostly negative years during which each family reported a non-missing rate of return. I also count the number of mostly positive years during which each family reported a non-missing rate of return. I then compute the ratio of “negative” years for which each family reported returns, which I use to control for when the families reported returns between 1984 and 2011. In other words, if families have reported returns only for years during which returns, on average, were on the negative side, this family will have lower returns than another family who has reported its returns mostly on years during which returns were high on average, but this would not mean that the first family fares worse on capital markets for that reason. And the proposed indicator will control for that contingency.

exclusion restriction in one of the selection equations I use to control for selection bias, as I discuss in the next section.

Controlling for Selection Bias Potentials

There is potential for selection bias when using PSID data to calculate rates of returns. In what follows, I describe the main selectivity issues potentially affecting this study and how I attempt to correct for them.

A first issue is that some PSID data is missing in each survey wave due to survey non-response and attrition from sample. The PSID team has produced a set of longitudinal weights that are meant to control for both selection probability inherent to the survey's design and for attrition over time (see Heeringa, et al., 2013 for more information on these weights). I thus use these weights in both average returns and standardized annual returns models featured in this study, as a means to control for attrition.

In addition to missing data resulting from attrition, there is also a high level of incidental truncation in my outcome variable (especially in the geometric mean of returns earned between 1984 and 2011) and in one of the predictor variables, net worth, which might cause selection bias if missing data patterns are not at random. However, if I believe that incidental truncation is likely not to be at random in this case, I also believe that the selection bias that will ensue is likely to work towards diminishing the effect of wealth and income on rates of returns, and thus of working towards making my regression results more conservative, rather than inflating them.

Indeed, missing data, in this case, is likely to be patterned based on income and wealth. More specifically, low-income families will likely have a lower probability than others of having

some accumulated wealth, since it is harder for them to save, and, therefore, they will probably have a much higher probability of having a missing value in the outcome variable and in the net worth variable. However, it is also likely that the few low-income families who do manage to accumulate some savings and to make it into the regression sample will perform better than others in their income bracket would, if only we could observe their rates of returns. It is indeed very possible that poor families who manage to pull together some savings will do so either because they know what they do on capital markets, or, because they will pay more attention to how they invest their savings, since they have worked so hard to acquire them in the first place. In any case, this selection bias should have for effect to diminish the income effect, not to increase it.

Of course, the opposite effect is also possible: high-income families who do not report their wealth information could logically be expected to do worse than high-income families who report it. Indeed, if they do not report their wealth information, it is in all likelihood because they do not know it (and not because they do not have any). It could be expected that poor attention to one's wealth correlates with poorer investment performance, and therefore that high-income families in the sample are the ones, in their income class, who obtain the highest returns. Yet, an analysis of missing data patterns reveals that missing values in the outcome are much more prevalent among low-income families, and for this reason, I believe that the main potential for selection bias should come from low-income families. Thus I believe, in sum, that while important, selectivity issues in this case do not represent the biggest problem, since failing to adjust for it will, most likely, have the effect of making my estimate of the income (and probably of the wealth effect) smaller and more conservative.

Still, in analyses that follow, I do make some attempt to control for these selection biases, especially in analyses involving the average annual rates of returns in the outcome. Indeed, missing data is much more prevalent in this outcome variable than in the standardized annual returns one (since the average outcome requires observation of wealth information on at least five survey waves to be non-missing, whereas the standardized outcome variable requires observation of wealth information on only two). In addition, models involving standardized annual returns have a panel structure and involve estimation of a correlation model, which makes correcting for selection bias much harder. Furthermore, and as I discuss in the results section, I find only mild evidence of selection bias in the cross-sectional, average returns model, and this evidence suggests additionally that results are indeed biased in a way that makes the income effect smaller, not larger. Therefore, estimates for the longitudinal, annual returns models are not corrected and should be interpreted as slightly conservative.

To attempt to identify and correct for selection bias in the average returns models, I use the generalized residuals method proposed by Wooldridge (2014), which I prefer to imputation methods for this study. The reason for this is that, when rates of returns or net worth measures are missing, wealth data is usually not missing completely in my sample; only parts of reported wealth are missing (for example data on home values might be reported, but data on interests and dividends income might not be, and therefore, rates of returns cannot be calculated, even though most wealth data is not missing). Since the outcome variable results from the addition, subtraction, and division of all elements of wealth data, using imputation methods to repair the elements of wealth data that are missing might in fact create more problems than it solves, by creating extreme outliers if, for example, the imputation ends up reducing by a large amount what is in the denominator of the rates of returns calculation (in fact, to avoid this problem, I

have replaced all values that were imputed by PSID with missing values). Therefore, I prefer the Wooldridge (2014) methods of generalized residuals in this case.

The Wooldridge correction strategy can be described as a two-step procedure. First, the likelihood of observing versus not observing data must be modeled for each case, using either a probit, tobit, or a count regression model. Then, once these first-stage selection models are computed, the presence of selection bias in the final outcome regression can be verified by including generalized residuals from the first-stage selection models as additional covariates. According to Wooldridge (2014), evidence of selection bias is given by the p -value associated to the generalized residuals covariate. Furthermore, if evidence of selection bias is found, maximum likelihood regression leads to unbiased estimates of other parameters in the model, when generalized residuals are added to the model.

Therefore, to control for selection bias due to non-random missing data in this study, I use two selection equations. One is a probit model in which the outcome is observation of net worth versus not (Heckman, 1979). In this model, predictors are the following: 1) total family income per member in 1984; 2) age in 1984; 3) education level in 1984; 4) race; 5) having an employer pension in 1984; and 6) being married in 1984 (see Curtin, Juster, & Morgan, 2008 and Kennickell & Star-McCluer, 1997 for analyses of wealth reporting in survey data). I use age in 1984 as an exclusion restriction. The other selection model, used to predict the likelihood of observing geometric mean of annual returns, is a Poisson model, in which the outcome is the number of survey waves for which annual rates of returns were observed. I use a count outcome for this selection model instead of a binary variable, as is the case in the familiar Heckman framework, because exclusion restrictions are not obvious for this second selection equation (Loughran, et al., 2013 and Wooldridge, 2014). As predictor variables for this model I use: 1)

average amount of wealth reported between 1984 and 2011 (families with zero or very little wealth will be more likely not to report returns, because they do not participate in capital markets); 2) average size of total family income reported between 1984 and 2011; 3) being married for most of the period; 4) having access to an employer pension; 5) having finished college by 2011; and 6) being African American versus not.

Once these selection models are estimated, I add generalized residuals from both of them in all second stage models using the average rate of return variable, provided that they test positively for statistical significance. For the Poisson model, the generalized residual I use is the Pearson residual (Cameron & Tivedi, 2002). For the probit model, the generalized residual is the Inverse Mills Ratio (Heckman, 1979). As I present outcome regression results below, I refer to the generalized residuals from the first, net worth selection model as the “Inverse Mills Ratio” and to the generalized residuals from the second, mean geometric returns model as the “Pearson Residuals.” I consider p -values below 0.05 for these covariates to be evidence for selection bias and keep these covariates in the outcome regression models whenever their p -value is below that threshold.

Yet a third potential exists for selection bias in this study, arising from the sub-sampling I must conduct on the original PSID sample in order to carry out my proposed analyses. In 2011, the full sample of families surveyed by the PSID and whose heads were over 18 years old in 1984 included a total number of 2867 families. However, I can calculate and observe returns only for those families surveyed in 2011 who have kept the same family head in PSID in all survey waves between 1984 and 2011. The reason for this is that, to calculate returns earned by families between 1984 and 2011, I need to keep track of families from one survey wave to another. However, PSID identifies families across survey waves using only the ID of the

individual it identifies as the family head. Therefore, if a family goes through a head change at some point between survey waves (if a former head, for example, dies and is replaced by his/her spouse as the new head of the family unit), all longitudinal data is lost for this family after the head has changed.⁶

The crucial questions thus become the following: when and why does the PSID change a family head, and what types of families become censored in my sub-sample as a result? I explain why in details in Appendix B of this paper, but the short answer to this question is the following: female adults originally sampled by the PSID who go through a change in marital status at some point between 1984 and 2011 are censored. Though I believe the censoring factor here is being a female versus a male sampled respondent to the PSID, and thus an exogenous explanatory variable, I chose to conduct all analyses on the subsample of male family heads exclusively to avoid selectivity issues, by means of making the representativeness of the sample clearer. Therefore, all analyses presented here should be understood as applicable to the population of families headed by males only, according to PSID's definition (it should be noted, however, that the analyses conducted on the sample including the female heads do not differ much from the results presented here, which apply only to male heads. These analyses can be provided by the author upon request).

The final sample size for the group of families who have not changed heads in PSID data and are headed by males is 1435. Table 1.1 in Appendix J presents key descriptive statistics for this subsample and for the full sample of families headed by males surveyed by the PSID in 2011

⁶ It should be noted that I cannot decide to follow individuals instead of families to avoid dropping some of the cases for which a change in family head occurs. Indeed, wealth information that I use in this study is collected only at the family level, not at the individual level - PSID provides information on wealth owned only for family units, not for each individual member, which makes it impossible to calculate rates of returns earned at the individual level.

and who were older than 18 in 1984 (old enough to have had their own family unit). As can be seen from this table, differences between samples are not numerous. The main variations are that families in the subsample appear to have a slightly higher family income, and that they are more likely to be married.

Results

Tables 1.2 and 1.3 in Appendix J present descriptive statistics for the geometric mean of annual rates of return by families and for several control variables, conditional on net worth categories and on income quintiles. These statistics suggest associations between average annual rates of return to capital and both wealth and income, at least in sample. In what follows, I verify whether these associations observed in sample have statistical significance and can be thought to hold true in the broader American population.

Estimating the Gross Effect of Net Worth and Income on Annual Rates of Return to Capital

To explore how income and wealth overall affect rates of return, I begin by estimating their respective effects on annual rates of return between 1984 and 2011 independently, in

separate models, in the longitudinal framework. Models A1 and A2 presented in Table 1.4 in Appendix J show that both non-investment income and net worth measured at the beginning of an investment period have a positive and significant effect on standardized annual rates of return earned during the period. However, when combining these two effects in Model A3, the effect of income seems to supersede that of net worth; income appears to mediate the effect of net worth. In fact, as we will see when exploring the effect of portfolio composition indicators later on, income and net worth interact in complex ways because income and net worth are not perfect predictors of each other, and their effects on rates of return do not have the same root cause. For now, we can conclude that both income and net worth positively predict rates of return. Furthermore, though I do not show results here, I have tested the effect of income and net worth in each survey year separately, and they hold in each year except in 2007 and 2009, which are, respectively, the year of the height of the housing bubble and the year of the stock market collapse. The one thing that changes from year to year is the precedence of net worth over income or vice versa in predicting rates of return. I obtain a final average gross effect for income and net worth by removing all control factors that are not significant from the final Model A4.

To further demonstrate the strength of the income and net worth effects, I also explore how these variables affect rates of return earned in the cross-sectional framework of analysis, in which the geometric mean of annual rates of return earned is the outcome variable. Table 1.5 presents these results. Here, income is log transformed, and I present the effect of net worth using a series of dummy variables, as discussed above. As can be seen in Models B1 and B2 in Table 1.5, both income and net worth are significant predictors for rates of return earned throughout the 1984-2011 period. Here again, however, we see that income appears to be the strongest factor when both effects are combined in Model B3, and that the net worth effect

mostly acts through the effect of higher income. Final estimates for these gross effects are obtained in Model B4 by removing non-significant control factors.

The cross-sectional results presented in Table 1.5 permits easy interpretation of the meaning of the coefficients for the income and net worth effects. Model A2, for example, shows that, on average, families with a net worth in the lowest 25th percentile of the net worth distribution in 1984 have earned 2.59 percentage points less in annual rates of return than families worth over \$200,000 in 1984 (that is, families in the top 10% of the net worth distribution) between 1984 and 2011. The effect of income is a little harder to interpret since it is logged and grand mean-centered. But, reverse calculating the effect, the 0.0100 income coefficient of Model A4 indicates that a family with a total income adjusted for family size in the top 10% of the distribution (that is, with a total income per square root family member of about \$40,000 in 1984) would be expected to have earned annual rates of return that are higher by 0.8 percentage points, on average, than those returns earned by families with an average-sized adjusted family income (that is, an income of about \$19,000 per square root member).

In what follows, before exploring what factors explain greater or fewer of these estimated gross effects, with special attention to the weight of the composition of risky assets in creating those effects, I briefly describe the practical significance of the socioeconomic disparities in rates of return found in this section.

The Effect of Income and Net Worth on Rates of Return to Capital Practical Significance and Scale of Disparities

In the previous section, I estimated the extent to which high-income and high net-worth families earn higher rates of return to their invested capital than other families. I estimated, in other words, the extent of socioeconomic disparities in rates of return to capital in the American population, as they existed between 1984 and 2011, and this estimate took the form of a regression coefficient for the effect of income in predicting the size of the rate of return to capital earned annually by families. What does this estimate of the income effect mean, practically? How important is the estimated socioeconomic disparity in rates of return to capital in the American population, and how does it affect income inequality more broadly? It will of course be a task for a future study to estimate what role socioeconomic disparities in rates of returns to capital play in increasing income inequality in America, especially in comparison to other factors, such as the unequal distribution of wealth and the large differences in educational attainment that exist across income and net worth groups, and which are known to increase income inequality levels. Yet, for the sake of offering at least an overview of the practical significance of the disparities in rates of return to capital I described in the previous section, I nonetheless provide a few initial, back-of-the-envelope descriptions of the practical meaning of the estimated income effect.

First, at the individual level, the socioeconomic disparity I described above has very important consequences. For instance, I have estimated above that, on average, a family with a median income earns an annual rate of return to capital that is 0.8% lower than the average annual rate of return to capital earned by families in the top 10% of the income distribution. To

grasp the importance of this difference in the annual rate of return to capital, we can imagine how an initial investment of \$100 would evolve for a family earning 2.8% annually on its invested capital over 27 years, which is the baseline estimated annual rate of return for median-income families. And we can then compare this evolution of an initial \$100 investment to how the same \$100 initial investment would evolve over the same period of time, provided that a family would earn not 2.5%, but 0.8% more annually, that is, 3.3% every year on its invested capital. Assuming that all returns to capital are reinvested each year in both cases, Figure 1.1 in Appendix K shows the evolution of the \$100 initial investment in both scenarios. As is seen in this figure, over 27 years, the median income family multiplies the value of its initial investment by a factor of only 1.6 if it earns 2.5% annually on its invested capital. However, if this median family closes its 0.8% gap in annual rate of return, this family is found to multiply the value its initial investment by a factor of 2.4 instead of 1.6 – nearly double – over the same 27 years.

In other words, then, at the individual level, a 0.8% gap in annual rates of return to capital has significant consequences. If lower-income families were to close this 0.8% gap in annual rates of return earned, their net worth and income would increase substantially over time.

Second, at the social, systemic level, it is also interesting to gain insight into the extent to which disparities in rates of return may contribute to income inequalities more broadly. To this effect, I compare income inequality observed in the PSID sample that I used in this study to the income inequality level that would have been observed in this same sample if no disparities in rates of returns had existed in it at all. To do this, I first compute a measure of the total income that families earn by summing, for each family in the sample and for each survey year, its reported income from labor and its total income from capital, which I compute by multiplying each family's reported net worth by its computed annual rate of return to capital. I then compute

the same measure of total income again, but, this time, I generate each family's income from capital by multiplying its net worth by the grand mean of average annual rates of return estimated in this sample. Let us call the first total income measure the observed total family income, and the second measure the counterfactual total family income: the income that would be observed for this family, assuming that no differences in rates of return to capital existed between families.

To explore how disparities in rates of return to capital affect income inequalities, I first explore how the standard deviation of the total family income variable compare in the observed and the counterfactual sample. Table 1.6 in Appendix J breaks down these standard deviations for the total income variable by survey wave year. As can be seen in this table, standard deviation for total family income is lower in all years in the counterfactual case, sometimes markedly so, which indicates that disparities in rates of return to capital increase the spread of the income distribution substantially.

To gain more insight into the effect of disparities in rates of return to capital on income inequality, I also look at the share of the total amount of reported income that was reported by families in the top 10% of the income distribution in the observed and in the counterfactual case. This share of income reported by high-income families is broken down by survey wave year in Table 1.7 in Appendix J. As can be seen in this table, the share of income reported by families in the top 10% is reduced by a factor of anywhere between 5% and 18%, depending on the year, if we assume that all families earn the same rate of return to capital.

Of course, these descriptions make for very coarse illustrations of the potential consequences of rates of return disparities for aggregate income inequalities. But these descriptions nonetheless suggest that the disparities in rates of return I have documented above

have non-negligible effects on the distribution of incomes in America, at both the social and the individual level.

In what follows, I explore the most important proximal causes for the socioeconomic disparities I have described here. I explore, more specifically, whether portfolio choice theorists were right in suggesting that an important cause for these disparities in rates of return to capital is the fact that lower-income families invest heavily in real estate, in contrast to higher-income families, who invest more in securities.

Explaining the Gross Effect of Net Worth and Income on Annual Rates of return to Capital

To explore what factors explain the gross income and net worth effects described in the previous sections of this chapter, I explore how the portfolio composition indicators I derived previously mediate the income and wealth effects in the longitudinal framework of analysis, which allows me to control for temporal precedence. To this effect, I successively add to Model A4 indicators for 1) quality of investment products owned (and differences in rates of return earned) within asset classes; 2) investment risk-taking; 3) composition of risky assets; and 3) leverage-taking, which I described above with methodological comments. In Appendix J, in Table 1.8, I report only how the effects of income and net worth change as I control for these indicators.

As can be seen in Table 1.8, adding the indicator for differences in returns earned within asset classes accounts for the income effect entirely, but it also strongly boosts the effect of net worth. In other words, the category of (probably young) high-income, but relatively low net-worth, families appears to do extremely well on asset markets. As further analysis has revealed, also, these families appear to do well chiefly on financial markets. Though I have removed variation in capital gains earned from financial assets, I am still grasping earnings from financial assets – interests and dividends – in this study, and high-income, low net-worth families are reporting vastly superior such earnings on their financial assets to the PSID.

It cannot be excluded that this finding is due partly to reporting errors. Some families certainly report earnings in approximate terms to the PSID, and the largest errors due to such misreporting would indeed be expected to be found in the smallest net worth families (because they have the smallest denominator in the calculation of rates of return). This, however, would not explain why high-income families, specifically, would be misreporting their earnings more than others. Another possibility is that high-income, low net worth families may be much more leveraged than they appear. Indeed, only equity is reported to the PSID for the financial assets category. Therefore, it is possible that these families may have sources of debt other than mortgages on their portfolios, which would explain why they receive such high earnings on relatively small financial assets endowments. Considering that it is relatively difficult to obtain credit backed by assets other than homes, however, it seems unlikely that this is the entire story.

Hence, assuming most of this effect is not due to misreporting of earnings or leverage, this finding is consistent with a vast literature suggesting that high-income managers have privileged access to both knowledge and investment products in the current structure of assets markets, and that they earn higher rates of return than others as a result (Harrington, 2012). Such

a mechanism appears to constitute an important source of returns disparities in the American population.

However, accounting for the effect of high returns earned within asset classes also shows just how important other mechanisms are in generating rates of return disparities. Indeed, removing the effect of low net-worth families who earn high returns within asset classes, we discover that high net worth families earn much higher overall returns to capital than others, on average. Furthermore, we learn that this effect of net worth is explained mostly by differences in the composition of risky assets, not by differences in levels of risk-taking or in leverage-taking. In fact, this net worth effect is explained chiefly by how low net worth families invest large amounts of their wealth in real estate assets, as portfolio choice theorists argue. Indeed, adding the indicator for financial risk-taking to the model, we see from Table 1.8 that differences in risk-taking across net worth groups do not even account for 10% of the total remaining effect of net worth. Controlling for ratio of wealth held in real estate, on the other hand, explains 36% of this effect.

Share of wealth in real estate, however, is not the sole important factor in explaining the net worth effect. Another important one is the amount of wealth held in private businesses by families, which explains 30% of it. This third important factor for socioeconomic disparities in rates of return is not often highlighted in the literature regarding asset choice and disparities in capital markets. But these results suggest it is significant, though only a small proportion of the population owns a private business (3% of in this sample). In other words, a small proportion of wealthy families appears to own extremely profitable businesses. This effect could certainly be attributable in part to labor income that is misclassified as proprietor's income in PSID data, for example, among those who own partnership shares. Furthermore, it is possible that many

business owners have debt and are thus more leveraged than appears. As a result, this factor is likely not as important as it appears here, but it is nonetheless certainly significant.

I validated how results from Table 1.8 hold in the subpopulation of families who do not own private businesses, since business owners constitute such a small group. Results are relatively similar, with the share of wealth in real estate assets explaining a slightly larger portion (40%) of the net worth effect. In this case, as in the sample which includes business owners, leverage-taking appears to play only a minor role in generating the net worth effect.

Conclusion

In sum, then, according to this analysis, three main factors combine to create quite substantial socioeconomic disparities in rates of return to capital in the American population. These factors act differently on income and net worth effects, and this is why these two effects appear as though they cancel each other when taken together.

A first factor generating important disparities in rates of return earned is the fact that high-salaried families appear to do much better within asset classes than others, a finding that echoes research by Harrington (2012), Nau (2012), Piketty (2014), and others who have documented the advantages that high-salaried managers enjoy on capital markets.

A second key factor in generating disparities in rates of return to capital is the ownership of very profitable businesses. Some high net worth families have nearly all of their wealth tied in

business, from which they earn high incomes, and this constitutes one more reason not often highlighted in the literature on the topic why disparities in rates of returns to capital exist.

Lastly, and more importantly for our topic, a third factor of roughly equal importance as the previous two is the fact that working- and middle-class families, particularly those with relatively low net worth, invest high proportions of their wealth in real estate, as portfolio choice theorists have long hypothesized. This last effect explains roughly 30% of a net worth effect that was estimated to create disparities in the order of 2.5% every year in rates of return to capital between the highest net worth and the lowest net worth families, between 1984 and 2011. Such levels of disparities, as I have showed earlier in this chapter are extremely consequential, at both the individual and the social systemic level, for the dynamics of income inequality in the American population.

Of course this study – and its findings – have limits, and they need to be kept in mind when interpreting these results. As I have mentioned in Appendix A, the measure of rates of return I produced here is complicated and relies on a number of assumptions. I have tested the robustness of these results to each one of them, however, and they hold in all cases (results can be provided by the author on demand). Still, these assumptions remain important to keep in mind when interpreting this study's results. In addition, all rates of return in this paper, including returns to homes, are *reported* as opposed to *observed*. That is, they are based of how much families report their homes and other assets to be worth over time, and therefore on how much they believe them to be worth. While data that would avoid relying on reported values cannot realistically be obtained on the scale required for this study, it should also be kept in mind that the disparities in rates of returns found in this study reflect disparities in reported rates of returns. More importantly, the estimates of the gap in rates of return I provided here are still not perfect

and fairly conservative, in that my measure of rates of return does not grasp all possible sources of returns variability, leaving aside those caused by economies of scale and by differences in capital gains on corporate securities. In other words, the extent of the gap is probably slightly understated in this study. Hence, though I have found that working- and middle-class investment in real estate explains about a third of this gap in this study, it should be kept in mind that this is true in a conservative estimate of the baseline gap.

Considering the importance of working- and middle-class investment in real estate assets for disparities in rates of return and for income inequality more broadly, in the following parts of this dissertation, I explore why lower-income and, in particular, lower net worth families invest so much of their wealth in real estate assets and so little in corporate securities.

Part 2

The 1940s Shift in Working- and Middle-Class Investment Practices

In the first part of this dissertation, I showed that important disparities in rates of returns to capital exist along socio-economic lines. I also showed that these disparities are due mostly to the fact that lower-income families invest more of their wealth in homes and less in corporate securities than higher-income families.

Why, then, do lower-income families invest so much of their wealth in homes and so little in corporate securities? As I already mentioned in introductory comments, for most portfolio choice theorists, if working- and middle-class families invest so heavily in real estate assets, it is because the ownership of homes has advantages over both occupation of rental units and ownership of other kinds of assets. Homeownership, for example, is status-enhancing, it is also a ticket to better schooling options, and to safer neighborhoods (Hendershott & Shilling, 1980; King & Leape, 1998; Denton, 2001; Flavin and Yamasita, 2002; Peress, 2004; Cocco, 2005; Garb, 2005; Cocco, 2005; Shum and Faig, 2006; Ronald, 2008; Diaz and Luengo-Prado, 2010; Ann, Choi & Koo, 2015). As a result, working- and middle-class families tend to choose to become homeowners, even at the price of owning no other assets, because they wish to benefit from these non-financial advantages of homeownership, according to portfolio choice theorists.

At least implicitly, for most of these scholars, working- and middle-class families have always preferred real estate assets and struggled to catch up with upper-class families regarding homeownership, precisely because homeownership holds such important advantages. As I show in this second part of the dissertation, however, working- and middle-class families have not always chosen homeownership and real estate assets as much as they do today, and they have not always invested so heavily in real estate assets as they do today. These families, in fact, only began to invest heavily in real estate assets in the late 1940s. Before then, as I show in what follows, working- and middle-class families were actually steadily catching up with upper-class

families regarding the extent of their investment in corporate securities, not regarding the extent of their investment in real estate assets.

As I show in Part III of this dissertation, as we pause to ponder over why working- and middle-class investment practices suddenly, but perennially changed in the late 1940s, we discover that current portfolio choice theories do not provide help in explaining this shift. The benefits that are commonly recognized to homeownership by portfolio choice theorists indeed did not appear or change during the 1940s and these benefits do not seem to have had any role to play in the initial turn to homeownership during the late 1940s. This 1940s turn to real estate, however, was, as I show next, what really brought about mass homeownership among working- and middle-class families in the first place. As a result, though the common theories used to explain high investment in real estate assets among working- and middle-class families certainly help us to make sense of the continued persistence of this phenomenon today, its crucial inception remains unexplained.

In Part III, I propose an explanatory theory for this initial shift towards real estate investment among working- and middle-class families. Before, I do this, however, in the second part of this dissertation, I concentrate only on describing this 1940s shift itself. Specifically, I demonstrate that changes in portfolio composition among low-income families really did occur in the late 1940s, through careful statistical analyses of savings and investment micro-data covering the entire 1918-2013 period. Chapter Two presents the methodology I employ in these analyses and Chapter Three presents results. To introduce this discussion of historical trends, and to facilitate the following presentation of detailed methodological concerns, I begin, here, with a broad overview of how savings and investment preferences appear to have changed in America during the 1940s, using only basic descriptive statistics.

Figures 2.1 and 2.2 in Appendix K show the evolution of savings as a ratio of total income between 1918 and 1950, among families earning between \$1,000 and \$2,100 (in 1937 constant dollars). According to 1948 tax data, this income bracket corresponds roughly to the bottom 10% to 60% of the national income distribution. As seen in Figures 2.1 and 2.2, in this income group, savings in nearly all asset classes changed during the 1940s. Savings in insurance decreased, savings in bonds and in deposits stabilized, and loans made to others increased. More strikingly, savings in real estate – mortgage principal payments, renovations, and new housing bought – increased substantially during the 1940s, after having followed a decreasing path throughout the 1920s and 1930s. In addition, savings in stocks stagnated in the 1940s even though they had been rapidly growing between 1918 and 1935, as is seen in Figure B, which zooms in on savings in securities.

Of all these changes in savings practices observed in the lowest income group, however, only one set appears to have been specific to this group: the rising trend in real estate savings coupled to the stagnation of savings in corporate securities. Indeed, Figure 2.3 in Appendix K shows trends in savings for both the \$1,000- \$2,100 income group and the above \$5,000 one (roughly the top 10% of the income distribution). As seen in Figure 2.3, while trends in savings in insurance, in bonds, in deposits, and in loans made to others are fairly consistent across groups, trends in real estate and securities savings run in opposite directions in the two groups. While savings in corporate securities are stagnating in the low-income group, these savings increase strongly in the high-income group during the 1940s. Furthermore, while savings in real estate are increasing dramatically in the low-income group, in the high-income group, these savings barely budge during the 1940s.

In other words, disparities regarding the extent of investment in homes and in corporate securities appear to have increased strongly during the 1940s. Moreover, these disparities continued to increase until the late 1960s, at which point they stabilized and gave rise to the differences in portfolio composition across income and net worth groups that we know today. Indeed, Figure 2.4 in Appendix K presents holdings of real estate and of corporate securities as a share of total assets by net worth groups between 1950 and 2013. As can be seen in Figure 2.4, net worth-based gaps in investments in securities increased until the late 1960s and then stabilized, with the exception of the second-lowest net worth group, which seems to have caught up briefly with the wealthiest group during the 1990s regarding investments in securities. Meanwhile, net worth-based gaps in real estate investments diminished during the 1950-2013 period, to such an extent that, eventually, investments in real estate became more important in the middle-income quintile than in the top one.

Figure 2.4 thus suggests that socio-economic gaps in portfolio composition strongly increased during the 1940s, 50s, and 60s, and that they then stabilized to create the disparities we know today. More importantly, however, data from the inter-war period also suggest that disparities in portfolio composition not only intensify in the 1940s, but they were also created, in fact, during this decade. More specifically, before the 1940s, low-income families appear to have been on their way to close their *securities* savings gap with higher-income families, not their real estate savings gap as they did after the 1940s. As we have seen in Figure 2.1 and 2.2, between 1918 and 1935, low-income families were indeed *decreasing* their levels of savings in real estate and *increasing* their levels of savings in securities (by a factor of nearly 10 over 20 years). Furthermore, other sources of data suggest that, in this process, low-income families were also increasing their holdings in stocks and decreasing their holdings in real estate relative to high-

income families between 1918 and 1936. Indeed, while savings data are not available for high-income families before the 1950s, the *Statistics of Income*, published by the Internal Revenue Service since 1917, provides aggregate data that breaks down the ratio of dividends to total income, by income brackets every year. These data, which are plotted in Figure 2.5 in Appendix K for the 1918-1948 period, show that, until at least 1926, dividends were increasing much faster as a share of income in the \$1,000 to \$2,000 income bracket than in the \$5,000 to \$15,000 income bracket. After 1926, these data also show that the gap in dividends as a share of income between low and high income brackets appears to remain stable for a while, before beginning to increase in the late 1940s. *Statistics of Income* data thus suggest that families in the lowest income brackets were increasing their investments in stocks faster than families in the highest income brackets and, therefore, that these low-income families were catching up with high-income families regarding extent of investments in securities until the 1930s.

In addition, census data on home ownership suggest that, during the same period, families in the bottom 60% of the income distribution were decreasing their level of investment in real estate relative to the level of investment in real estate of top income earners. Indeed, as is shown in Figure 2.6 in Appendix K, which presents homeownership rates for different income groups, homeownership rates were increasing much faster among the *high-income* families between 1920 and 1940. After the 1940s, however, the opposite trend is observed, and homeownership rates are increasing faster in the *low-income* group, a pattern that is consistent with trends observed in the post-1935 savings data presented above.

In sum, then, descriptive historical statistics suggest that, far from being unavoidable, the current disparities in portfolio composition might, in fact, have been on their way to resolution during the 1920s and 1930s. During this period, low-income families appear to have caught-up

with high-income families regarding the extent of investment in securities and to have gotten further away from high-income families regarding investments in real estate. In the 1940s, however, following a major reversal in savings and investment habits of both low- and high-income families, the catch-up process of low-income families to high-income ones regarding investments in securities came to a sudden halt. Starting in the 1940s, the gap between low- and high-income families regarding investment in securities at best stagnated and perhaps even widened. On the other hand, low-income families began catching-up with high-income families regarding investments in real estate in the 1940s, and they eventually surpassed their higher-income counterparts in this matter.

As a result, the current disparities in portfolio composition are in many ways the consequence of a massive change in investments practices across income groups that occurred in the 1940s. Any attempt at understanding why such disparities exist and persist today must thus have an explanation for this 1940s shift. In the third part of this dissertation, I show how current explanations of portfolio composition disparities fail to explain the 1940s shift, and I propose a new theory to explain it. Before attacking this problem, however, in the next two chapters, I describe more formally the trends I covered only briefly in this introduction, and I provide statistical evidence to show that savings and investment practices did change during the 1940s. Chapter Two presents data sources and methodological issues pertaining to the combination and interpretation of a variety of historical survey data sets. Chapter Three presents results of age-period-cohort analyses demonstrating a 1940s shift in investments in securities and in real estate across the income spectrum.

Chapter 2

A Methodology for Mapping Historical Trends in Household Portfolio Composition

In this chapter, I describe the methodology I use to compare trends in savings and investments in real estate and in securities across income groups between 1918 and 2013. I also describe the analytical strategy I use to evaluate whether a shift in investment practices across income groups truly occurred during the 1940s.

Three main difficulties are encountered when analyzing the history of investment practices among American households, especially across income groups. First, while large-scale investment surveys were introduced as early as 1918 in the US, sampling and data collection processes are poorly described and relatively obscure for the earliest of these surveys, especially those conducted before 1940. In addition, in these early surveys, investment micro-data is available only for the lowest income groups. For the high-income groups, investment preferences must be derived from aggregate data available by income class, which is less precise.

Second, while investment surveys are available for the entire 1918-2013 period, different surveys were conducted by different agencies for different purposes and at different points in time during this period. As a result, the population targeted by investment surveys is not constant over time. For example, before 1947, investment data is available only for the urban population, while after 1947 these data are available for the entire US population. Historical analyses of investment data must thus involve the combination of heterogeneous populations.

Lastly, in the various investment surveys, different proxies were utilized for measuring investment preferences of American households. For instance, before 1950, major investment surveys inquired about the *savings* practices of American households, but after 1950, these surveys inquired mostly about the asset *holdings* of American households. As a result, mapping historical trends in investment practices requires combining both savings-based and asset-based proxies of investment practices.

One way to resolve most of these methodological issues is to separate the 1918-2013 period in a series of overlapping sub-periods within which targeted populations and investment proxies are constant. By this strategy, time trends and shifts can be identified through formal age-period-cohort analyses within each of these sub-periods. Furthermore, the consistency of findings across sub-periods, proxies, and populations can be assessed using data from one investment survey, conducted in 1950, which covered the entire US population and contained both savings and assets data.

Hence, in order to analyze historical trends in investment practices, I split the 1918-2013 period in four sub-periods covering, respectively, 1918 to 1936, 1936 to 1950, 1950 to 1968, and 1953 to 2013, within which the same investment proxy is available for the same population. For the 1918-1936 period, I use a variety of sources to compare the evolution of investment preferences of low- and high-income households, since, as I mentioned above, investment micro-data is available only for low-income families during this period. I use aggregate *Statistics of Income* data and census data to complement savings survey data in this period. For the other three sub-periods, I use investment micro-data only and conduct formal age-period-cohort analyses to compare investments of low- and high-income families over time. Overall, this sub-period design enables me to assess how investment changed during the overall 1918-2013

period. I reach the conclusion that low-income families began investing more in real estate and less in securities than high-income families during the 1940s, in results that I present in Chapter Four.

Before presenting these results, however, in this chapter I focus on describing the methodology employed to analyze historical savings and investments data. In a first part of the chapter, I describe data sources, populations, and sampling issues for each of the four sub-periods featured in the analysis. In a second part of the chapter, I describe the general age-period-cohort framework I use to analyze time trends within each sub-period. I specify model specifications and provide details about how the outcome variables for these models are computed.

Sources, Sampling, and Populations

Table 2.1 in Appendix J provides an overview of data sources, targeted populations, and proxies for the extent of investment in real estate and in corporate securities used in each sub-period defined above: 1918-1936, 1936-1950, 1950-1968, and 1953-2013. In what follows, I describe sources, populations, and sampling issues for each sub-period. In the next section I describe how the extent of investments in real estate and securities are computed and modeled using either savings or assets value data.

1918 to 1936

The first survey ever to inquire on a large scale about households' investments was the *Bureau of Labor Statistics' Cost of Living Survey* of 1918-1919. The *Cost of Living* series, now called the *Consumer Expenditure Survey* (CES), was originally designed by the Bureau of Labor Statistics (BLS) for the purpose of assessing the cost of living of wage and salary earners living in urban centers (Bureau of Labor Statistics, 1924). As a result, the 1918-1919 CES targeted only the urban population and restricted its targeted population to families headed by employed men (as opposed to both unemployed and self-employed men). Moreover, because BLS was interested mostly in the economic conditions of the working- and middle-classes in 1918-1919, this wave of the CES surveyed only families earning a total income of no more than \$2,000 in wages or of no more than \$3,000 in salaries annually. The 1918-1919 wave of the CES also excluded all African American families, as well as non-English speaking families, and it surveyed only families composed of at least a married couple, a child, and no more than one roomer/boarder. The CES defines a family as all members of a household related by blood that pool their income together.

In 1935-1936, BLS conducted a new wave of the CES, in which it continued asking about savings (Kneeland, 1939). However, in this new wave of the survey, BLS decided to exclude families containing more than four children. As a result, using the 1918-1919 and 1935-1936 waves of the CES, which are, respectively the third and fourth waves of this survey, it is possible to observe trends in savings for the 1918-1936 period, albeit only for a fairly limited population. This population is constituted of urban, native, white, married, employed men with no more than

four children but no less than one, and who, crucially, earned less than \$2,000-\$3,000 in 1918 constant dollars. According to tax data, this income group represents roughly the bottom 60% of the national income distribution from 1918 to 1936.

For the 1918-1936 sub-period, I thus use CES data to analyze time trends in real estate and securities savings among households in this relatively low-income population. To compare savings patterns in this low-income group with savings patterns in the higher-income groups during this period, I rely on additional sources of data, chiefly on data from the US Census and from the Statistics of Income, which are computed by the Internal Revenue Service. I use homeownership rates across income groups to explore differences in investment in homes and real estate, and I use the ratio of dividends in total income across income brackets to explore differences in extent of investment in securities. For clarity of exposition, I present these two additional data sources, along with methodological caveats in Chapter Four, as I present results.

The 1918-1919 and 1935-1936 waves of the CES were conducted before modern sampling standards were institutionalized. As a result, the way in which sampling and selection was conducted remains relatively unclear, and this issue must be kept in mind when using these survey data for the purpose of statistical analysis. For example, in the 1918-1919 wave of the CES, BLS first selected 92 cities in 42 states where it would conduct interviews. BLS does not specify, however, how the actual sampling of a little over 12,300 families was conducted within these cities (Bureau of Labor Statistics, 1924). The Inter-University Consortium for Political and Social Research (ICPSR), which digitized data from the 1918-1919 wave of the CES in 1986, suggests in its own codebook that, within cities, BLS sampled families “from employers records” (ICPSR, 1991, p.4). Presumably, therefore, BLS sampled a series of employers in each city and, from these employers’ records, BLS randomly selected families among those fitting the criteria

detailed above (married, white men earning less than \$2,000 in wages or \$3,000 in salaries, etc.). Therefore, it is possible that households in the 1918-1919 dataset are clustered within employers, but I do not have a variable identifying this cluster with which to adjust standard error estimation.

In addition, for the 1935-1936 wave of the CES, BLS specifies that it obtained its final sample in a two-step process in its Bulletin 648 (BLS, Bulletin 648, 1939). In this bulletin BLS describes how it first sent a very short schedule to 341,000 randomly selected families across the country. It is unclear, however, how this original, reputedly random sampling was conducted. Also, from this 341,000 sample, BLS then selected 61,000 families to receive the extended expenditure and savings schedule (3,600 of which were digitized by ICPRS in 1992). But, again, the exact sampling technique is not described. No probability weights are provided with this data or with the 1918-1919 data. Therefore, sampled families all presumably have equal probability of being sampled in these data, but this cannot, in effect, be verified.

In sum, then, for the period beginning in 1918 and ending in 1936, I use the third and fourth waves of the CES to describe savings in real estate and in securities of low-income (roughly the bottom 60% of the income distribution), white, non-immigrant families living in urban centers. I use *Statistics of Income* data and Census data to compare investments in real estate and securities among this group to investments among higher-income groups. I end this first sub-period in 1936, because after 1936, savings data becomes available for all income groups, which makes it possible to compare investments strategies across income groups more systematically and more directly. The next sub-period thus starts in 1936.

1936-1950

In 1935-1936, the CES, which I described above, broadened its targeted population to include families of all income levels. Starting in 1935, therefore, it becomes possible to compare the savings in real estate and in securities of low- and high-income families more directly than in the previous 1918-1935 sub-period. A second sub-period in this analysis thus starts in 1935 and ends in 1950, the year at which savings data stop being available and assets value data become available instead.

Between 1935 and 1950, savings data are available in three investment survey waves: in the fourth wave of the CES conducted in 1935 and 1936, which I described above, and in the first and fourth waves of the Survey of Consumer Finances (SCF), which were conducted in 1947 and 1950 respectively. The CES indeed stopped asking respondents about savings after its 1935-1936 wave in order to focus on expenditures only, and the SCF was created in 1947 by the Economic Behavior Program at the University of Michigan to focus specifically on the savings and investment practices of American families¹.

The population covered in this sub-period is fairly restricted, as it was in the 1918-1935 sub-period, due to population limitations imposed by the 1935-1936 wave of the CES. Indeed, even though the 1935-1936 wave of the CES sampled families of all income levels, most other selection restrictions that had been in effect in the 1918-1919 wave of the CES were kept in the 1935-1936 wave. As a result, the population for the 1935-1950 sub-period is the population of urban, white, non-immigrant, married men having less than four children who were employed, as

¹ The SCF was conducted annually until 1971 and, thereafter, on a triennial basis starting in 1977, at which point the survey was taken over by the Federal Reserve Board.

opposed to both unemployed and self-employed. Since the SCF targets the entire US population, I had to subsample from the 1947 and 1950 SCF samples to ensure population consistency with the CES sample. Hence, from the original SCF samples, I selected only families with married heads who were not African-Americans and who were employed, but not self-employed. I also excluded all farm families. I could not, however, identify immigrant families in the SCF data, and the SCF sample thus contains all immigrant families, while the CES samples excludes all those who had been in the US for less than a year. Like the CES, the SCF defines families (or, in their language, spending units) as members of a household related by blood who depend on the family head for financial subsistence or who share at least 50% of their income with the head.

All sampling and selection caveats identified above for the 1935-1936 wave of the CES apply in this period, as well. Sampling for the SCF, on the other hand, is done according to modern standards and is more transparent. All SCF samples are stratified probability samples, and all clustering and strata variables are provided with data. SCF also oversamples high-income families, and probability weights are provided with data to adjust for over-representation of high-income households. I use these weights and clustering variables in all analyses.

Even though the SCF is still conducted today, the second sub-period ends in 1950 because, in 1950, a change occurred in how SCF surveyed families regarding their investments. After 1950, the SCF stopped asking for the amount of annual savings of households in most asset classes and began asking for the market value of their assets, instead. After 1950, I thus observe assets.

1950-1968

The third sub-period in this analysis is the period starting in 1950 and ending in 1968. The period starts in 1950 because, in 1950, a transition took place, from observation of savings to observation of assets values. The period ends in 1968 because, after 1968, it is not possible anymore to identify the urban and rural populations, while, in 1950, investment data is available about the urban population only.

In this 1950-1968 sub-period, I transition from exploring the savings of households to exploring the value of their holdings in real estate and in securities, across income groups. The population covered is the entire urban population². I use the 1950, 1953, 1963, and 1968 waves of the SCF. Sampling, design issues, and definition of families for the SCF are described above, in comments regarding the 1935-1950 sub-period.

1953-2013

The fourth and last sub-period covered in this study begins in 1953 and ends in 2013. The sub-period begins in 1953 because, after 1968, it is not possible to restrict the SCF samples to urban families only, while the 1950 wave of the SCF directed assets value questions only to

² There is one small exclusion: financially independent children still living with their parents were not asked assets value questions by the SCF, so they are thus excluded from the population.

urban families. Therefore, to extend the analysis of investment trends to 2013, I create a fourth and last sub-period, which lasts from 1953 and 2013 and which covers the entire US population.

I continue analyzing values of real estate and securities owned across income groups in the 1953-2013 sub-period. To do this, I use the 1953, 1963, 1968, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2011, and 2013 waves of the SCF. Sampling and other survey designs elements for the SCF are described in the comments for the 1935-1950 sub-period above.

In sum, in this analysis of time trends in investment practices, I will explore trends within four overlapping sub-periods, which cover slightly different populations and in which different measures of extent of investment in real estate and in securities are available. Between 1918 and 1935, I explore *savings* data among a low-income population constituted of white, employed, non-immigrant, married men living in urban centers. I will also explore the investments of high-income families during this period using data from the *Statistics of Income* and the US Census. For the period beginning in 1935 and ending in 1950, I will explore *savings* data across income groups in the population of white, married, employed men. Between 1950 and 1968, I will explore *assets values* data across income groups for the urban US population. Lastly, between 1953 and 2013, I will explore *assets values* across income groups for the entire US population.

Measurements and Modeling

My goal in this historical analysis is to explore how the extent of investment in real estate and in corporate securities changed over time among working- and middle-class families, relative to how investments in these same assets changed among upper-class families. To do this, I explore changes in investments in real estate and in securities during four sub-periods: 1918-1935, 1935-1950, 1950-1968, and 1953-2013. However, to measure the extent of investment in real estate or securities, I have access to *either* annual savings *or* to assets value data, depending on the sub-period. For the two pre-1950 sub-periods, savings data only is available. For the post-1950 sub-periods, assets value data only is available. In what follows, I first present how I use savings and assets value data to measure extent of investment in real estate and securities. I also discuss how savings- and assets-based proxies for the extent of investment in assets relate and compare. I then describe the modeling strategy I employ within each sub-period, using these proxies as outcome variables to evaluate time trends in investment practices across income groups.

Measuring Extent of Investment in Assets

Using Savings and Assets Value Data

Since 1950, the Survey of Consumer Finances has asked American households about the value of their assets but has not asked consistently about their active savings. As a result, current literature on portfolio composition uses assets value data exclusively for exploring determinants of investment practices. The methodology to proxy the extent of investment in a given asset class using assets values data is thus well-established, but guidelines for using savings data to measure the extent of investments in assets are inexistent. Hence, I follow other portfolio choice theorists when using assets values to measure the extent of investment in assets, but I develop a new method for measuring investments preferences using savings data. In what follows, I present how I compute assets-based proxies for investment in assets using the conventional portfolio composition approach and how I compute new savings-based proxies for the extent of investments in assets.

Assets-Based Proxies

In the current portfolio choice literature the extent of investment in a given asset by a household is measured by computing the market value of holdings in this asset and then dividing this value by the total market value of a households' portfolio. This metric is often referred to as

the “share of an asset in portfolio” (See, for example, Poterba & Samwick, 2001; Bertaut & Starr, 2002; McArdie, Smith & Willis, 2010; and Buccioli & Miniacci, 2015). Therefore, as I analyze investment trends in the 1950-1968 and 1953-2013 sub-periods, in which assets value data only is available, I follow the portfolio choice literature and use the share of real estate and securities in portfolio to proxy the extent of investment in real estate and in securities, respectively. These metrics are defined formally in (1) and (2) below.

$$RE_ratio = \frac{RE_value}{Total_Assets_value} \quad (1)$$

$$Sec_ratio = \frac{Sec_value}{Total_Assets_value} \quad (2)$$

In (1) and (2), the value of real estate owned includes the value of the main residence and of any other real estate (residential or commercial). The value of securities owned includes corporate shares and corporate bonds owned directly, indirectly, and in pension accounts. The value of total assets is the sum of all financial assets (bank accounts, stocks and bonds owned directly or indirectly, etc.), of real estate, and of private businesses. Total assets value excludes cars and other consumer durables. The value of life insurance owned is also excluded because it was asked inconsistently across survey waves. The value of currency owned is also excluded, because it is not available in most survey waves. I also exclude any “other” assets such as art, again because this category is not inquired about systematically across survey waves. The total assets variable does include any pension accounts owned, but not the defined benefits plans respondents are entitled to from an employer. There were no particular issues when computing

the total assets, the value of corporate securities, or the value of real estate using the SCF survey, since this survey is designed to measure these values clearly and to be comparable from year to year.

Also, since I need to compare how these two metrics evolved over time, not so much in absolute value but, rather, across income groups, I use *standardized* versions of these two metrics. Standardization of these metrics also has the benefit of transforming the metrics from variables bounded at zero and one to truly interval variables, which will perform better in linear regression models. The standardized shares of real estate and of securities in portfolio are specified in (3) and (4) below³.

$$RE_ratio_sd = \frac{\frac{RE_Value}{Total_Assets_Value}}{Mean\left(\frac{RE_Value}{Total_Assets_Value}\right)} \quad (3)$$

$$Sec_ratio_sd = \frac{\frac{Sec_Value}{Total_Assets_Value}}{Mean\left(\frac{Sec_Value}{Total_Assets_Value}\right)} \quad (4)$$

³ I standardize the share of real estate and the share of securities in-portfolio by dividing these metrics by their sample mean. I use this standardization technique instead of a more typical standardization one that involves measuring the distance of a families' share of real estate or securities in-portfolio relative to the sample mean of this share, and dividing this distance by the standard deviation of the share of real estate or securities in portfolio in sample. I chose to divide shares of real estate and of securities by the sample mean of these shares, because what I am really interested in are differences in proportions of shares of real estate and securities in-portfolio across income groups, not differences in units. Differences in the proportion of assets held in real estate and in securities are indeed what matter for differences in rates of returns to capital, not differences in units. As a robustness check, however, I ran all analyses using traditional standardization methods, and I found virtually no differences in modeling results.

Savings-Based Proxies

Proxies for the extent of investment in assets computed from savings data are not as widely available in the portfolio choice literature. In fact, to my knowledge, the composition of savings has not been used as a proxy for extent of investment in an asset class, not even before the 1950s, when most surveys questioned households about their savings only. Pre-1950 studies referencing the SCF or CES, notably those conducted by Kuznet & Jenks (1953), Dorothy Brady (Brady & Friedman, 1947), and Raymond Goldsmith (1955), all utilized total savings data to explore differences in the extent of savings versus consumption across income groups, not to explore differences in asset choice across income groups. To analyze investment practices in the 1918-1936 and the 1936-1950 sub-periods, in which savings data only is available, I thus create a new savings-based metric to proxy the extent of investments in assets.

One way to create savings-based measures of investment preferences would be to emulate the asset-based proxies currently used by asset-choice theorists, which I presented above. This strategy would involve computing the share of annual savings in a given asset class in the total annual savings of a household. An important problem would afflict such a measure, however, since savings, unlike assets owned, can be negative. To illustrate the problem, imagine a case in which the total savings of a family are negative, but in which savings in real estate are positive. In such a case, savings in real estate are in truth very important relative to total savings, but the ratio of savings in real estate to total savings would be negative and would thus wrongly indicate that savings in real estate are *not* important.

To avoid this problem, I develop a different kind of proxy for the extent of investment in a given asset and use *the ratio of savings in a given asset to the total annual income* of a family to indicate the extent of investment in this asset. This measure indeed removes the double-negative problem, since the vast majority of annual incomes are not negative. This measure also compares savings to total resources available, by comparing savings to total income. However, this measure does not compare savings in an asset to total annual savings and thus to overall resources dedicated to investments. To adjust for this, whenever I use ratios of saving in real estate or securities to total income in the outcome variable of an A-P-C model, I also control for total savings as a ratio of income in the covariates.

More formally, the savings-based assets are computed as defined in (5) and (6) below. I also compute the ratio of savings to total income in a similar manner.

$$RE_savratio = \frac{Savings_RE}{Total_Income} \quad (5)$$

$$Sec_savratio = \frac{Savings_Sec}{Total_Income} \quad (6)$$

Savings in real estate include mortgage principal repayments, additions, and repairs to previously owned structures, as well as the acquisition of new land and structures. Savings in corporate securities include all acquisition of corporate shares and corporate bonds, either directly or indirectly, through ownership of shares in mutual funds. Total family income includes income earned by all family members. Table D.1 presented in Appendix D provides detailed

information about how each item was computed, using data from the various survey waves. Here, I discuss only the four main issues with these computations.

First, in all survey waves before 1950 except for the 1918-1919 wave of the CES, respondents were asked about their savings and dis-savings in each asset class, one after the other, and their answers were recorded systematically on the survey schedule. In the 1918-1919 wave, however, respondents were asked about their savings and dis-savings in an open question; interviewers simply asked respondents how they had invested their savings in the past year and wrote down their answers in an unstructured manner. Martha Olney coded and digitized these open responses in 1996, in an addendum to the main CES survey data available through ICPRS (see ICPRS study # 6276 for documentation about this addendum). Olney constructed assets categories, such as deposits, liberty bonds, stocks, bonds, real estate, etc., based on respondents' answers, and she then created one variable for each category, in which she indicated the amount saved in the relevant asset category by each family, based on their responses to savings questions. Because savings were not asked systematically for each asset class in the 1918-1919 sample, however, it is possible, in my opinion, that data collected about savings in this wave of the CES are not as extensive as in other waves of the CES.

Second, savings in corporate securities and in municipal and state bonds are often lumped together; the value of savings in each category is not available separately in most survey waves used in this study. Municipal and state bonds, however, are very marginal in terms of volume when compared to stocks and other corporate securities, especially in the savings of households. Municipal and state securities are held mostly by very wealthy individuals (because of high minima) and by insurance companies (See Goldsmith, 1955 on this issue). Therefore, it is fair to assume that amounts reported for corporate, municipal, and state securities are mostly held in

corporate securities. However, this could inflate slightly the reported value of corporate securities among the very wealthy families in these data.

Third, whereas savings in corporate securities and savings in federal government bonds are broken up into different variables in most survey waves, they are not in the 1935-1936 wave of the CES. Indeed, in the 1935-1936 schedule, respondents are asked about their savings and dissavings in “Stocks and Bonds”. However, whereas in all other survey waves used in this study respondents were also asked about savings or ownership of *US federal government securities* in a separate question, no separate question addressed federal securities specifically in the 1935-1936 schedule. One has to assume that this is either because federal securities are lumped with corporate securities, which would be at odds with previous and following surveys, or because federal securities are assumed to be so marginal in households’ savings in 1935-1936 that they do not need their own category. I believe the second option is most likely.

Indeed, on one hand, liberty bonds that had been in circulation during and immediately after World War I had become nearly inexistent by 1935-1936, since the federal government had reimbursed the near totality of its war debt by 1930 (Garbade, 2012). On the other hand, the other major federal bonds program that eventually targeted small savers in the US, the US savings bonds program, did not begin until late in 1935, and US savings bonds remained extremely unpopular as savings instruments until the US joined allied forces in the Second World War in 1941 (United States, Department of the Treasury, U. S. Savings Bonds Division, 1984) Hence, I believe that in 1935-1936, unlike in all other years covered in this study, US federal securities were actually just as marginal as municipal and state bonds in household savings, and that they were owned only by institutions and very wealthy individuals and families. Therefore, I believe that the lion’s share of the amount reported in the “Stocks and Bonds”

section of the 1935-1936 schedules should refer to stocks and corporate bonds. Furthermore, ICPSR appears to hold the same opinion, since it called the variables referring to savings and dissavings reported under the “Stocks and Bonds” line of the 1935-1936 Survey Schedule of the CES “value of stocks purchased” and “value of stocks sold.” I noticed that this variable should in fact contain both stocks and bonds only when looking at the actual survey schedule.

Yet, the fact that government bonds were lumped with corporate securities in the 1935-1936 CES remains an important issue to keep in mind when interpreting the data presented above, especially since one of the main results in this study is that savings in stocks among the middle-classes increased between 1918 and 1936 and stagnated after 1936. It is indeed impossible to rule out that this pattern could be due to the merging of savings in federal bonds and in stocks in the 1935-36 wave of the CES. However, for reasons I mentioned above, I believe it is unlikely to be the case. Furthermore, in an attempt to make findings more robust to this possibility, I show trends in other sources of data as I present results in the next chapter, which seem to confirm rather than contradict my conclusions.

The fourth and last measurement issue pertains to the 1947 wave of the SCF. In this wave of the SCF, savings in all asset classes except in the main residence are reported in intervals of amounts as opposed to plain dollar amounts, and I computed point estimates for these savings by taking the mid-point of the interval. In some cases, such as in the case of savings in real estate other than homes and of savings in stocks, the brackets are large, yielding imprecise estimates of the amount saved in each of these assets. I do include the 1947 wave of the SCF in this study, however, to obtain more diversified data for the late 1940s, which is the period of interest in this study. But it should be understood that results are not as precise when using this sample, and I do

present trends that both include and exclude the 1947 sample when I present results for the 1935-1950 period below.

Keeping these four issues in mind, I use as main outcome variables the ratio of savings in real estate to income as defined in (5) and the ratio of savings in corporate securities to income as defined in (6) as outcome variable in analyses for the two pre-1950 sub-periods. Also, as I do for asset-based proxies, for reasons I explained while discussing asset-based proxies above, I use standardized versions of the savings-based variables. To standardize savings-based proxies, I use the same standardization technique I use for asset-based proxies, specified in (3) and (4) above: I divide each household's ratio of savings in real estate or in securities to income by the mean of the corresponding ratio in the entire sample.

To summarize, I have now defined two kinds of proxies to indicate the extent of investment in real estate and in securities: savings-based ones and assets-based ones. Savings-based proxies measure total savings in real estate as a share of income and total savings in securities as a share of income. I use these savings-based proxies to analyze investment trends in the 1918-1935 and 1935-1950 sub-periods, with a control variable indicating the ratio of total annual savings to total income. Some issues exist in the collection of savings data, which are summarized in Appendix D, and the key issue pertains to the lumping of US federal bonds with corporate securities in the 1935-1936 sample. To analyze investment trends during the 1950-1968 and the 1953-2013 sub-periods, I utilize assets-based proxies. Assets-based proxies are equal to the total value of real estate or securities owned divided by the total value of assets owned. No particular issues were encountered when computing them.

In all four sub-periods, I use standardized versions of these proxies as outcome variables in age-period-cohort models to analyze time trends in investments in real estate and in securities

across income groups. Overall, results from these four sub-period analyses should provide a detailed account of how investment practices changed between 1918 and 2013, and these results should inform us about whether or not important changes occurred in the 1940s.

Before I describe the modeling strategy for these sub-period analyses, however, one last comment is in order about the savings- and assets-based proxies themselves - a comment on how compatible they are as indicators of extent of investment in real estate and securities. In theory, the value of savings and the value of assets owned should both inform us about a unique underlying investment phenomenon, but consider this phenomenon from different points in time. Savings are investments observed while they are being made (or shortly thereafter), while assets values are observations of investments long after families have chosen to make and to hold on them. Hence, both savings- and assets-based proxies should reflect the extent of investment in assets such as real estate and securities or preference for these assets, but with a different sense of temporality. These proxies should thus be correlated and affected similarly by factors influencing investment preferences. In Appendix E, I use the 1950 SCF sample, which contains both savings and assets data to confirm these ideas. I find that overall, savings-based and assets-based proxies co-vary and are affected in very similar ways by covariates, but I also find that savings-based proxies are in a certain sense more precise as indicators of *preference* for assets, since they target active wealth building practices. Assets-based measures, on the other hand, are more complete, in that they also capture other ways through which families might end up acquiring more of a given asset over time: inheritances and compounding effects. I also find that income seems to affect assets-based measures of investment more strongly than savings-based measures, especially for the extent of investment in securities, and, thus, I find that income appears to affect the indirect processes of asset choice – inheritances and compounding effects –

more strongly than the direct ones. As a result, some of the increase in the effect of income on investment in real estate that we observe over time in Chapter Four, especially around the 1950 period, might be resulting from the fact that, after the 1950, we measure investment choice through a proxy that is more strongly affected by income. But, since we see the major increase in the income effect on real estate investment during the 1935-1950 period, within which savings-based proxies for investment preferences are utilized, not across periods and only as a result from changing proxies, I believe my conclusions about time trends in the income effect on real estate investment are robust to this issue.

Modeling

So far, I have decomposed the 1918-2013 period into four different sub-periods: 1918-1935, 1935-1950, 1950-1968, and 1953-2013. For each of these sub-periods I have data about the investment practices of a fairly homogenous population and a unique way to observe and measure these practices. For the 1918-1935 and 1935-1950 sub-periods, savings data is available for a fairly restricted population covering the urban population of families composed of at least one married couple and an employed male head. Assets value data is available for the urban population of households between 1950 and 1968 and for the entire US population between 1953 and 2013. For each of these four sub-periods, I thus use either savings-based or assets-based proxies for the extent of investments in real estate and securities, which I described in the previous section, as outcome variables in age-period-cohort analyses that will allow me to

describe time trends in investment preferences within each sub-period. For all sub-periods, I use the same basic analytical framework, which I describe in what follows.

My goal in each sub-period is to explore whether the effect of family income (and of net worth, when this information is also available) on the extent of investment in real estate and securities changed over time. To do this, for each sub-period, I first combine the samples specified in the first section of this chapter. To do this, I weight each sample so that the sum of weights for each sample divided by the estimated population of the US for the corresponding year is constant across samples. I then use mixed effect models on these combined samples, which predict investment in real estate and securities during the period using time indicators, as well as indicators of socio-economic status, which are either income, net worth, or both, depending on period and data availability. The main predictors of interest in these models are terms for the interaction between time and socio-economic indicators. I also add a set of control demographic factors such as age, race, and family composition to these models. In addition, these models control for cohort and identify age, period, and cohort effects using the strategy proposed by Yang and Land (2013), which involves using random effects for cohorts instead of fixed effects coupled with variation of cohorts and periods time spans.

The mixed effect strategy proposed by Yang & Land (2013) for identifying age, period, and cohort effects on a response variable is one possible strategy among many others, and opting for it requires justification. A common alternative identification strategy involves modeling age, period, and cohort effects as fixed effects (using dummy variables) in regular Ordinary Least Square specifications. In such specifications, linear dependency between age, period, and cohorts is broken down by splitting one or more of these variables into unequal intervals. In this identification strategy, the linear identification problem is effectively dealt with, but two

fundamental assumptions remain: 1) the effects of age, period, cohort, and other variables are assumed to be purely additive; and 2) the time effects are assumed to be adequately modeled as fixed. For our specific problem, which is to model period effects on the investment behaviors of households, this last assumption, in particular, is likely not to hold.

More specifically, it is likely that the investments responses are highly *correlated* within cohorts, as a result of contextual similarities in the experiences of members of many cohorts during the 1919-2013 period that this study covers. For example, during this period, some cohorts will have massively participated in either one of the two World Wars. Such an unsettling experience as participation in total war is likely to generate peculiar forms of concern for material security. Since investment behaviors consist, in large part, of endeavors to achieve material security, it is thus highly probable that a correlation exists between the investment behaviors of members of cohorts who experienced the World Wars. Furthermore, it is also possible that members of these cohorts may react in peculiar and unique ways to common determinants of investment behaviors, such as size of net worth, for instance, which provides baseline material security. As I discuss in Chapter Three below, likelihood ratio tests for most model specifications in nearly all sub-periods I analyze here in fact show clear evidence that a correlation exists within cohorts and that allowing for random variation of intercepts and for the slopes of other predictors, such as size of net worth, across cohorts does improve model fit. For these reasons, I choose to rely on a hierarchical framework, in which I assume that individual observations are nested within cohorts, in order to model the effect of age, period, and cohorts on investment behaviors and to resolve identification issues pertaining to their co-linearity in regular OLS settings.

More specifically, the basic mixed-effect model for each sub-period takes the form specified in (9) and (10) below.

$$Y_{ij} = \beta_0 + \beta_1 * income_{ij} + \beta_2 * networth_{ij} + \sum_j \beta_j Year_j + \sum_j \beta_j Year_j * income_{ij} + \sum_j \beta_j Year_j * networth_{ij} + \sum_z \beta_z C_{zij} + \varepsilon_{ij} \quad (9)$$

$$\beta_0 = \gamma_0 + \mu_c \quad (10)$$

In these equations, Y_{ij} is one of my proxies for the extent of investment in either real estate or securities, depending on the sub-period and on the asset explored (it is thus either savings in real estate to income, savings in securities to income, share of real estate in portfolio, or share of securities in portfolio). Income is the total family income excluding all income from capital (interests, dividends, rents) and dividing by the square root of family size (Western et al., 2008). Net worth is the sum of assets owned less any mortgage debt pending. The $Year_j$'s are a set of dummy variables indicating the survey wave years in each sub-period and are thus the main period effects variables. For each sub-period, the baseline year is always the earliest survey year in the sub-period. The C_z variables are the set of control factors, which always include age of family head. The other control factors vary across sub-periods, depending on data availability. I thus define these controls, and the precise methods of measurement for each of them as I present results for each sub-period in Chapter Three. γ_0 is the average intercept across cohorts, and μ_c is a random variation factor for this intercept between cohorts. In some of the models, I also have random slopes of for some of the main effects, for the effect of net worth in particular, between cohorts, which I discuss at more length in Chapter Three.

As I present results in the next Chapter Three, for each sub-period, I first explore this basic A-P-C model, to explore whether the effect of income on investment in real estate and in securities changed over time, by looking at the coefficient estimate of the income/net worth and period interaction terms. I then also perform two additional analyses to clarify how changes in the income effect occur.

First, I explore how the effect of income on the *likelihood* of owning real estate or securities changed over time using logistic regression. Then, using a similar A-P-C framework as specified above, I also explore to what extent the income effect changes over time, conditional on ownership of real estate or securities, which I do using a Heckman selection equation (Heckman, 1979). These two additional analyses allow me to explore whether overall changes in income or net worth effects over time are due to changes in the probability of investing in securities or in real estate across income and net worth groups over time, or to changes in the extent of investment across income and net worth groups.

This basic sub-period analytical framework will be slightly different only for the first sub-period, covering 1918 to 1935. As I mentioned already, for this sub-period, I have savings micro-data *only* for a relatively low-income population: for families earning less than \$3,000 annually. For this sub-period, therefore, I first use an APC analysis as specified in (9) and (10) above, but only to explore how the savings of these relatively low-income families changed over time, not to explore how the income effect changed over time. To explore the change in the income effect – to compare how the extent of investment in securities and in real estate changed across income groups over time –, I rely additional data sources: the *Statistics of Income* and US Census data, as I have mentioned above. For ease of exposition, however, I describe these

additional data sources and the way in which I mobilize them in my analysis only when I present results for the 1918-1935 sub-period in the next chapter.

Once I have presented detailed time trend analyses for each sub-period, in the next chapter, I also conduct one final analysis, in order to assess how soundly the sub-period explorations can be combined to produce an overall account of changes in the socio-economic status effect on investment preferences between 1918 and 2013, given that population and main indicators of both socio-economic status and investment preferences vary across sub-periods. To do this, I use the 1950 SCF sample, which is the sole sample that contains all levels of population covered in other sub-periods, as well as all indicators of both investment preferences and socio-economic status. I use this sample to explore how income is affected by varying population and indicators in a series of regression analyses.

To summarize the methodological approach proposed for analyzing the changing effect of socio-economic status on investment preferences between 1918 and 2013, I separate the 1918-2013 period into four sub-periods, covering, respectively, 1918-1935, 1935-1950, 1950-1968, and 1953-2013. Within these sub-periods, the population observed by investment surveys is homogeneous, and measures of extent of investment in assets do not change. I thus first explore time trends in the effect of income and net worth on investments in real estate and in securities within each sub-period individually, using an age-period-cohort framework that employs a hierarchical, mixed effect identification strategy. This basic analytical framework is slightly different for the 1918-1935 sub-period, due to data constraints. For this sub-period, I explore changes in investments in real estate and in securities among low-income families over time and then assess trends in investment preferences among high-income families using other sources of

data than investment surveys, notably the *Statistics of Income* and data from the US Census. Once all sub-period analyses are conducted, I then assess the extent to which these analyses can be combined to produce an overall account of changes in the effect of socio-economic status on investment preferences during the entire 1918-2013 period, using one sample, the 1950 wave of the Survey of Consumer Finances, which covers all levels of population covered in the various-sub-periods, as well as all indicators employed.

The key limits of this methodology pertain chiefly to the analyses for the two earliest sub-periods, and they are caused mostly by the sub-standard sampling strategies used in the two oldest investment surveys featured in this study, the 1918-1919 and the 1935-1936 waves of the Consumer Expenses Survey. In these surveys' documentation, indeed, sampling is claimed to be random, but the actual sampling strategy is not described, and none of the usual survey design variables are provided with the data; there are no weights, cluster, or strata variables for these samples. The true representativeness of these samples is thus hard to assess, and the extent of clustering and correlation within these samples is also hard to measure. But the general sense among other users of these surveys is that, given the very large scale of these two waves of the CES, the samples collected in 1918-1919 and 1935-1936 represent fairly well the urban, population of families headed by employed men for this period.

The other limit of this methodology is that US federal securities were lumped into the same category as corporate securities in the 1935-1936 wave of the CES. Therefore, there is a small chance that the growth in stock ownership observed for the 1918-1936 period in the next chapter is due to this grouping of the two types of securities. But, as I have detailed above, I do not believe this to be a likely possibility, because in 1935-1936, US federal securities were virtually not in circulation among households, as the federal government had bought back nearly

all of its debt in the 1920s. Furthermore, different sources of data also suggest investments in securities increased among lower-income groups, as I show in the next chapter, to which I now turn.

Chapter 3

Trends in Household Portfolio Composition Across Income and Net Worth Groups from 1918 to 2013

In the first part of this dissertation, I showed that low-income families earn smaller returns to invested capital than higher-income families because, in contrast to higher-income families, they invest most of their wealth in real estate and virtually none in corporate securities. In the introduction to the second part of this dissertation, I presented descriptive statistics that suggest that, in contrast to what is commonly posited, low-income families have not always invested as much in real estate and as little in corporate securities as they do today. These descriptive statistics indeed suggest that low-income families began investing massively in real estate and lightly in securities only in the 1940s. In the present chapter, I seek to robustly demonstrate that investment practices really did change along these lines during the 1940s across income groups.

In the previous chapter, I developed a methodology for evaluating these questions. I proposed to use historical survey data about savings and investments covering the entire 1918 to 2013 period. I also proposed to split this period into four sub-periods and to analyze time trends within each sub-period separately, since the various investment surveys conducted in the US between 1918 and 2013 do not all cover the same population over time and do not all ask about investment preferences in the same way. I thus defined four sub-periods over which comparable savings and investments data is available for a homogeneous population. These sub-periods are, respectively, 1918 to 1935, 1935 to 1950, 1950 to 1968, and 1953 to 2013. In this chapter, I

present results from time trend analyses for each of these sub-periods. I also assess the extent to which these analyses can be combined into an overall account of time changes during the entire 1918-2013 period. I find evidence that important changes in investment behavior did occur in the 1940s across income groups. I find that low-income families were catching up with high-income families with regards to investments in securities before the 1940s, but that, after the 1940s, these families stopped closing their gap in securities investment and began, instead, to catch up with high-income families with regards to investments in real estate.

1918-1936: Closing the Gap in Corporate Securities' Investments

As I detailed in the previous Chapter Two, for the 1918-1936 sub-period, micro-data about savings in real estate and in corporate securities are available, but only for a population of families earning a relatively low annual income. This population is constituted of urban households with a head who is white, non-immigrant, and married, who has at least one child, but no more than four, and who earns less than \$3,000 a year, either as a wage or a salary earner. Therefore, for the 1918-1936 period, I begin by analyzing how the savings in real estate and in securities changed in this relatively low-income population between 1918 and 1936. I then attempt to compare how investments in real estate and securities changed among higher income families using additional sources of data, notably the *Statistics of Income* and the US Census.

Savings Trends of the Working- and Middle-Classes 1918-1936

To explore trends in savings in the low-income population, I use two waves of the Consumer Expenses Survey (CES), conducted in 1918-1919 and in 1935-1936, respectively, which I described in detail in Chapter Two. I also use the savings-based proxies for the extent of investment in real estate and securities that I developed in Chapter Two. To indicate the extent of investment in real estate, I use savings in real estate divided by total annual income, and I use the ratio of savings in securities to total annual income to indicate the extent of investment in securities. In Appendix J, in Table 3.1, I present descriptive statistics for these two metrics.

From Table 3.1, we see that, among the employed working- and middle-class families, savings in real estate as a ratio of income decreased between 1918 and 1936, from an average of 2.6% to an average of just 1.5% of annual income. Second, while savings in securities remained lower than savings in real estate in absolute terms in 1935-1936, savings in securities were multiplied by a factor of five from 1918 to 1936. As also shown in Table 3.1, however, these period changes in savings allocation could be explained by the fact that families in the 1935-1936 sample appear to be slightly wealthier than in the 1918-1919 sample. Indeed, even though a national distribution of income is not available for this period, we see that the average income in the 1935-1936 sample is higher in inflation-adjusted dollars than in the 1918-1919 sample and that the average income is also closer to GDP per capita in the 1935-1936 sample. Therefore, to see whether savings in real estate really decreased and whether savings in securities really increased in this group between 1918 and 1936, I use an age-period-cohort framework similar to

the one specified in (9) and (10) of Chapter Three. The exact specification I use here is in (1) below.

$$Y_i = \beta_0 + \beta_1 1935_i + \beta_2 Income_i + \sum \beta_z Z_i + \varepsilon_i \quad (1)$$
$$\beta_0 = \gamma + \mu_c$$

The outcome Y is either savings in real estate divided by total income or savings in securities divided by total income. The predictor of interest is the 1935 versus 1918 dummy variable, indicating the change in savings in 1935-1936 compared to 1918-1919. I control for income expressed in constant 1937 dollars using the consumer price index. The other Z control factors are age of family head, size of the family (number of members), whether the family lives in a large metropolitan area (1M inhabitants or more), and the ratio of savings in all other assets than securities (or real estate, depending on the outcome variable) to total income. This specification also includes random intercepts for 10-year cohorts. Coefficient estimates and standard errors results for this model are presented in Table 3.2 in Appendix J.

As seen in Table 3.2, the decrease in savings in real estate is not significant when controlling for income and other factors. However, savings in securities as a share of income is estimated to have increased by 0.5 percentage points between 1918 and 1936, an estimate that is significantly different from zero, even when controlling for other factors such as income. From this analysis, we can thus conclude that savings in corporate securities did increase between 1918 and 1936 in the low-income group (families earning less than \$3,000), while savings in real estate stagnated in this group. Of course, when interpreting these results, we should keep in mind that in 1935-1936, the great depression was in full swing and that unemployment was at nearly 20%. If we were to look at the full US population, including its unemployed members, savings in securities, and savings in general, would assuredly be lower than they are in CES data. However,

as long as we believe that the employed population's behavior is representative of the unemployed population were it to be employed, it seems fair to presume that these data reflect trends in investment preferences of urban, white, non-immigrant families with a low to mid-size income.

In this population, did the increase in average savings in securities result mostly from rising rates of share ownership, or from increased savings in securities by stockholders? Descriptive statistics suggest the former. Indeed, 0.4% of families saved some amount in securities in 1918-1919, while 2.5% of them saved in securities in 1935-1936. To explore this question more thoroughly, however, I perform logistic regression using the same specification as in (1) above, but using dummy variables indicating whether or not families saved some amount in real estate or securities as outcome variables. No random effects are included in this specification, because the model fit was not improved significantly by random intercepts compared to linear regression according to a likelihood ratio test. Results are presented in Table 3.3.

From Table 3.3, we learn that the likelihood of saving in securities increased between 1918 and 1936, as the odds of saving in securities were multiplied by a factor of over two. The probability of saving in security changed from an estimated 0.33% in 1918-1919 for families of average age, income and size not living in a metro area to an estimated 0.95% in 1935-1936. In contrast, the odds of saving in real estate did not change during this period. Therefore, it appears that the overall rise in savings in securities among low-income families is explained at least in part by an increase in the *number* of working- and middle-class families who saved some amount in securities between 1918 and 1936.

Did savers in real estate and in securities also change the share of income they allocate to securities during the 1918-1936 period? To explore this question, I use the same model specification as in (1) above, albeit, this time, I run the regressions over only the subsample of families who have saved some amount in real estate and in securities. To adjust coefficient estimates for variations in the likelihood of saving some amount in these assets, I use a Heckman correction strategy (Heckman, 1979). I first compute the likelihood of saving in real estate and in securities in first stage probit selection equation and add the generalized residuals from these selection equations in the second stage outcome models. The selection equations include all covariates of the outcome models. Income is used as an exclusion restriction since it was not significant in the first model presented in Table 3.2 and is thus removed from outcome models. Results from the second stage outcome models are presented in Table 3.4 in Appendix J.

As seen in Table 3.4, there is no evidence that savers in securities significantly increased the ratio of income spent on securities between 1918-1936. The coefficient estimate is positive, but not significantly different from zero. This lack of statistical significance, however, could be due to a lack of power – fewer than 100 cases are included in the model that is conditional on having saved in securities. For now, however, we can conclude that savings in securities were increasing among the working- and middle-classes between 1918 and 1936, and that this increase was driven mostly by an increase in the number of families saving in stocks and less by an increase in the amount of income spent on securities by savers in securities. Meanwhile, savings in real estate stagnated in this population during the same period.

Exploring Investment Practices Across Income Groups:
Statistics of Income and Census Data

Were working- and middle-class families catching up with the upper-classes regarding the extent of income spent on buying securities or were families of all income levels spending more and more in securities during this period, leaving the socio-economic disparities in securities investments unchanged? As I mentioned earlier, for the 1918-1936 sub-period, I do not have micro-data about the savings of higher-income families and, thus, I cannot compare their savings in securities and in real estate in a direct manner to those of low income families. Therefore, I use additional sources of data to explore whether evidence suggests that investments in securities were rising and investments in real estate were stagnating across all income groups.

First, to explore how the extent of investment in securities changed across income groups, I explore how dividends, as a share of total income, changed across income groups over time between 1918 and 1937. In the absence of investment data, exploring dividends as a share of income is indeed a way to explore trends in securities investments. Logically, if working- and middle-class families were increasing their investments in securities relative to upper-class families, and assuming their wages and salaries did not change substantially over time, the share that dividends represent in their total income should rise compared to the share that dividends represent in the total income of high-income families.

Data on dividends for the 1918-1936 period are available in the *Statistics of Income* (SOI), which have been published every year since 1917 by the Internal Revenue Service (IRS). As the title of the publication indicates, the SOI series consists in volumes that contain data on the size and composition of income of federal taxpayers. The micro-data that IRS used to

compile these volumes have been destroyed, but the aggregate tabulated data remain. In particular, for each year between 1918 and 1926, and for each year after 1937, SOI volumes contain the total amount of dividends reported by taxpayers, tabulated by income brackets¹. For these years, I thus computed the share of dividends in total gross income for each income bracket. In Figure 3.1 below, I show how the share of dividends in total income for the \$1,000 to \$2,000 income bracket has evolved in comparison to share of dividends in total income for the \$5,000 to \$10,000 income bracket (all amounts in constant 1937 dollars). Figure 3.1 in Appendix K plots the share of dividends in total income for the low-income bracket divided by the share of dividends in total income for the high-income brackets over time.

As seen in this figure, the dividend to income ratio is steadily climbing for the low-income brackets between 1918 and 1937, relative to the same ratio in the high-income brackets. In 1918 the dividends to income ratio in the low-income bracket was less than 10% of the dividend to income ratio in the high-income bracket. By 1938, it was close to 40%. In absolute terms, dividends climbed from representing 1% of total income in the low-income brackets in 1918 to representing about 5% of income in 1937. In the high-income brackets, dividends represented 14% of total income in 1918 and 13% in 1937.

As I mentioned above, these trends in dividends to income ratios should suggest that families in the low-income brackets were increasing their investments in securities faster than were upper-income families between 1918 and 1937. However, it is also possible that the dividends to income ratio increased faster in low-income brackets not as a result of a change in

¹ Between 1927 and 1936, dividends reported by tax payers with incomes below \$5,000 are grouped together, which makes it hard to portray stock ownership among the lower-income classes.

the extent of investment in securities across income groups, but because other sources of income diminished in the low-income brackets while they increased in the high-income brackets.

For example, unskilled labor wages might have decreased while white collars salaries increased. There is little evidence that this happened between 1918 and 1937, however. Wages for skilled and unskilled labor increased throughout the 1920s, as can be seen in Table Ba4361-4366 of the *Historical Statistics of the United States* (Carter, 2006). Wages did decrease in the 1930s according to this same source, but there is much evidence suggesting that even though unskilled wages decreased in the 1930s, *inequalities* in wages and salaries remained stable during this decade. As Margo (1999) summarizes, most historical wage series show decreasing wages and salaries inequalities throughout the 1920s, and stable wages and salaries inequalities during the 1930s. In addition, as Goldin and Katz (2010) showed, the educational income premium decreased sharply throughout the 1900-1940 period. Therefore, there is little evidence to suggest that labor income might have been rising faster in the highest income groups than in the lowest income groups between 1918 and 1937.

A second possible confounding explanation for the rising importance of dividends in the low-income brackets would be a decrease in interest income in the low-income brackets. However, the opposite – a decrease in interest income in the highest income brackets – appears more plausible. Indeed, most interest earned on government securities is not taxable and, thus, not reported in tax data or counted in total gross income. In 1921 and 1924 exemptions on interest from federal government securities became larger. This change in tax law certainly induced a reduction of reported interest income in the largest income categories, not the lowest,

since the change in the amount exempt is larger than the low-income bracket². Other than that, it is unlikely that holdings of non-taxable government securities increased substantially in any income brackets, which would reduce reported interest, since in the 1920s and 1930s, the US federal government was actively buying its war debt back (Garbade, 2012).

A third possible explanation for the rising importance of dividends in the lowest income brackets compared to the highest ones would be decreasing dividends rates in the highest income brackets. It is a well-documented phenomenon that high-income individuals tend to choose securities that return smaller dividends and a larger plus-value, since capital gains are taxed at lower rates than dividends (Elton & Grueber, 1970). It is thus plausible that high-income taxpayers became increasingly aware of this tax dynamic after the introduction of the federal income tax and that they progressively changed their equity ownership so as to earn smaller dividends over time. Unfortunately no data is available to evaluate the likelihood of this possibility, and this is an important limit of SOI data that must be kept in mind as we interpret the data.

Another limit of SOI data is that, during the interwar period, only a relatively small proportion of the US population filed tax returns, since income was not yet taxed at-source by employers (I evaluate this proportion to be somewhere between 10% and 15%, given the number of returns filed, the share of returns filed jointly, and the size of the population over 14 between 1918 and 1937). As a result, it is unclear which types of families filed tax returns between 1918

² I have carefully reviewed exemptions to federal income tax over time by consulting the instructions for the Form 1040 of the IRS for each tax year between 1918 and 1937. I have not identified major changes in exemptions that appear to me capable of causing major distortions in the share of dividends in any particular income bracket, particularly not the lower-income ones, other than this issue with tax exemption on interest from federal securities. In Table F.1 presented later in Appendix F, major changes in tax exemptions over time between 1918 and 1937 are summarized.

and 1937 and why. Formally speaking, and according to IRS documentation, between 1918 and 1937 all married couples with net incomes over \$2,500 and all individuals with net income over \$1,000 were required to file tax returns (Mehrotra, 2013). But, many returns fall in the below \$1,000 income bracket during this period, and it is unclear what prompted those taxpayers to file returns at all. Could it be that the government enforced increasingly strongly returns filing among dividends earners, specifically? Could it be that high-income families, formally filing in higher income brackets, learned to acquire new tax breaks and reduced their taxable gross-income? Such phenomenon could have generated the observed increase in the importance of dividends in the low-income brackets. We cannot rule out with certainty that they did not. This is thus another limit of SOI data to bear in mind.

Lastly, one other limit to SOI data is that it is aggregate data and thus contains no information about demographic factors. Factors other than income, notably age effects, could thus explain the growing importance of dividends income in the lowest income brackets, but it is impossible to adjust for this possibility.

In sum, then, there are some limits to using SOI data and the share of dividends in income to evaluate extent of investment in securities across income groups over time. However, within these limits, SOI data does suggest that families in the lowest income brackets were increasing their investments in stocks at a faster pace than families in the highest income brackets between 1918 and 1937. This idea is, of course, consistent with previous findings from this chapter showing that low-income families were in fact increasing their savings in securities during the same period. But other studies conducted in the 1920s and 1930s also support the idea that investments in securities were increasing faster in low-income groups in the 1920s and 1930s. For example, Means (1930) estimated that families in the top 0.1% of the income distribution

(the top 100,000 income earners) went from owning 56% of all US corporate securities in 1918 to owning only 35% of them in 1927. Furthermore, Warshow (1924) examined the number of individual stockowners in a sample of publicly traded corporations between 1900 and 1923 and estimated that the number of unique investors grew by a factor of 2.5 during this period in the U.S., while the population grew a factor of only 1.5. Overall, then, I believe that there is strong evidence suggesting that low-income families were not only increasing their level of savings securities between 1918 and 1937, but that they were also in effect catching up with high-income families regarding extent of investments in securities.

In addition, census data provides evidence that, over the same period, lower-income families were falling *behind* high-income families with regards to less lucrative investments (i.e., investments in real estate). Indeed, we saw previously that the savings in real estate of low-income families were stagnating between 1918 and 1936. But US census data also shows that homeownership rates were increasing faster among high-income families than among low-income ones between 1920 and 1940, as shown in Figure 3.2 in Appendix K. This figure thus suggests that high-income families may have increased their real estate investments faster than low-income ones during this period.

I verify whether the income effect on home ownership indeed increased between 1920 and 1940 using a simple logistic regression analysis. To do this I use three waves of the US census – 1920, 1930, and 1940 – and I model the log odds of owning a home versus not in 1930, and 1940 compared to 1920, as specified as in (2) below. I run this regression for a population similar to the one studied in the CES surveys. That is, to insure population consistency, I select only families with a married male head having at least one child, who is not African American, not self-employed, and who is in the employed labor force. I also select heads who were born in

the US only. It should be noted that all results are more or less the same when regression is run on the entire US population.

$$\begin{aligned} \text{Log}(\text{Oddsratio_ho})_i = & \beta_0 + \beta_1 1920_i + \beta_2 1940_i + \beta_3 1920 * \text{income}_i + \beta_4 1940 * \text{income}_i + \beta_5 \text{income}_i \\ & + \beta_6 \text{age}_i + \beta_7 \text{Married}_i + \beta_8 \text{FamilySize}_i + \beta_9 \text{race}_i + \beta_{10} \text{Gender}_i + \beta_{11} \text{MetroArea}_i + \beta_{12} \text{SelfEmp}_i + \beta_{13} \text{City}_i + \varepsilon_i \end{aligned} \quad (2)$$

In this model, income is not reported income in dollar amount, but is rather an income index. Indeed, for the 1910, 1920, and 1930 censuses, no information on income was collected; only information on occupation was gathered. Therefore, the sole income variable available for these census years is an income index that was constructed on the basis of respondents' reported occupations and on the basis of the median income reported by occupation in the 1950 census. More specifically, for each respondent, this income index gives the proportion of the population that reported being in occupations with a median income lower than the median income found for the respondent's occupation in the 1950 census. The other control variables are age, being married, size of family, being African American, being self-employed, living in a large metropolitan area, and being male. I also add random effects to control for birth cohort (10-year birth cohorts). The main predictors of interest are the interaction terms between the income index and the dummies for the 1930 and 1940 census years.

Table 3.5 in Appendix J presents coefficient estimates for parameters in equation (2) above. As can be seen in this table, there is no evidence that homeownership rates increased between 1920 and 1930 or between 1920 and 1940 for the median income family. This finding echoes previous findings from this chapter, which showed stagnation in how much of their income working- and middle-class families spent on investments in real estate during this period. However, there is evidence in census data that homeownership rates increased *faster* among higher income groups than among other groups (the income effect is indeed more positive in

1930 and in 1940 than it was in 1920). Therefore, census data suggests that lower-income families were falling farther behind higher-income families with regards to investments in real estate between 1920 and 1930.

In sum, analyses for the 1918-1936 sub-period suggest that, during this period, white, non-immigrant working- and middle-class families were increasing the extent to which they invested in corporate securities relative to their upper-class counterparts. At the same time, these low-income families were keeping their level of investment in real estate stable, but they nonetheless appear to have fallen behind upper-class families with regards to investments in real estate, as the high-income families appear to have increased their investments in real estate between 1920 and 1940. In other words, the portfolio choice disparities that we know today seemed to have been on their way to being resolved in the 1920s and 1930s. As I show next, things changed dramatically in the late 1940s.

1935-1950: The Growth of Portfolio Composition Disparities

I now turn to analyzing time trends in investment behavior during the 1935-1950 sub-period. As I described in Chapter Two, the population covered in this sub-period is the population of urban, white, married male heads with no more than four children, and no more than one boarder. Families of all income levels are included, and I thus compare the savings of high- and low-income families directly for this sub-period.

To explore these savings trends, I use the 1935-1936 wave of the CES and the 1947 and 1950 wave of the SCF, which I described in Chapter Two. I use the same savings-based proxies I used in the previous sub-period for extent of investments in real estate and in securities. However, I now use the standardized version of these proxies, defined in Chapter Two, since I compare the savings of different income groups. That is, the outcomes variable for the 1935-1950 sub-period are 1) the ratio of savings in real estate to total income divided by the mean of this ratio in sample and 2) the ratio of savings in securities to total income divided by the mean of this ratio in sample. In descriptive statistics, however, I do present the unstandardized proxies, for ease of interpretation.

In Table 3.6 in Appendix J, I show how total savings, savings in real estate, and savings in securities have evolved from 1935-1936 to 1950 depending on income, in the population described above. As I mentioned in Chapter Two, most savings data in the 1947 sample are available only in brackets. I thus computed ratios by averaging over these brackets for this year. Therefore, data for this year are less precise.

As can be seen from Table 3.6, there was a dramatic increase in real estate savings in the lower-income groups between 1935 and 1950, and this increase seems to have been relative to other income groups. Indeed, upper-income families have tended to either decrease the share of income they allocate to savings in real estate or to leave this share unchanged. Savings in corporate securities, on the other hand, have, on average, tended to decrease as a ratio of income among lower-income families, while they have tended to increase among upper-income ones. In addition, as Table 3.6 shows, the ratio of income dedicated to savings in general also increased among lower-income families, more so than among upper-income ones. Overall, therefore, this table suggests that, while lower-income families were catching up with upper-income families in

terms of how much of their income they saved, they seem to have caught up, and even surpassed upper-income families in real estate investments, but to have stopped catching up with upper-income families in terms of how much of their income they invested in securities.

To see whether these trends hold in the full population, I turn to regression analyses. I fit the A-P-C model specified in (9) and (10) of Chapter Two. The main predictors of interests are family income, the two dummy variables for survey waves, with 1935-1936 as baseline, and two terms for the interaction between income and survey waves. Income is defined as the total income of a family that is not from capital – no interests, rents, or dividends – divided by the square root of the number of members in family. I then take the distance of that income from the grand mean for each family and divide it by the standard deviation of this variable in sample. This standardized income variable is centered on its mean, as are all other continuous variables in the model. I control for total savings (in assets other than the one in the outcome variable), family size, age, and whether a family lives in a large metropolitan area. I do not include random intercepts for cohorts in these models, because I have found that such mixed models did not fit better than linear regression using a likelihood ratio test. Fixed effects for cohorts were not significant either. I report regression results in Table 3.7 in Appendix J.

Results presented in Table 3.7 show that lower-income families increased the share of their income spent on real estate between 1935 and 1950 compared to upper-income families. However, there is no evidence that the extent of investment in securities changed in relative terms during the same period. I test the robustness of these results to two issues.

First, as I have mentioned already, the sampling process used to create the 1935-1936 sample is somewhat obscure. We do not know what the sampling probabilities are for this sample, and as a result we cannot be certain that the distribution of income in this sample can be

trusted to represent the distribution of incomes in the broader population. In particular, it appears that sampled families in 1935-1936 might have been richer in relative terms than families who were sampled in 1947 and 1950. For instance, if we divide family income by GDP per capita in each sample, we find that the average ratio is 1.05 in the 1935-1936 sample, whereas it is about 0.68 in the other two. The income effect for real estate could be higher in 1935-1936, therefore, because there are more wealthy families in relative terms in this sample, not as a result of a real catch-up among low-income families.

To test for this possibility, I perform the same regression analysis as the one performed above, but I replace income by a measure of income that takes the family adjusted income, but divides it by the GDP per capita for that year, instead of standardizing it, as in the previous model. GDP per capita is from Table Ca9-19 of the *Historical Statistics of the US* (Carter, 2006). Results from this regression are presented in Table 3.8 in Appendix J.

As seen in Table 3.8 above, results are robust to this modification in the measurement of income. Table 3.8 shows a very strong decrease in the effect of income on savings in real estate between 1935-1936 and 1950 and no significant difference in the effect of income on savings in securities.

I also check robustness of the above-mentioned findings to another issue: the exclusion of the 1947 sample from the analysis. As mentioned above, amounts saved in the different asset classes in the 1947 sample are available only in brackets, and for the previous two analyses, I have converted these brackets into amounts by taking the mid-point of each bracket. I included the 1947 sample in previous analyses in an attempt to gain more precision for the timing of changes in trends, but I now check whether results obtained above were created by the odd distribution of savings values in the 1947 sample. In Table 3.9 in Appendix J, I report results for

a regression similar to that immediately above, but conducted on the 1935-1936 and the 1950 samples only. As shown in Table 3.9, results are robust to this modification of the sample.

In sum, then, previous analyses suggest that, between 1935 and 1950, working- and middle-class families increased the amount of income spent on real estate investments relative to upper-income families, while leaving their investments in securities unchanged relative to high-income families, perhaps even reducing their investments in securities relative to high-income families slightly. Indeed, the lack of statistical significance in the tables above for the securities regressions might be due to the fact that the savings in securities variable is heavily zero-inflated. Contrary to what was happening during the 1918-1935 period, therefore, between 1935 and 1950, working- and middle-class families stopped closing their securities gap and began closing their real estate gap, instead.

To know more about how this reversal in trends occurred, I now explore whether this overall change in trends was due mostly to changes in the likelihood of saving in real estate and securities or to changes in how savers in these assets allocated their incomes. I begin by exploring how the likelihood of saving in real estate and in securities changed across income groups between 1935 and 1950. I model the log odds of savings in both asset classes versus not saving, using logistic regression. I use the same set of controls as above. I also use only the 1935-1950 samples for simplicity of results and continue using the measure of income that is a ratio of GDP per capita. Again, no random effects for cohort are included, because they were found not to improve model fit. Results are presented in Table 3.10 in Appendix J.

We see from Table 3.10 that the odds of saving in real estate versus not increased tremendously in 1950 compared with 1935 – by over five times – for the family with an average income. The odds of saving in securities, on the other hand, did not budge for this category of

families. Also, even though the income effect was already bigger on the odds of saving in securities than on the odds of saving in real estate in 1935, this income effect was increased in 1950 for savings in securities, but it increased much less for savings in real estate. In fact, the p-value for this coefficient estimate is right on the 10% threshold; therefore, evidence of an increase in the income effect is slight.

Also, if we translate odds ratios into probabilities, we obtain the following results. In 1935, families with the average ratio of income per family member (IPM) to GDP per capita (GDPC) have an estimated probability of saving in securities of 2.5%. Families in the top 10% of this income distribution (a value of 1 on the centered IPM/GDPC income variable), on the other hand, have an estimated 5.9% of saving in securities. In 1950, average families have the same estimated probability of saving in securities as in 1935, which is about 2.5%. But families in the top 10% of the income distribution have an estimated probability of saving in securities equal to 8.8%. Whereas the upper-income families were 2.36 times more likely to own securities than average-income families in 1935, they were 3.54 times more likely to do so by 1950.

When looking at likelihood of savings in real estate assets, we find that average-income families had a 14% chance of saving in real estate in 1935 but an estimated 45% chance of doing so by 1950. Families in the top 10% of the IPM/GDPC income variable, in contrast, had a 21% chance of saving in real estate in 1935 and a 56% chance of doing so by 1950. In 1935, therefore, top income families were 1.5 times more likely than average ones to save in real estate. By 1950, however, they were only 1.2 times more likely of savings in real estate assets.

In sum, therefore, average-income families became less likely than upper-income ones to save in securities in 1950 compared to how likely they had been in 1935. In addition, average-income families became immensely likely to save in real estate than they had in 1935 in

comparison to high-income families. Therefore, changes in savings trends appear to be due in part to changes in the odds of owning real estate and securities across income groups.

I now verify whether families who did save in real estate or securities also changed how much of their income they allocated to these assets, in relative terms, between 1935 and 1950. As I did in my analysis for the previous sub-period, I use a Heckman selection framework. I use all covariates in the selection model and age as an exclusion restriction for the model with savings in real estate in the outcome. I could not find any exclusion restriction for the other model, which should be kept in mind, because standard error estimates for the inverse Mills Ratio can be unstable when no exclusion restrictions are used. In Table 3.11 in Appendix J, I report only coefficient estimates for the outcome models.

As seen in Table 3.11, patterns of savings in securities and in real estate are quite different when controlling for how likely a family is to save (or dissave) in these two assets. First, we see that the income effect for stocks is reversed. That is, among families who have decided to be active traders of securities, those with a lower income allocated a greater proportion of their income to buying securities in 1935, and this income effect does not appear to have changed between 1935 and 1950. This suggests that the light trend towards an increasing income effect for the level of income allocated to securities observed earlier is due entirely to an increase in the fraction of upper-income families allocating some amount to buying securities, not to any change in the amount of securities that buyers actually buy.

For savings in real estate, the income effect does not reverse completely when controlling for likelihood of participating in the real estate market, but it does become non-significant in 1935. This suggests that, in 1935, all families who decided to actively participate in real estate markets allocated a similar amount of their income to investing in real estate. In 1950,

however, the income effect is radically different. It has become significantly negative, suggesting that, by 1950, lower-income families who chose to participate in real estate were allocating a much higher share of their income to investing in real estate than they had before, and compared to upper-income families.

In sum, then, previous analyses suggest that, between 1935 and 1950, working- and middle-class families stopped catching up with high-income families with regards to savings in securities. The share of income these families allocated to investments in securities has overall stagnated, if not decreased slightly, in comparison with upper-income families. Moreover, the likelihood of saving in securities among lower-income families decreased markedly compared to upper-income families. During the same period, working- and middle-class families began to catch up with high-income families regarding investment in real estate instead of investments in securities. These families indeed increased both their likelihood of saving in real estate, but mostly, they increased the amount of income they saved in this asset following the decision to save some amount in real estate. In addition, the large reduction of the income effect on the relative share of income invested in real estate appears to have begun in 1947, as per descriptive statistics, but to have really taken off somewhere between 1947 and 1950, since the decrease in the income effect is not significant until 1950. In Appendix G, I explore how the dividend to income ratio and rates of homeownership evolved during this period. I find that the dividend to income ratio began to decrease in the low-income brackets between 1943 and 1947, which is consistent with findings in savings data. I also find that the effect of income on likelihood of owning a home stops increasing between 1930 and 1960s, which is also consistent with savings data findings.

Hence, trends in savings practices across income groups appeared to indeed have reversed in the late 1940s. While low-income families closed their securities gap exclusively before 1935 and fell behind regarding investments in real estate, in the late 1940s, these families began closing exclusively their real estate gap instead. I now turn to exploring trends in investments in securities and in real estate during the 1950s and 1960s to see whether this transformation of investment practices proved permanent.

1950-1968: Portfolio Composition Disparities

Continue to Deepen

The third sub-period for which I analyze time trends begins in 1950 and ends in 1968. As I described in Chapter Two, the population covered in this sub-period is the entire population of urban families. This sub-period ends in 1968, because after this date, it is not possible to identify urban families and thus to compare data properly with the 1950 sample.

For the 1950-1968 sub-period, data on savings cease to be available, as data on assets value was collected only after 1950. I transition to the assets-based proxies to measure the extent of investment in real estate and in securities in the 1950-1968 sub-period. I described these assets-based proxies in Chapter Two. As a quick reminder of how they are computed, the share of real estate in portfolio measures investments in real estate and is defined as the total value of real estate assets divided by the total value of assets owned. The share of securities in portfolio measures investments in securities and is defined as the total value of corporate securities

divided by the total value of assets owned. In all regression analyses for this sub-period, I use the *standardized* versions of these variables, described in Chapter Three. I standardized the share of real estate and of securities in portfolio by dividing each of these shares by their mean in sample.

I use the 1950, 1953, 1963, and 1968 waves of the SCF. In these waves of the SCF, data about the net worth of families becomes available, in addition to data about annual income. Therefore, in contrast to previous sub-periods, for the 1950-1968 sub-period, I use both net worth and income as indicators of socio-economic status, and I explore how the effect of both indicators on investment behavior changed during this sub-period.

In Figures 3.3 and 3.4 in Appendix K I show how the average share of real estate in portfolio evolved across income and net worth quintiles between 1950 and 1968. Figures 3.5 and 3.6 present similar results for share of securities in portfolio.

From these figures, we see that families in the bottom net worth quintiles increased their share of real estate in portfolio, while families in the top net worth quintile have reduced this share between 1950 and 1968. We also see that, meanwhile, the share of securities in portfolio increased very slowly in the bottom net worth quintiles, while it increased very sharply in the top quintile. Only families in the second-lowest net worth quintile (the fourth quintile) seem to have increased their share of securities in portfolio starting in the mid-60s. The income effect on the share of securities in portfolio also appears to have become stronger over time between 1950 and 1968; the share of securities in portfolio increased much faster in the top income quintile than in the bottom ones. However, the income effect on shares in real estate in portfolio barely changed during the same period. Overall, then, these figures suggest that families possessing low net worth increased their investments in real estate relative to their high net worth counterparts, regardless of their income level. On the other hand, families with high *incomes* appear to have

increased their share of securities in portfolio faster than families with low incomes, even if they had relatively low net worth, as is suggested by the increase in share of securities in portfolio by the fourth net worth quintile in the late 1960s. The disparities in portfolio composition that emerged in the late 1940s thus seem to have intensified between 1950 and 1968, particularly along the net worth distribution.

I now explore whether disparities in portfolio composition really did intensify during this period using the same age-period-cohort (A-P-C) framework I used before and which is described in (9) and (10) of Chapter Two. Outcome variables for A-P-C models are the standardized version of the shares of real estate and of securities in portfolio, described in Chapter Two. The main predictors are income, net worth, net worth squared, dummy variables for each of the survey waves employed in this sub-period (1950 is the baseline), and the terms for the interaction of each of the income and net worth effects with the survey wave dummies. I control for whether a family head is unemployed, self-employed, married, African American, a woman, has attended college, and for his or her age. I also control for family size and for whether a family unit is a roomer or boarder in a sampled household. I add random intercepts and random slopes for both net worth main effects by ten-year cohorts in the model, where the share of real estate in portfolio is in the outcome variable. For the model with the share of securities in portfolio, none of the random effects improved the model fit, so I left them out. However, the model with share of securities in portfolio in the outcome variable does include an inverse Mills Ratio computed from a selection equation in which I modeled the probit of having an observed outcome variable. There are indeed quite a few missing values for the variable “amount owned in securities” in the 1968 SCF sample, and for that reason, I chose to model those missing values and to control for selection patterns.

Income is in a standardized form. I first take the distance of a family's income from the grand mean of income for the given survey wave and divide this distance by the standard deviation of income in the same survey wave. Income, as before, is defined as total family income, less any capital income, divided by the square root of family size. Net worth is standardized in a similar manner as income. And I define net worth as the sum of all assets minus mortgage debt. Table 3.12 in Appendix J presents results from these models.

Looking first at the model predicting share of real estate in portfolio, we see in Table 3.12 a confirmation of trends perceived in descriptive statistics. The effect of net worth on real estate changed dramatically between 1950 and 1968. Whereas this effect was mostly positive in 1950 – raising the share of real estate in portfolio until about the top 3rd income percentile – by 1968, this effect had changed direction and become a strongly bell-shaped effect. We can best see the difference in the effect of net worth by looking at it graphically. Figure 3.7 in Appendix K presents the predicted values for share of real estate in portfolio as a function of net worth percentiles in 1950 and 1968. As seen in this figure, by 1968, the average-income and net worth family was tying a *bigger* share of its assets to real estate than a family in the top 10% of the net worth distribution, whereas in 1950, it had tied a smaller share.

The income effect on share of real estate in portfolio, on the other hand, evolved in the opposite direction between 1950 and 1968. While the income effect was strongly negative at comparable levels of wealth in 1950, it became less negative towards 1968. This suggests, again as we had seen in descriptive statistics, that families of nearly all income levels increased the their share of real estate in portfolio, as long as they were in the bottom 60% of the net worth distribution.

When looking at trends in the share of assets tied in corporate securities, we find very different patterns over time, but again patterns that confirm those observed in descriptive statistics. The effects of both income and net worth on relative share of assets in securities were very strong and positive in 1950. The effect of net worth was even exponential in 1950 - stronger towards higher values of net worth –, as shown by the positive estimated slope for the squared net worth term. By 1968, however, the income effect had increased. However, confirming that high-income families of all net worth categories have increased their share of securities in portfolio, the net worth effect on share of securities in portfolio decreased slightly between 1950 and 1968, particularly its quadratic term.

In sum, then, throughout the 1950-1968 period, working- and middle-class families fell even farther behind upper-class families regarding investments in securities than they had in the late 1940s. At the same time, middle-class families, especially those with low net worth and mid-level incomes, caught up increasingly with high net worth ones and even surpassed them with respect to the share of portfolio they held in real estate. The socio-economic disparities in portfolio composition that emerged in the 1940s thus seem to have intensified in the 1950s and 1960s.

I now explore whether these changes in net worth and income effects on investment behavior were due to changes in the likelihood of owning real estate and securities or to changes in the amount invested by owners of these assets. To do this I use the same model as in Table 3.12, albeit with a logit link and with ownership of real estate and securities in the outcome variables. I use random intercepts for cohorts in the model predicting the odds of owning securities, but not in the model predicting the likelihood of owning real estate, since likelihood

ratio tests revealed random intercepts and did not yield a better model fit than regular linear regression for this model. Results from these models are presented in Table 3.13 in Appendix J.

From Table 3.13, we see, first, that the average likelihood of owning both real estate and securities increased strongly between 1950 and 1968. The odds of owning real estate were multiplied by about 10 in 1968 compared to 1950, and the odds of owning securities were multiplied by a factor of nearly 14 for average-income and net worth families. However, the increase in the odds of owning securities does not appear to have diminished the effects of income or net worth on those odds during the period. Quite to the contrary, the effect of income on the odds of owning securities increased sharply during the period, an increase which was accompanied by a small, barely significant decrease in the quadratic effect of net worth. On the other hand, the effect of net worth on the odds of owning real estate decreased over the period. Indeed, the quadratic effect of net worth on the likelihood of owning real estate diminished between 1950 and 1968, which means that the effect of net worth on the odds of owning real estate became more bell-shaped, rather than increasing in a straight fashion in the late 1960s.

The overall trend towards a relatively bigger share of assets tied up in real estate among low and median net worth families observed above is thus explained, at least in part, by the fact that an increasing proportion of low net worth families became real estate owners during the 1950-1968 period. Similarly, it appears that high-income families increased their share of securities in portfolio compared to other families during this period, in part because a larger number of them became securities owners.

I now explore whether trends observed in Table 3.12 are also explained by changes in how shares of real estate and of securities in portfolio have changed over time among owners of real estate and securities. As before, I use a Heckman type of selection specification, with all

covariates in the selection equation. I use the dummy variable for being married as an exclusion restriction in the selection equation and thus remove it from the final outcome model. I use random intercepts for cohorts in the model with share of real estate in portfolio, but not in the model for share of securities in portfolio. Results from these models are presented in Table 3.14 in Appendix J.

We see from Table 3.14 that, even when restricting analysis to those families who own real estate, income and net worth have effects on the share of real estate in portfolio that are similar to those we found in Table 3.12. Income in 1950 is negatively associated to the share of real estate in portfolio, when holding net worth constant. It seems, however, that this negative effect was relaxed in 1968 as compared with 1950, which explains entirely the relaxation of the negative income effect we observed in Table 3.12. As for net worth, in 1950 this variable was associated positively to the share of real estate in portfolio, even among real estate owners. However, the net worth effect was already strongly bell-shaped in 1950 among real estate owners, whereas it was mostly increasing in the larger population, as seen in Table 3.12. The net worth effect nonetheless became more negative towards the upper end of the net worth distribution between 1950 and 1968, and thus decreasing in a nearly straight line by 1968. The overall change in the net worth effect we observed in Table 3.12, therefore, is likely explained not only by the fact that lower net worth families became more likely to own real estate between 1950 and 1968, but also by the fact that lower net worth families owning real estate began holding even larger shares of their assets in real estate, when compared to their richer counterparts over the 1950-1968 period.

Looking now at the model that predicts share of assets in corporate securities, conditional on ownership of securities, we observe more of a standstill in all effects between 1950 and 1968.

Neither the income nor the net worth effects changes over time. Hence, we can conclude that the overall change in the income and net worth effects observed in Table 3.12 was due mostly to an increase in the proportion of high-income families who owned securities.

In sum, then, the 1950-1968 period witnessed an intensification of the portfolio composition disparities that coalesced in the 1940s. Income became stronger as a predictor of the share of assets families held in corporate securities throughout the 50s and 60s, while net worth became slightly less significant in predicting the share of corporate securities, since high-income families of all net worth categories increased their investments in securities. Furthermore, working- and middle-class also appear to have continued to catch up with upper-class families during the 1950s and 1960s regarding their investments in real estate. In the 1950s and 1960s, however, we have learned that it is mostly low *net worth* families who are catching up with high net worth ones, and even surpassing them, regarding the extent of investment in real estate, and this, regardless of their income levels. We have also seen that this process was driven as much by the fact that low net worth families became more likely to be real estate owners after 1950 as by the fact that these owners began investing more of their wealth in real estate than higher-income owners of real estate after 1950. On the other hand, in the 1950-1968 period, if low-income families fell farther behind high-income ones regarding investments in securities, it is mostly because high-income families became dramatically more likely than others to be securities owners during this period.

In the next and final section of this chapter, I explore what happened to the income and net worth effects after 1968 by exploring time trends in investment behaviors across income groups for the entire 1953-2013 period.

1953-2013: The Stabilization of Portfolio

Composition Disparities

The fourth and last sub-period I analyze in this chapter is the period beginning in 1953 and ending in 2013. The population covered in this sub-period is the entire mainland US population, including farm families, which were excluded in all previous analyses. To explore how the income and net worth effects on investment behaviors changed during this period, I use the same assets-based proxies for investments in real estate and securities that were used in the previous sub-period. I use share of real estate in portfolio for investments in real estate and share of securities in portfolio for investments in corporate securities. In all regression analyses, I use these proxies in their standardized versions, which are described in Chapter Three. For all analysis in this sub-period, I use the 1953, 1963, 1968, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, and 2013 waves of the SCF.

Figures 3.8 and 3.9 in Appendix K show the evolution of shares of real estate in portfolio between 1953 and 2013 by selected income and net worth quintiles. Figures 3.10 and 3.11 shows the same trends for shares of securities in portfolio.

As can be seen in these figures, the share of real estate in portfolio across income groups remained fairly stable between 1953 and 2013; this share decreased at similar pace in all income groups. However, in the low net worth groups, the share of real estate remained stable after spiking in the 1950s and 1960s, while this share decreased steadily in the high net worth groups. The process of catching up and of surpassing the high net worth families thus continued to intensify in the low net worth group after the 1960s and well into the 2000s.

On the other hand, socioeconomic gaps in the extent of investments in securities seem to have remained virtually the same between 1953 and 2013. The income effect on the share of securities in portfolio indeed seems to have decreased slightly in the 1970s and 1980s, after spiking in the 1950s and 1960s, to have returned to its 1953 level, and to have remained stable thereafter, as all income groups increased their share of securities in portfolio at comparable rates. We also see from Figure 3.10 that the second lowest net-worth group seems to have caught up with the highest income group regarding investments in securities, particularly in the 1990s. This is also a continuation of trends observed in the 1950-1968 period. High-income families increased investments in securities in all net worth groups, but particularly in the second lowest, where young, high-income families are found in high proportions. In sum, the socioeconomic disparities in investment behavior that emerged in the 1940s and intensified in the 1950s and 1960s do not appear to have resolved later in history. These socioeconomic disparities appear to have persisted until the 2010s and perhaps even to have intensified slightly after the 1950s and 1960s.

I now explore whether these trends hold for the population as a whole through regression analysis. I use the same mixed model specification used in other sub-periods and detailed in (9) and (10) of Chapter Two. In the model with the share of real estate in portfolio as the outcome, I use cohort random intercepts and slopes for the net worth terms. I use random intercepts only for the model with the share of securities in portfolio as the outcome. The main predictors are, as before, income, adjusted for family size, and net worth, as well as interaction effects between income and net worth and each of the survey waves dummies. The baseline year is 1953. I use all the same control variables I used to analyze trends during the 1950-1968 period, except that for the 1953-2013 period, I cannot control for whether a family lives in a large metropolitan area.

Geo-location variables are indeed not available in public use after 1989. Also, whether family head is self-employed is not available in public use after 1989, either, and is thus left out, as well. Since there are many covariates in this model, due to the large number of survey waves, I report only coefficient estimates for the predictors of interest in Table 3.15 in Appendix J; these estimates include the income and net worth covariates, as well as their interaction effects with time dummies.

Results from Table 3.15 mostly confirm trends perceived in descriptive statistics above. The net worth effect on share of real estate in portfolio appears to have continued to decrease until 1992, when compared to 1953, and then to have remained more or less the same; the point estimates for the interaction effects between net worth and the survey wave dummies, which compare the net worth effect in those years to the net worth effect in the 1953 baseline year, are indeed virtually the same between 1995 and 2013. The income effect on the share of real estate in portfolio, on the other hand, while negative in 1953, appears to have become slightly positive by 1989 and to have stabilized thereafter, suggesting that families of all income levels in the low net worth categories increased their investments in real estate.

On the other hand, the effects of both income and net worth on the share of securities in portfolio appear to have remained stable during the 1953-2013 period. As seen in Table 3.15, the increase in the income effect in the 1960s, which we observed in the previous section, was short-lived. By 1989, the income effect was not significantly different than it had been in 1953, and the point estimates for the income effect in each subsequent survey wave also show that the effect of income remained stable after 1989. The effect of net worth on the share of securities in portfolio may have decreased slightly starting in 1992, compared to 1953, although this effect is not consistently significant and could thus be an artifact of fluctuating stock prices.

In sum, then, the disparities in portfolio composition that coalesced in the 1940s rapidly intensified in the 1950s and 1960s, intensified at a slower pace in the 1970s and 1980s, and then mostly stabilized to create the level of disparities in portfolio composition that we know today across income and net worth groups. It is interesting to note, here, that the period between the late 1950s and 1990 is the period that witnessed the much talked about mutual funds revolution (Nocera, 1995). Though many observers have argued that the growth of the mutual fund system brought about a general financialization of American lives and a sharp interest among small investors for the stock market (Langley, 2008 and Davis, 2009, for example), we see from the previous analyses that the mutual fund revolution did not change the extent of investment in the stock market among working- and middle-class families *relative* to upper-class families. While working- and middle-class families did increase their investments in the stock market in absolute terms with the growth of mutual funds, as many have noted, these families have not caught up with upper-class families with regards to these investments in response to the mutual funds revolution.

Since I am finding mostly stable trends after the post-1950-1968 period, I am not presenting results from detailed analysis of trends in ownership likelihood and in investments level, conditional on ownership. I have conducted these analyses, however, and they show that the little change in the effect of income and of net worth on the share of real estate in portfolio that are observed in the 1970s and 1980s are due to both to changes in ownership rates and to changes in the level of investments of real estate owners, as it was the case in the 1950-1968 period.

Combining Time Trends from 1918 to 2013

In the previous sections of this chapter, I described how investment behavior changed across socio-economic status groups over the course of four overlapping periods: 1918-1935, 1935-1950, 1950-1968, and 1953-2013. Within each of these periods, the population observed by investments surveys is homogeneous, and indicators of investment behavior, as well as those for socio-economic status, are constant. *Across* these periods, however, both populations and indicators vary. For instance, before 1950, the population covered by investments surveys was constituted of urban, married, white, non-immigrant, and employed men having children. Furthermore, indicators of investment behavior in the pre-1950 periods are based on savings data and income only is available as an indicator of socio-economic status. After 1950, however, things change. The population covered by investments surveys covers all non-farm families, and after 1953, this population extends even further, to encompass all US families. In addition, after 1950, available indicators of investment behaviors are based on assets value data instead of on savings data, and both income and net worth become available as indicators of socio-economic status. Additional control factors, such as educational attainment, are also available after 1950, but not before.

Given these differences between sub-periods, can findings pertaining to the sub-periods individually really be combined to produce an overall account of time trends for the entire 1918-2013 period? How do varying population, changing indicators, and modifying control factors affect findings across sub-periods? To provide some answers to these questions, I perform one last series of analyses, using the 1950 wave of the SCF. This sample is indeed the sole among

those utilized in this study to contain all indicators of socioeconomic status, all proxies of investment behavior, and to cover nearly all levels of population observed. Using this sample, I thus examine how restricting the population and changing indicators are likely to have affected findings in the different sub-periods and across them³.

Using the 1950 SCF sample, I compare results from four different models, which I use to predict indicators of investment behaviors with varying indicators of socioeconomic status, over different populations, and controlling for different sets of factors. The first regression model predicts the extent of investments in either real estate or securities using income only as an indicator of socio-economic status for the pre-1950 population, i.e., the population of families composed of at least a married couple, headed by a white male who is not unemployed nor self-employed, and who lives in an urban area. In this first model, I control for factors adjusted for in the pre-1950 sub-periods, including family size, age of head, and living in a large metropolitan area. I call this first model “Model 1” in Table 3.16 below. In a second model, Model 2, I add variables indicating net worth and net worth squared to Model 1 to see how the income effect changes in the post-1950 sub-periods as a result of adding these additional indicators of socioeconomic status. In a third model, Model 3, I start from Model 2 and also extend the population to the post-1950 one; to all non-farm families. I also add gender, marital status, race, and labor force status as controls. Finally, in a fourth model, Model 4, I start from Model 3 and add a variable indicating whether a family head went to college. In Table 3.16 in Appendix J, I report regression results for these four models, which I used to predict the four outcome variables used

³ The only exception is that the effect of changing the population from including only non-farm families to including all US families can not be evaluated, because only data about the non-farm population is available in the 1950 wave of the SCF.

in this study: the ratio of savings in real estate to total income, the ratio of savings in securities to total income, and the share of real estate and of securities in portfolio.

From Table 3.16, we see, first, that the direction of the income effect does not change depending on which type of proxy for the extent of investment in assets is used.

Second, we see that that the effect of income on investments in real estate is strongly affected by the presence of the net worth variables in a regression model. Indeed, the effect of income on both savings in real estate and share of real estate in portfolio changes direction from Model 1 to Model 2, which adds net worth as a covariate. This finding suggests that the effect of net worth and of income on investments in real estate run in opposite directions. Furthermore, since net worth and income are correlated, when income is considered alone, as it was in the two pre-1950 sub-periods, the income effect on investment in real estate includes both net worth and the income effects and the effect of socio-economic status can thus appear smaller when income only is available as proxy.

Furthermore, from the findings of Table 3.15, it appears that the decrease in the income effect on savings in real estate that we have observed in the 1935-1950 sub-period could be the result of three distinct processes. First, the net worth by income distribution could have changed dramatically during this period, and low-income families might have become wealthier. This seems unlikely, however, since in such a case a comparable reduction of the effect of income would have been expected on investments in securities, as well, but in fact did not occur. Second, the *net worth* effect may have diminished – low net worth families may have begun investing more in real estate – and third, the *income* effect may have become more negative between 1935 and 1950. From results for the post-1950 sub-periods, it appears that the second scenario is the most likely. Indeed, in all post-1950 sub-periods, I found that the positive net worth effect on the

extent of investments in real estate was decreasing with time, while the income effect was becoming more positive. If we assume that it was the same trend that was being formed in the 1940s as the trends we observed after the 1950s, we can infer that, beginning in the 1940s, it was also low net worth families, of most income groups, who began investing more and more in real estate.

When predicting investment in securities, the effect of income is not affected as much by controlling for net worth. The positive effect of income decreases when controlling for net worth, but it stays positive. Therefore, the effect of net worth and income on investment in securities work in the same direction, and the decreasing effect of income on securities investments observed in the 1918 to 1935 sub-period may have been either a decreasing effect of the income, of the net worth, or of both effects simultaneously. Unfortunately, we cannot parse out these effects with the data available.

Changing the population also affects the effect of income on investment behavior. Restricting the population to employed, married, white men living in urban areas, such as in the pre-1950 periods, produces estimates for the effect of income that are more *positive* than in the larger population for most indicators of investment behavior, as is seen by comparing results from Models 2 (restricted population) and 3 (entire population). Therefore, it should be understood that the estimate for the effect of income in the two pre-1950 sub-periods is certainly higher at baseline than in the two post-1950 sub-periods.

Lastly, adding a variable indicating educational attainment to the model, as in Model 4, has the effect of slightly reducing the effect of income on all indicators of investment behaviors. This suggests that the effect of income is mediated by educational attainment in part, but not in full. As a result, estimates for the effect of income on investment behavior in all pre-1950 sub-

periods, in which educational attainment is not controlled for, are likely to be slightly inflated compared to estimates for the income effect in the post-1950 period. In addition, in light of the mediating effect of educational attainment, it is plausible that the swift decrease in the effect of income observed between 1935 and 1950 is due to the expansion of educational attainment during this period. However, the mediating effect of education is small, and college graduation rates increased very slowly between 1935 and 1950, which makes this scenario unlikely. Indeed, as Table Bc798-805 of the *Historical Statistics of the United States* shows, the college graduation rate grew only from 6.8% to 8.8% between 1940 and 1950 (Carter, 2006). Hence, the growth of the income effect on savings in real estate observed between 1935 and 1950 could be explained in small part by an increase of educational attainment in the population during this period, but most likely not in full.

To summarize my conclusions about the combinability of results across sub-periods, the restricted population and the absence of certain covariates in the pre-1950 sub-periods should not affect results by much, and the post- and pre-1950 results regarding the changing effect of socio-economic status on investment preferences should be highly comparable. Only two main differences exist between the pre-1950 and the post-1950 sub-periods. First, the income effect in the pre-1950 sub-periods condenses both the net worth and the income effects and, as a result, for the pre-1950 sub-periods, it is impossible to tell whether time changes in the income effect are changes in the effect of income, in the effect of net worth, or both. Second, in the pre-1950 sub-periods, the baseline positive effect of income in predicting investments in real estate and in securities is likely to be slightly inflated because, unlike in post-1950 sub-periods, educational attainment is not controlled for, and the population is restricted to an urban, employed population, in which the effect of income on investments in real estate and in securities is more

positive than in the general population. I thus believe it is fair to conclude from the previous analyses that, in the US, particularly in its urban and employed population, a broad change in investment practices occurred in the late 1940s across socio-economic status groups and was permanent. Low socio-economic status families began investing much more in real estate after the 1940s, whereas before then, they had been increasing their investments in securities steadily and relative to their high socio-economic status counterparts.

Conclusion

In sum, analyses presented in this chapter show that the socio-economic disparities we currently observe in portfolio composition – in which working- and middle-class families invest massively in real estate and comparatively little in corporate securities – were not always as important as they are today.

Chiefly, between 1918 and at least 1936, working- and middle-class families appear to have been on their way to closing their securities ownership gap with upper-class families, not their real estate ownership gap. Indeed, in 1918-1919, working- and middle-class families invested very few of their limited resources in price-fluctuating, risky assets, compared to their upper-class counterparts. As Cohen (1990) suggested, and as I also showed in the introduction to Part 2, middle-class families then preferred to invest in bank accounts, insurance, and, during and immediately after the Great War, Liberty bonds. By 1935-1936, however, even though working- and middle-class families still did not invest large amounts of their resources in risky assets,

these families had clearly increased the amount of resources they dedicated to buying *securities*, and they had even caught up significantly with upper-class families regarding the share of their resources they allocated to this asset. During the same period, working- and middle-class families showed no interest in increasing their investments in real estate; their investments in this asset stagnated, even as investments in real estate were most likely rising among the upper classes. Hence, as incomes grew in the 1920s, as surpluses became easier to generate for the working- and middle-classes, and even after the stock market had crashed in 1929, lower-income families were actively closing their gap with upper-class families regarding investment in securities, not regarding investment in real estate. Furthermore, as we have seen in this chapter, this catching up process was driven chiefly by the growing rates of securities ownership in the low-income segments of the population.

In the late 1940s, however, a sharp reversal in investment trends across income groups occurred, and it proved permanent. Beginning in the late 1940s, working- and middle-class families, especially those with low net worth and mid-level incomes, briskly began using their incomes to invest more and more in real estate, not in stocks or other corporate securities, as they had done only ten years earlier. While the amount of savings that middle-class families allocated to buying securities stagnated and perhaps even decreased between 1935 and 1950, and while the number of middle-class families entering the stock market also stagnated, the number of stock markets participants grew sharply among the upper classes. Meanwhile, the share of income spent on real estate investments by middle-class families soared relative to the share of income spent on the same asset class among upper-class families, in a growth pattern that lasted for at least four decades.

Indeed, until at least the 1990s, low net worth families continued investing more and more in real estate relative to high net worth families, and increasing numbers of them kept entering the real estate market. Furthermore, high-income families continued to increase their investments in securities relative to others after the 1940s, albeit not very significantly after the 1950s, chiefly because, even though growth in stock market participation occurred in all income groups after the 1950s, high-income families kept entering this market at a faster pace than others. These two trends, towards lighter investments in securities and increasing investments in real estate and among the working- and middle-classes, stabilized in the 1990s, but not before they had created a situation we still find today, in which families with a mid-size net worth invest *more* of their wealth in real estate than the highest net worth families, and high-income families invest a share of their wealth in securities that is about three times the share that median income families invest in this asset class.

There are of course some limits to these results that could affect my estimates of the changing effect of socioeconomic status in each sub-period. However, for reasons I explained in Chapter Two and in the present one, none of these limits seem likely to be affecting the *directions* of trends I described here. For instance, sampling strategy is relatively obscure for 1918-1919 and 1935-1936 waves of the Consumer Expenses Survey, and selection bias in these samples could be affecting my estimates of the income effect in the pre-1950 period. However, most specialists of these early waves of the CES nonetheless consider the samples to be good representations of the urban employed population during the 1918-1935 period, in part due to their extremely large size (12,431 and 61,000, respectively). In addition, the change in the effect of income on stocks in the 1935-1950 period could be explained in part because corporate securities and US federal securities were lumped together in a unique asset category in the 1935-

1936 wave of the CES. I am confident that this problem is unlikely to explain the change in the income effect in full, however, since, as others have shown, very small amounts of US federal securities were actually in circulation during this period, and since *Statistics of Income* data also strongly suggest the same change in the income effect that was observed in savings data. Lastly, the changing effect of income on investment in real estate observed during the 1935-1950 period could be due in part to increased educational attainment in the US population, but not in full, in my opinion, since the rate of growth of the graduation rate for this period is very low.

In light of these results, therefore, it is no exaggeration to say that the gaps we currently observe in portfolio composition across income and net worth groups were in many ways created during the 1940s. Indeed, while portfolio composition disparities existed along class lines in the 1920s and 1930s, during this period, these disparities were apparently on their way to being resolved. However, in the late 1940s, class-based disparities in portfolio composition suddenly soared again, and, this time, permanently. Low-income families began to fall farther behind high-income families regarding investments in securities and to catch up with them regarding investments in real estate, even though they had done the exact opposite a few years before.

As I showed in the first part of this dissertation, the current disparities in portfolio composition generated by this reversal in investment practices – comparatively high investments in real estate and low investments in securities among the working- and middle-classes – cause sharp gaps in rates of returns to capital across income and net worth groups. The 1940s reversal in investments practices was thus immensely consequential for the dynamics of inequalities in America, and it is crucial to understand why this reversal happened and persisted. As I show in the next part of this dissertation, current theories of portfolio choice and of homeownership in America do not suggest compelling explanations for the 1940s shift. I thus propose another

explanation for the 1940s shift in the next part of this dissertation, and thereby, I update current theories of portfolio choice, of middle-class investment behavior, and of the significance of homeownership in America.

Part 3

Access to Long-Term Amortized Credit and Investment Practices

In previous parts of this dissertation, I showed that working- and middle-class families invest much larger proportions of their wealth in real estate assets than upper-class families and that they invest only lightly in corporate securities, in contrast to upper-class families. As I argued in the first part of this dissertation, these differences in the composition of risky assets found across income and net worth groups are the main cause of substantial socioeconomic disparities in rates of return to capital, which are in turn consequential for the dynamics of income inequality in the American population.

In contrast to what is commonly assumed, however, differences in the composition of risky assets found across income and net worth groups were not always as pronounced as they are today. Working- and middle-class families have not always invested so much in real estate assets and so little in corporate securities, when compared to upper-class families. Rather, and as I showed in the previous part of this dissertation, working- and middle-class families suddenly began to invest massively in real estate assets, mostly by becoming homeowners, only in the late 1940s. Before then, during the 1920s and 1930s, working- and middle-class families had, in fact, been increasing their investments in corporate securities when they invested in risky assets and had not been increasing their investments in real estate. As a result, the differences in the composition of risky assets that exist today across income and net worth groups are, in many ways, the product of this 1940s shift in working- and middle-class investment practices. For this reason, it is crucial to understand the true causes of this initial shift, which occurred in the late 1940s, if we are to fully explain the differences that exist today in the composition of risky assets across income and net worth groups, and if we are to explain, as well, the socioeconomic disparities in rates of return to capital that these differences cause.

Why, then, did trends in investment practices shift during the postwar era? What can possibly explain the massive and sudden turn to real estate and away from securities in the wealth-building strategies of working- and middle-class families during and after the 1940s? According to most asset choice theories, such sweeping changes in investment practices could only be caused by equally dramatic changes in the benefits of and returns to homes relative to those associated with the ownership of other asset classes. And, indeed, one such radical change in the relative benefits occurred in the 1940s. A new benefit to homeownership appeared in this decade, became utterly unavailable through the ownership of other asset classes, and seems to have attracted the working- and middle-classes families particularly strongly.

This benefit, however, does not usually figure into the set of advantages to homeownership that we, and most scholars of asset choice, intuitively recognize as the key motivations for homeownership, such as access to better public schools and to safer neighborhoods (Denton, 2001), or access to detached, single-family homes (Glaeser & Shapiro, 2003). Those *are* real benefits to homeownership in today's U.S., and they no doubt play a significant role in the decisions of many contemporary Americans to buy homes, even at the price of owning virtually no other assets at all. But these commonly recognized benefits to homeownership did not change or become more important during or shortly before the 1940s, as I demonstrate later. Thus, they cannot explain the initial turn to homeownership during the 1940s.

I argue, in what follows, that the important benefit that did change shortly before the 1940s - becoming attached to homeownership and unavailable through ownership of other assets - is access to long-term, low down payment *amortized credit*, in short, to the modern mortgage. Indeed, and as I show next, prior to the mid-1930s, low down payment, amortized loans had been

available to finance the purchase of both homes (as well as other durables) *and* financial assets. However, by the end of World War II, as a result of both policy implementation and institutional change in the credit markets, this form of credit had not only become available in titanesque volumes to help finance the purchase of homes, as many historians have noted, but had also *vanished* from markets for securities, as few historians have remarked. In this process, low down payment, amortized credit became a benefit accessible solely through the ownership of *homes*.

To the contemporary ear, describing access to low down payment, amortized credit as a benefit may sound uncanny. Such credit instruments indeed have been available so long for homes only, and so utterly unavailable for purchasing securities, that we hardly imagine access to these debt instruments as an advantage, much less as an advantage with which homeownership uniquely provides us. In fact, we typically attach to homeownership itself the benefits that, in reality, are afforded to us because we rely on amortized credit to pay for homes. For example, we often say that buying a home “forces us to save,” while, in truth, it is not buying a home that forces us to save regularly, but the fact that mortgage payments are due to the bank every month.

Yet even though we, twenty-first century Americans, do not think of access to the modern mortgage as a benefit anymore, during the inter- and postwar eras, American families, especially working- and middle-class ones, often explicitly conceived of long-term amortized credit as something useful and as a prized tool in their wealth-building strategies. In what follows I provide a detailed description of the broad range of benefits that working- and middle-class families saw in amortized loans for assets purchases, but briefly stated here, these benefits include, first and foremost, precisely this idea that relying on credit is a financial commitment to save and to build wealth.

My argument in the next two chapters, therefore, is that a major factor in the turn of working- and middle-class families towards greater investments in homes during the 1940s was the *confinement* of low down payment amortized credit to the real estate market (and the market for other durables) and the *disappearance* of this kind of credit instrument from securities markets during the 1930s and 1940s. I argue that, for working- and middle-class families, access to long-term, amortized credit instruments was such an important advantage in their wealth-building strategies and in their attempts at self-building, more generally, that they picked assets based on whether or not “installment” types of acquisition plans were available. As a result, when amortized credit became confined to the real estate market in the 1940s, these families turned towards homes and away from securities as their preferred investment vehicle, in order to continue relying on low down payment, amortized credit in their wealth-building strategies.

To support this argument, I proceed in two steps. I begin, in Chapter Four, by showing how the 1940s shift is poorly explained by the theories that have so far been proposed for why, today, working- and middle-class families invest so much in real estate and so little in securities. I then describe how, in the 1910s and 1920s, low down payment, amortized credit had been available to help finance acquisition of both real estate assets and corporate securities, and how, after 1945, amortized credit had disappeared from securities markets but soared in real estate markets. I show how the timing of the changes in the availability of amortized credit across asset classes fits the timing of the changes in working- and middle-class investment choices, in a way that is consistent with the theory that it was this confinement of amortized credit to the real estate market that brought about the 1940s shift in working- and middle-class families’ investment practices.

Then, in Chapter Five, I both refine and provide additional evidence for this theory. Specifically, I show how and why working- and middle-class families in effect actively sought to rely on amortized credit in their wealth-building strategies, shortly before and during the postwar era. Relying on both ethnographic and interview data, as well as investments and savings survey data collected prior to 1950, I expose the motivations of working-, middle-, and upper-class families in building wealth and why amortized credit became a crucial tool for working- and middle-class families, given the specific goals they sought to achieve with wealth and assets. I also show how these families explicitly stated that they chose assets based on whether or not amortized credit was available whenever interviewed on the topic shortly before and during the postwar era, and I also show how these families appear to have done so in practice, as well, based on their own reported investment and savings behaviors.

In this third and last part of the dissertation, therefore, I show how policy change, which brought about the confinement of amortized credit to the real estate market, was ultimately at the root of the 1940s shift in investment practices of the working- and middle-classes, and thus at the core of today's deep socioeconomic disparities in portfolio composition and in rates of returns to capital. However, as I make this argument, and as I discuss the process that led working- and middle-class families to invest massively in real estate, I not only expose the structural conditions under which asset choice became so different across income and net worth groups, and under which rates of returns became so unequally distributed in the American population. Indeed, because this investigation leads me to consider at length the *motivations* for using credit in the context of asset acquisition, exploring why investment practices shifted during the 1940s also leads me to engage with and to propose significant transformations to contemporary theories of consumer demand for credit.

While these theories generally posit that credit is either solely a facilitator in the purchase of assets that are, ultimately, the sole objects of desire, or, alternatively, that, when demanded for itself, credit is desired mostly because it permits benefiting from large ticket items before having fully paid for them, my investigation suggests this is in fact the least important advantage of credit in the eyes of working- and middle-class families. For these families, amortized credit is useful, utilized, and demanded first and foremost because it is a way for them to commit to the project of acquiring wealth. Before discussing theories of demand for credit and the motivations of working- and middle-class families in using amortized credit, however, I begin by describing how amortized credit became confined to real estate assets in the first place, between the mid-1930s and the mid-1940s.

Chapter 4

The Great Credit Revolution:

Changing Opportunities for Credit across Asset Classes

In what follows, I propose a theory, according to which one crucial factor in the transformation of working- and middle-class investment practices in the 1940s was the disappearance of low down payment, amortized credit from the securities markets during the 1930s. I indeed show that while amortized credit, as well as other types of loans, had been available to help finance the purchase of *both* securities and real estate in the 1910s and 1920s, after WWII amortized loans had both vanished from securities markets and become widely available in the markets for real estate. I suggest that working- and middle-class families turned massively to homes as an investment vehicle after the 1940s in large part because they sought to continue relying on amortized credit in their asset acquisition projects, but they could only do so, at this point, if they invested in homes and other real estate.

To make this argument, I begin by showing that theories proposed for why, today, lower income families invest more than others in real estate do not explain the initial 1940s shift in investment practices. The commonly recognized benefits to homeownership, that is, those benefits that are viewed as the reasons behind high investments in real estate among the lower income families, did not, indeed, change shortly before or during the 1940s. Having shown that other theories failed to explain the 1940s shift, I then demonstrate how credit options available across asset classes changed in ways that could explain this shift. To do so, I provide a detailed description of how, as is well-known, amortized mortgage loans became widespread during the

late 1940s. Furthermore, I also show that during the 1910s and 1920s, the “partial payment plan” for securities-buying had also been widespread, but it disappeared from securities markets in the mid-1930s.

As I describe how the landscape of credit options changed across asset classes shortly before the postwar era, or what I call the credit revolution, in what follows, I demonstrate how the temporal unfolding of these changes fits the timing of the changes in working- and middle-class investment behaviors during the 1940s. I also demonstrate that the one group that did not experience this change in credit options across assets, African Americans, did not experience the 1940s shift in investment practices, in contrast to other groups. These pieces of evidence are telling, and they support the theory that the confinement of amortized credit really spurred the 1940s shift in working- and middle-class investment practices.

However, the evidence I propose in this chapter is hardly fully convincing, be it only for the fact that we are left in the dark as to why, exactly, amortized credit would have been so attractive for working- and middle-class families in the first place. In Chapter Five, therefore, as a way to both refine and further support the theory I expose in the present chapter, I explore these questions. I show that working- and middle-class families did explicitly choose assets based on whether or not amortized credit was available to finance them throughout the early decades of the 20th century, and I demonstrate why. Here, in Chapter Four, however, I focus mostly on describing this credit revolution that brought about the confinement of amortized credit to the real estate market, as well as its disappearance from securities markets. Before going there, though, I take a moment to show how other explanations for why, today, working- and middle-class families invest heavily in homes and real estate do not help us to explain the 1940s shift.

The Commonly Recognized Advantages of Homeownership over Time

Many scholars have puzzled over why, today, so many American families currently own homes at the price of owning virtually no other assets at all (among others, Hendershott & Shilling, 1982; Denton, 2001; Flavin and Yamasita, 2002; Cocco, 2005; Shum and Faig, 2006; and Diaz and Luengo-Prado, 2010). A common explanation proposed for this puzzle is that many families do not consider buying a home as an investment decision in the first place. According to this theory, most families choose to become homeowners in a tenure decision that they make independently of other investment decisions. Once the decision is made, however, homeownership results in an exogenous shock to the portfolio of the family's assets, to which the family responds by shedding all other risky assets from their portfolios. In this process, low net-worth families thus end up owning virtually no other assets at all other than homes, which explains the socio-economic disparity in portfolio composition (Flavin and Yamasita, 2002; Cocco, 2005; Shum and Faig, 2006; and Dias & Luengo-Prado, 2010). Might this framework help us explain why investment behaviors changed in the 1940s? Have owned homes somehow become more preferable than they used to be in comparison to rental units during the late 1940s? This idea seems unlikely, for two reasons.

First, contrary to what this explanatory framework posits, families – working- and middle-class ones in particular – do quite explicitly consider home purchases as a major investment decision, or at least they did so in the 1920s, '30s, '40s, and '50s, around the time of the 1940s shift. For example, in a survey regarding motivations for homeownership conducted in

1931, two of the top three motivations articulated concerned homes as savings and investment. The third most influential consideration was indeed “forced savings” and the second “safety of investment.” Even the most influential consideration, the “Welfare of Children,” could also be interpreted as concerning investment and savings, to some extent, depending on whether or not ability to transfer an asset to children was part of what respondents had in mind when checking “Welfare of Children” (Woodbury, 1931, p.321)¹. Hence, given the clear investment dimension that working- and middle-class families attribute to homeownership, even if transformations had occurred in the benefits of owned homes relative to rental units in the 1940s, it is unlikely that such transformations would have been sufficient alone to generate the scale of change in investment practices that were observed in the 1940s.

More importantly, owned homes did not really become more beneficial than they were compared to rental units during the 1940s in the first place. And to the extent that they did, it was entirely as a result of the development of the modern amortized mortgage. Indeed, housing tenure scholars generally argue that homeownership has two key benefits over renting. The first of these benefits is that homeownership is more or less the only way to occupy single-family, detached dwellings (see, for example, Glaeser & Shapiro, 2003). However, very limited evidence suggests that single-family dwellings became uniquely available in the market for owned homes

¹ Katona and Mueller (1953) found homes and real estate in the list of favorite investments reported by respondents to a national survey on consumer attitudes in 1951. Furthermore, advertising materials for homes and real estate assets also reveal that concerns for these assets as investments and savings vehicles were important. Advertisers of real estate indeed very explicitly recommended to one other to present real estate assets as good investments in their efforts to sell these assets to middle-class families. For example, in 1925, in its *Real Estate Advertising*, which was Volume V of the materials for a Standard Course on Real Estate sponsored by the association, The National Association of Real Estate Boards told its trainees that the three emotions to which Classified advertising of Real estate can “successfully appeal” are “Pride in ownership,” “The desire to design and build,” but also “The saving impulse” (Gifford, 1925).

during the 1940s. For example, as late as 1950, detached, single-family units still were a large part of the rental sector in the U.S. – about 40% - which was roughly the same proportion as in 1940 and roughly the same proportion, as well, as the estimated proportion for selected metropolitan areas in 1934 (Grebler, 1952 and Wickens, 1935).

The second recognized advantage of homeownership over rental is that homeownership constitutes a form of insurance against undesired moving due to unexpected rent increases (Sinai & Souleles, 2005 and Pattillo, 2013). There is evidence that homeownership became more of a protection against undesired moving during the postwar era. However, as I show next, this is entirely due to the fact that installment buying of homes became the dominant way to purchase homes. In other words, this effect is part of the theory I propose here, and I thus reserve the discussion of this point for later.

In sum, then, the framework proposed by scholars who explain current over-investment in homes among working- and middle-class families by assuming that homeownership is a tenure choice only, and not an investment decision, does not help us much in explaining the 1940s, at least not outside of a consideration of the credit revolution effect.

Other scholars have tried to explain the puzzle of low levels of investments in securities among working- and middle-class families in recognition of the fact that these families do consider home-purchases as an investment decision. According to these scholars, the reason why so many working- and middle-class families invest little in securities and heavily in homes, despite lower returns to investment, is that homeownership has non-economic advantages that make investing in homes more lucrative than it appears when observing only formal rates of returns. However, none of the non-economic benefits of homeownership over other assets that

are commonly cited in this literature as motivations for homeownership have changed significantly during or shortly before the 1940s.

For example, many scholars argue that homeownership is now, in effect, the way to have access to the better public schools in America, as well as to other forms of higher-quality public services (see, for example, Denton, 2001). However, even though the ability to access better schools is certainly a motivation for homeownership today, little evidence suggests that it was already the case in the 1940s and 1950s. For one thing, the connection between suburban areas and homeownership, whereby the connection between better schools and homeownership is currently maintained, was not as strong as it is today. Freund (2010), for example, dates the beginnings of sustained activism against rental units in suburban areas to the late 1950s, and some of the most famous suburban developments of the late 1940s and 1950s, even the illustrious Levittown itself, were originally planned and implemented with sizable amounts of rental units (Kelly, 1993).

More importantly, it is also unlikely that the *concern* for access to good public schools, in the first place, was as salient as it is today. As Goldin and Katz (2010) demonstrated, the returns to schooling actually decreased until the 1950s and remained constant until the late 1970s. In addition, high school graduation rates were still fairly low in the 1940s, at only 59% in 1950, compared to well over 70% today. And, even though the proportion of high-school graduates rate did increase sharply in the 1940s, from 41% of all 17 year-olds in 1935 to 59% in 1950, this proportion had in fact increased even faster during the previous 15 years, from 16% in 1920 to 41% in 1935, without generating any massive increase in homeownership among working- and middle-class families, as we have seen in Chapter Three (Carter, 2006, table Bc258-264). Hence,

there would have been very few reasons, prior to the 1970s, for families to be as concerned as they are now about high quality schooling during the 1940s, '50s, and '60s.

Lastly, and perhaps more convincingly, shortly before and during the postwar era, many studies inquired about tenure choice and motivations for homeownership (for example, Woodbury, 1931; Caplow, 1948; and Katona & Mueller, 1952). In these studies, however, concerns for location and neighborhoods are always found at the bottom of the list of motivations for homeownership. There is thus no evidence suggesting that working- and middle-class families have massively turned towards homeownership starting in the late 1940s because homeownership was or had become a ticket to better schooling options, or to better neighborhoods and services more generally.

Another non-economic benefit to homeownership commonly cited as a reason why so many families sacrifice higher monetary returns by buying homes is the fact that homeownership is status-enhancing and a cornerstone of American identity (See, for example, Garb, 2005). While homeownership is indeed a deep-seated American cultural value, most scholars of the phenomenon trace the cultural importance of homeownership as far back as at least the 1862 Homestead Act (Jackson, 1987; Ronald, 2008; Quinn, 2010; and Garb, 2005). The cultural value of homeownership, therefore, does not help us, either, in explaining the sudden turn to investment in homes and in real estate during the late 1940s.

Lastly, one other hidden benefit to homeownership often singled out by asset choice theorists is the fact that homeownership receives a different, more advantageous tax treatment than other assets (see, for example, Rosen & Rosen, 1980). Imputed rent, for instance, is not subject to income tax for owner-occupied homes, while rents are taxable for other real estate assets. Furthermore, interests paid on mortgages are tax deductible. However, the income tax

treatment of owned homes dates as far back as the federal income tax itself and did not become an advantage of owned homes during the 1940s. Furthermore, interests paid on all debt incurred to generate taxable income are potentially tax-deductible, not just mortgage interests. Therefore, the preferential tax treatment for owned homes cannot explain the 1940s shift in investment practices, not outside of the fact that credit in effect became more easily available for homes than for other kinds of assets, as I show next.

Hence, none of the non-economic advantages of owned homes over rental or over other assets have changed in the 1940s in ways that could help explain the 1940s shift. Furthermore, it is worth noting, also, that none of the formal economic advantages of owned homes over rental units or other assets changed substantially, either, during the late 1940s. For instance, real home prices rose at a faster pace than real rents between 1940 and 1970, and at a faster pace than median wages during the same period (Carter, 2006 and Vigdor, 2006). In addition, according to various historical asset price indexes, returns to homes and common stocks did not change markedly in relative terms during the postwar period (See, for example, Shiller, 2005). It is thus unlikely that working- and middle-class families turned massively towards homeownership and investment in real estate during the postwar era because it would have somehow become more economical for them to do so, either as a housing tenure option or as an investment option.

Rather, as I show next, the one benefit that did become associated with homes shortly before the postwar era, and utterly unavailable through the ownership of other assets, and which could explain the 1940s shift, is the ability to access long-term, low down payment, amortized credit. In Chapter Five, I give a detailed account of how amortized credit is and was seen by working- and middle-class families as a major benefit, on the basis of which they did choose their assets. For now, however, I simply describe how, between the 1930s and mid-1940s,

amortized credit indeed soared in real estate markets but disappeared from other assets markets, notably from all securities markets, in effect becoming available only through ownership of homes. To do this, I begin by describing how mortgage supply changed during this period in the markets for homes and real estate.

The Transformation of Mortgage Credit in the 1930s and 1940s

Long-term, high loan-to-value ratio, and amortized credit – in short, the modern home mortgage – was not always the only form of credit, or even the dominant loan structure available to help finance the purchase of homes and real estate. Rather, the amortized loan structure became dominant progressively, over the course of the 1930s and 1940s. As is summarized in Table 5.1 below, before 1950, the average mortgage loan covered between only 52% and 55% of the value of a purchased home and had to be reimbursed in seven to eight years. Furthermore, over 60% of these loans were not *amortized*, or could not be repaid, principal and interests, through fixed monthly payments; they had to be repaid in a lump sum at the end of the seven to eight years of the loan term. Lastly, roughly 40% of all loans were extended by non-institutional lenders, by individuals (Grebler et al., 1956 and Hyman 2011).

By 1950, however, the mortgage credit landscape had changed in important ways (Colean, 1950; Green & Wachter, 2005 and Rose and Snowden, 2013). As many have noted, mortgage supply had become much more voluminous, but, as can be seen in Table 4.1 in

Appendix J, the typical loan structure was also quite different. By 1950, the typical mortgage covered 71% of the value of the purchased home. 90% of mortgage loans were amortized - could be repaid in fixed, equal monthly payments - and the vast majority of them could also be repaid in as much as 16 years.

The causes of these changes in the supply of housing credit are well documented in several histories of consumer debt, and I refer here to Quinn (2010), Hyman (2011), Prasad (2012), and Rose and Snowden (2013) for particularly insightful expositions on the matter. Briefly stated here, these changes were brought about largely by the National Housing Act of 1934, its Title II in particular. In this act, which was meant to invigorate a moribund construction industry during the Great Depression, the federal government proposed to help credit find its way to the construction industry by establishing a system of insurance for mortgage lenders, which would cover them in the event of defaults by their mortgagees. To this effect, the federal government created an insurance agency that collected premiums paid by the mortgagees of various eligible suppliers of mortgage credit (mainly commercial banks, savings and loans associations, and life insurance corporations). In the case of a default by a contributing mortgagee, the federal insurance agency would use the collected premiums to immediately reimburse the owner of the mortgage – the financial institution that had originally lent the money. The insurance company would then become responsible for the foreclosed home and eventually proceed to the liquidation of this asset by selling it in the market.

This insurance system was attractive to many suppliers of mortgage credit because, in the absence of this insurance system, the suppliers of credit were the ones who had to deal with foreclosed homes whenever mortgagees defaulted. The process of selling these foreclosed homes, however, was long and costly, since taxes and other maintenance fees had to be paid by

the financial institution during the interim between repossession and liquidation of the home. Financial institutions thus saw much risk in lending to prospective home-buyers, even if, in theory, they had a collateral on their lent capital. The insurance system that the federal government proposed solved this risk problem, and, thus, many suppliers of credit showed interest in participating in the system.

As most historians of credit have noted, this insurance system had the effect of releasing large amounts of mortgage credit into the housing market, because it greatly reduced risk (Jackson, 1987; Quinn, 2010 and Hyman, 2011). However, the insurance system also greatly contributed to the diffusion of the long-term, low down payment, amortized mortgage loan (Rose & Snowden 2013). The NHA indeed stipulated that the federal agency would insure *only* loans that were fully amortized, with a term of 15 years or more, an interest rate of less than 5%, and a loan-to-value ratio of at least 70%. As a result, most commercial banks, insurance companies, and savings and loans associations turned to *these* kinds of loans and discontinued their former “balloon” or “straight” mortgages, as the loans described above were then called (the seven- to eight-year mortgages to be repaid in lump-sums at the end).

The full effect of the NHA’s insurance program on both the volume and structure of mortgage credit, however, were not felt much before the end of WWII. Indeed, as the Second World War struck and shook the world to its core in 1939, new construction in the U.S. became the object of severe restrictions. As a result, the mortgage market was brought to somewhat of a standstill until 1945. At the close of war in 1945, however, the NHA insurance system quickly rippled through the mortgage markets to reconfigure them; a slew of mortgage credit fell into the laps of prospective home-buyers throughout the country, all of it in the form of long-term, amortized loans. Furthermore, it should be noted as well that the federal government also helped

this transformation of mortgage credit with its Veterans Affairs (V.A.) benefits program. As part of this program, the federal government itself for a time became an important mortgage supplier as it extended large volumes of mortgage credit to many war veterans, which was also of the low down payment, long-term, amortized kind.

In sum, then, and as many have noted before, the insurance system, combined with the V.A. programs, had the double effect of releasing important new sums of mortgage credit and radically transforming the mortgage market, from a market in which “straight loans” were more prevalent into one that was dominated by the long-term, low down payment, amortized mortgage loan. As I describe later, over more or less the same period, however, exactly opposite developments occurred in the securities market. Credit available for financing the purchase of securities atrophied instead of expanding, and, more importantly, amortized loans disappeared from the securities market altogether, leaving the little credit that was left for financing purchases of securities of the straight loan kind.

The Disappearance of Installment Buying of Securities in the 1930s

Until the mid-1930s, various forms of credit had been available to help families and individuals finance the purchase of corporate securities, just like various forms of credit had been available to buy real estate and homes. The loan structure we remember most from this period is undoubtedly the now infamous *margin* loan, which, in many ways, resembled the straight

mortgage described in the previous section. Margin loans were usually extended by brokerage houses to their clients. At these brokerage houses, “retail clients” (non-institutional clients, namely individuals and families) usually had the option of having an open balance on their account to help them finance the acquisition of larger blocks of securities than what their own capital allowed for. For a client relying on this strategy, the open balance was called the “margin” or the “margin loan,” and the capital amount was called the “equity.” Different brokerage houses had different policies regarding how large they would allow these margins to be. Some houses were quite generous and required their clients to have as little as 10% equity on their account. Others required as much as 50% equity. Unlike the straight mortgages discussed above, therefore, margin loans, as open balances, did not usually have a term *per se*. However, in practice, the terms were usually fairly short. That is, if, as a result of fluctuation in the market price of securities, which were constant, the equity held by a client in an account fell below the threshold set by the brokerage house, this client would receive what was known as a “margin call,” during which clients would be asked to immediately add additional capital to their account, so as to bring their equity up to the required level. (Smiley and Kheen, 1988 and Fortune, 2000). In sum, then, margin loans were loans that had to be repaid in a lump sum over a period of time that was relatively uncertain.

Aside from the margin loan, another kind of loan structure was available to help finance the purchase of securities before the mid-1930s, which was more akin to the amortized mortgage, though this the existence of this other kind of loan has now been mostly forgotten. These other kinds of loans were involved in what was known as the “installment plan” for buying securities. Similar to homes with an amortized mortgage, under the installment plan, relatively large blocks

of securities could be purchased for a small initial down payment and, thereafter, a series of equal, monthly payments for a fixed number of months.

In the financial assets field, the installment plan, or the partial payment plan, as it was sometimes called, was pioneered by the U.S. federal government when it entered World War I and devised an ambitious - and immensely successful – program to sell bonds to its population. For a lively history of the Liberty Bond program, as the World War I bond effort was called, I refer to Greenough (1922), who presents a detailed account of how the bonds were sold in the State of Indiana (see, also, Clifford, 1917 and Case, 1922). Briefly stated here, the story of the Liberty Bond and of the installment plan for financial assets starts in 1917, when the federal government endeavored to sell five billion dollars' worth of bonds to its population. To develop a strategy to do this, the government recruited the country's prominent bankers and securities brokers. According to one apparently famous story of the period, reported by Greenough in his account of the Indiana Liberty bonds sales effort, the reaction of one prominent Indianapolis banker, upon learning the amount of capital the government hoped to raise through sales of bonds to the public, was to burst into laughter. Five billion dollars, in 1917, was indeed an enormous sum, especially given the fact that most Americans, at that point, had never invested in or bought securities before.

Eventually, however, each of the four Liberty Loan drives were over-subscribed, and the U.S. government raised not \$5 billion, but \$10 billion to finance World War I and its aftermath, over the span of only three years, between 1917 and 1920. The success of the Liberty Bond program was attributed, of course, to massive sales and advertising efforts. But it was also attributed to the installment plan, on which the government eventually relied to sell bonds to a

vast but previously untapped market for securities, constituted mainly of working- and middle-class Americans (Greenough, 1922, p. 131).

The installment plan for liberty bonds was apparently developed initially by banks, during the first Liberty Loan drive in 1917. Most banks of the country were indeed asked to help the sales effort of bonds by themselves buying fixed quotas of Liberty Bonds, which they would then become responsible for distributing among their clients and in the population they served. In this context, most banks quickly understood that many of their clients did not have the cash to buy even the smallest \$50 denominated bonds, but that many of them could amass such a sum within a year or two, if they saved every month. Hence, many of these banks began offering bonds to their clients, lending them the \$50 required to buy a bond for up to one year, sometimes more, and demanded from their clients only a small down payment upon purchase and that the borrowed money be repaid in a series of fixed, equal monthly payments. These payments would include interests, which most banks fixed at the same interest rate as those returned by the purchased bonds (Greenough, 1922). These installment plans proved major successes during the first Liberty Loan drive, to such an extent, in fact, that the federal government eventually helped most banks offer the same plan. Already by the second Loan drive, the plan had even become a cornerstone of the official Liberty bonds advertising campaign, as is seen in Figure 4.1 in Appendix K (see, also, New York Times, 1917; New York Times, 1918; and Riegel, 1920 for popular accounts of the partial payment plan).

More importantly for our purpose here, the staggering success of the Liberty Bond installment plan meant that, when the securities brokers of the country went back to their employers - the various private brokerage houses of nearly all urban centers - after they had been released from the Liberty Bonds task forces at the end of the war, these brokers had learned a

valuable lesson. They had learned that the market for securities was much broader than they had thought before the war. And they had learned, also, just how to tap this new market of “smaller” investors, using the installment plan. As a result, a number of broker houses began offering stocks and bonds on the installment plan to both current and potential new clients via various forms of advertising, in journals, in the mail, and on the roads (Financial Advertisers Association, 1928).

Since there is, unfortunately, no good history of credit for securities, no official statistics exist regarding the volume of installment credit for securities after WWI. But the general sense, among leaders of the Investment Bankers' Association of America, was that brokers relied on installment credit extensively from 1920 to at least 1923. Between 1920 and 1923, indeed, the demand for new capital by the corporations of the country was extremely high, since during the war most of these corporations had been virtually unable to attract any new capital at all. Brokers thus strove to sell the torrents of new stocks and bonds issues floated by corporations, and to do this, they did just as they had done during the war: they relied heavily on the installment plan (Financial Advertisers Association, 1928, p.83).

After 1923, however, new securities issues calmed down, as did the installment plan in broker houses. The reason for this was that managing installment plans was very costly for broker houses (Schwarm, 1927). These relatively small, boutique organizations were indeed not structured to manage many recurrent, small payments. They thus found it expensive to integrate installment plans to their day-to-day business and relied on the plan only when absolutely necessary, as it had been between 1920 and 1923.

On the other hand, however, many of the large corporations of the countries, the very corporations that issued securities in the first place in the form of both stocks and bonds, had the

perfect organizational structures for efficiently handling installment plan-selling of their own securities to the public. And these corporations did, in effect, sell vast amounts of their own securities on the installment plan to an enormous number of “small investors” throughout the 1920s and well beyond 1923. In fact, the lion’s share of installment-selling of securities is believed to have been conducted by these large corporations during the 1920s – by AT&T, by Standard Oil, the railways corporations, etc. – as part of their various, and very successful, employee and consumer ownership plans.

During the 1920s, indeed, the corporations of the country developed customer ownership programs in which they sold their securities to their regular clients on the installment plan. Corporations often collected the monthly installments at the same time as they collected monthly payments for the use of their services (phone, electricity, gas, etc.) (Heilman, 1925; Bruner, 1925; Wood, 1925 and Wishon, 1925). Furthermore, these same corporations also sold their stock to their own employees, in the context of their employee ownership programs, which also generally involved some kind of installment plan (Foerster & Dietel, 1926). As a report of the National Industrial Conference Board found in 1928, out of 389 corporations surveyed, 304 had employee-ownership plans, the vast majority of which involved selling shares to their employees on the partial repayment plan (National Industrial Conference Board, 1928). Specifically, in those plans, employees could apply to purchase a given amount of shares at a market price fixed at the onset of the transaction, and these employees then agreed with the employer that payment for this block of stock would be completed over one to three years, usually. In these arrangements, employees would provide a small down payment and then reimburse the borrowed sum in equal monthly payments. As employees were paying for their subscribed shares, the employer would usually hold the shares’ certificates in a trust fund, on behalf of the employee,

until the shares were fully paid for, at which point the certificates would be transferred to the employee. In the meantime, however, and even as payments were still being made, employees received the full amount of dividends to which they were entitled as owners of the shares; these dividends were generally substantial because large blocks of stocks could be subscribed for as a result of the installment plan.

It is unclear exactly how much credit was extended to employees and consumers in this process, or how many shares were actually acquired by consumers and employees, but existing estimates suggest that both of these amounts were very large. For example, by one estimate, of the roughly 2,500,000 individuals who became stockholders between 1918 and 1925, approximately 50% of them did so by buying stock through either an employee or a consumer ownership plan and, thus, for the most part, on the installment plan (Binkerd, 1925, p. 34). Means (1930) reached approximately the same conclusion as Binkerd (1925), albeit arguing that the growth of new stockholders between 1918 and 1921, as opposed to later in the 1920s, was due mainly to an increase in stockholders among “the general public,” who bought stocks through brokerage houses. As we have seen before, however, during the early twenties, it is highly possible that even those patrons of the brokerage houses actually bought securities on the installment plan and that much of the growth of securities ownership throughout the 1920s resulted from this plan (see Means, 1930, p. 570). Hence, even though we do not possess an exact estimate of the amount of amortized credit that was available to help finance the purchase of securities during the 1920s, there are good reasons to believe that this amount was quite large and that installment-buying of securities was very important (see also Financial Advertisers Association, 1928, pp. 62-63).

However, in the 1930s, things changed abruptly, and installment-buying for securities disappeared entirely. The reasons for this disappearance were certainly multifaceted, but the Securities Act (SA) of 1933 and the Securities Exchange Act (SEA) of 1934 likely played important roles. Indeed, sections 7(c) and 11(d)(1) of the SEA prevented securities brokers from being involved in the distribution of new issues of securities if this distribution involved credit. Furthermore, if even they were involved in transactions of securities on secondary markets, brokers, as a result of the same sections of the SEA, were permitted to extend credit only for up to 40% of the value of the traded securities (Securities Exchange Act, 1934 and Pittman, 1987). This had the effect of curtailing margin credit in securities markets quite severely, which was exactly the purpose sought after with these sections of the SEA. But, more importantly for our purposes here, and as Pittman (1987) has highlighted, the Board of Governors of the Federal System and of the Securities Exchange Commission, who are jointly responsible for enforcing the provisions of the SEA, have both explicitly stated that installment or deferred payment plans are to be considered as “impermissible extension[s] of credit” under these SEA provisions (Pittman, 1987, p.56)². Therefore, even though its primary intention was to curtail margin credit, the SEA had also the effect of rendering installment-buying of securities virtually impossible.

It would of course be premature in the context of this study to claim that the SEA provisions were the sole cause for why brokers stopped offering installment plans for securities and for why banks never developed the practice of offering amortized loans for securities, but it seems, and many other scholars argue, that these SEA provisions constituted major roadblocks. Preventing brokers to be in new issues of securities that involved any kind of credit indeed

² As Pittman argues: “The Board reasoned that since an investor in a staged payment offering would be entitled to all the benefits and risks of ownership of the security at the time he or she entered into a contractual agreement to make deferred payments, the program would be extending credit to the investor until the final payment was made” (Pittman, 1987, p.56).

certainly prevented these brokers from developing the efficient organizational structures that would have enabled them to accommodate the installment plan, or to develop consumer finance arms or collaborations with banks that would have helped them to systematically offer installment plans to their clients. Furthermore, limiting the amount of credit that brokers could extend in even secondary exchanges of securities to 40% of the value of securities also, in effect, made sure that the installment plan could not develop in secondary markets, either, given that the installment plan usually involves less than a 10% down payment (Pittman, 1987 and Fortune, 2000).

In addition, it appears that the same provisions of the SA and of the SEA, which prevented *brokerage houses* from extending credit to their customers, also prevented many corporations from continuing to sell their *own* securities on the installment plan. Indeed, though corporations were theoretically selling their *own* securities as part of their consumer and employee ownership plans, and though they could thus, according to the letter of the SEA regulations, extend credit if they wished to, most of these corporations in fact relied on spun-off trusts to effectuate the trades of securities with their employees and consumers (Foerster & Dietel, 1926). These trusts must have been considered as brokers under the SEA, since a significant number of corporations identified the Securities Act of 1933 and the expected SEA of 1934, which was then being debated, as a key reason for discontinuing their employee ownership plan, when they were asked about this topic in a 1933 survey conducted by the National Industrial Conference Board (Davis, 1933, p. 24). Of course, these corporations also identified a series of other factors as motivations for discontinuing their employee ownership plans, including that, immediately after the trauma of the 1929 crash, they felt that selling securities to their employees was inappropriate. However, no company identified lack of employee interest in

the plans as a cause for discontinuation. Hence, if federal regulations were certainly not the only cause for the cancellation of employee ownership programs in the 1930s, these regulations certainly prevented the practice from reviving after the immediate trauma of the crash had passed, and when better times were back in place, during the postwar period.

As a result of these developments, therefore, by the mid-1930s, not only had credit supply for securities purchases been severely curtailed, but, more importantly, and as no historian, to my knowledge, has highlighted, amortized loans, which had existed before for securities acquisition, had completely vanished from the securities market. Why even the most comprehensive histories of credit have overlooked both the existence and the disappearance of the installment plan for securities is a little bit of a puzzle. Hyman (2011), for example, who brilliantly documented the dramatic rise of installment credit in nearly all spheres of consumption, does not even mention that installment-buying existed for securities in the 1920s and that, *contrary* to all other forms of installment-buying, it disappeared after WWII, instead of booming. More puzzlingly still, Calder (1999), who wrote a wonderful history of how debt was morally justified in America during the twentieth century, mentions that installment-buying of securities existed in the 1920s, but only in passing, devoting less than a paragraph to the question. And he does not appear to consider it important, for a history of the increasing legitimacy of credit, that one important form of credit, installment-selling of securities, far from being legitimized, in keeping with other trends in credit change, was in fact made virtually illegal. It is beyond the scope of this dissertation to question why the evolution of installment-buying of securities went by under the radar of history. But regardless of the reasons why, it remains true that installment-buying of securities existed in the 1920s, even if only relatively briefly, and that the postwar credit revolution, which has been

much talked about, involved not just a major expansion of mortgage credit (and of credit for durables other than homes), but also the disappearance of amortized credit for financial assets.

An Explanatory Theory for the 1940s Shift in Investment Practices

In sum, then, between the mid-1930s and the end of WWII, the credit market for financing the purchase of assets underwent a radical transformation, a revolution. Before the mid-1930s, straight and amortized types of loans had been available to help the purchase of both real estate and securities, with straight loans dominant in the real estate markets and amortized, installment plan loans at least as important as margin loans in the securities market. After WWII, however, the mortgage credit supply had swelled and become predominantly of the amortized form, while, in the securities markets, all forms of credit supply had been severely curtailed, and the installment plan had disappeared entirely.

This credit revolution meant that, by 1945 and still to this day, access to amortized credit to finance the purchase of an asset had become dependent on the type of asset one bought. Specifically, amortized credit had become available only for homes and real estate assets, in other words, a benefit accessible only through the purchase of real estate assets. In the chapter following this one, I demonstrate how, though we do not consider amortized credit as a benefit anymore, amortized credit really was a useful tool for asset-building for working- and middle-class families of the early 20th century, as they themselves explicitly recognized.

Before delving into the ways in which amortized loans were useful to working- and middle-class families of the early decades of the 20th century, however, I would like to state explicitly the theory I advance here, relative to the causes of the 1940s shift in investment practices. I argue that access to amortized credit was so valuable for working- and middle-class families that in the late 1940s, these families began changing their investment practices in response to the confinement of amortized credit to the real estate market. I believe that the credit revolution was an important cause of the massive shift in investment practices of the 1940s and that this shift was thus not mostly the result of a change in asset preferences, but rather the result of structural changes in credit markets that forced working- and middle-class families to buy real estate assets, if they wanted to continue using amortized loans.

In the present chapter, I have begun to provide evidence in support of this argument. I showed, first, that traditional explanations for why, today, working- and middle-class families invest massively in real estate are unable to explain the major 1940s shift towards real estate and away from securities. I have also demonstrated, as I traced the history of what I called “the credit revolution” of the 1930s and 1940s, that the timing of the confinement of amortized credit to the housing market fits the timing of the 1940s shift in investment practices, in a way that supports my argument. As further evidence in support of my argument, it is also worth noting that among the one group that was systematically *excluded* from the new markets for amortized mortgages during the postwar period, African Americans, the same shifts in investment practices observed in other segments of the working- and middle-class population did not occur during the postwar era.

Indeed, as is well-known, African Americans could hardly access the new long-term, high loan-to-value, amortized mortgages until at least the Fair Housing Act of 1968 (Massey &

Denton, 1993; Sugrue, 1996 and Freund, 2010). And, if the confinement of amortized credit had not been an important cause for the 1940s shift in investment practices in which working- and middle-class families began investing increasingly more in real estate and increasingly less in securities, similar shifts would have been observed in the African American population, as well. However, no such effect is observed; in fact, the effect was quite to the contrary. Data from the Survey of Consumer Finances, which I introduced in Chapter Two, indeed shows that African Americans continued to *reduce* their investments in real estate and to *increase* their investments in securities between 1950 and 1968, as the rest of the population had done before the onset of the credit revolution, and in sharp contrast to what the rest of the population did after the credit revolution. These data are presented in Appendix H.

Conclusion

In this chapter, I advanced an explanatory theory for the 1940s shift in working- and middle-class investment practices, according to which this shift was caused in large part by the disappearance of the installment plan from securities markets and by the confinement of this plan to the real estate market. I have also begun to demonstrate, if not the validity, at least the plausibility of the theory, by showing the temporal co-occurrence of the credit revolution and of the 1940s shift and the inability of other theories to explain this shift. I also showed that the investment behaviors of African Americans during the postwar era, who were excluded from the experience of the credit revolution, also supports this theory.

However, the evidence provided thus far in support of the theory is hardly enough to be truly convincing, in large part because an important piece of the theory I advanced is still underdeveloped. Why, indeed, would working- and middle-class families have been so interested in amortized credit, to the point of transforming their investment behaviors in response to a change in the availability of amortized credit across asset classes? What are the benefits of amortized credit for working- and middle-class families? How, indeed, is credit a benefit? In the next chapter, as a way both to refine the theory I proposed here and to support this theory further with more evidence, I propose answers to these questions. I take an in-depth look at the process of asset acquisition and of wealth-building; I explore the motivations for and strategies of wealth-building. As I do this I show that the installment plan was crucial in working- and middle-class families' strategies for building wealth, and that they actively looked for such plans, chiefly because it allowed them to commit to the very project of acquiring wealth.

Chapter 5

The Uses of Credit in Wealth-Building Strategies

In Chapter Four, I articulated an explanatory theory for the changes in working- and middle-class investment practices that occurred in the late 1940s. I suggested that lower-income and lower net worth families began investing more in real estate assets and less in securities after WWII because they were interested in using *amortized* credit in their wealth-building strategies. Amortized credit, however, had by then become available *only* for homes and real estate assets and had disappeared from securities markets. Working- and middle-class families thus massively turned to real estate, not so much out of a preference for these assets, according to the theory I proposed, but as a way to continue to utilize amortized loans in their wealth-building strategies.

I provided some evidence in support of this theory in Chapter Four. I showed, for example, how the credit revolution and the shift in investment practices were timed in a way consistent with the theory. I also showed that the investment behaviors of African Americans, who did not experience the credit revolution during the postwar era to the same extent as others, because they were excluded from the new amortized mortgage markets on racial grounds, also support the theory I proposed. Yet pieces of the puzzle are still missing regarding both this theory and its validity. For instance, why would working- and middle-class families have been so interested in using amortized credit in their asset acquisition projects, before and during the postwar era; why would they have been interested in these credit instruments to the point of transforming their investment practices when amortized credit became confined to the real estate market? Is there evidence that these families in effect sought amortized credit in their wealth-

building strategies during the early decades of the 20th century? Can we find evidence that these families indeed *chose* assets based on whether or not amortized credit was available to finance their purchase? If so, why?

Providing answers to these questions will help both validate and further refine the theory I proposed in Chapter Four. In fact, finding answers to these questions is even, in my view, the only route for providing robust evidence in support of this theory. To my knowledge, working- and middle-class families were indeed not asked in any survey or interview, during or shortly after the 1940s, why they increasingly chose real estate *over* securities or other assets. During this period, opinion surveys regarding investments and savings tended to explore attitudes about and motivations for purchases of individual classes of assets, often real estate assets, and most of the time owned homes in particular. As a result, there is no hope for direct proof of the theory I proposed in Chapter Four, in the sense of a clear statement by some of the working- and middle-class families who were investing and saving in the 1940s confirming that yes, part of the motivation for choosing real estate over other assets in the 1940s was the possibility of amortized credit in the real estate market.

However, the theory I proposed in Chapter Four can nonetheless be defended and supported through other, more indirect means: by showing, as I just suggested, that, shortly before and during the postwar era, families do appear to have *demande*d *amortized credit* and to have chosen assets in part based on availability of this kind of credit instrument. If they did so, indeed, it then becomes highly probable that they changed their investment practices in response to a change in amortized credit availability across asset classes, as I suggested in Chapter Four. Furthermore, exploring at length *why* working- and middle-class families were interested in amortized credit will not only bring more evidence in support of the theory I proposed in Chapter

Four, but it will also help refine this theory, since exploring the “why” question will clarify the *mechanisms* whereby confinement of amortized credit to the real estate market in effect helped modify investment practices during and after the 1940s.

In what follows, therefore, and as a way to both refine and support the theory I proposed in Chapter Four, I ask the following: Did working- and middle-class families demand amortized credit in their wealth-building strategies during the early 20th century, more so than upper-class families? To be sure, some important work on this question has already been produced. Prasad (2012), for example, demonstrated very clearly that an underlying demand for credit does exist in the U.S., particularly among families possessing small resource endowments, since at least the New Deal era. According to Prasad, the low level of social spending by the state in the U.S. leaves many families with no choice but to borrow to respond to emergencies. Furthermore, a habit of reliance on credit and private wealth for security provision also undermines support for more extensive welfare programs, which generates all the more demand for credit, especially among low net worth working- and middle-class families who have fewer and fewer alternate ways to respond to emergencies. In other words, then, evidence is already available to suggest that working- and middle-class families consider credit to be important, that they rely on it extensively, and that they demand credit more than other families do. But Prasad and others, notably Krippner (2012), have explored the importance of credit for families *in general*, whereas the question of interest, here, relates to the usage of credit in a very specific context: that of asset purchases and of wealth-building. Indeed, what needs to be elucidated in this chapter is whether or not working- and middle-class families sought to use credit as a tool for wealth-building, not just as an instrument for dealing with emergencies.

More importantly, what is crucial for establishing the validity of the theory I proposed in Chapter Four is finding an answer to the following question: Did working- and middle-class families desire to use amortized credit so strongly, in the early decades of the 20th century, as to even *choose* assets in part based on whether or not amortized credit was available for financing their purchases? If so, why, or why not? In this chapter, therefore, as a way to both validate and further develop the theory I proposed in Chapter Four, I focus on this specific set of questions.

To find answers to these questions, I rely on both quantitative and qualitative data sources regarding savings and investment behaviors, as well as attitudes towards savings and investment during the first half of the 20th century, which I detail below. Building on these data sources, I first describe the contrasting sets of goals that well-off and poorer families respectively pursued when they bought assets and endeavored to build wealth in the early decades of the 20th century. I show that, while upper-class families hoped to generate income for a distant future, for their old age and for their progeny, working- and middle-class families were mostly concerned with the management of recurring episodes of income loss. These contrasting sets of goals for building wealth across socio-economic status groups led to contrasting strategies of wealth accumulation across these same groups. In turn, these contrasting strategies led to different levels of demand for credit as a tool for wealth accumulation and demand for other types of credit instruments across income and net worth groups. More specifically, I show that working- and middle-class families explicitly considered *amortized credit* as a useful tool for asset acquisition, in contrast to upper-class families, who preferred balloon-types of credit instruments. I also show that working- and middle-class families demanded amortized credit particularly strongly and deliberately sought to use such credit instruments when acquiring assets, in large part because

utilizing amortized credit instruments permitted them to commit to the project of asset acquisition.

These findings thus strongly support the theory that the credit revolution and the confinement of amortized credit to the real estate market constitute important causes for the 1940s shift in working- and middle-class investment practices. These findings, indeed, support the idea that working- and middle-class families transformed their investments behaviors in response to the confinement of amortized loans to the real estate market, because they show that working- and middle-class families were highly concerned with access to amortized credit in the early 20th century and explain why.

As I present findings and conclusions from this chapter's analyses, however, I not only refine and further support my theory for the 1940s shift in investment practices. I not only clarify the social processes and the structural conditions under which investments in homes among lower income families became so dominant and created major disparities in rates of returns to capital. While I share this chapter's findings, and especially as I unpack the variety of reasons and motivations for why working- and middle-class families demanded using amortized credit in their wealth-building strategies, I also engage with and contribute to contemporary theories of consumer demand for credit. More specifically, findings from this chapter call for a significant transformation of how we understand the motivations for credit use among working- and middle-class families and for a transformation of how we conceive of the role played by credit relationships in American society, more broadly.

I indeed show in this chapter that the key reason why working- and middle-class families demanded amortized credit so strongly and so much more than upper-class families in the context of wealth-building strategies during the early 20th century was not only because credit

helped them use assets before having paid fully for them, as most theorists of consumer demand for credit would assume. Rather, working- and middle-class families demanded amortized credit because signing up for amortized loan contracts was a way for them to *commit* to the accomplishment of a major life goal in the future, to the purchase of a substantial asset. As I close this chapter, therefore, I discuss the implications of this chapter's findings not only for my own theory of how investment strategies and rates of returns to capital came to be so unequal in the American population, but also for theories of consumer demand for credit.

Before discussing these matters, however, I present the findings themselves in what follows, beginning with an overview of data sources.

Data Sources

To explore the motivations for savings, asset acquisition, and wealth-building of families before and during the 1940s and 1950s, I rely on both quantitative and qualitative data regarding investment behaviors and attitudes towards investing, savings, and asset acquisition. I focus on white families since only these families were touched by the credit revolution during the 1940s. A first source of data I employ is comprised of the savings and investment surveys already introduced in Chapter Two: the 1918-1919 and the 1935-1936 waves of the Consumer Expenditure Surveys, as well as the Survey of Consumer Finances, particularly its 1950, 1953, 1963, and 1968 waves. I also occasionally draw on homeownership data from the U.S. Census available through the Integrated Public Use Microdata Series Project.

Qualitative data on attitudes and opinions regarding investments, savings, asset choices, and credit come from four sources. First, I rely on what were known in the first half of the 20th century as “budget studies.” These studies were frequently conducted by social workers and home economics scholars prior to the 1950s. Most of these studies were commissioned by the Bureau of Labor Statistics as a way to collect information about the cost of living of families in different social and geographic locations. These studies usually involved detailed interviews with small samples of families living in the same neighborhood or city regarding their annual expenses and savings. These interviews were often complemented with ethnographic data and, in some cases, they were also longitudinal, with repeat interviews at regular intervals. Some of these studies targeted middle-class populations – salary earners and professionals. But most of them targeted the urban working-class population of wage-earning families (for a comprehensive survey of budget studies conducted before 1935, see Williams & Zimmerman, 1935; see Horowitz, 1992 for a general review of these studies until the postwar era).

Second, I also rely on opinions surveys conducted prior to 1960 regarding homeownership (from governmental, academic, and commercial sources). I also explore surveys regarding ownership of other assets, when available, but few of them exist (for a review of survey research during this period, see Converse, 2009).

Third, I rely on publications by professional associations of advertisers of assets (real estate and securities, in particular), as a way to gain insight into how assets were presented and sold to working- and middle-class families, and, more importantly, as a way to better understand the motivations of working- and middle-class families for acquiring assets, via what marketers and advertisers knew about these motivations. To this effect, I rely mainly on educational

publications produced by the National Association of Realtors and by the Financial Advertisers Association before 1950, which were intended for their respective members.

Lastly, I rely on a moral history of consumer credit written by Calder (1999) to gain additional insight into the motivations and rationales for using credit during the first half of the twentieth century. In this work, Calder traces the uses and meanings attributed to credit by individuals, families, policy makers, and moralists during the first half of the twentieth century. I rely on his work, findings, and data as I discuss and interpret the uses and meanings of credit among working- and middle-class families in the context of their wealth-building strategies.

These materials form a large corpus that is also broad in scope, covering an extremely diverse population over decades during which tremendous levels of social change occurred. There are of course inherent limits to such a broad corpus. All differences across ethnicities or regions, for example, which might have existed in the relationships of families to wealth-building and to credit, are necessarily glossed-over and not taken into consideration. For the purposes pursued here, however, a wide-ranging corpus has distinct advantages. At any given point in time or region, qualitative studies on the savings and investments of the working- and middle-class populations are scarce. Therefore, a corpus that extends to many ethnic groups, regions, and decades is virtually the only way to obtain substantial data regarding the ways in which class and socio-economic status affected the motivations for asset acquisition and for reliance on credit. I thus rely on a broad-scoped corpus, despite the limits of such an approach, with the hope that more nuance regarding ethnic, regional, gender, or cohort differences in strategies for savings and credit usage can be explored in future research.

In what follows, I build on these data to explore first the contrasting sets of goals and strategies that high- and low-income families sought and employed as they acquired assets and

built wealth. I then show how, in their respective wealth-building strategies, and as a result of differences in these very strategies, high- and low-income families exhibited different levels of demand for credit, as well as a demand for contrasting loan structures. While lower income families demanded using credit to purchase assets to a greater extent than upper-class families, they also demanded amortized credit, specifically, in contrast to upper-class families, who preferred straight loans. Building on the same set of sources, I also demonstrate that, contrary to what would be assumed in most theories of consumer demand for credit, the reason why working- and middle-class families preferred credit, and amortized credit, specifically, was not only because they benefited more than other families by being able to use assets before having paid fully for them and because amortized loans were easier to manage for low net-worth families. As I show in what follows, and building on the aforementioned sources, working- and middle-class families demanded amortized credit mostly as a way to commit to the project of acquiring assets: to force themselves to save.

Purposes of Asset Acquisition across Income and Net Worth Groups

I begin my inquiry into whether and why working- and middle-class families demanded particularly strongly to use amortized credit in their asset purchases by exploring the goals these families sought to achieve with assets acquisition shortly before the 1940s shift and by contrasting these goals with those aimed at by upper-class families. Having a strong

understanding of these contrasting sets of goals across income and net worth groups will indeed help us understand in what follows, first, why families possessing different levels of income and net worth chose different asset accumulation strategies and why they had different criteria for choosing assets. Second, possessing a strong understanding of the specific set of goals sought after by families buying assets will also aid us in understanding why credit, and amortized credit, specifically, was so highly demanded by working- and middle-class families in particular when they purchased assets, as I show later.

To begin exploring the goals and strategies of asset accumulation across income and net worth groups, it is worth pointing out, first, that in the early decades of the 20th century, families of all income levels bought and accumulated assets for both *emotional* and *practical reasons*. On the emotional level, acquiring assets had similar implications across income and net worth groups. Asset acquisition, indeed, meant advancement, was experienced as the accomplishment of a major life goal, and was conceived of as a help to children, a demonstration of love, and a service to posterity among both lower and higher income families. I will thus discuss this emotional dimension of asset-building, which was similar across income and net worth groups, at more length later on.

On the practical level, the goals that lower- and higher-income families sought to achieve when buying and accumulating assets differed sharply and called for contrasting strategies for asset accumulation across income and net worth groups. More specifically, as Lynd and Lynd (1929) showed clearly in their classical study of Muncie, Indiana, one crucial economic difference between high-income and low-income families during the early 20th century, aside from the size of their income, was the extent to which this income was uncertain in the near future. Upper-class families (which the Lynds called the “business group”) virtually never

experienced income loss except in old age and in retirement, while the vast majority of working- and middle-class families were regularly plagued by wage loss, throughout their working lives¹. As a result of these differences in the experience of financial uncertainty, families of different income and net worth levels purchased assets with different goals in mind. In their own wealth-building projects, working- and middle-class families sought to prepare for the next down-turn, which was generally expected in a matter of weeks or months, not in a matter of several years. Upper-class families, in contrast, sought to generate an income with their asset acquisitions that would be needed only in the relatively distant future.

As a result of pursuing different practical goals when building wealth, lower- and higher-income families used different strategies to accumulate assets, and different techniques to evaluate these assets' worth or to choose between them. Upper-class families sought to both maximize and protect the long-run income yielded by their investments. These families generally expected to obtain income from their assets *on formal exchange markets*; they anticipated gathering interests and dividends when these assets reached their term or collecting capital gains resulting from fluctuation in these assets' market values over time. Upper-class families thus chose assets largely on the basis of which one could yield the highest, in theory, on these formal exchange markets and over time, which they did by carefully exploring the returns promised by assets with a fixed term, such as bonds, and through occasional speculation and betting regarding the future market value of price-fluctuating assets such as real estate and stocks. Furthermore, upper-class families were also concerned about protecting the long-run income provided by their

¹ "The most prosperous two-thirds of the business group," as the Lynds summarized in 1929, "at a rough estimate, now as in 1890, are virtually never subject to interruptions (of work and income) so long as they do good work, while the other third is somewhat subject to cessation of work, though to a less extent than the working class. (...) Among the working class, however, the business device of the shut-down or the lay-off is a recurrent phenomenon." (Lynd & Lynd, 1929, pp. 55-56).

assets and by managing their investment risks, and to this effect they sought to diversify their portfolios (Levy, 2012). They thus also chose assets with regards to creating mixes that promised a good balance of certain incomes and more uncertain, but potentially bigger, ones in the future. All in all, therefore, and as the Financial Advertisers Association noted in 1928, when choosing investment strategies, financially experienced, upper-class families sought “investment structure” and “diversification plans” and, as they shopped for assets, as they pondered where to invest and from where to divest, they wanted “facts, more facts,” as well as income and risk details for each investment option they considered (Financial Advertisers Association, 1928, p.161-164)².

For working- and middle-class families, however, such criteria for asset choices were not directly relevant to their own wealth-building goals. In a nutshell, since these families sought to manage the reality of rapidly re-occurring income losses with their assets, the theoretical, long-term yield of assets was not the most relevant information about assets for working- and middle-class families. Scholars and marketers who studied the savings and investment behaviors of working- and middle-class families all singled this fact out. As financial advertisers noted in 1929, for example, lower-income investors did not, in contrast to higher-income ones, seem to care much about the formal yields or about the details of the costs and benefits of various investment possibilities when comparing options for investing. Rather, these families sought assets that promised, more generally, “a good income” (Financial Advertisers Association, 1928, p.161-164). Social workers also noted the same tendency among working- and middle-class

² For descriptions of how upper-class families conceived of investment and asset choices, especially in contrast to working- and middle-class families, see also Ott (2011) in the context of securities-buying and Garb (2005) in the context of home and real estate purchases. The literature on the rise of the “small investor” during the 1920s, as well as documentation regarding sales strategies during the bond drives during the two World Wars, are also extremely useful for characterizations of how high- and low-income families made investment decisions (for example, Clifford, 1917; Wood, 1925; Bruner, 1925; National Industrial Conference Board, 1929; Heller, 1953; and Katona, 1960).

families to overlook the formal costs and benefits of investment options in the early 20th century as they noted, and sometimes scorned, how these families had little bank account savings while possessing a number of insurance policies that were actually much more expensive than the construction of constantly replenished savings accounts (More, 1907, p.42 and Lynd & Lynd, 1929. See, also, Schoenfeld & Bezanson, 1925; Ewen, 1985; and Wadhvani, 2002).

Hence, working- and middle-class families did not seem to care much for the formal costs and benefits of assets as they chose where to invest, and, given that these families sought to manage recurring income loss, they had good reasons for overlooking the formal, long-term income structure promised by investment opportunities. For working- and middle-class families, indeed, the important features of assets were not how much they could each theoretically yield in the future. Rather, and, especially given that no strong system of social support was in place in the U.S. at the time, the main feature of assets for working- and middle-class families was whether or not assets could yield enough to help with an income loss *on short notice*. From this perspective, insurance, on which working- and middle-class families relied extensively (as social workers pointed out) made sense, even though insurance cost more in absolute terms than savings in the bank. Insurance was indeed the ideal way in which to secure sufficient additional income in the event of one of the most frequent causes of income loss: death and illness (see, also, Zelizer, 1979 on the uses of insurance).

For all other causes of income loss, however – lay-offs and work stoppages, for example – insurance was not generally as available in the early 20th century. What, then, were the best strategies for ensuring a minimal income on short notice in these other occasions? What were the best assets to own in prevision of these episodes of income loss, and why? Bank account savings figured fairly low down the list, as social workers noticed. Indeed, for most working- and

middle-class families, episodes of income loss recurred at such a rapid pace, that, even assuming the most conscientious savings possible, the amounts that could be accumulated in the bank between two down-turns by these families were generally too small to be of any help in compensating for the loss of wages when it occurred (Lynd & Lynd, 1928). Furthermore, as Abbott (1936) also found in her studies of Chicago's tenement districts in the 1920s and 1930s, deposits were not insured before the mid-1930s, and the shaky banks of most working-class neighborhoods failed on a regular basis (see, also, Friedman & Schwartz, 1971 on bank failures during the early decades of the 20th century). For working- and middle-class families, therefore, on top of being inefficient for their needs, bank account savings were also quite risky.

A better strategy for these families, in order to maintain material security despite frequent down-turns, was to have at their disposal as many *high-value, large ticket* assets as possible: durables, homes, and large blocks of securities. Here, the high-value character of the assets was more important than their eventual theoretical yield. Indeed, the high-value character of assets provided these assets with a kind of fungibility that was extremely valuable to families plagued by frequent wage losses, even when these high-value assets were durables. More specifically, working- and middle-class families could always exchange fairly easily or pledge high-value assets on a few different markets when hard times suddenly hit them and be assured of obtaining some cash on very short notice in return; they could pledge these at pawn-shop or at short-term loans offices, for example. In this process, families rarely got a theoretically good yield on the assets they pledged, and they often did not even obtain the face value of these assets. In fact, in these short-noticed, emergency exchanges, high fees and losses were often involved. However, in these emergency exchanges, the amount of cash that working- and middle-class families could

get from a high-value asset was likely to be high enough to provide them with some sufficient security to weather a wage loss episode, some sort of relief in hard times.

For example, with some of these high-value assets, such as homes and other real estate, families could obtain an extra income during a suddenly appearing episode of wage loss, by renting these assets. In these cases, families did not necessarily get the best rents for their available rooms, and families would often themselves tighten up in the worst, darkest, smallest corners of their own properties in order to rent as much of their space for extra income. This was hardly efficient by the standards upper-class families would have employed to judge the value of assets, but in this process of renting what they could, families did nonetheless secure “welfare, even if at the cost of present health, comfort and decent living” (Abbott 1936, p. 377). In addition, as More (1907) and many other social workers noticed, the pawn shop system also helped families monetize high-value assets during wage-loss episodes, which greatly helped managing these episodes, though the monetization process involved substantial costs (See, also, Calder, 1999 for a review of pawn shop culture literature). For example, in the following passage, More (1907) describes what she calls the “pawning habit”:

Articles of clothing and other possessions are often “put in” (at the pawn shop) from Monday morning to Saturday evening, but in the meantime 3 cents on every dollar is forfeited. One woman who had a particularly hard winter claimed that she lost from \$0.25 to \$0.50 a week by pawning articles and then redeeming them as soon as she had a little money ahead. One family which had been given \$100 in clothing, money, and rent by the church paid \$25 for a watch “on time” (which means on the installment plan) when a child of fourteen “graduated,” and had barely paid for it when it was pawn for \$5. (...) Many families in this investigation did not have the pawning habit, and always paid cash for everything – “German style”, as one woman expressed it. There is not the Monday morning pilgrimage to the pawnshop that there is in some neighborhoods, but both pawning and “buying on time” are typical of every workingmans’ neighborhood. (More, 1907, p.147)

As More confirms in this passage, the monetary value obtained from the pawned assets was indeed often much less than what the assets themselves were worth, in theory, and extra fees were also often involved. But even if, for example, a watch acquired for \$25 could yield only \$5 in the event of an emergency, this \$5 was nonetheless probably more than what could have been accumulated in cash over the span of only a few weeks or months between two downturns and, thus, the asset and the investment strategy, though apparently costly by other standards, in effect fulfilled their intended goal³.

To sum up, then, if the pawning, short-term loan systems, as well as the other ways families had of monetizing high-value assets were by no means perfect, and although these were systems in which abuse and asymmetries were rampant, their workings nonetheless demonstrate how having at their disposal some kind of *high-value*, large-ticket assets constituted a more effective and overall safer way for working- and middle-class families to manage the difficult reality of recurring income-loss, a more effective way than relying on incremental day-to-day savings or than relying on carefully explored theoretical yields of assets over time, which could never be sure to yield when needed.

Furthermore, it should also be noted that possession of *high-value* assets was not only useful to working- and middle-class families as they tried to compensate for wage loss upon its occurrence, but, also, as these families devised preventive strategies for managing the reality of recurring-income loss. More specifically, between episodes of income loss, the possession of high-value assets helped these families build social capital, on which they could then rely for support during actual events of wage loss. Indeed, as More (1907) and many other social workers

³ Furthermore, as More herself mentions, the pawned assets were often available to be bought back at the same low price at which they had been pawned shortly after they were first pawned, thus diminishing the overall loss.

observed in the early twentieth century, and as sociologists still observe today, the single most important resources that working- and middle-class families have at their disposal for surviving moments of hardship are families and friends, or what many call their “social capital” (Bourdieu, 1986; Coleman, 1988; and Small, 2011)⁴. However, as More (1907) and others have noted, support from families and friends in times of hardship is not free. It has to be created and maintained, which is done in large part by actively participating in networks of mutual support, helping out others during one’s moments of prosperity. Rendering services and performing other kinds of “emotional labor” is one way to do this, but lending assets to kin and friends when they are in need is another effective way to build social capital (Hochschild, 1983)⁵. For example, both social worker Abbott (1936) and family historian Hareven (1982) described how many families bought homes (and rental properties) so as to be able to move kin in with them for low rents, and often for no rent at all (See, also, Bosworth & Baldwin, 1911; Little & Cotton, 1914; and Bruton, 1924)⁶. Furthermore, as historian Ewen (1985) observed, women also commonly lent to each other their available durables so that friends and kin could pawn these durables to secure cash in times of need, in part with the expectation that these friends and families would eventually return the favor for them. Hence, actively participating in networks of mutual support

⁴ For example, More estimated that, on average, 7.3% of total income among the families she studied in 1907 consisted of gifts from relatives and friends (More, 1907, p. 85). She also mentioned that most families with small incomes would be “dependent” (on charity or on some other kind of welfare), were it not for the support of their friends and families (see, also, similar results in Schoenfeld & Bezanson, 1925).

⁵ On emotional labor, see, for example, More (1907), who describes the case of Ms. G, who was a poor “manager” of her own affairs, but who, on the other hand, was always “a kindly, helpful neighbor (...) who usually has some children with her, whom she is keeping for a neighbor,” and as a result, managed to never be in need (More, 1907, p.117 and p. 176).

⁶ For example, Abbott wrote that as she studied owners of two- to four-family dwellings in the tenement districts of Chicago: “many cases were found which indicated that frequently the resident landlord had a close personal relationship with the tenant and was more lenient in collecting rents and in increasing rents (...) The tenants are frequently relatives and friends, and in these cases such leniency is even greater” (Abbott, 1936, p. 389).

formed a key element of working- and middle-class families' management strategies, and, in order to be able to participate in these networks, they benefited from having high-value assets at hand, which they could lend and otherwise use to help out families and friends.

In sum, then, working- and middle-class families, at least in the first half of the 20th century, tended to pursue starkly different practical goals when saving, investing, and building wealth than their upper-class counterparts. Their own specific objectives for possessing assets and wealth led working- and middle-class families to weigh assets according to different criteria and to embrace contrasting accumulation strategies - to choose different assets for different reasons when compared to upper-class families. While upper-class families sought to maximize future income for their old age and, thus, evaluated assets mostly with respect to their formal, theoretical revenue potential over time, working- and middle-class families sought to acquire assets as a way to secure the means through which to survive recurring income-loss episodes, and prioritize insurance and high-value assets that could yield some emergency income on short notice⁷.

⁷ Of course, by contrasting descriptions of asset evaluation, asset choice, and asset utilization strategies across income and net worth groups, my point is not to suggest that no low-income families ever considered the future earning potential on formal exchange markets for the assets they bought, or that higher-income families never considered the value of their assets in their social networks. Many lower-income families did speculate on the future value of assets on exchange markets and did buy real estate or securities in the hope of reaping a large monetary gains in the future, as Hoyt (1933) has noticed (see, also, Garb, 2005 on real estate speculation among working-class families). Furthermore, many high-income families did rely on parents and friends for material security, as Calder (1999), for example, has pointed out. The point of the above description, rather, was simply to stress that investment criteria and strategies are different, on average, across income and net worth groups because, as many scholars of class have argued, on average, both the quantity of resources possessed by families and the labor market position enjoyed by these families differ across income and net-worth groups, which creates contrasting experiences of material insecurity across these groups (Lareau & Conley, 2008). It is these contrasting experiences of material insecurity, which, in turn, tend to lead to the contrasting sets of goals and strategies I described across income and net worth groups, which are, of course, not homogenous within groups, but simply different, on average.

As I show next, the differences in wealth-building goals and in asset acquisition strategies across groups, which I have described in this section, in turn created important differences in the demand for credit across income and net worth groups in the context of asset purchases and of wealth-building. In particular, these differences in goals and strategies for asset acquisition created higher demand for *amortized* forms of credit among working- and middle-class families. I discuss this point in what follows.

The Demand for Credit in Asset Acquisition Strategies

In the previous section, I argued that working-, middle-, and upper-class families, on average, aimed for contrasting sets of goals as they respectively accumulated wealth and purchased assets, as a result of the specific texture material insecurity takes on in each their respective experiences. I also showed that, because of these differences in goals, these groups of families pursued different wealth-building *strategies* in the first decades of the 20th century; they chose assets according to different criteria. In these contrasting asset acquisition goals and strategies, was reliance on credit equally useful for lower and higher income families? Was amortized credit sought after, independent of the specific assets that credit could help purchase, in one set of strategies more than in the other? Was reliance on credit so important in some of these asset acquisition strategies that families would have gone so far as to choose assets based on whether or not loans were available to finance their purchase, and change their investments behavior, as I suggested in Chapter Four, in the event of a disappearance of credit from some

assets markets, such as securities? More importantly, would working- and middle-class families *in particular* have demanded amortized credit in their own asset accumulation goals and strategies?

As I show in what follows, the answer to these questions is yes: working- and middle-class families do appear to have demanded credit, amortized credit, specifically, as they purchased assets, and more so than did upper-class families during the early decades of the 20th century. Furthermore, working- and middle-class families seem, also, to have gone so far as to choose their assets in part based on whether or not amortized credit was available for financing their purchase. In the following section of this chapter, I delve into why, exactly, working- and middle-class families demanded amortized credit in their asset-purchase processes and take an in-depth look at the range of motivations these families had when demanding and utilizing credit: into how credit helped them build assets for the reality of recurring income loss. Before I explore these motivations for demanding amortized credit, however, I explore, more simply, the basic evidence that suggests that the working- and middle-classes did, indeed, demand credit, specifically amortized credit, in their asset acquisition strategies to a greater extent than upper-class families.

Evidence that amortized, installment plan types of credit were demanded in particularly strong fashion during the first half of 20th century by working- and middle-class families is found in one key observation made by Whyte in 1956 (Whyte, 1956). Discussing middle-class suburban families purchasing large ticket items such as durables and real estate, Whyte indeed noted the following quite straightforwardly: “If vendors will not oblige by accepting equal monthly installments, the purchasers will smooth out the load themselves by floating loans” (1956, p. 323). Using credit, in other words, appears to have been a major concern for middle-

class families around the time of the 1940s shift, as they purchased assets. These families indeed bargained merchants for installment plans, according to Whyte, and when merchants did not oblige, they possibly went elsewhere, and, at the very least, as Whyte stresses, they managed to get credit from elsewhere.

More formally and less anecdotally, elsewhere we can also find evidence that credit was demanded in asset acquisition projects, not just by middle-class families, but also by working-class ones, as well as evidence that these families, in fact, even chose assets to some extent on the basis of whether or not *amortized* credit was available for them. More specifically, we can find evidence in support of these ideas in the manners in which the availability of amortized credit generally correlates to higher rates of ownership of the assets, especially among lower income and lower net worth families. This relationship – between increased amortized credit availability and increased ownership of the assets it permits buying among working- and middle-class families – was in fact particularly strong in the early decades of the 20th century, and many have noticed it. Olney (1991), for example, has shown that consumption and ownership of small consumer durables – home appliances and the like – grew very quickly among working- and middle-class families as a result of the expansion of the installment plan for durables in the early 20th century. As Caldor (1999) reminded us, also, Ford came dangerously close to collapse, in the late 1920s, when the company failed to follow the lead of its competitor, General Motors, in offering installment-buying of cars. Furthermore, a survey of employee stock ownership plans among over 300 corporations conducted by the National Industrial Conference Board (1928) showed that the corporations possessing the most successful ownership plans with the “rank and file” employees were those in which installment purchases of stock, as opposed to other kinds of purchasing incentives, were involved. Lastly, scholars of homeownership have also long agreed

that the expansion of amortized mortgage credit supply during the postwar era, which I described in Chapter Four, played a large role in the staggering growth of homeownership during this period, from only 42% in 1940 to over 60% in 1960, a growth that brought large swaths of the working- and middle-classes into homeownership, as I myself showed in Chapter Three (see, for example, Chevan, 1989 and Fetter, 2013).

Much evidence, therefore, demonstrates the strong association between installment credit availability for an asset and increased demand for this asset among working- and middle-class families. However, scholars who have documented this association generally do not assume or understand it as suggesting that credit generates growth in asset ownership because credit is demanded for its own sake, as I argue here. Most scholars who have explored the relationship between installment credit and asset-buying contend that this relationship stems from the fact that credit *facilitates* asset purchases among low net-worth families, who desire not credit but the asset it permits buying (see Olney, 1991 and Fetter, 2013 for particularly explicit expressions of this argument). In this interpretation, therefore, amortized credit availability does not increase the purchases of assets because there is an underlying demand for amortized credit in asset-buying, but because there is a long-held, underlying demand for specific assets, which credit helps meet whenever it becomes available. Credit, in this interpretation, is thus not a general tool for wealth-building that is demanded regardless of the specificity of assets; rather, it is a tool that permits buying the specific assets that are desired, and that is used only to satisfy the demand for these assets.

How can we verify which of these interpretations of the meaning of associations between installment credit supply and asset ownership among working- and middle-class families is true, or whether both are true? One possible way is to look at how working- and middle-class families

respond to facilitators for asset purchases *other than* increased credit availability. For instance, if credit boosts asset purchases only as a facilitator for the purchase of assets, then families have an underlying, unfulfilled demand for assets, and we should expect these families to express this pre-existing, unfulfilled desire for assets by buying these assets more when prices decrease as well, and not only when credit becomes available to finance their purchase. Inversely, if families respond to increased credit availability with increased ownership of assets in part because they have an unmet *demand for credit*, then we should not expect families to respond particularly strongly to lower asset costs in the absence of credit for the purchase of this asset, but to nonetheless respond strongly to credit availability for this asset by increasing purchases of this asset. Furthermore, if families have a demand for amortized credit *specifically* and not for credit generally, we should expect them to respond to greater amortized credit availability, but not so much to credit availability, more generally, with an increase in assets purchases. Lastly, if demand for credit or for amortized credit, specifically, is stronger, or only valid for working- and middle-class families, as I hypothesized here, we should expect these patterns to be more pronounced or to be observed only among the lower income families.

In what follows, I use this logic to verify whether or not the association between increased installment credit and increased ownership of assets among working- and middle-class families indeed indicates that these families desire to use amortized credit in their asset accumulation strategies more so than wealthier families. Specifically, I consider the case of homes, and I explore the effect of amortized mortgage credit availability on home purchasing behaviors and compare it to the effect of decreased housing costs on this same behavior, when controlling for credit availability. To do so, I exploit regional variation in both housing costs and availability of straight and amortized mortgage credit during the early 1930s, before the

occurrence of the great expansion of amortized mortgage credit, which permits me to explore the effect of housing costs while controlling for credit availability⁸. Building on these regional differences, I explore how working- and middle-class families responded to lower housing costs and to greater availability of different kinds of mortgage loans during the early 20th century, and I compare these responses to those exhibited by higher income families to the same factors. I explore whether any income group displayed behavior suggesting that those in the group had a demand for amortized credit that was, in a sense, independent of their demand for homes.

Data regarding the availability of both straight and amortized mortgages by region is available for the year 1934 from a financial survey of urban housing (Financial Survey thereafter) that was conducted by the Civil Works Administration (Wickens, 1935). For this survey, detailed data regarding mortgage contracts were collected in 15 American cities, most of them mid-sized, with populations ranging between 70,000 and 400,000 inhabitants (they include cities such as Portland, Maine; Providence, Rhode Island; and Cleveland, Ohio). From this survey, I generate proxies for the availability of credit of different kinds by city. As a proxy for the general availability of mortgage credit by city, I use the ratio of homes that are mortgaged in each city (I could also have used the average mortgage interest rate, which indicates the price of mortgage credit. Robustness tests showed these two proxies are interchangeable and yield roughly the same results). Second, as an indicator of the availability of amortized mortgages more specifically, I use the proportion of mortgage loans that were amortized in each city. Used in combination, these two proxies thus indicate, respectively, the availability of straight mortgage loans and the availability of amortized mortgage loans in each city.

⁸ With data from after the credit revolution it would indeed be close to impossible to observe how families responded to the reduction of housing costs, controlling for access to credit, since amortized credit became so widely available and in fact intertwined with home purchases.

Homeownership as well as housing costs data is available for the years 1935-1936, through the 1935-1936 wave of the Consumer Expenses Survey, which I introduced in Chapter Two. I thus use proxies derived from the 1934 Financial Survey in combination to this CES data. Since very few of the cities sampled in the Financial Survey were also found in the 1935-1936 wave of the CES, in order to merge the 1934 Financial Survey data with the 1935-1936 CES sample, I assume that the proxy values computed for each city from the Financial Survey apply throughout the state in which the sampled city is located. For example, data computed for Cleveland out of the Financial Survey is applied to all Ohio cities in the CES sample. The proxies for credit availability I use here are thus relatively coarse, since they are based on data for only one city and are then applied to the city's entire state. Results shown next should thus be interpreted with caution. However, I believe the proxies are still useful, since, as many historians of banking and credit have suggested, during the pre New-Deal Era state regulations were the most important forms of banking regulations, and as a result, many more similarities existed within states than between them regarding things such as interest rates, amortization rates, and loan-to-value ratios (Coleman, 1950; Grebler, 1952; and Friedman and Schwartz, 1963). Regarding indicators for housing costs by region, I computed them directly from CES data. Specifically, home values are not available in the CES; therefore, I use median rents by state instead, which I divide by median family income in the corresponding state to create a proxy for average housing costs by state⁹.

With these proxies in place, I use logistic regression to explore how families of different income levels responded to lower housing prices and to greater availability of mortgage credit –

⁹ After validation in the Census data, which contains both home values and rent values, even though these rent-to-value ratios vary slightly across region, median rents are generally highly correlated with median home values (corr=0.8).

availability of both straight loans and amortized ones. Specifically, in this logistic regression model, I predict the odds of homeownership using the proxy for housing costs, the proxies for mortgage availability, and income (net worth being unavailable in the CES sample)¹⁰. I also interact income with the three proxies for housing costs and credit availability, to explore how the response to lower housing costs and to mortgage availability differs depending on income. I control for a series of demographic factors: age, family size, and whether a family lives in a metropolitan area. Lastly, I control for a few other elements of loan structure, to make sure that my indicator for the availability of amortized credit does not, in fact, indicate something else than the availability of amortized loans, such as, for example, longer loan terms, which were often associated with amortized loans. I compute these controls from the Financial Survey data. I use the proportion of loans with a term of 15 years or more to control for length of term. I also control for size of down payment using the ratio of outstanding debt-to-home values by city¹¹. Lastly, I also add a control for the comparability of rental units to owner-occupied ones by region, using the proportion of rental units that are detached, single-family dwellings in each city. Regression results are presented in Table 5.1 in Appendix J.

Looking first at housing costs, results from Table 5.1 suggest that, on average, families do respond to housing cost reductions by buying homes. However, this seems to be true mostly for

¹⁰ Results also hold when I predict the amount of income allocated to real estate assets in the outcome variable.

¹¹ In the regression model results presented in Table 5.1, I did not include the control variable for average Loan to Value Ratio (LTVR). Power and multiple correlation issues arise when adding too many state specific covariates, since the dataset contains only a limited number of states, with limited combinations of state-specific values for the different mortgage credit availability proxies I computed. I did test the robustness of this model to including this covariate, however, removing for this purpose other state-specific covariates, and results are robust for controlling for average LTVR.

families with *higher incomes*, i.e., for upper-class families. Indeed, looking at the term for the interaction between housing costs and income and looking at Figure 5.1 presented below, which shows the data graphically, we see that in regions with lower housing costs, higher income families are more likely to own homes, while lower-income families are not. In fact, Figure 5.1 in Appendix K suggests that lower housing costs have some kind of significant effect on homeownership only among families in the top 30% of the income distribution and that this effect seems to be, by far, the strongest among families in the top 10% of the income distribution. In other words, then, if many families showed signs of having an underlying interest in homes, as an asset in and of themselves and independently of whether or not credit was available to finance their purchase, these families were mostly upper-class families, not working- and middle-class ones. Working- and middle-class families, for their part, showed no particular interest in homes as an asset, at least if we judge their interest by the extent to which they responded to lower costs with actual increases in homeownership. At any rate, results from Table 5.1 show that working- and middle-class families had *much less* of an interest in homes as assets, independently of credit, than higher income families, as they responded much less to lower housing costs with increased homeownership than did higher income families.

Regarding the effect of the availability of credit, and amortized credit in particular, results from Table 5.1 tell quite a different story. These results suggest that, in contrast to their response to housing costs, working- and middle-class families responded to the availability of credit, and to the availability of *amortized* credit, specifically, with increased homeownership, to a much greater extent than their upper-class counterparts. More specifically, as seen in Table 5.1, both indicators of credit availability predict, at baseline, higher rates of homeownership. But the

availability of amortized credit increases homeownership among *low-income* families more so than among high-income families, while the opposite is true for the availability of straight loans.

In sum, then, evidence from Table 5.1 suggests that working- and middle-class families had a *demand* for *amortized* credit as they purchased assets in the early decades of the 20th century, while upper-class families had less of a demand and, at any rate, preferred straight loans, to the extent that they used credit. The availability of amortized credit, in other words, did not appear to raise asset ownership among working- and middle-class families only as a facilitator of asset purchases, contrary to what many scholars of consumer demand for durables claim. Rather, the availability of amortized credit appears to have also created a new demand for assets among working- and middle-class families; because these families had a demand for credit, and to some extent chose assets on the basis of whether or not credit was available.

Of course, there are many limits to this evidence and to the interpretation I proposed for it. First, as we interpret these data and come to conclusions, it should be remembered that, as I already mentioned, the proxies for the availability of credit employed here are relatively coarse. Unfortunately, I did not find ways to check the robustness of my findings about the effect of the availability of mortgage credit in general during the interwar period. However, there is a way to check the robustness of the effect of the availability of *amortized* credit on home purchases, which I present in Appendix I. As is seen in this Appendix, the fact that the availability of amortized mortgages is associated to more homeownership among low-income families, specifically, while lower housing costs is not, is a very robust finding and is discernable in three different samples, using two different proxies for the availability of amortized mortgages.

A second limit to the above analyses is that the evidence I produced pertains to home purchases only, which are but one kind of asset purchase. It would be inappropriate to blindly

extend this finding to all other assets and to claim that the meaning of these findings is that working- and middle-class have a demand for credit that led them to choose assets *in general* on the basis of whether or not amortized credit was available to finance their purchase. Replicating the above analysis to other assets would be much beyond the scope of this dissertation. However, for now, I do believe that the qualitative evidence I produced in the previous section of this chapter, regarding the relationship of working- and middle-class families to assets, does suggest that the findings I presented in this section regarding the demand for credit in the case of home purchases specifically can be extended to many other assets, including other durables, securities, etc. Indeed, qualitative findings from the previous section indicate that many working- and middle-class families did not pay much attention to the specificity of the assets they bought – to their costs, their yields, their usages - and paid more attention to their high-value character, as well as to the asset fungibility endowed by this high-value character. Furthermore, and as I show in detail next, credit actually helps families acquiring those high-value assets. I thus believe that these qualitative findings are consistent with the notion proposed here, based on quantitative data for housing only, that working- and middle-class families in effect demanded amortized credit as they purchased and accumulated most assets, as part of their strategies and techniques for building wealth, and that they chose these assets in part based on the availability of credit.

Lastly, a third, and more important limit to the previous analysis of housing data, and to the interpretation I proposed for it, is that the lack of response to lower asset costs among lower-income families may not indicate low levels of interest in the asset, as I assumed here. Olney (1991), for example, who has studied the relationship between credit availability and purchases of consumer durables in the early 20th century, proposes another interpretation for the lack of response to lower asset prices among lower income families in the context of restricted

credit supply for the purchase of these assets. According to Olney, if low-income families do not respond to lower prices for an asset in the absence of credit to finance its purchase, it is not for lack of interest in this asset, but because, without access to credit, lower income and net-worth families are simply unable act upon their desire to buy assets, even in the event of decreased asset costs. In a nutshell, according to Olney, families who do not have the cash to pay \$1,000 on a home probably do not have the cash to pay for this home even if its price drops to \$800. According to Olney, therefore, the lack of response to lower asset prices, in the context of limited credit supplies for financing the purchase of these assets, does not indicate a lack of underlying interest for the asset, but simply the existence of borrowing constraints that prevent the expression of this underlying interest for the asset. In turn, the response to increased credit availability indicates merely that these families would wish for this borrowing constraint to be lifted for this asset, not that they demand credit in their process of building wealth.

In her own work on durables, Olney (1991) provided two key pieces of evidence to defend her interpretation of the meaning of the non-response to lower asset costs in the absence of credit among working- and middle-class families. As a first element of evidence in support of her interpretation, Olney showed that if lower income families did not respond strongly to lower durables costs in the first years of the 20th century, when credit was in short supply for these assets, lower income families had become highly responsive to lower prices for durables after installment credit for durables had boomed, starting in the 1940s (p.133 and following). This same phenomenon, the emerging responsiveness to prices after credit is released, is visible in the case of homes, as well. Indeed, as Figure 5.2 in Appendix K shows, while lower housing costs did not increase homeownership rates among lower income families in 1935, by 1960, when mortgage credit had become widely available even to these lower income families, the reverse

had become true; low housing costs had become significantly associated to higher homeownership rates among lower income families¹². As I said, Olney takes this as evidence that low-income families become responsive to lower housing costs only after credit booms *because* credit finally makes it possible for them to express their long-held underlying demand for assets. However, why would the new responsiveness to costs in the presence of credit not mean the opposite? How do we know, for instance, that low-income families did not become responsive to lower housing costs when credit became widely available to buy homes because they had an underlying, unfulfilled demand for *credit* in assets purchases and because homes, after the credit revolution, had become the main vehicle for access to credit?

With only asset purchases data available, there is actually no way to adjudicate between the two interpretations. And, probably because she knew this, Olney (1991) relied on another piece of evidence to support her interpretation of the meaning of low responsiveness to cost reductions in the absence of credit. Olney argued that if the large, credit-fueled increase in purchases of durables in the 20th century had not been due to a demand for these durables themselves, but mostly to a demand for credit that permitted the purchase of these assets, as I myself suggest, then surely the *price* of credit would have increased during the 20th century to signal this high demand for credit, or at any rate, it would certainly have gone down.

As Olney points out, the price of credit indeed actually decreased quite sharply during the interwar period, the period she examines. However, contrary to what Olney suggests, the decrease in the price of credit can hardly be seen as evidence for low levels of demand for credit during the interwar era. First, as congressional hearings regarding the National Housing Act make very clear, the decrease in average interest rates in the 1930s was produced by low levels

¹² I have confirmed this pattern in a regression analysis that is not shown here.

of demand for credit among businesses, not among consumers (National Housing Act, 1934). Most bankers who testified before the House committee on Banking and Currency indeed acknowledged that demand for credit was high among consumers, but that most banks were prevented by regulations from extending credit to these consumers (see, also, Olson, 1988). Furthermore, in the 1920s, it is largely recognized that interest rates declined due to a vast expansion of credit supply, caused by savings that had been accumulated during the First World War (Fortune, 2000 and Grebler et al., 1956). Hence, it is inappropriate to conclude that demand for credit was sagging during the interwar period based on declining interest rates. Furthermore, throughout the entire postwar era, and though credit supply *increased* massively during this period, interest rates climbed substantially. More to the point, consumer demand for credit became so high during the postwar era, as both Prasad (2012) and Krippner (2012) have pointed out, that generalized credit crunches were experienced in the U.S. population. These crunches even propelled consumer advocates to push for the deregulation of financial institutions, which promised to increase credit supply (Prasad, 2012). In other words, then, there is not much evidence in the evolution of average interest rates or in the scholarship on demand for credit during the early decades of the 20th century to suggest that demand for credit among working- and middle-class families was sagging.

For these reasons, then, I believe that the data I presented above are more amenable to the interpretation I suggested than to the one proposed by Olney (1991). There is indeed little evidence to suggest that if increased amortized credit supply were associated to increased purchases of assets by working- and middle-class families in the early decades of the 20th century, it was only because of an underlying demand for these assets, which could finally, with credit, be satisfied. I believe that the evidence provided above in fact suggests that if working-

and middle-class families did not respond much to lower housing costs by buying homes before credit became widely available for homes, but nonetheless responded to amortized credit quite strongly during this period, it was at least in part because these families, in contrast to upper-class ones, had a high demand for credit, for amortized credit in particular, and because they chose to buy assets whenever this form of credit became more available to finance their purchases, i.e., whenever these assets became a vehicle for access to amortized credit.

In summary, the data presented in this section suggest that, in their own wealth-building strategies, working- and middle-class families did indeed demand using amortized credit, specifically, to a greater extent than upper-class families, as I hypothesized in Chapter Four, and that working- and middle-class families even chose assets in part based on the availability of mortgage credit. There are some inherent limits to the quantitative data regarding asset purchases I presented here, however. Therefore, in what follows, I provide more evidence in support of the interpretation I proposed for these data, as I turn to an examination of the motivations that working- and middle-class families gave for utilizing credit in the context of their wealth-building strategies, which show that these families both had many advantages to using credit in the process of wealth building and explicitly admitted seeking for amortized credit as they purchased assets.

The Motivations Behind Demand for Credit

Why were working- and middle-class families interested in using amortized forms of credit *specifically* – installment plan types of repayment structures – in their wealth-building strategies, in contrast to upper-class families, who seem to have preferred the straight loan structure when they used and demanded credit for asset purchases? In what follows, as a way to bring further evidence to the assertion that working- and middle-class families indeed demanded amortized credit particularly strongly, and as a way to further define the *process* whereby they were led to do so, I provide answers to this question.

To do so, I begin by exploring how the dominant theory of consumer demand for credit would explain the particular demand for amortized credit among working- and middle-class families, based on knowledge of the reasons why and strategies with which they built wealth acquired in a previous section of this chapter. However, as I show next, this theory provides only a partial answer to this question. This theory posits that the sole motivation for using and demanding credit in the context of asset purchases is that credit permits *using assets before they are fully paid for*. Evidence presented in a previous part of this chapter suggests that working- and middle-class families had indeed more reasons than others to want to use assets before having paid for them. However, as I also show, other pieces of evidence suggest that using assets before they are paid for was not the primary reasons why working- and middle-class families wanted to rely on amortized credit in their asset purchases. When these families were asked why they demanded this form of credit, they indeed identified an entirely different motivation, one having to do with the possibility of committing to the project of an asset acquisition through the

use of amortized loans. As I show next, therefore, delving into the subjective motivations for using amortized credit among working- and middle-class families not only helps us see that these families demanded credit and understand why they did so. It also leads us to reconsider our basic theories of credit demand.

Credit as a Way to Utilize Assets

Before Having Fully Paid for Them

How can we explain the fact that working- and middle-class families appear to have demanded credit more than upper-class families in their wealth-building strategies during the early decades of the 20th century, using the framework provided by the most common theory of consumer demand for credit, that formulated by financial economists? How can this theory help us explain, more importantly, why working- and middle-class families demanded *amortized* credit specifically, and not straight loans? Is the framework provided by this theory sufficient to explain the puzzle? As I show next, not completely. But, before I expose why, I describe the ways in which this theory can in fact shed light onto these questions.

According to financial economists, whenever credit is used or demanded in the context of wealth-building strategies, it is because *credit permits utilizing assets before they are fully paid for*. As these scholars argue, benefiting from assets (and from what they can return) earlier in the life course is generally useful for *all* families, regardless of their income or net worth. The longer the returns from an asset can be enjoyed, indeed, the larger the total “utility” derived from an

investment, no matter the baseline income or net worth of a family. All families, therefore, are expected to have some level of demand for credit, according to this financial theory. Credit, however, has a price: the interest rate charged for borrowing funds from someone else. Furthermore, credit also amounts to borrowing from one's future income, since credit eventually has to be reimbursed. Credit thus prevents consumption in the future in order to augment this consumption in the present. As a result, the basic financial theory for consumer demand for credit predicts that families with the highest demand for credit, as a device permitting using assets before they are fully paid for, should be those families facing the following: 1) the lowest interest rates, 2) the highest expected return from investment opportunities, and 3) those families with the weakest level of concern for preserving future income over the present one (Seligman, 1927 and Juster & Shay, 1964 are the main foundational texts for this theory; see Durkin et al., 2014 for an excellent and broader review of financial theories of consumer demand for credit).

This basic financial theory of consumer demand for credit certainly helps us explain why families of all income levels showed some interest in using credit in their wealth-building practices, as we have seen in the previous section through quantitative data. Indeed, as this theory predicts, all kinds of families, including upper-class ones, saw some advantage to using their assets before having fully paid for them and they did rely on credit with such a purpose in mind. For example, upper-class families often used credit to further maximize their long-term investment returns on formal exchange markets through the technique of leverage, which can greatly magnify the rates of return earned on investments¹³. For example, Mary Obenauer, then

¹³ This technique involves buying an asset on credit and, thus, with a small down payment. The technique then involves reselling this asset later on, when its market price is higher, repaying the loan out of the proceeds of the sale, and finally keeping the profits, which are substantial even though they were obtained with a relatively small amount of invested capital, because credit was involved.

joint chairperson of the board of governors of the Home-Owners Protective Enterprise, in her testimony to the House Committee on Banking and Currency in 1934 during the hearings on the National Housing Act, described to the Committee how she and the other wealthy homeowners she represented used credit to leverage homes that were then flipped on the market. In her testimony she indeed described how she was often in the process of “buying one home, paying the mortgage and building another, selling that and building another” (Hearings Published - NHA, 1934, p. 384)¹⁴.

Lower-income families, for their part, particularly enjoyed having access to high-value assets in their wealth-building strategies, as we have seen in a previous section of this chapter. To this end, credit, as an instrument permitting benefiting from assets before they are fully paid for, proved extremely useful, as a passage from More (1907) already quoted above, in which she describes the installment plan/pawning habit conundrum, made abundantly clear¹⁵. In addition, though working- and middle-class families were less inclined to rely solely on the future value of assets as a criterion to decide between assets, they did sometimes engage in speculation on the future market value of assets, as their upper-class counterparts did, and when they did so, they,

¹⁴ Upper-class families also often used credit, because it helped them benefit from assets before they were paid for, in their efforts to diversify their portfolios (see, for example, Financial Advertisers Association, 1928). They indeed bought larger pools of assets than their present income would allow for, with the idea of buying a more diverse mix of assets.

¹⁵ “Articles of clothing and other possessions are often “put in” (at the pawn shop) from Monday morning to Saturday evening, but in the meantime 3 cents on every dollar is forfeited. One woman who had a particularly hard winter claimed that she lost from \$0.25 to \$0.50 a week by pawning articles and then redeeming them as soon as she had a little money ahead. One family which had been given \$100 in clothing, money, and rent by the church paid \$25 for a watch “on time” (which means on the installment plan) when a child of fourteen “graduated,” and had barely paid for it when it was pawn for \$5. (...) Many families in this investigation did not have the pawning habit, and always paid cash for everything – “German style”, as one woman expressed it. There is not the Monday morning pilgrimage to the pawnshop that there is in some neighborhoods, but both pawning and “buying on time” are typical of every workingmans’ neighborhood. (More, 1907, p.147)

too, often used credit to leverage their investments in an attempt to further maximize the returns earned (Hoyt, 1933 and Foerster & Dietel, 1926).

Hence, with its core assumption that the motivation for demanding credit is the capacity to benefit from assets before they are fully paid for, the basic financial theory of consumer demand for credit certainly helps explain why all kinds of families demanded credit. In addition, the financial theory of consumer demand for credit is also useful for explaining why working- and middle-class families seem to have demanded credit *more intensively* than others. There are several reasons, indeed, why working- and middle-class families would have been more likely than other families to face lower interest rates than others, at least subjectively, to expect to earn higher returns from investment opportunities than others, and to have the lowest level of concern for preserving future income over the present one.

Indeed, regarding interest rates, though working- and middle-class families may not, in effect, have been offered lower interest rates than upper-class families, there is some evidence that many working- and middle-class families did not fully understand the costs involved in relying on credit, and that they assumed that these costs were lower than they truly were. Many economists, for instance, singled out this financial literacy problem among the lower-income fringes of the population (Danielan, 1929; Due, 1955; and Mors, 1965). A number of social workers of the early 20th century also implicitly claimed that working- and middle-class families underestimated the costs of credit, as they puzzled over why these families so often chose expensive acquisition strategies involving the installment plan over less expensive ones implicating saving before buying assets (for example, More, 1907). However, these same social workers also often noticed that many working-class families were, in fact, well aware of the price difference between items bought for cash and items bought on the installment plan, and yet

nonetheless bought on the installment plan (More, 1907, p.145, in particular). Hence, while many working- and middle-class families certainly relied on credit more than others as they purchased assets, because they assumed the costs of credit were lower than they were in reality, many of these families also appear to have had a strong positive demand for credit.

Among the factors contributing to the particular strength of demand for credit among working- and middle-class families is that they had one investment opportunity with a particularly high rate of return, as financial economists would argue. More specifically, while the investment opportunities faced by working- and middle-class families may not have promised higher formal returns on exchange markets than opportunities for investments of the upper-class families, there is evidence that many working- and middle-class families *considered* the fact of possessing *high-value* assets as extremely valuable, and that they thus attributed a near infinite subjective rate of return to the possession of high-value assets. Indeed, as I described earlier, having discretion over *high-value* assets was absolutely instrumental for working- and middle-class families' immediate material well-being. These assets were a near necessity for these families' ability to manage the frequent, but unpredictable, wage losses episodes. Working- and middle-class families were thus likely to accept paying nearly any price for the sake of having access to these assets as soon as possible. Furthermore, since working- and middle-class families, for the most part, had relatively low net-worth, small incomes and very little time between two down-turns to accumulate savings, as I have argued above, using credit and paying its price was more or less the only way these families had to make sure to actually have these assets at hand when they would be needed for survival. This would be especially true in the American context, as Prasad (2012) showed, where no system of high interest rates on deposits provided fast ways to save in prevision of purchases for working- and middle-class families.

In contrast, upper-class families certainly occasionally faced investment opportunities that promised high enough returns to warrant reliance on credit. But, in their eyes, no single opportunity had the same infinitely high rate of return that possession of high-value assets had to working- and middle-class families, since wealthy families did not depend on any one of those investment opportunities for their immediate survival.

In addition, working- and middle-class families were also certainly less likely than upper-class families to value their future income and future consumption. Indeed, in contrast to upper-class families, for working- and middle-class ones, income was as uncertain in the near future as much as in the distant one, as I have described earlier in this chapter. As a result, it is very probable that these families were more inclined to sacrifice future income in the interest of present than upper-class families.

In sum, then, based on the idea that credit is demanded as a device useful for enjoying assets before they are fully paid for, the financial theory of consumer demand for credit offers some insight into the reasons why working- and middle-class families demanded credit particularly strongly, and more so than upper-class families in the context of assets purchases. However, as we have seen in the previous section of this chapter, the main difference in demand for credit across income and net worth groups was not so much the difference in the extent of demand for credit. It was rather the stark difference in the *kinds* of credit instruments demanded by families in each group. While upper-class families preferred straight loans, working- and middle-class families demanded amortized loans. And for this other puzzle, the financial theory of consumer demand for credit is also helpful, to some extent. Indeed, one way in which the difference in preference for loan structures across income and net worth groups could be explained, within the framework of the financial theory of consumer demand for credit, would be

if, somehow, straight loans and amortized loans would have had different prices, depending on the income and net worth of families. In reality, straight and amortized loans did not exactly have a different price depending on the income and net worth of the families, but they did have very different levels of risk associated with them, which is more or less equivalent. For working- and middle-class families, more specifically, amortized loans involved fewer financial risks than straight loans, which is in part why they utilized amortized credit to a greater extent than other families.

To see why amortized loans involved fewer financial risks than straight loans for working- and middle-class families, it is useful to begin by stressing how straight loans were generally less costly and more convenient than amortized loans for high net-worth families. In contrast to amortized loans, straight loans did not require any principal repayment before the term of the loan was due. Straight loans could thus be repaid easily with the proceeds of the sale of an asset, instead of from current income. During the term of the loan, therefore, all that families were required to pay were relatively low interest rates, which were, as they still are today, largely tax deductible. As a result, straight loans could be used purely for the management of investments and without encroaching much on consumption, either present or future. Straight loans were thus, in this respect, more convenient than amortized ones, and it is thus unsurprising that upper-class families, who cared deeply about the formal costs and benefits of their investment options, preferred straight loans whenever they used credit to maximize future returns.

For working- and middle-class families, however, and specifically for families who did not possess the net worth required to reimburse straight loans on short notice, the straight loan system, for all its advantages, was in practice extremely risky. Consider, for example, a straight

home mortgage. Straight mortgages, as I have mentioned in Chapter Four, generally covered about 50% of the value of a purchased home, and they had to be reimbursed in six to seven years. For lower income families, paying back a substantial loan in so little time was not realistic. Hence, if these families took a straight loan to finance the purchase of a home, they either had to believe that they would be able to sell the home for a good price before the loan came due, or, that at the term of the loan, a new loan would be extended to them. In practice, credit was often re-extended at term, whenever families requested it, and families could rely on credit for as long as they needed to repay their loans out of current income. However, there was also a very real risk that credit would not be re-extended upon request. As soon as the smallest economic downturns occurred, most bankers chose to protect themselves by stopping their lending activities altogether. If a family was out of luck and happened to need mortgage refinancing during a downturn, therefore, and if, as a result, this family failed to obtain the required new credit, the family would be forced to repay its loan immediately (on these issues see National Housing Act, 1934).

For upper-class families who had either a high income, a high net worth, or both, such unexpected loan repayment requirements were never best-case scenarios, but they did not involve complete catastrophe, either. Wealthy families usually could come up with the amount due on a loan without having to sell their home and could thus avoid despairing losses. For working- and middle-class families, however, situations of loan repayment requirements were downright tragic, in most cases. Most working- and middle-class families indeed did not possess the funds to repay their loan principal on short notice, and they thus had no choice but to sell their homes, often at a loss. More dreadfully, even, when these families could not find a buyer for their homes, they had to foreclose and, in this process, they generally meant losing

everything: both their home and their savings. Straight loans, therefore, were in practice very risky for working- and middle-class families, because they did not involve a realistic plan for them to re-pay an asset out of current income in one single credit contract. As a result, working- and middle-class families always ran the risk of running out of credit before having finished paying for the assets. I took the example of the straight mortgage to illustrate this risk of running out of credit supply involved in the straight loan system, but it is important to note that these same risks were to be expected for all kinds of straight loans, notably for margin loans, which could be used to finance the purchase of securities. Margin loans were indeed always liable to unexpected margin calls, as I described in Chapter Four, and could thus always necessitate immediate loan repayments on short notice.

Amortized loans, in contrast to straight loans, did involve a realistic plan for progressive reimbursement of the loan *out of current income*. Amortized loans, indeed, usually necessitated a relatively small down payment, followed by fixed monthly payments extended over a given period of time that was long enough to permit low-income families to actually reimburse the entire loan. With an amortized loan, therefore, working- and middle-class families had a guarantee that they would not be required to reimburse a loan before they were ready to do so. As a result, the risk of having to lose everything because of an unexpected loss of credit supply was removed. Of course, this does not mean that working- and middle-class families *had* to use amortized loans strictly to reimburse them out of current income. These families could very well utilize these loans to speculate over the future value of assets, the same as upper-class families often did with straight loans, or they could use amortized loans more generally in the hope of

reimbursing them out of the proceeds of asset sales instead of out of current income¹⁶. However, even when these families had no intention of reimbursing their loans through current income, amortized loans still proved a less risky credit instrument than straight loans, precisely because of how, if worse came to worst, with an amortized plan, even low-income and low net-worth families now had a “plan B”; they could choose to simply continue with the purchase of the asset instead of being forced to lose everything.

In sum, then, the common financial theory of consumer demand for credit is no doubt useful as we try to understand why working- and middle-class families demanded amortized credit and upper-class families straight loans. This theory indeed suggests that the demand for credit is in fact a demand for using assets before they are paid for and that there exist a number of conditions under which this demand will be particularly strong: whenever interest rates on credit are low, whenever rates of returns to investment opportunities are high, and whenever temporal preference for present income is also high. As I have argued above, it is likely, indeed, that working- and middle-class families faced each of these conditions particularly frequently. Working- and middle-class families probably conceived of interest rates as relatively low – lower than they truly were. These families also likely attributed a very high rate of return to the possession of high-value assets, one of their investment opportunities. Furthermore, these families also likely valued their present income much more than their future one. Lastly, for them, amortized credit was, if not cheaper, at least less risky than were other forms of credit, which also helps explain, within the framework provided by the financial theory of consumer

¹⁶ In fact, as Hoyt (1933) noticed, many working-class families used installment plan loans to speculate on real estate markets. Furthermore, many employers who sold their stock to their employees on the installment plan in the 1920s also noticed that some of their employees in fact used their unpaid stock to speculate, as they resold them on secondary markets before they were done with their monthly repayments (National Industrial Conference Board, 1928).

demand for credit, why working- and middle-class families demanded amortized credit more specifically.

This general explanation for why working- and middle-class families demanded amortized credit, however, useful as it is, is nonetheless at best a very partial one. And the reason for this is that the motivation that is hypothesized to be at the core of demand for credit in the financial theory of consumer demand for credit does not appear to have been the main motivation for demanding credit among working- and middle-class families. Various pieces of evidence suggest that working- and middle-class families did not demand amortized credit mostly to benefit from assets before having fully paid for them and, thus, earlier in their life-course. First, a key prediction of this idea – that credit is used to benefit from assets before having fully paid for them – is that those who use credit to buy assets will buy assets at a younger age: the availability of credit to buy assets, in other words, should reduce the positive effect of age in predicting ownership of assets. However, no such evidence is found. For instance, if we go back to the analysis of response to the availability of mortgage credit presented in Table 5.2, I have interacted the effects of credit availability and of age in this model (not shown here), but I found that credit availability does not diminish the effect of age on the odds of homeownership.

Furthermore, the changes in age patterns of the ownership of assets that occurred throughout the postwar era also do not suggest that greater credit availability for asset purchases resulted in lower age of entry into asset ownership, particularly not among low net worth families. As I showed in Chapter Four, amortized credit became much more abundant for homes and real estate assets over time during the postwar era, while remaining severely restricted in other asset markets. If working- and middle-class families utilized credit only for the purpose of

benefiting from assets earlier in time, the age of entry into homeownership should decrease among low net worth families throughout the postwar era, as credit became more and more available for homes. Furthermore, we should see no particular change in the age of entry into ownership of other assets during the same period. However, as we explore age patterns in the ownership of homes and other assets during the postwar period, we discern no such pattern and in fact observe exactly opposite ones.

More specifically, Figure 5.3 in Appendix K shows age patterns in the ownership of assets during the postwar era. In this figure, the change in rates of ownership of selected asset classes between 1950 and 1968 is displayed as a function of age and separately for families possessing low and high net-worth. In this figure, the change in the proportion of households owning a given asset class for each age by net worth group between 1950 and 1968 is expressed as a percentage of the initial proportion of households owning this asset class in that same age by net worth group in 1950. For example, Figure 5.3 in Appendix K shows that households with a head aged between 25 and 34 years old and in the bottom 60% of the net worth distribution in 1968 were 2.5 times (or 250%) more likely to own securities than were households in this same age by net worth group in 1950.

As is seen in this figure, the rate of homeownership, for which credit expanded between 1950 and 1968, did increase substantially among low net-worth families, as we already observed earlier in this dissertation. However, rates of homeownership did not increase faster among young households than among older ones, but in fact, quite the opposite. Furthermore, if we look at rates of ownership of both corporate and government securities for which credit did not expand between 1950 and 1968, we observe that in, the low net-worth group, ownership of these assets increased the fastest among young households during the postwar era. Certainly, corporate

securities and government bonds were not as bulky as homes to purchase, and young, low net-worth families may not have needed credit to buy them as much as they needed credit to buy larger ticket assets such as homes. But it should be remembered that in the 1950s and 1960s, corporate securities and government bonds were still subject to quite high purchase minimum requirements and were thus still bulky assets to buy, in contrast to today (see Krippner, 2011 and Ott, 2011). Hence, in sharp contrast to what the financial theory of consumer demand for credit would suggest, these age patterns in the ownership of assets during the postwar era suggest that young, low net worth families appear to have had no problem buying assets earlier in their life course without credit and to not have bought assets on credit for the sole purpose of obtaining them earlier in their life course.

In sum, then, there is little quantitative evidence suggesting that working- and middle-class families used and demanded credit in asset purchases only or mostly because they valued acquiring and utilizing assets before having fully paid for them. Furthermore, much qualitative evidence further corroborates this idea, that access to assets before they are paid for was not the main pull of credit for working and middle-class families. Specifically, whenever working- and middle-class families were actually asked why they valued buying assets on the installment plan during the early decades of the 20th century, these families virtually never pointed out the fact that credit permits using assets before they are fully paid for. Rather, these families identified an entirely different function of credit relationships as their key motive for using credit, a function that most contemporary scholars of demand for credit have overlooked. More specifically, when asked why they used installment credit so often, as I show next, working- and middle-class families generally answered that installment-buying was crucial to them because it was a way for them to *pre-commit* to the project of purchasing a substantial asset; it constituted a way to make

sure that this project would eventually be completed (I borrow the term “pre-commitment” from Shefrin & Thaler, 1981).

As I show next, this capacity for commitment to the project of purchasing assets was in fact the key motivation for working- and middle-class families when demanding installment credit in the context of assets purchases. Upper-class families, for their part, had no particular use for tools to help them commit to such a project. As a result, if working- and middle-class families demanded installment credit as much as they did, and if they even chose assets on the basis of whether or not installment credit was available for financing the purchase of assets, in contrast to other families, it was much more because they, in contrast to others, had this additional motivation for using credit - the commitment motive for credit demand -, rather than because they desired more than others to use assets before having fully paid for them.

Credit as a Way to Commit to Future Projects

As I discussed in the previous section, most theorists of consumer demand for credit assume that whenever credit is demanded, it is as a device that permits using assets before they are paid for. However, credit relationships have other functions, which appear to have been more important in fueling the demand by working- and middle-class families for amortized credit in the context of asset purchases during the early decade of the 20th century.

For instance, and though few theorists of consumer demand for credit explicitly recognize it, with the stark exception of Calder (1999), whose work I discuss at length later on, engaging in

a credit relationship is also a very powerful way to “commit” to the acquisition of an asset in the future. Indeed, once the down payment has been made on a loan contract, failure to continue with repayment of the loan will result in the tragic loss of both face and capital (see Owens, 2015 on the loss of face involved in credit defaults). Taking a loan to purchase an asset, therefore, creates very a strong incentive to actually realize the purchase in the future. Taking a loan, in other words, involves creating side bets, as Howard Becker would have it, that will force one to continue with the project of asset acquisition in the future (Becker, 1960).

In addition, it should be noted that, when *amortized* loan structures are involved, credit relationships constitute even stronger pre-commitments to purchasing assets. Indeed, for one thing, in its installment form, credit requires repayments in short intervals, while straight loans do not. In the straight loan structure, therefore, it is easier to lose sight of how face and capital may be lost in the future, while this threat feels very immediate with amortized loans. More importantly, however, straight loans, especially during the 1920s and 1930s, were in practice so hard to manage for working- and middle-class families and so uncertain that, in effect, they hardly felt like a commitment to acquiring an asset. Indeed, and as I have described in the previous section of this chapter, straight loans, particularly in the mortgage credit market, were generally for a term that left too little time for working- and middle-class families to accumulate the funds necessary to reimburse the loan. If straight loans were to be used as a way to realize the acquisition of a substantial asset over time, these families had to believe that new credit would be extended at term, which was far from guaranteed. As a result, it was hard to believe, with a straight loan, that a commitment to the future could be made through the loan, since it was unclear that the commitment would be honored on the other end of the credit relationship.

Hence, for these reasons, engaging in credit relationships, especially in their amortized, installment plan forms, was, in the early decades of the 20th century, a very powerful way to commit to the project of acquiring assets. More importantly, this function of credit relationships appears to have been the key reason why working- and middle-class families in effect demanded credit when they bought assets. Indeed, as I have already mentioned earlier in this chapter, Whyte observed in 1956 that middle-class families of the early 1950s not only demanded amortized credit, but frequently bargained merchants for installment plans when they bought all kinds of assets, and even sought installment credit from other sources whenever merchants would not oblige them with an installment plan. However, Whyte also noted that when these families were asked why they so actively sought installment credit to finance the purchase of their assets, these families generally answered that it was “a matter of psychology” (Whyte, 1956, p. 323). More specifically, as Whyte explained, these families “don’t trust themselves.” “Occasionally,” Whyte continued, “bankers ask them why they don’t build up a constantly replenished savings fund to finance purchases rather than rely on loans.” And, as Whyte, noted, the answer to this question was standard: “We’re sure we’ll pay back the bank, (...) but we couldn’t be sure we’d pay ourselves back” (p. 323). As Whyte observed, therefore, middle-class families not only appreciated commitment to buying assets; they actually actively looked to buy on the installment plan precisely such as to commit themselves to acquire assets.

Remarkably similar findings were observed in Chicago in 1931 when both current and prospective homeowners, were surveyed not exactly regarding why they used the installment plan, but regarding why they bought homes, which most of them had bought on the installment plan. In this survey, working- and middle-class respondents identified “forced savings” as their second most important motivation for buying homes, indicating through this that they actively

sought to commit themselves to saving and that they used the installment plan to do so (Woodbury, 1931; also see Calder, 1999, who has documented extensively the savings and asset accumulation discipline that working- and middle-class families imposed onto themselves through their various credit repayment obligations throughout the early 20th century).

In addition, Abbott (1936) has also noticed that working-class families living in Chicago's tenement districts in the 1920s and 1930s very purposefully utilized installment plan buying, particularly of real estate, as a way to force themselves to accumulate and acquire assets. In her observations, however, Abbott did not only demonstrate *that* working-class families wanted and actively sought to commit themselves to building-wealth through the installment plan, but also *why* the possibility for making such a commitment to assets was so important to them. As Abbott showed, for working- and even middle-class families, pre-commitment to future asset acquisition, through financial engagement, was not simply one way, among others, to acquire assets, but it was in fact the *only* way that assets could be acquired. For most working-class families, indeed, but even for many middle-class ones during the early 20th century, asset acquisition, and savings more generally, were accomplished only at the price of terrible daily sacrifices in basics such as food and heat. As a result, without a binding commitment to save every month, these sacrifices were rarely made or sustained for a long time, and working- and middle-class families thus expressly sought to force themselves to make these sacrifices, by relying on the installment plan. As Abbott (1936) observed regarding homeowners who had bought real estate on the installment plan, for example:

Many say that they considered the forced savings a good thing even though it had been painful. Many people, when asked why they had bought a house, even when the purchase entailed grave hardships, even thought it a foolish question. Some spoke of discomforts endured and others of exigent needs that could not be met, but all agreed with an Italian who had been paying on his house over a period of twelve years and who said he had been "worried nearly

crazy" most of the time, but nevertheless "would do it again." (Abbott, 1936, p. 381)

Hence, though they knew painful sacrifices would be entailed in saving, and, in fact, precisely *because* they knew of these sacrifices, working- and middle-class families actively sought ways to force themselves to save. And buying homes, as well as other assets on the installment plan was one very powerful way to do so, as Abbott observed; indeed, the most powerful way of all.

Why, one might ask, were working- and middle-class families so inclined to commit to the project of building assets? Why were assets so important to them, important enough to warrant commitment to years of painful sacrifices? First, as I have described earlier in this chapter, assets were crucial to working- and middle-class families in their struggle to maintain material security despite erratic incomes. Committing to acquiring assets was thus in effect a commitment to achieve basic material security, in a country relying mostly on private forms of welfare.

Second, and as I have hinted at in the beginning of this chapter, asset acquisition also permitted families to achieve a variety of emotional goals as well. For one thing, especially for working- and middle-class families, assets were a ticket to independence – an independence that these families prized deeply. Indeed, and as I have mentioned earlier, working- and middle-class families, in contrast to upper-class ones, depended to a great extent on their kin and friends for material support. However, and though kin- and friendship networks provided priceless assistance in times of income loss, these networks were also often experienced as emotional burden, particularly among women who were generally the ones performing the emotional labor necessary to maintain them (Bosworth & Baldwin, 1911 and Hereven, 1982). Many young

working- and middle-class couples thus actively sought to acquire assets, and not only to exchange them in networks of mutual support, but also in the hopes of one day getting out of these networks, of one day affording to “reject assistance” from their siblings, parents, and friends (Hereven, 1982, p.111). In addition, committing their future earnings to the purchase of assets also certainly helped families protecting this income from relatives, who often made claims on earnings whenever it was not already spent (Stack, 1974).

Still on the emotional front, many working- and middle-class families also saw asset acquisition as a way to get ahead, to achieve status, to realize a major life-goal, and more importantly, to do something for their children: offer them the promise of a better future. In this, they were not dissimilar from many upper-class families; just like for upper-class ones, this last concern for helping out progeny was constantly on the minds of working- and middle-class families, as the Lynds noticed in 1929. “Not satisfied with the vocations chance has dealt them,” the Lynds observed, “many parents want to do something more for their children. (...) ‘I hope they won't have to work as hard as their father’ they say; or ‘He don't want the girls to go into no factory if he can help it.’” (Lynd & Lynd, 1929, p. 49; see also More, 1907, p. 139). Like upper-class families, therefore, working- and middle-class ones truly hoped to help their children get ahead, and they saw wealth as a way to do that. More importantly, however, in contrast to upper-class mothers, over-burdened working- and middle-class ones, as the Lynds observed, rarely had time to play with their children or to “be their pals,” and they regretted it sorely. For the working-class mothers, therefore, buying assets in the hope of securing a better future for their children was not only one way to be hopeful for and helpful to them; it was, in fact, among the few ways to express love to children that these mothers could actually afford.

In addition, it is worth noting that working- and middle-class families were particularly interested in committing to the project of building assets, more than other families, for reasons other than the importance of assets and their being worth the commitment. This other reason relates to commitment to the project of building wealth, as a commitment to a future course of action, more generally, being also an *existential* posture against the uncertainty of the future, not only a technique to ensure material security in the face of uncertain future income. Indeed, committing to a substantial project and living up to this commitment every month, is not only a way to accomplish this specific project, but as a projection of the future, committing to a project later on is also a way, more generally, to manage existential anxieties generated by the inevitably uncertain character of future events.

The idea that signing up for an installment plan, or otherwise affirming that something will be done in the future, no matter what happens, is a strategy for coping, at the existential level, with the *uncertainty* of the future may at first sound odd or counter-intuitive. Indeed, whenever we consider the techniques available to individuals and families for coping with the anxieties generated by the uncertain future, we tend to pay more attention to strategies that involve risk management, avoidance of undesired events, and the cultivation of “plan B’s” (see Levy, 2012 on the evolving notion of risk through history and on the evolution of its management techniques). We also often pay attention to attempts to *provoke* future events, through betting or otherwise speculating, as a strategy available to families and individuals for “coloniz[ing] the future,” as Giddens (1991) would have it. However, it is important to realize that what I call here *assertive strategies*, such as those available through the installment plan, and which involve committing to a future course of action regardless of what the future may turn out to be, also are ways to manage the *experience* of future uncertainty at the existential, emotional

level, just like managing risk or speculating. Assertive strategies, like any other strategies to cope with the future, indeed also involve a *posture* with regard to the uncertainty of the future. More importantly to our purpose, assertive strategies do not only constitute *one* way, one technique for bearing the uncertain future, but an extremely empowering way in which to do so. And, precisely for this reason, such assertive strategies may actually have been much more attractive than others to working- and middle-class families, specifically, during the early decades of the 20th century.

Why? First, assertive strategies may be particularly efficient for dealing with the peculiar texture future uncertainty took in the experience of working- and middle-class families. As the Lynds demonstrated particularly convincingly, for instance, for working- and middle-class families of the earlier decades of the 20th century, uncertainty of income was constant: the feeling of uncertainty was not only experienced towards the future. Furthermore, as the Lynds observed, regarding the future itself, working- and middle-class families experienced it mostly “as a plain stretching unbroken to the horizon” (Lynd & Lynd, 1929, p. 66). In other words, most working- and middle-class families did not know the exact specifics of what would happen to them next, but they had some sense that, left unprovoked, the future would not hold the promise of an upward change, but rather the promise of more of that particular kind of uncertainty that they already experienced on a daily basis.

This particular experience of the uncertain future was in contrast to what most upper-class families experienced. For upper-class families, the future was not experienced as “a plain stretching unbroken to the horizon,” but rather as “ground sloping upward, however gently” (Lynd & Lynd, 1929, p.66). In other words, upper-class families experienced the future more as probable progression, but with the probability of undesired events that could rise in the way of

this progression. In a sense, then, for these families, anxiety with respect to an uncertain future took the form of a definite object, which might, however, be lost due to unplanned events.

In the context of this particular type experience of future uncertainty, risk management, edging, and “plan B’s” are as existentially appropriate coping mechanisms as can be. However, for the way that working- and middle-class families experienced the uncertain future, more assertive strategies certainly were equally attractive, and probably more so. Assertive strategies were certainly appropriated more by these families, together with speculation, in which working- and middle-class families were certainly also engaged, and with any other strategies that involved provoking the future instead of protecting it from undesired events. Attempts to change the relatively bleak promises of the future instead of protecting it from its probable course were indeed likely more soothing, emotionally, to working- and middle-class families.

A second and probably more important reason why the assertive strategies must have been valued by working- and middle-class families had to do with an important selection effect in the working- and middle-class populations in the early decades of the 20th century. During the early 20th century, indeed, a great proportion of working- and middle-class families had immigrated to the United States in the hope of finding a better future – the assertive coping strategy *par excellence* (Thomas & Znaniecky, 1918). A predisposition for the assertive strategy thus certainly existed in this group as a result.

Whatever the fundamental reasons for the attraction of this coping strategy among working- and middle-class families, however, it remains true that a number of these families, and a number of scholars who studied them as well, identified the installment plan as an assertive coping strategy and this coping strategy as one source of these families’ interest in the installment plan. For example, More (1907) noted that many working-class families bought

assets on the installment plan, which required payments that their current income could not possibly meet. More importantly, More noted that though families had not the faintest idea of how they would pay for these installments in the future, they nonetheless experienced no anxiety at the prospect whatsoever. In addition, and though More condemned the over-buying practice vehemently, even she had to admit that very few families actually defaulted on their installments in the end, and that by signing up for more debt than they could chew, these families in effect forced themselves to achieve more than they did now, which, as she noted herself, “indicates ambition for a higher standard” (More, 1907, p. 145). Furthermore, studies in consumer behavior conducted by Katona and Muller (1952) in the early 1950s also reveal that families who bought on credit were more likely to be hopeful or positive about their future earnings, especially among the lower income groups. Katona and Muller concluded that this is because those who sign up for loans know they will get ahead in the future. However, there is no way to show, and every reason to think, that causality, here, goes at least both ways – many families certainly sign up for loans as a way to perform their own advancement ahead of time. In summary, then, there is some evidence that working- and middle-class families used the commitments involved in the installment plan as a way not just to commit to buying assets, specifically, but also as a way to commit to future projects more generally, such as adopting an existentially assertive posture towards their own future.

To summarize, then, contrary to what most theorists of consumer demand for credit generally assume, the fact that credit permits using assets before having fully paid for them was not the only, or the main reason why working- and middle-class families demanded credit in the context of their wealth-building strategies in the early 20th century. By their own account, one other key reason why these families demanded amortized credit was because the installment plan

enabled them to financially commit to the long-term project of acquiring assets. Such financial commitments were important to them because they constituted virtually the only way in which these families would actually go through the sacrifices necessary to acquire assets. Furthermore, assets were important enough to them to justify wanting to make these sacrifices. Assets were indeed a ticket to material security, independence, and advancement altogether. Furthermore, the very notion of a commitment to a future course of action was itself existentially and emotionally soothing, in the face of an uncertain future. As a result, and as we have seen here, not only did families demand installment credit for how it permitted them to commit to the purchase of assets, but they even admitted choosing assets, savings strategies, and merchants based on whether or not the installment plan was available. As I argued above, upper-class families had no such pressing need for committing to buying assets as working- and middle-class families had. And, it is thus mostly for this reason, since working- and middle-class families, in contrast to others, saw benefits other than using assets before they are paid for to using amortized credit, that they demanded installment plan credit much more than upper-class families did during the early decades of the 20th century.

As I have argued here, one crucial other, additional benefit that working and middle-class families saw to credit use was the possibility of committing to the purchase of assets. However, there existed another additional benefit that many working- and middle-class families, specifically, saw in the installment plan, which was also part of their motivation for seeking the installment plan, and part of the explanation for why they demanded installment credit so much more than did other families. In what follows, I describe this third motivation for using credit in asset purchases among working- and middle-class families, before concluding this chapter.

The Installment Plan as Roadmap to Advancement and Self-Accomplishment

Aside from how the installment plan helped them commit to the project of acquiring assets and to benefit from assets before having paid for them, working- and middle-class families also saw a third benefit to using installment credit in the context of asset purchases. Amortized credit, on top of permitting working- and middle-class families to commit to the project of asset acquisition, also provided them with a monthly budget, as well as instructions for how to actually realize this major project. Indeed, and though this implicit function of amortized credit has been scantily recognized in the literature on demand for credit, installment plan credit, in contrast to straight kinds of credit instruments, involves more than just a sum to be repaid. It also includes the following: a strategy for successful repayment; a sequence of fixed payments to be made monthly, for a given number of months; and a clear road map for asset acquisition. In addition, as Caruthers and Ariovich (2010) have noted, in the context of loan contracts, creditors acquire a vested interest in the success of debtors in the projects they undertake with borrowed money. Creditors, especially providers of mortgage loans, are thus often inclined to provide advice and resources for the project. As a result, installment plan contracts provide not only an opportunity to commit to an asset acquisition project, but also a roadmap and the possibility for council on how to realize the project.

For working- and middle-class families, this type of turnkey package of instructions and advice is tremendously valuable, since advice on and clear roads to major life goals are in short supply in their lives. Indeed, and as many contemporary sociologists have noted, working- and

middle-class families share the same aspirations as upper-class families and face the same plethora of possible goals: higher education, asset acquisition, or business ownership. These opportunities are not, for the most part, hoarded or safely guarded by elites; they are equally available to all, at least as dreams and hopes (Tilly, 1998). What is sometimes hoarded by elites, consciously or not, and at any rate, what is widely recognized to be scarce in working- and middle-class lives, are the roads to these goals: the trajectories and the sequences of steps required to reach and accomplish them. As a result, what working- and middle-class families often lack, many contemporary sociologists argue, are not hopes and dreams, not aspirations in and of themselves, but the “cultural capital” necessary for developing the knowledge of how to realize them (see, for example, Lareau, 2003 and Small, 2011).

As the Lynds noted in 1929, things were no different in the early 20th century. Many working- and middle-class parents had, by their own account, no idea of how to help their children get ahead, though they sincerely wished to: “Many parents want to do something more for their children, but, particularly among the working class, they are frequently at a loss as to how to go about it” (Lynd & Lynd, 1929, p. 48). Furthermore, according to the Lynds, many of these parents had no more idea of how to get ahead themselves. When questioned about their husbands’ future employment prospects, the Lynds observed, working and middle-class mothers generally answered something akin to, “He’ll never get any better job” (Lynd & Lynd, 1929, p.66).

As a result, and as Abbott (1936) has noted in her own work, many working- and middle-class parents chose to buy homes and other assets on the installment plan before choosing other potential roads to advancement, such as schooling for their children (Abbott, 1936). The reason for this was in part the installment plan; because they could be bought on the installment plan,

real estate assets were clearer endpoints than other aspirations – they were endpoints for which the road ahead, not just the end, was visible and understandable. In contrast, trajectories to educational attainments were not as obvious for many working- and middle-class families, and educational attainment was often abandoned as a project, the same way many other potential vehicles to self-accomplishments were, because even if attractive, without roads to them, these other options for self-accomplishment felt too abstract.

The installment plan, therefore, held a third important advantage to working- and middle-class families, aside from how it helped them commit to acquiring assets and aside from how it helped them use assets before they were paid for. The installment plan also provided working- and middle-class families with valuable trajectories and instructions for how to accomplish major life projects such as the acquisition of assets. This third advantage constituted yet another element that stimulated demand for amortized credit among working- and middle-class families, another advantage that lead them to choose assets on the basis of the availability of installment plans, and, even, to chose assets over other forms of accomplishment, when assets could be bought on the installment plan. This third advantage of amortized credit was therefore yet another factor explaining why, and suggesting that, working- and middle-class families demanded credit, and amortized credit more specifically, in their asset purchases, more than did upper-class families.

Conclusion

In this chapter, my main objective was to both refine and to further support the theory I proposed in Chapter Four, according to which the confinement of amortized credit to the real estate market in the late 1940s ushered in the 1940s shift in working- and middle-class investment practices. To this effect, I endeavored to explore whether working- and middle-class families appeared to have demanded amortized forms of credit in their wealth-building strategies. I examined whether these families appeared to have chosen assets on the basis of whether or not amortized credit was available to finance them, shortly before and during the postwar era. I also sought to understand more deeply why working- and middle-class families might have desired to rely on amortized credit to such an extent, and more so than upper-class families. As I have argued in my introductory comments, if evidence is found that working- and middle-class families indeed actively demanded the installment plan, and more so than upper-class families, this provides strong support for the theory I articulated in Chapter Four.

As I have argued throughout this chapter, my conclusions are that working- and middle-class families indeed appear to have had a strong demand for amortized credit in their wealth-building strategies, much more than did upper-class families during the early decades of the 20th century. First, as I have shown in this chapter, asset-purchasing behaviors exhibited by low- and high-income families in the early decades of the 20th century suggest that working- and middle-class families were particularly inclined to demand amortized credit when they purchased assets. Second, many reasons also existed for why working- and middle-class families demanded particularly strongly amortized credit in their wealth-building strategies, all having to do with

how their small income and net worth, as well as their position in the labor market, shaped their experiences of material and existential uncertainty.

Indeed, I showed in this chapter that working- and middle-class families were largely concerned with achieving security in the context of erratic income, while upper-class ones were concerned mostly with dealing with the relative uncertainty of future income. For this reason, working- and middle-class families privileged having access to *high-value* assets, which helped them obtain income on short notice and build social capital. Upper-class families, in contrast, evaluated investment options mostly with regards to their relative costs and future benefits on formal asset markets. The demand for high-value assets among working- and middle-class families likely created a higher demand among these families for benefiting from assets before having paid for them, which is something credit uniquely permits, and this was one reason why those families demanded credit in their asset building projects. Furthermore, working- and middle-class families also demanded credit, and amortized credit specifically, in their wealth-building strategies more so than other families because, for these families, amortized credit also helped committing to the project of building assets, and provided clear roadmaps for how to do so.

I believe these findings about the importance of both assets and amortized credit in working- and middle-class lives strongly support and further refine the theory I proposed in Chapter Four. Indeed, considering that working- and middle-class families specifically had a high demand for amortized credit, and that they even chose assets in part on the basis of amortized credit availability, there seems to be little doubt left that the confinement of amortized credit to the real estate market was in fact among the causes of the great 1940s shift in working- and middle-class investment practices, which I described in Chapter Three. The idea that the

installment plan was important enough for working and middle-class families that they would have turned to the one asset for which this installment plan was left available in the aftermath of the credit revolution indeed seems highly probable, in light of the results I have presented in this chapter. This being said, however, it would be extremely hard, even impossible, to quantify the importance of this particular cause of the 1940s shift compared with other potential ones.

For instance, at the same time that amortized credit became confined to the housing market and disappeared from other asset markets, notably from the markets for securities, amortized mortgage credit also developed and greatly expanded in the housing market, which had, before then, been dominated by straight loans. As a result of this transformation, in the 1940s, homes and real estate did not only acquire an advantage over other investment options, notably over securities, but over rental units, as well. Indeed, and as I have described in this chapter, the amortized mortgage as a credit instrument was a much less risky instrument than the straight mortgage loan, for working- and middle-class families, since amortized mortgages involved a clear plan for completing the purchase of a home, without involving the risk of running out of credit half-way through the process, as had been the case in the straight loan system. As a result, when mortgage credit became overwhelmingly of the amortized kind in the aftermath of the credit revolution, owned homes also became a form of housing for which *tenure* was guaranteed. Provided that families were confident they could complete their repayment schedule successfully, homes bought with an amortized mortgage indeed guaranteed that a family would never have to move out of their home, unless they chose to. This of course stood in contrast to homes bought on straight loans, but also in contrast to rental housing, for which rents could always increase unpredictably.

Through the credit revolution, owned homes thus acquired a substantial advantage over both rental units and other investment options. It is therefore likely that the turn to homes that occurred in the aftermath of the credit revolution was due to a combination of both of these factors. In fact, the shift in working- and middle-class investment practices observed in the late 1940s certainly proved as sweeping as it did precisely because the credit revolution created this double advantage for owned homes in the eyes of working- and middle-class families. However, given the importance of assets and of wealth for working- and middle-class families, which I have demonstrated here, given the importance of amortized credit in realizing asset acquisition for these families, and also given that these families actually identified investment-related motives more often than housing tenure ones when questioned about why they bought homes in the early 20th century, as I have already discussed in Chapter Four, I doubt that the turn to homes in the 1940s would have been so marked, if the credit revolution had only had the effect of expanding the supply of *amortized credit in the housing market*, and not the additional effect of *confining* this kind of credit instrument to this sole asset market. I believe, indeed, that results from this chapter strongly support the idea that not only the expansion of amortized mortgages, but, crucially, the disappearance of amortized credit from securities markets, ushered in the 1940s shift, and therefore, an era of deep disparities in the rates of returns to capital earned across socioeconomic groups, as I have demonstrated in Chapter One.

Aside from their significance for the theory I proposed for the 1940s shift, I also believe that findings from this chapter have substantial implications for theories of consumer demand for credit. Specifically, I believe that findings from this chapter call for important revisions to our common assumptions regarding *why* consumers rely on credit in the context of asset purchases, and regarding how motivations for using credit in fact differ and depend on income and net

worth: on class belonging. As I discussed earlier in this chapter, in most theories of consumer demand for credit, the assumption is that the one key benefit of credit, and the reason why those who rely on it do so, is that credit helps consumers use assets before they are fully paid for. After taking a closer look at why working- and middle-class families, in particular, were so inclined to rely on amortized debt in the context of asset acquisition, however, we have learned that this is not the only appeal of credit, and that, in fact, for working- and middle-class families specifically, this is not even its most salient one. Among these families, *amortized* credit, specifically, was in high demand, not only because they wanted to use assets before they were paid for, but *mostly* because amortized credit allowed them to commit to realizing substantial projects, for which credit, in addition, provided instructions and advice.

To my knowledge, only one other contemporary student of credit, Calder (1999), has explicitly recognized this disciplinary dimension of credit: the fact that credit, once signed up for, forces families to go through with the project of investing and of asset-building. According to Calder, however, the disciplinary effect of credit is largely imposed onto families, almost against their will, and not explicitly self-imposed. In fact, Calder interprets the prevalence of the installment plan in contemporary American society in functionalist terms. In an argument he derives from Philipp Reiff's (1955) work, Calder argues that a society such as the U.S., which has become so opulent, so focused on the satisfaction of individuals' desires through consumption, had no choice but to eventually develop a disciplinary system, in order to avoid complete collapse and in order to ensure, as well, that the incentive to work among its individual members would keep existing. Credit and the installment plan, according to Calder, somehow arose to fulfill this function, or, at any rate, ended up fulfilling it.

Calder reaches this conclusion in large part because he, like so many other students of credit, focused his attention largely on families whose experience with credit ended in tragedy: in default and in losses (See, for example, Geisst, 2009 and Balleisen, Moss & Warren, 2010). These cases are indeed tragic, and these families should absolutely be protected against the perils of credit. But focusing on only those cases sends too strong a signal, I believe, that credit is only a trap in which families enter unconsciously and by lack of choice. The vast majority of families do not default on their debt¹⁷. The vast majority of them in fact feast and celebrate when a debt has been repaid, and rightly consider this event a major accomplishment. These families, however, and their relationship to credit, are rarely at the forefront of our studies of credit, and it is in part for this reason that scholars such as Calder have often been led to interpret the rise of credit as either a disciplinary apparatus that was imposed from above or as a misleading system in which families borrow from their income unknowingly or solely because they are structurally forced to do so. If we do observe all those families who successfully use credit to build assets, however, as I have tried to do here, what we find at the core of the modern credit relationship are other motives to use credit: not only mistaken entrapment, but also the conscious self-discipline that is required of anybody seeking to realize a dream.

Of course, my point here is not to argue that this particular relationship to credit found among working- and middle-class families, in which the notion of self-discipline for the sake of accomplishment is core, developed in a cultural void or in an historical space free of social, economic, and political influences. It has been demonstrated by many that a number of cultural, social, and political currents combined to carve out the special, and sometimes overwhelming,

¹⁷ Even during a crisis of levels not seen since the 1930s, in 2010, delinquency rates on mortgage loans barely capped 10%, according to Charge-Off and Delinquency Rates on Loans and Leases at Commercial Banks data from the Federal Reserve.

space that credit currently takes up in American lives. The expansion of credit was preceded by a long struggle for the moral and legal legitimacy of credit relationships, as Caldor (1999) and Hyman (2011) have shown. The development of a large credit market was also brought about by a slow-unfolding, but deep-rooted political process in which the federal state eventually transformed into an arbiter and facilitator of expanding credit relationships, in large part as a result of how this state understood its role in managing growth through consumption and in redistributing wealth (Quinn, 2010 and Prasad, 2012). It is through those processes that credit supply expanded and that demand for credit swelled in the 20th century. Surely, it was also through them that the demand for credit among working- and middle-class families developed, at the micro-level, in part as a concern for commitment and for self-discipline, though I have glossed over these macro effects in this chapter in the interest of focusing instead on the precise character and content of the demand for credit among families of the early 20th century, as shaped by class.

What I meant to emphasize by describing this demand for credit as involving self-discipline, therefore, was not the idea that this demand consists of an individualistic relationship to credit, lying unmediated by broader social currents. Rather, what I meant to highlight more simply, is how different the substance of demand for credit is in the experience of working- and middle-class families compared to how most scholars of this demand portray it, once we look beyond only tragic experiences with credit and beyond our former assumptions regarding what credit relationship can accomplish. The substance of this demand for credit, the way demand for credit is experienced in the lives of working- and middle-class families, then appears as involving not only the desire to bring the future into the present, to use assets before they are paid for, or to cope with emergencies as they occur, but also, and, crucially, the desire to commit

to substantial achievement in the future, to an important life goal, as well as the need for clear roadmaps to these goals. I believe it will be important going forward to take this fuller, more complex view of the nature of working- and middle-class credit demand into consideration as we research the roles and functions of credit in modern America, in at least three respects.

First, this new view of demand for credit, as shaped by class belonging, actually corresponds to the demand for credit as it existed in the early decades of the 20th century and to the way class was experienced during these same decades. As I showed throughout this chapter, if working- and middle-class families developed a high demand for committing to projects of asset acquisition and for road-maps to achieve them, it was in large part because of the particular ways in which their class position shaped their experience of both material and existential uncertainty. However, social class, in the 21st century, certainly does not mean the same thing and certainly does not entail the same sets of contrasting experiences of material and existential well-being as it did nearly a century ago. For instance, though the welfare state is not much more developed in the U.S. today, and not of much more help for poorer families in dealing with emergencies, income seems less uncertain among the working- and middle-class families. As a result, I believe it will be important to reproduce studies of the meaning of the credit relationship across classes in more contemporary settings, to explore the evolving ways in which class shapes the experience of uncertainty, and thus the demand for credit relationships.

Assuming for now the notion of commitment still is core to working- and middle-class families' demand for credit, however, a second implication for future scholarship on credit arises. The importance of credit in working- and middle-class America has been demonstrated to stem from a certain void in alternative forms of material assistance in context of emergencies, notably from a void in government-provided material assistance. Preeminence of credit, as

Prasad (2012) has shown, is a trade-off with a bigger welfare state. In similar thread of thought, but considering this time that demand for credit is not only a demand for assets that can be paid later but used in moments of emergency, and also a demand for direction and commitment to life-defining projects, new research should ponder what other kinds of voids the credit relationship might be fulfilling in contemporary societies.

Lastly, recognizing the multifaceted nature of demand for credit will also help, I believe, in research and in projects aimed at addressing the troubling asymmetries that currently plague the credit system. Indeed, even though I use the language of benefits and self-discipline to characterize the demand for credit among working- and middle-class families in this chapter, I certainly do not do so with the intention of glossing over the rampant asymmetries that afflict the credit system, or with the intention of implying that all families enter credit relationships with full knowledge of what these relationships will bring them. Rather, I mean to show that credit has many advantages from the perspective of working- and middle-class families and to show that we do not fully recognize some of these advantages that working- and middle-class families recognize to credit relationships. One important consequence of this idea for the study of asymmetries in credit market is that the levels on which asymmetries can be played are probably more numerous than we thought they were. And this is a point we should pay attention to, for both scholarly and practical reasons.

Conclusion

During the 1930s and 1940s, federal intervention and policy-making greatly limited the extent to which welfare was publicly provided in the US. As Prasad (2012) showed, though the federal government began providing basic forms of assistance in the 1930s, in part through the passing of the Social Security Act of 1935, many other bills passed during the same period in effect prevented more extensive forms of public assistance from developing and taking root. As a result, the welfare system in the U.S. became based chiefly on private, market-based relationships instead of on public, political ones. As this dissertation has shown, however, federal interventions and policy-making during the 1930s have not only shaped the extent to which welfare was privately provided in the U.S., but New Deal-era policies have also shaped the options available to families and individuals for insuring their own security in a private system of welfare.

More specifically, though the U.S. has long had a tradition of encouraging credit relationships, this tradition has existed only in tension with a counter-tendency to restrict credit relationships (Prasad, 2012). Indeed, though the National Housing Act of 1934 opened a number of credit taps, tight regulation of the banking system closed a number of other ones, as it set rules regarding who could supply credit and when during the 1920s and 1930s. Furthermore, barely hidden forms of racial and gender discrimination worked to prevent certain groups, women and African Americans, in particular, from receiving credit in the U.S., throughout the postwar era, despite the fact that this period also saw a staggering growth of credit supplies. More

importantly, and though no historians of credit have remarked upon it, one other form of federal credit restriction also took root in the New Deal era, amidst great efforts to facilitate credit supply elsewhere: restrictions were imposed by federal policy-making in 1934 regarding the *purposes* for which credit could be extended. Indeed, the Securities Exchange Act of 1934 imposed severe limits on the quantity of credit that could be extended to help individuals purchase financial securities (stocks, bonds, etc.). This provision of the SEA thus had the effect of limiting the total volume of credit available for such purchases and, crucially, it also had the effect of proscribing installment-buying of securities. This one particular kind of credit restriction based on the purposes for which credit could be extended and used, in contrast to most other forms of credit restrictions, has not been lifted to this day. But, more importantly, it was through this one form of credit restriction that the federal government intervention sharply altered the way in which working- and middle-class families strove to provide for their own security in a largely private welfare system. Indeed, restriction of credit for securities-buying, especially as it occurred in an otherwise extremely favorable climate for credit relationships in the housing market, helped transform the way in which working- and middle-class families built their own private wealth.

As I showed in this dissertation, working- and middle-class families of the early decades of the 20th century had a great interest in relying on installment-buying plans when purchasing assets and building wealth. Installment-buying of assets allowed them to benefit from the returns of these assets sooner rather than later, but, crucially, installment-buying also helped them commit to the project of acquiring assets. As a result, many working- and middle-class families considered installment-buying as a precious tool for building wealth, and, in fact, they often chose the assets they bought on the basis of whether or not assets could be purchased on the

installment plan. For this reason, when some federal policies of the 1930s helped suppress installment-buying of securities, at the same time as other ones helped facilitate installment-buying of real estate and owned homes, these policies combined to greatly transform the wealth-building practices of working- and middle-class families, at least those who were not prevented from accessing all forms of credit, which is to say white families headed by men. Indeed, as the installment plan disappeared from securities markets and as it soared and became the dominant form of acquisition of real estate assets, working- and middle-class families, in contrast to upper-class ones who had no particular use for the installment plan, began investing massively in real estate assets. They began to catch up with wealthy families regarding the share of their resources they invested in real estate and, even, to surpass upper-class families in this matter. More importantly, working- and middle-class families adopted such high levels of investments in real estate assets even though only a decade prior, during the 1920s and early 1930s, working- and middle-class families had been catching up actively with wealthy families not regarding investment in real estate assets, but regarding investment in the higher-yielding category of corporate securities.

As I showed in this dissertation, this change in working- and middle-class investment practices had important consequences for the dynamics of income inequality in America. Indeed, as many financial economists and portfolio choice theorists have long hypothesized, and as I have myself confirmed in the first part of this dissertation, low levels of investment in corporate securities and high levels of investment in real estate assets among working- and middle-class families create large disparities in rates of return to capital across income and net worth groups,

which in turn contribute to an increased concentration of income in the population¹. Furthermore, as I also illustrated in Part 1, the disparities in rates of return created by working- and middle-class investment in real estate is highly consequential, not only for overall levels of inequality at the social, systemic level, but also at the individual level. Median income and net-worth families could indeed substantially improve their total accumulated wealth at retirement from formal employment, as well as their total lifetime income, if they were to close their gap in rates of return earned. More importantly, closing this returns gap even appears all the more necessary looking forward, as retirement is taking on increasing importance as a life-course stage in an aging population, and as technological change appears to be steering income away from labor and towards capital (Jacobson and Occhino, 2012). As I have shown in Part One of this dissertation, closing the rates of return gap will not be accomplished solely by bringing about more extensive securities investments and smaller investments in real estate among the lower-income and net worth populations. But such a rebalancing of working- and middle-class portfolios should nonetheless comprise an important part of the solution.

Could this all mean that one way out of the increasing inequalities that plague America would be to help poorer families to take on large amounts of debt to invest in an unstable stock market? Certainly not. This is not the policy recommendation that the results presented here should imply, at least not necessarily, for a variety of reasons. First, credit-taking on securities markets would certainly induce a large amount of systemic risk in these markets, which is a point I am in no position to evaluate and which I leave to others. Secondly, and more importantly, even assuming that installment-buying of stocks could make sense, technically, it is unclear that

¹ Real estate assets indeed return at lower rates than corporate securities, on average, and working- and middle-class families who have larger shares of this type of asset in their invested capital thus earn smaller rates of return to their overall capital.

allowing such installment-buying would, in fact, have any effect on the investment practices of today's working- and middle-class families.

More specifically, there is no doubt that the disappearance of amortized credit from securities markets was an important factor in the initial shift towards high levels of investment in real estate assets among working- and middle-class families during the 1940s. But, as I showed in Chapter Five, this was a period during which homes, for working- and middle-class families, were more or less just an asset as any other (see Garb, 2005, on this issue as well). Furthermore, this was also a period during which working- and middle-class families understood and recognized that it was installment-buying of assets that helped them commit to the project of building wealth and that transformed assets into wealth-building vehicles.

However, though it is necessary to research this more in depth, in my opinion, neither of these perceptions exist anymore in the working- and middle-class populations in the U.S. For one thing, installment-buying of assets has been available only for homes and for real estate assets for such a long time by now that most families today attribute the benefits of using installment credit to the fact of homeownership itself. They do not recognize installment-buying as a tool for wealth-building in the same way as 1940s families did.

Furthermore owner-occupied homes are not just another asset, the way they once were, for working- and middle-class families. These assets are now also entangled in layers and layers of emotional and social meaning, on top of having acquired quite substantial new advantages over other assets and over rental units. Homeownership, for example, has become a deep-seated cornerstone of middle-class identity, as well as a celebrated rite of passage in the process of family formation. Since homes are a rare case of fully open technologies, homeownership has also become an important site of the application of technical skills (Harris, 2012). More

importantly, even, homeownership is now a ticket to high-quality public schools and, though Grebler (1952) showed that up until the 1940s most U.S. cities and states were still privileging renters' rights in their housing regulation systems, homeownership has now also become the obvious route to stable housing arrangements in many regions of the country, precisely due to regulations adversarial to renters.

Most of the developments that, over time, worked to allocate these additional advantages and benefits to owner-occupied homes in the U.S. very likely stemmed ultimately from the disappearance of installment-buying of securities. Indeed, as this disappearance created a momentous change in working- and middle-class investment practices, this change certainly, in turn, helped form the constituencies necessary to the creation of advantageous homeowners' rights. More research in this area, of course, is necessary, before settling this issue, and the topic would in fact constitute an exciting new research program. But for now, regardless of the ultimate causes for those new advantages to homeownership, it remains true that homeownership today does carry many other advantages, on top of being a way to access amortized credit and in addition to the fact that few families, in my opinion, recognize amortized credit as a wealth building-tool at this point. For these reasons, the re-institution of installment-buying of securities would certainly not have the sweeping effects that its disappearance once had, and the results presented here should thus certainly not imply that the source of inequality I have uncovered in this dissertation would necessarily resolve itself should only the taps of credit in securities market open once more.

Nonetheless, results from this dissertation do suggest other ways in which financial markets could change in order to become better-suited to the wealth-building aspirations of working- and middle-class families, which would specifically help these families choose

corporate securities more often than real estate going forward. As Schwarm (1927) had recognized already in the 1920s, when most corporation stocks were still available for purchase only in large blocks, two ways exist for making financial assets acquirable by smaller investors. One way is to offer installment plan buying in order to help small investors purchase stock in the large blocks in which they are originally available. The other way involves splitting the large blocks of stock into tiny amounts that can be bought by even small investors without credit, by means of various forms of securitization. As the installment plan option became virtually illegal in the 1930s, and as we see today very clearly, securities brokers largely adopted the second technique of breaking down financial assets in infinitesimal sizes, in their efforts to market stock to small investors: this is what mutual funds are all about, indeed, and the infinitely small size of their shares is usually what these funds in fact work very hard to sell to the public. Mutual fund advertising, indeed, often focuses on how easy it is to invest tiny amounts of money with them, and on how easy it is, as well, to take money out on short notice, precisely because everything in the funds has been broken down into tiny portions. As Cronon (1992) and Levy (2012), among many others, have noted, incremental, voluntary contributions and, above all else, liquidity have indeed become the main tropes of all financial imagination.

However, the rise of mutual funds, despite its promises of liquidity and absolute freedom in investments, has had no effect at all on disparities in the extent of corporate securities investments across income and net worth groups, as has been demonstrated in the historical analyses of investment practices between 1918 and 2013 presented in Part Two of this dissertation. Certainly, nearly all families increased their investments in corporate securities between the late 1960s and today in absolute terms. But this was certainly because much new non-housing capital had formed during this period. Mutual funds, which became the principal

brokers of securities during this period, do not appear to have changed anything in the relative share that high- and low-wealth families allocate to corporate securities. In 2013, indeed, working- and middle-class families lagged just as far behind upper-class families as they did in 1950 regarding the extent of their investments in corporate securities.

Findings from this dissertation help us understand why, and help us understand, by the same token, how financial markets could change to address this phenomenon. A key finding of this dissertation is indeed that working- and middle-class families do not appear to have any particular desire for liquidity in their investments. Quite to the contrary, these families invest massively in the most illiquid assets of all, and this dissertation has suggested that this not a matter of chance. Working- and middle-class families do not necessarily equate the absence of constraints for future actions with freedom or with effective management of the uncertain future. Many working- and middle-class families, as I have shown here, in fact conceive of constraints to future behavior as a satisfactory posture towards the future, as a useful system to ensure wealth acquisition, and, even, as powerful roads leading to self-accomplishment.

Of course, and as I have mentioned already, more research is necessary to validate whether or not this concern for committing to future courses of investment and actions still exists among working- and middle-class families today. But the persistence of their investments in illiquid assets certainly suggests so. And this thus leads one to wonder: why have financial imagination and thinking become so disconnected from this fundamental concern of working- and middle-class families? This question is a complex one, which certainly has something to do with the class position of those with control over financial thinking, and addressing it will make for an interesting new research agenda. But, for the moment, and going back to the practical implications of this research's findings, it will suffice to highlight the fact that working- and

middle-class families would certainly benefit tremendously if those in charge of financial markets were, somehow, to find ways to satisfy these families' desire for self-imposed constraints on future behavior, instead of restlessly striving to reach new levels of financial liquefaction.

Credit relationships, as I have argued in this dissertation, constitute one way that working- and middle-class families have found to discipline their way into the acquisition of wealth and the accomplishment of major life goals. This form of contractual relationship may or may not be suitable in financial markets. And, beyond what I had to say regarding this question in this dissertation, this is certainly not for me to say. But, assuming for a moment such contractual relationship is not, in the end, suitable for financial markets, the road ahead of finding other ways to satisfy the working- and middle-class demand for self-imposed discipline will probably be a long and difficult one. Indeed, credit relationships became a suitable way for individuals and families to discipline themselves, but only following a long process that had both legal and political dimensions and that brought about clarifications of the rights and responsibilities of both parties in a credit relationship, as well as limits to the power of both lenders and debtors entering in such relationships (Caldor, 1999). To give only one example, before bankruptcy laws were established, which ensured that defaulting debtors would pay some price for defaulting, but not the price of their entire wealth or of their lives, hardly anyone understood credit relationships as an appropriate tool for self-discipline. Most, in fact, understood these credit relationships as dangerous asymmetrical relations implicating half-voluntary subjugation to a powerful other party (Calder, 1999). For credit relationships – for any kind of contractual relationships – to evolve into ones that can be used by one party in the relationship as a tool for self-discipline, these contractual relationships, which necessarily

involve power and control, need to be transformed, through regulation, into a quite delicate balance, involving just enough power to incentivize both parties to honor the contract, but, also, just enough options for exit, so that self-discipline does not become submission. It took a long time for the credit relationship to finally embody such a balance in the U.S. And, certainly, if financial markets find themselves having to develop their own kind of relationship permitting self-imposed discipline, it may be equally as long before they are sound. But with the disproportionate amount of brilliant minds that the financial system attracts, with its high rewards, and if only these minds can be put to work on such problems, solutions can certainly be found, and if they are, many of us will be better off.

Appendix A

Measurement of Rates of Returns using PSID Data

In this Appendix, I specify how I have calculated annual rates of returns using PSID data. I begin by defining the concept of “rates of returns” in more detail and by specifying a general formula for calculating annual rates of returns and their average over a given period of time, as well as their volatility. I then show how I have used PSID and other data sources to compute rates of returns for each family in my sample.

Rates of Returns - Definition and General Formulae

Before entering into the technicalities of how I measure annual rates of returns in PSID data, it is useful to start with a general definition of rates of returns to capital, as a concept. Rates of returns to capital is the most common indicator used to describe the compensation received by economic agents after they have invested. As a measure, rates of returns is generally defined as the earnings acquired by an investor from his/her invested capital, expressed as a ratio, or rate, of the total capital originally invested. More formally, the rate of returns (R) yielded by an investment during a given period of time (t) is expressed in (1) below thus:

$$R = \frac{\textit{TotalIncome}}{\textit{CapitalInvested}} \quad (1),$$

where R is the rate of return, $TotalIncome$ is the income that was earned during the investment period t as compensation for the initial investment, and $CapitalInvested$ is the size of the initial investment that was made at the beginning of the period (t).

Also, the total income earned from an investment generally contains two components. First, most investments in assets yield *a stream of earnings* during an investment period, which is usually paid by the leaser of the asset. For example, owners of corporate stocks are paid a dividend every year by the corporations they partially own, and owners of real estate are paid a rent by those who use their dwellings. In this paper, I call this part of the investment income the *earnings* part of the return to an investment.

Secondly, investments in assets can also generate another form of income, if the price value of assets invested in appreciates with time. That is, asset buyers sometimes become eager to pay more than what the current owner of an asset originally paid to acquire it. If the difference between the current market price of an asset at the end of an investment period and the buying price is positive, then the investor will have acquired additional income from his/her investment in the asset, because the asset is now worth more in monetary value than it was at first. In this paper I call this part of the investment income the *asset price appreciation* part.

To properly compute and compare the returns that families earn on their capital every year, it is thus necessary to take into consideration both parts of an investment income: the earnings part and the asset appreciation part. Therefore, when I calculate the returns that families have earned every year from PSID data, the general formula I use is expressed in (2) below:

$$R = \frac{Earnings + AssetAppreciation}{CapitalInvested} \quad (2)$$

As per the definitions given above, in this formula *Earnings* refers to all rents, dividends, or interests paid to an investor during an investment period of time t , in compensation for the capital originally invested (*CapitalInvested*). And *AssetAppreciation* refers to the net difference between the monetary value of capital owned at the end of the investment period and the value of the capital initially invested, with the net difference suggesting that this difference is net of inflation, and net of any additional contributions or withdrawals to capital made during the investment period.

Hence, an even more precise formula for calculating rates of returns is expressed in (3) below:

$$R = \frac{\text{Rents} + \text{Dividends} + \text{Interests} + (\text{FinalCapitalVal} - \text{CapitalInitiallyInvested} - \text{ContributionofAdditionalCapital} - \text{Inflation})}{\text{CapitalInitiallyInvested}} \quad (3)$$

Formula (3) can be thought of as representing a computation of the rate of returns earned on an investment in a single asset, such as in a single home, for example, or in a single bundle of stocks. However, in this paper, I want to compute and compare the rates of returns earned by families on their entire portfolios of assets, which are usually made up of a variety of assets. Therefore, assuming families have investments in z asset classes, the rate of returns families earn on their entire portfolios of assets can be expressed as in (4) below:

$$R = \sum_z w_z * R_z \quad (4),$$

where w_z is the weight of asset z in a household's portfolio and R_z is the rate of returns earned on asset z , calculated using (3) above.

Combining Formulas (3) and (4), the rate of return realized by a family on its total equity during a given investment period of time t can be written as in (5) below:

$$R = \sum \left(\frac{Capinvested_z}{Totalcapinvested} \right)^* \left(\frac{Earnings_z + (FinalCapital_z - Capinvested_z - Additionstocapital_z - Inflation_z)}{Capinvested_z} \right) \quad (5)$$

Computing Annual Rates of Returns Earned

Formula (5) provides a general formula for calculating a rate of return earned for any given period of time t . When financial analysts compare rates of returns earned by different individuals or companies, however, they usually compare the *annual* rates of returns these individuals or companies have realized on their capital. In fact, even when financial analysts want to compare returns earned by different investors over a long period of time, they usually express the total returns earned during the period in terms of an equivalent *annual* rate of return that would have generated the same overall wealth at the end of the period as that which was in effect observed at the end of the period, controlling for additional contributions to invested capital made during the period and for compounding effects linked to reinvestment of returns earned from year to year, and assuming all returns are reinvested from year to year (see Fama & French, 2002 for a classical example of this comparison technique).

PSID does not survey families on their wealth every year. Between 1984 and 2011, the PSID asked families about their wealth in 1984, 1989, 1994, 1999, 2001, 2003, 2005, 2007,

2009, and 2011. Therefore, I cannot extract directly from PSID data a measure of the rate of return earned by each family for every single year between 1984 and 2011, and so the first step in measuring comparable returns earned by each family thus involves generating from data reported on each survey waves measures of annual rates of returns for each year between 1984 and 2011. To do this, I will use the strategy to which I just hinted, used commonly by financial analysts. It involves calculating an equivalent *annual* rate of return out of a return earned over a period spanning multiple years. That is, I will look at how much income families have received from capital in total between each survey waves and from there will derive an equivalent annual rate of return earned during each year between survey waves.

This metric, whereby a total rate of return earned over many years is decomposed into an equivalent annual rate of return, is sometimes called the implicit annual returns rate, or, more often, the *compounded annual growth rate* (CAGR). It is calculated, more formally, using (6) below:

$$CAGR = \left(\frac{InitialCapital + Earnings + AssetAppreciation - Contributions}{InitialCapital} \right)^{\frac{1}{\#years}} - 1 \quad (6)$$

I will thus use this CAGR formula for each period between two survey waves, to calculate the equivalent annual rate of returns for the years during this period. That is, for each period j of x number of years between survey waves, and for each household i having investments in z asset classes, I compute (7) below to obtain an estimated annual rate of return earned for each of the x years during period j :

$$CAGR_{ij} = \sum w_{Asset_z} * \left(\frac{InitialCapital_{ijz} + Earnings_{ijz} + AssetAppreciation_{ijz} - Contributions_{ijz}}{InitialCapital_{ijz}} \right)^{\frac{1}{x}} - 1 \quad (7)$$

Once I have these estimates of annual rates of returns earned for each family, I can compute the final outcome variables. As explained in the core of the text, I use two outcome variables.

To begin with, I use the geometric mean of these annual rates of returns earned between 1984 and 2011. This first outcome variable is meant to portray the performance of families on capital markets over many years, which might lead one to wonder why I do not simply compute a CAGR for the full 27 years between 1984 and 2011, during which period PSID collected wealth information. The reason for not using a full period CAGR here, and for using geometric mean of annual returns, instead, lies in the limits on sample size that the CAGR metric would impose. Indeed, getting out of PSID data a family-specific CAGR for the full 27 years between 1984 and 2011 would require that families had reported their wealth information completely, on every single survey wave of the PSID. However, most families surveyed by the PSID have at least some wealth information missing from their wealth data, in at least one of the survey waves between 1984 and 2011. Therefore, if I calculated CAGR for each family, the outcome variable would be missing for so many of them that sample size would actually fall below usability (N=112).

Calculating an average of the annual rate of returns earned instead permits going around this sample size issue. Indeed, if the outcome is some kind of average of annual returns earned, families need not to have reported complete wealth information on every single survey wave in order to have a non-missing outcome variable; they merely need to have reported wealth on one survey wave. Calculating an average of annual returns earned on only one rate of return observation during the period, however, would not be desirable either, since it would go against the long-term glance at returns that this outcome variable precisely seeks to introduce. Therefore,

to make sure to re-introduce the long-term view in my outcome variable even while using the averaging technique, I deem families to have a non-missing value on their average annual rate of returns earned *only whenever they have reported non-missing returns for at least 17 out of the possible 27 years between 1984 and 2011*. With this criterion, I obtain a fairly large sample of families with an observed outcome variable (N=986), while keeping the long-term perspective on rates of returns earned. Furthermore, in terms of averages, I choose the geometric mean instead of the arithmetic mean or instead other central tendency measures, because the geometric mean is the best way to portray compounding effects of returns earned over a long period of time, and is, for this reason, the central tendency measure most often relied on by financial analyses. As I have mentioned, this is not the traditional way to compare returns earned over a long period of time, but I believe it is the best way around missing data and sample size constraints, in this case.

The second outcome variable I use in this study is a standardized measure of annual rates of returns, which I have described in the core of the text.

Data and Assumptions in the Computation of Rates of Returns Earned

Now that I have explained the computational strategy used to create outcome variables in this study, I turn to detailing how I measured and computed these outcome variables out of PSID data. As can be easily understood just by glancing at formula (5) above, which shows how to

calculate rates of returns earned for an entire portfolio over a given investment period, calculating returns earned by a family on its entire portfolio of assets requires a lot of information, ranging from assets owned at the end and beginning of the investment period, to any savings and withdrawals realized during the period, and including any rents or dividends earned during the same period. Most of this information has been collected by the PSID since 1984, which is why it is a great data set with which to work for this study. However, some of this information is not collected by PSID, and in these cases I need to make assumptions about their value for each family. In what follows, I describe in detail all information required to calculate rates of returns of families, I specify which information is provided with PSID data, which is not, and what assumptions I have made when information is not available.

Table A.1 in Appendix J lists all information required to calculate the rate of returns earned by families on their full portfolio of assets during an investment period between two survey waves. Table A.1 also identifies which information the PSID does and does not provide, with the marker Y meaning that the information is provided in PSID data, and the marker N meaning that the information is not provided.

As per Table A.1, the PSID collects most data required for computation of rates of returns, but not all of it. More specifically, for all asset classes, PSID collects data about the size of capital invested at the beginning of every investment period between survey waves, over 1984-2011, and about the size of capital they had left at the end of each investment period. PSID also collects earnings (rents, dividends or interests) received for most asset classes.

It does not, however, collect earnings received for main residence. That is, PSID does not ask respondents about their “imputed rent” when they are homeowners - about how much rent these families avoid paying to someone else as a result of owning their home. I thus estimate this

imputed rent for all families who report being homeowners. To estimate the imputed rent earned by a family during one year, I multiply home equity owned by this family at the beginning of the year and multiply it by the annual national rent to value ratio for residential real estate during that year, which is calculated by the Bureau of Labor Statistics. I use home equity (which is defined as home value minus mortgage principal) instead of total home value to estimate imputed rent, in order to take into consideration the costs of financing home ownership in the calculation of the imputed rent.

In addition, except for investments in main residences, PSID data does not contain all information necessary to calculate incomes earned by respondents from value appreciation of their assets. More specifically, PSID does not collect data about the debt families owe against their assets, except for main residences. As a result, it is impossible to derive how much additional debt families took on to finance additional investments in the different asset classes (or how much debt they reimbursed) from one year to the next. In other words, except for main residences, I cannot calculate with PSID data exactly how much additional capital families added or withdrew from their initial investments in assets from one year to the next. And since this information is absolutely necessary to calculate rates of asset appreciation earned, as shown in (3) above, I cannot compute from PSID data only the income that families have generated from value appreciation of the assets they own, except for main residences.

To compute the rates at which the value of these assets appreciates for each family, I thus need to make assumptions. For some of these asset classes, namely real estate other than main residence and stocks, price indexes are available, and I can use them to make assumptions about the rate at which assets value grow (or shrink). More specifically, to estimate the rate of value appreciation for real estate other than main residence, I calculate the rate of returns of the Case-

Shiller price index and assume that all families who own residential real estate other than main residence have realized this rate of return on the part of their portfolio that consists in other real estate. This might appear a large assumption, especially given that I have argued earlier in this paper that home price indexes are unsuitable instruments for asset price appreciation calculation. However, in the case of real estate other than main home, the rent received represents the greater part of the total return earned, which is grasped in PSID data, and, at any rate, residential real estate represents only about 5% of families' portfolios, on average, which is not a large share.

For investment in stocks, I use the same strategy. That is, I calculate the rate of returns of the Willshire total market index, and I assume that all families who are stockowners have earned that rate of return on the part of their portfolio that is held in stocks (Willshire Associates, 2014). As I have argued before, the use of home price indexes is problematic for computing returns to housing capital, but the use of stock price indexes to compute returns to stocks is not. Therefore, I use stock price indexes to calculate annual returns to stocks for all families who own stock, and I also assume that all stockowners have paid fees on their investments in stocks, since most families in the US hold stock indirectly through investments in mutual funds, which usually charge fees. More specifically, I assume they pay the equivalent of 1% a year on their investment in stocks (Investment Company Institute, 2013).

For other asset classes, namely private businesses and cash, deposits, and government bonds, no price indexes are available. I thus make other types of assumptions about the rate at which the value of these assets changes. For private businesses, I assume that the asset value, on average, grows with inflation, and, thus, that the total rate of asset appreciation of private businesses, in real terms, is always zero. I assume, therefore, that most gains from investments in

private businesses are realized through proprietor's income, which is reported by respondents of the PSID, and that the value of their business equity itself grows only with inflation.

For cash, deposits, and government bonds, I also assume that most gains from investments in these assets are realized through interests paid from bond issuers, not from asset price appreciation. I thus assume no gains from asset appreciation at all, not even following inflation. In other words, I assume that government bonds and deposits, just like cash, depreciate with time (if interests earned are removed from returns, as they are here), at a rate inverse to that of inflation.

Finally, since it is unclear what is contained in the "other assets" category on which PSID collects data, and since it is thereby impossible to make assumptions to estimate asset appreciation rates or earnings earned for this category, I drop this asset class from my analyses and calculate the returns earned on equity owned in all asset classes, except "other."

In Table A2 in Appendix J, I summarize the data sources I use and assumptions I make to estimate returns earned by families on their investments in each asset class.

Finally, I have also identified a few cases that are likely misreported data and that generated errors in reported rates of returns, which I have considered as missing data. Chiefly, I have set as missing any instances of investments in cash and government bonds that were reported to be higher than \$0 but lower than \$50. Indeed, these small values of reported investments in cash and bonds tended to yield unrealistic returns at the end of investment period when they were reported; these returns were sometimes as high as 300% annually, which is unrealistic. Most likely, these small reported values of initial capital yielded such high rates of returns because additional capital was added by the family during the investment period but was not declared in the PSID survey.

I have also treated as outliers, and excluded from my analyses, any instances of reported annual returns to private businesses that were over three standard deviations away from the sample mean for the investment period, on both sides. This had for effect to exclude instances of reported returns to businesses that were over 100% annually.¹ Finally, I have also treated as outliers, and excluded from my analyses, any instances of reported annual returns to primary residence that were over three standard deviations away from the sample mean for the investment period, on both sides. This exclusion procedure had different effects on the data, depending on the investment period. But, on average, it removed any instances of reported annual returns to primary residence below -45% and over 60%.²

Of course, quite a few assumptions enter in the computation of the rate of return in the end. I have tested sensitivity of results presented in the core of the text to all most of them. That is, I have tested that results are not sensitive to what I identify as outliers. I have also verified that results are not sensitive to assumptions about maintenance costs for homes and to the fact that I depreciate the market value of government bonds. That is, when I assume no maintenance costs for homes, and give inflation to the deposits and government bonds appreciation rate, gaps in rates of returns are still found, but are not as large. The author can provide these robustness checks on request.

Finally, it should be noted that all measures of returns in this paper are measures of returns to equity and not of returns to assets, since I observe equity initially invested and not

¹ Very high returns on private businesses are probably errors that I caused by a miscalculation of what is purely a proprietor's income, out of the total income that is generated by a private business in which the owner also works. Such high returns are probably reported when respondents underestimate the number of hours they actually work in their businesses and therefore underestimate the part of the business income that should be considered a salary.

² For primary residences, the very high, unrealistic returns that I have excluded from analysis were most likely a result of instances in which a family made significant renovations to their home and forgot to report it, or sold their residence and forgot to report it to the PSID.

assets initially invested (which would include borrowed assets, as well). I compute returns to equity and not to assets because PSID respondents report equity owned only for some of the asset classes, such as real estate and private businesses, which makes a calculation of returns to assets impossible.

Appendix B

Sub-sampling from the Original PSID Sample

I can observe rates of returns earned between 1984 and 2011 only for families who have kept the same family head in PSID data in all survey waves between 1984 and 2011, as I have mentioned in the core of the text. But when and why do family heads change in PSID data? And what types of families become censored in my sub-sample as a result?

To answer this question rigorously, I need to provide first some information about how PSID samples families and how PSID staff decides which family member to pick as family head.

When the PSID started in 1968, it sampled a first group of families¹. Let us call families in this group the *original 1968 families*. These original 1968 families were followed every one to two years, until today, by the PSID. In addition, after 1968, PSID also decided to follow any member of an original 1968 family who had left the original 1968 family unit to form his or her own family unit. That is, if any offspring of an original 1968 family moved out of the family home after 1968 to start a family, this offspring and his or her family were added to the PSID sample as a new family unit in the next survey wave and were followed every year thereafter. Similarly, if any partner or spouse of an original 1968 family moved out of the original family, following a divorce, for example, this partner and all members of his or her new family were also added to the sample, as a new family unit. As a result, as time passed, the sample of families on the PSID grew in size and changed in composition.

¹ These families were sampled to represent the full population of American families, with a slight over representation of low-income families, using a stratified probability-sampling device.

Now how does the PSID decide who is head of the families it follows over time? By default, PSID considers the family head to be the older *male* in the family unit. As a result, female heads in the PSID are found in just a few cases: in instances of single woman families, of single mothers with children, or in cases of families headed by two females. More importantly, to remain consistent with its original procedure of setting males as family heads, PSID has decided to change the family head back to a male head whenever one of the female heads forms a union with a male. As a result, family heads change in the PSID. They change whenever a family head was a female in a previous wave but entered a union with a male in the next wave. In this case, the new male spouse becomes the head of the family unit that was formally headed by the female spouse. In addition, family heads can also change in the PSID whenever a family head on a given survey wave is a male who was in a partnership with a former female member of an original 1968 family, but who divorces in the next survey wave. In this case, PSID follows the female after divorce, not the male partner, because the wife was the sampled member of the family, since she was a an offspring of an original 1968 family. The wife thus becomes the head of the family unit that was used to be headed by her former spouse.

As a result, not being able to follow families that have had different heads across survey waves means I cannot observe data for *families in which one of the heads is a female offspring to an original 1968 family, and in which a change in marital status has occurred*. This limitation necessitates that I perform my analyses on a non-random subset of the original sample of PSID families. But it also means that the censoring factor in this non-random selection is *being a female versus a male offspring to an original 1968 family unit when changing marital status*, which I consider to be an exogenous explanatory variable in this study (since I doubt gender would be significantly affected by rates of returns earned).

Therefore, regression on the subsample of families who have kept the same head on all survey waves between 1984 and 2011 should yield consistent and unbiased estimators (as per Wooldridge, 2008, Chapter 17). And I simply use the *subpop* command in Stata to estimate standard errors using the full population information, while performing coefficient estimates on the subpopulation of families that have kept the same head between 1984 and 2011, using maximum likelihood regression (see Gittleman & Wolff, 2004, who have used the same strategy on PSID data).

Appendix C

Detailed Models Results from Chapter 1

In tables C1 and C2 in Appendix J, I provide detailed results for models A5, A6, A7, and A8 as well as for models B5, B6, B7, and B8. In the main text, I described only how the income and wealth effects changed across these models.

Appendix D

Computation of Savings-Based Proxies

In Table D.1 in Appendix J, I describe the variables I summed and subtracted in order to compute annual savings in each of the main asset classes for respondents to the two waves of the CES and to the 1950 and 1947 waves of the SCF.

Appendix E

Comparing Savings- and Asset-Based Proxies for Investments in Assets

In what follows, I use the 1950 SCF sample to explore whether asset-based and savings-based proxies of the extent of investment in an asset are related, and to explore to what extent these two proxies are influenced similarly by outside factors. I run two sets of basic regression analyses on the 1950 SCF sample. First, in a simple OLS regression model, I explore to what extent the ratio of savings in real estate to income, as defined in (5) of Chapter Two, helps predict the share of real estate in portfolio defined in (1) of the same chapter. I do the same for savings and assets held in securities. Second, again using a simple OLS regression framework, I explore the extent to which both the savings-based proxies and the assets-based ones are predicted by family income and net worth, controlling for other factors.

Beginning with the first set of analyses, I predict the share of real estate in portfolio and the share of securities in portfolio with the ratio of savings in real estate to total income and the ratio of savings in securities to total income, respectively. I control for a host of factors: total family income, whether family head is married, unemployment and self-employment, race, educational attainment, gender of head, and the age of family head. In Table E.1 in Appendix J, I present only the coefficient estimates for the main predictors, either ratio of savings in real estate to total income or ratio of savings in securities to total income, depending on the outcome used.

We see from Table E.1 that the share of income spent in real estate assets and the share of real estate in total portfolio are associated. The share of income spent in securities and the share of securities in portfolio, on the other hand, are not as strongly related. The p-value for the coefficient estimate for the share of income spent in securities is just over the 10% threshold, at 0.13. How are we to interpret these results?

First, many types of annual savings in real estate assets, such as additions to property and maintenance, can only be done by families who are already homeowners, and who thus probably own a fairly large part of their assets in real estate during the year in which savings in real estate are observed. Furthermore, most families who own some real estate will also probably spend some of their income in real estate savings in most years, because they pay back principal on their mortgage, and because they need to maintain and renovate these assets regularly. This idea is corroborated by the fact that the likelihood of owning real estate in the 1950 sample and the likelihood of having saved some income in real estate in this same sample are almost the same: 55% in the first case, and 53% in the second. Also, given that buying a new home or another building cannot be done in small increments, for families who save large parts of their income for buying a new home during a given year, real estate assets will also probably represent a large amount of their portfolio, as well. For all these reasons, it is logical that savings in real estate and real estate as a share of total portfolio are correlated when observed in the same calendar year.

The situation is different for securities, and there are many reasons why savings in securities could be uncorrelated to the share of assets in securities when both are observed during the same year, without this lack of correlation within-year necessarily implying that the two measures are not correlated over the long run. Chiefly, building wealth in securities can be done

in a much more incremental fashion than building wealth in real estate. One can add small amounts to a securities endowment frequently (or non-frequently), without having to make a bulky investment in securities upfront. It is thus entirely possible that what looks like a large investment in securities on a given year, as a share of income, does not end up changing the composition of portfolio by much. Also, families who are stockowners, even those who own a large amount of their portfolio in corporate securities, do not *have* to save additional amounts of income into this asset on a regular basis, the same way real estate owners have to do for maintenance. This idea is corroborated by the fact that, in the 1950 SCF sample, the probability of owning securities is a little over 9%, while the probability of having saved in securities is less than 3%. Lastly, asset-based measures are sensitive to fluctuations of the market values of assets, while savings-based proxies are not. Since securities fluctuate more than real estate, it is possible that the lack of within-year correlation between the two measures reflects this fact. Hence, there are many reasons why savings in securities and assets in securities could be loosely correlated in any given year. Over time, however, I believe that the ratio of income saved in securities has to be related to the share of assets in securities quite strongly, since it is in large part through active savings that wealth is built, at least for the vast majority of families.

From this analysis, therefore, it seems that savings-based and assets-based measures should be informative of more or less the same underlying inclinations, i.e., the preference for a given asset class. The main difference between the two types of proxies would be, first, that savings-based measures are informative only of asset choices performed by families as they save from surplus income, while asset-based measures are informative also of any wealth transfers received by families and of compounding and price fluctuation effects. Another difference is that

savings in securities is likely to be observed less often than assets held in securities, which might induce more power issues with savings based-measure for stocks.

A second set of analyses confirms this interpretation and adds nuance. I explore whether savings-based measurements and asset-based measurements are affected in similar ways by income and net worth, for both real estate assets and securities in 1950. Specifically, I take the ratio of savings in real estate and securities to income and the share of real estate and securities in portfolio one-by-one as an outcome variable (all in their standardized versions), and I perform OLS regression to predict them with total family income and net worth as the main predictors. Income and Net Worth are in percentile units. I add the same set of control factors as in the previous set of analyses. In Appendix J, in Table E.2, I report only the coefficient estimates for income and net worth predictors, in each of the four regression analyses.

We see from Table E.2 that the effects of income and net worth on savings in real estate and assets held in real estate are very similar. One percentile difference in income and net worth have almost the same effect on savings in real estate and on the share of real estate in portfolio, compared to their grand mean. For securities, the net worth effect is similar on the savings-based and the asset-based outcome. But the effect of income is much lower on the savings-based proxy than on the asset-based proxy. This could result from the fact that, in contrast to savings-based proxies, asset-based ones grasp the effect of market value fluctuations and asset appreciation over time, as well as the effect of transfers, which would suggest that income has a different effect on these processes than on the process of choice, per se. For example, it may be that, even though high-income families do not save more of their income in securities, these families nonetheless end up holding more of their wealth in securities over the long run because of the play of compounding effects. Since they have a bigger income from which to save, they acquire

more securities in absolute terms even with the same rate of savings in securities, and this bigger amount compounds at a faster rate. Again, this highlights the idea that the main difference between asset-based and savings-based proxies is that, when using savings-based proxies, we zero in on the preferences for assets when actively building capital, while asset-based measures also include how families let the effect of market value, compounding effect, and transfers affect their holdings.

In sum, then, savings-based proxies might be, in a certain sense, more precise as indicators or expressions of the *preferences* of families for assets, since they target active wealth-building practices. However, asset-based measures are more complete and less conservative than savings-based ones, in that they capture the other ways through which families might end up acquiring more of a given asset, namely through inheritances and compounding effects. Therefore, it should be kept in mind that trends depicted using savings-based proxies in the pre-1950 period will pertain only to this more specific form of expression of investment preferences, while trends that are depicted using asset-based proxies in the post-1950 period will capture a broader set of mechanisms, and that in this broader set of mechanisms, income appear to play a stronger predictive role. In the end, however, I believe that both proxies largely aim at the same underlying phenomenon, and that they can be combined to discuss investment preferences over time.

Appendix F

Summary of Changes to Federal Taxation 1918-1937

The summary is presented in Table F.1 in Appendix J.

Appendix G

1940s Trends in Investment Behaviors

From *Statistics of Income* and Census Data

In Chapter Three, I showed how savings micro-data suggest a swift change in investment practices across income groups in the late 1940s. As a robustness check on this finding, I explore how trends played out during the 1935-1950 period in the two additional data sources I employed to explore trends in investment practices in the 1918-1935 period: *Statistics of Income* and census data.

I first explore what happened to the dividends to income ratio of the low-income classes during the 1935-1950 period. In Appendix J, in Table G.1, I show the dividends to income ratio for what I believe are comparable income brackets in the years 1937, 1943, 1947, and 1948. I chose those years based on the availability of tabulated dividends data. Furthermore, to generate comparable income brackets, I have multiplied the bottom and upper boundaries of the lowest income bracket tabulated in 1937 SOIs, the \$1,000 to \$2,000 bracket, and expressed each boundary as a multiple of GDP per capita for 1937. That is, \$1,000 was equal to 2.05 times the GDP per capita of \$497 in 1937, and the \$2,000 upper boundary was equal to 4.11 times the GDP per capita for that year. I have generated boundaries for income brackets that would be comparable in 1943, 1947, and 1948 by taking 2.05 times the GDP per capita as the lower boundary and 4.11 times the GDP per capita as the upper boundary for those years. In the end, the average gross income in each of these brackets, presented in Table G.1 in Appendix J, is slightly lower in 1947 and 1948 as compared to GDP per capita, but I have obtained results for

restricted income brackets for these years that generates an average gross income that is equivalent across years as compared to GDP, and the results are virtually unchanged.

We can see in Table G.1 that the dividends to income ratio for this group of middle-class tax payers has decreased sharply between 1937 and 1948, but more importantly, we can see that that this ratio has also decreased more quickly than the overall dividends to income ratios. Indeed, after peaking at 38% of the overall dividend to income ratio in 1943, the dividend to income ratio of the low-income tax payers decreased to 18% of the overall dividends to income ratio in 1948, roughly back to where it was in the early 1920s. Hence, data from the *Statistics of Income*, like savings data from the CES and SCF surveys, suggest that low-income families did not continue to close their gap in securities during the 1935-1950 period. In fact they appear to have increased this gap between 1943 and 1947.

Census data is also in line with savings data from the CES and SCF surveys for the post-1940s period. In Table G.2 in Appendix J, I show how the income effect on the likelihood of homeownership has changed between 1930 and 1960, using a logistic regression conducted on the 1920, 1930, and 1960 censuses (homeownership data is not available in 1950, and I compare 1960 to the 1930 census, since in the 1940s homeownership rates had decreased due to the Depression). I restrict the analysis to a population comparable to that covered in the CES-SCF analyses. That is, I explore trends only for the population of households headed by married couples with no more than four children, reporting not being African-American, and being employed, as opposed to both unemployed and self-employed. I use random intercept by cohorts.

We can see from Table G.2 that, whereas the effect of income on the odds of owning a home had increased between 1920 and 1930 (the income effect is lower in 1920), the income effect did not change significantly between 1930 and 1960. This result is in line with results

obtained from the CES and SCF, suggesting that an important process of catching up with upper-class families was in place among working- and middle-class ones, with respect to their level of investment in real estate assets.

Appendix H

Investment Behaviors of African Americans 1950-1968

African Americans were largely excluded from the new market for federally-insured amortized credit, from the very formation of this market in the mid-1930s until at least the passage of the Fair Housing Act in 1968. Many factors contributed to racial discrimination in mortgage lending, but to name only one example, in its value appraisal process for homes that would be mortgaged under the federal system of mortgage insurance, the Federal Housing Authority (FHA) relied on a practice now often referred to as “redlining.” In this practice, which was meant to help determine lending risks for the mortgages that would be insured under the federal system, the FHA categorized neighborhoods according to their likelihood of experiencing instability in home prices. The red category indicated the highest likelihood of home prices instability. From the onset of the federal insurance program, the FHA itself, and later even the private insurers of mortgage loans, disproportionately classified African American neighborhoods as “red,” hence the term “redlining.” As a result, the FHA often refused to insure mortgages loans for homes that were located in African American neighborhoods, and African Americans, in turn, found themselves with far fewer mortgage credit opportunities than other Americans until at least 1968, when the Fair Housing Act was signed into law (Jackson, 1987; Sugrue, 1996; and Freund, 2010)¹.

¹ Even long after the Fair Housing Act had been signed into law, evidence of persistent racial discrimination in mortgage lending remained.

In other words, then, until 1968, African Americans can be considered a control group for the effect of the credit revolution on investment practices. Indeed, African Americans have not experienced the credit revolution in the same way as others. African Americans have experienced the credit revolution as a restriction of amortized credit opportunities in both the securities and the real estate markets, not just in the securities markets, which is the way that other Americans have experienced the credit revolution. Therefore, if the confinement of amortized credit to the real estate market was indeed a major cause for the booming investments in real estate assets among working- and middle-class families that occurred after the late 1940s, as I suggested in Chapter Four, then African Americans, who were largely unable to access the new amortized mortgages, should not have increased their investments in real estate assets as much as other working- and middle-class families. In fact, if the theory I proposed in Chapter Four is valid, African Americans should be expected to have continued increasing their investments in corporate securities in the absence of opportunities for amortized credit in the real estate market, in the same way that other Americans also did before the credit revolution.

In what follows, I verify whether African Americans really did continue to increase their investments in corporate securities in the postwar era, while keeping their investments in real estate constant. To do this, I use data from the 1950, 1953, 1963, and 1968 waves of the Survey of Consumer Finances, which I introduced in Chapter Two. I begin this analysis with basic descriptive statistics. Table H.1 in Appendix J shows the proportion of owners of corporate securities among African Americans and among other Americans, for families possessing a total net worth in the bottom 70% of the net worth distributions in 1950, 1953, 1963, and 1968. Table H.1 also shows the mean ratio of total net worth held in corporate securities among low net worth African Americans and other Americans, respectively. This ratio is itself expressed as a

ratio of the grand mean of the corporate securities to total net worth ratio found in sample for 1950, 1953, 1963, and 1968, the same way as I presented this ratio in the analyses found in Chapter Three. Table H.2 presents the same data, albeit for ownership of real estate assets, instead of corporate securities.

As can be seen from Tables H.1 and H.2, the share of wealth held in corporate securities does appear to have grown substantially among African Americans, whereas this share has more or less stagnated among other Americans between 1950 and 1968. Furthermore, the exact opposite trends are observed for real estate assets: the share of total wealth held in real estate assets has more or less stagnated among African Americans between 1950 and 1968, whereas this share has grown substantially among other Americans during the same period.

In Table H.3, I verify whether these trends hold in the broader population, through regression analysis. I use the same regression specification I already used in Chapter Three to explore investment trends in the general American population between 1950 and 1968. Here, however, I run these regressions only for the African American population. I also explore whether ratios of wealth held in real estate and corporate securities increased or decreased in the African American population in 1953, 1963, and 1968, as compared to 1950. To do this, I use dummies for each of these survey years, with 1950 as the baseline. I also control for income, net worth, for whether a family head has attended college, for the age of the family head, for whether the family head is female, and for the size of the family. Since sample sizes for African Americans are relatively small, especially for high-income and high net worth families, I explore only how investments in securities and real estate changed between 1950 and 1968 in the entire urban African American population; I do not explore changes in net worth and income effects on investment behaviors during this period within the African American population. I do not add

any random intercepts or slopes by cohorts to the regressions presented in Table H.3, since likelihood ratio tests did not show that such random effects improved model fit.

As can be observed in Table H.3, the extent of investments in corporate securities indeed seems to have grown among African American families between 1950 and 1968, particularly starting in 1963. Furthermore, the extent of their investments in real estate assets appears to have remained constant during the same period, as descriptive statistics above suggested.

These data are thus consistent with the theory I proposed in Chapter Four, according to which the confinement of amortized credit to the real estate market was an important cause of the 1940s shift in investment practices observed in the urban working- and middle-class populations. Indeed, members of the one group that remained largely excluded from the new market for amortized mortgage credit during the postwar era, African Americans, continued to increase the extent of their investments in securities, not in real estate assets, during the postwar period, the same way as the rest of the population had done before the onset of the credit revolution, and in contrast to what the white, urban, working- and middle-class populations have done after the credit revolution.

Appendix I

Robustness Checks on the Effect of Access to Amortized Mortgages on Home Purchases

In Chapter Five, I explored how housing costs and the availability of mortgage credit affected the income effect on the odds of owning real estate in 1935-1936. I found that lower housing costs were not significantly associated to a smaller effect of income on the odds of owning real estate assets. Quite to the contrary, in fact, I found that, if anything, lower housing costs appear to have been associated to a stronger (more positive) income effect in 1935 and 1936. Meanwhile, I also found that greater access to amortized credit was associated with a reduction of the income effect on the odds of owning real estate assets, while greater access to straight mortgage loans was associated with a larger income effect. The proxies I used in this analysis for the availability of mortgage credit, however, were relatively imprecise, since they were calculated on data for a single city but applied to this city's entire state.

In an effort to test the robustness of Chapter Four findings to the proxies I used, I now conduct similar analyses, albeit with different proxies for the availability of mortgage credit and using different datasets. To my knowledge, outside of the Financial Survey (Wickens, 1935), there is no obvious way to proxy for general availability of mortgage credit by region before the mid-1930s. There is, on the other hand, an alternate way to proxy for the availability of *amortized* mortgage credit by region. Indeed, long-term, high loan-to-value, amortized mortgage loans in the 1920s and 1930s existed, but, at that point, these mortgage loans were still a

financial innovation and were extended almost exclusively by one type of financial institution: what were then known as building and loan associations (B&Ls). As a result, it is possible to proxy for availability of amortized mortgage loans in a region by calculating the value of assets under management by B&Ls in each region and dividing this by the size of this region's population. Data regarding the value of assets under management by B&Ls are available by state for 1919, in an annual report of the United States League of Local Building and Loans (United States Savings and Loan League, 1920, p. 48), and for 1931, in the Published Hearings before the Committee on Banking and Currency regarding the National Housing Act bill of 1934 (Hearings before the Committee on Banking and Currency, 1934, p. 239). In what follows, I thus use the 1919 B&Ls data in combination with the 1919-1920 wave of the Consumer Expenditure Survey, introduced in Chapter Two, and the 1931 data in combination with the 1930 wave of the U.S. Census, to conduct robustness checks regarding findings presented in Chapter Four.

Specifically, using the above-mentioned reports, I computed for both 1919 and 1931 the per capita value of assets under management by B&Ls in each state. I consider, in what follows, this per capita value of assets under management to be a proxy for the availability of amortized credit in each state. I use this proxy to explore how both housing costs and the availability of amortized mortgage loans affects the odds of homeownership among lower-income families. As I have already discussed at length in Chapter Two, the 1919-1920 wave of the CES contains data only for relatively low-income families (families roughly in the bottom 60% of the income distribution). Therefore, in this dataset, and for the year 1919, I can only explore how housing costs and the availability of amortized mortgage loans, respectively, affect the odds of homeownership in this low-income population. For the year 1931, and using homeownership data from the 1930 U.S. Census, however, I can explore more directly how housing costs and the

availability of mortgage credit changes the effect of income on homeownership, through interaction terms used in regression analyses.

Table I.1 in Appendix J presents regression results documenting the effect of housing costs and of the availability of amortized mortgage credit on homeownership in both the 1919-1920 and the 1930 samples. In both samples, housing costs are measured by dividing the median rent for each state by the median income in the corresponding state. In the 1930 sample, I can also control for the relative prices of owned homes and of rental housing, which I do by introducing a term for the median home value in each state, divided by median rent in the corresponding state. In the 1919-1920 sample, income is defined as total family income from wages and salaries divided by the square root of the number of members in the family. In this 1919-1920 sample, I control only for age of family head, whether a family lives in a metropolitan area, and family size, since the 1919-1920 sample covers only a limited population comprised of white, married men who lived in urban areas and were wage or salary earners. I refer readers to Chapter Two for more details regarding the population covered in the 1919-1920 sample. In the 1930 sample, the population covered includes the entire mainland U.S. population. I thus control for a variety of additional demographic factors, such as marital status and the gender of the household head in the 1930 sample. Also, income in this 1930 sample is an index. The value for income for a respondent to the 1930 census corresponds to the percentage of household heads in occupations with smaller median incomes in the 1950 Census than the median income reported in the 1950 Census for the occupation reported by the respondent to the 1930 Census. For example, a value of 50 for this income index means that 50% of household heads in 1950 reported being in occupations with median incomes that were smaller than the 1950 median

income for the occupation reported by the respondent to the 1930 Census. I refer readers to Chapter Three for detailed income information.

As can be seen in Table I.1 above, results for both the 1919-1920 and the 1930 samples echo results obtained in the 1935-1936 sample. For instance, in the 1919-1920 sample, which covers only a population of relatively low-income families, lower housing costs are actually significantly associated not with a higher propensity to own homes, but with a lower propensity to do so. However, the availability of amortized mortgage credit is nonetheless significantly associated with greater odds of homeownership, as we had also found in the 1935-1936 sample. Furthermore, in the 1930 sample, lower housing costs are significantly associated with an increase in the income effect, whereas greater availability of amortized credit is associated with a reduction of the income effect.

In sum, then, results presented in Chapter Five regarding the response to greater availability of amortized credit and to lower housing costs appear to be robust to the specific sample used and to alternative proxies for the availability of mortgage credit.

Appendix J

Tables¹

Chapter One

Table 1.1. Comparing the Full PSID Sample and the Regression Subsample

	Full Sample	Subsample
Number of Cases (<i>count</i>)	2,333	1,435
Geo. Mean of Annual Rates of Returns Earned between 1984 and 2011	1.7%	2.0%
Net Worth in 2011 (<i>mean</i>)	\$104,208	\$103,127
Total Income (Net of Investment Income) by SQRT of Family Member in 2011 (<i>mean</i>)	\$28,229	\$32,492
Age in 1984 (<i>mean</i>)	36	37
Heads Married in 2011 (<i>proportion</i>)	53%	73%
Head Finished College by 2011 (<i>prop.</i>)	36%	40%
Head is African American versus White (<i>prop.</i>)	10%	6%
Heads Have an Employer Pension in 2011(<i>prop.</i>)	26%	28%

¹ All tables are by the author unless specified otherwise.

Table 1.2. Descriptive Statistics for Key Variables Conditional on Net Worth

	Net Worth Percentile in 1984					
	<i>All</i>	< 25 th	between 25 th and 50 th	between 50 th and 80 th	between 80 th and 90 th	>90 th
Number of Cases	1,240	334	278	337	177	114
Outcome Variables						
Within-Family G.Mean of Annual Rates of Returns Earned 84-11 (<i>mean</i>)	2.1%	0.9%	1.8%	2.3%	2.1%	3.4%
Standardized Annual Rates of Returns (<i>mean</i>)	0.0043	0.0247	-0.0181	0.0122	-0.0081	-0.0009
Predictor Variables						
Labor Income of Head 84 (<i>mean</i>)	\$32,503	\$17,063	\$25,153	\$33,195	\$38,488	\$59,152
Permanent Total Family Income/# in Family in 1984 (<i>mean</i>)	\$17,757	\$16,188	\$15,101	\$14,136	\$19,376	\$31,896
Net Worth in 1984 (<i>mean</i>)	\$114,071	\$1,269	\$17,428	\$55,659	\$138,342	\$572,073
Control Variables						
Being Married for Most of 84-11 (<i>prop.</i>)	76.2%	58.4%	79.7%	77.9%	85.0%	80.1%
Being African American (<i>prop.</i>)	5.4%	10.8%	11.2%	2.5%	0.4%	0%
Having an Employer Pension (head or partner) (<i>prop.</i>)	42.6%	57.2%	51.3%	44.1%	34.5%	11.5%
Having Finished College in 2011 (<i>prop.</i>)	39.9%	28.5%	35.2%	42.9%	50.6%	62.6%
Age in 84 (<i>mean</i>)	38	28	32	39	43	47

Table 1.2 Continued

Portfolio Composition Variables

Within-Family Standard Deviation of Annual Returns 84-11 (<i>median</i>)	7.6%	7.2%	8.1%	7.0%	6.8%	6.9%
Average % In Deposits, Gov. Bonds, or Cash in Portfolio 84-11 (<i>mean</i>)	25.1%	47.6%	23.6%	18.6%	19.3%	18.1%
Average % In Home Equity 84-11 (<i>mean</i>)	48.7%	34.8%	56.6%	58.2%	48.3%	31.8%
Average % In Stocks 84-11 (<i>mean</i>)	14.0%	10.6%	11.2%	12.3%	16.4%	25.7%
Average % In Real Estate other than Main Residence 84-11 (<i>mean</i>)	7.2%	3.5%	6.3%	7.2%	8.7%	12.7%
Av.% In Private Business Equity 84-11 (<i>mean</i>)	4.8%	3.3%	2.0%	3.5%	7.1%	12.4%
Within-Family Average of Debt to Home Value 84-11 (<i>mean</i>)	28.6%	28.3%	38.8%	30.2%	20.7%	16.6%

Table 1.3. Descriptive Statistics for Outcome Variables Conditional on Family Income in 1984

	Percentile of Total Family Income/ sqrt(Family Size)					
	<i>All</i>	$\leq 20^{\text{th}}$	between 20 th and 40 th	between 40 th and 60 th	between 60 th and 80 th	$> 80^{\text{th}}$
Number of Cases	1,432	286	286	287	286	287
Outcome Variables						
Within-Family G.Mean of Annual Rates of Returns Earned 84-11 (<i>mean</i>)	2.1%	1.0%	1.6%	2.4%	1.6%	3.3%
Standardized Annual Rates of Returns (<i>mean</i>)	0.0043	-0.0280	0.0272	0.0345	-0.0162	-0.0011
Control Variables						
Within-Family Standard Deviation of Annual Returns 84-11 (<i>median</i>)	13.6%	13.2%	14.0%	9.7%	9.2%	8.4%
Average % In Deposits, Gov. Bonds, or Cash in Portfolio 84-11 (<i>mean</i>)	24.7%	25.5%	26.1%	26.6%	24.7%	22.6%
Average % In Home Equity 84-11 (<i>mean</i>)	49.0%	56.1%	51.9%	52.8%	47.7%	41.4%
Average % In Stocks 84-11 (<i>mean</i>)	13.9%	6.1%	9.7%	11.6%	15.5%	23.3%
Average % In Real Estate other than Main Residence 84-11 (<i>mean</i>)	7.2%	4.9%	7.0%	6.7%	7.2%	9.5%
Av.% In Private Business Equity 84-11 (<i>mean</i>)	5.3%	7.3%	5.3%	3.2%	5.4%	3.9%
Within-Family Average of Debt to Home Value 84-11 (<i>mean</i>)	28.6%	25.5%	27.9%	31.4%	32.7%	24.9%

Table 1.4. Standardized Annual Rates of Returns as a Function of Income by Sqrt of Family Member and Net Worth Reported in the Previous Survey Wave

	Model A1	Model A2	Model A3	Model A4
Lagged Standardized Total Family Income per Sqrt Member	0.0060** (.0027)		0.0057** (.0030)	0.0054** (.0028)
Dummy for 0 Lagged Wages and Salaries	0.0194 (.0158)		0.0205** (.0137)	0.0250** (.0133)
Lagged Standardized Total Family Net Worth		0.0028** (.0016)	0.0009 (.0030)	-0.00159 (0.0026)
Age Lagged (<i>Centered at 50</i>)	0.0014** (.0006)	0.0017*** (.0006)	0.0013 (.0005)	0.0013*** (.00046)
Whether Head or Spouse Has an Employer Pension	-0.0115 (.0142)	-0.0145 (.0131)	-0.0121 (.0140)	
Whether Head is African American	-0.0201 (.0266)	-0.0201 (.0267)	-0.0174 (.0267)	
Whether Head Has Completed College	-0.0028 (.0131)	-0.0013 (.0129)	-0.0033 (.0133)	
Lagged Whether Head is Married	0.0056 (.0144)	0.0052 (.0145)	0.0055 (.0144)	
Dummy for Missing Outcome in the Previous Survey Wave	-0.0148 (.0130)	-0.0157 (.0129)	-0.0103 (.0103)	
Constant	-0.0333** (0.0272)	-0.0276* (.0168)	-0.0430** (.0158)	0.0052 (.0044)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 1.5. Geometric Mean of Annual Rates of Returns as a Function of Family Income and Net Worth in 1984

	Model B1	Model B2	Model B3	Model B4
Log of Total Family Income per SQR Member in 1984 (<i>grand-mean centered</i>)	0.0100** (.0047)		0.0087** (0.0047)	0.0102** (0.0044)
Dummy for 0 Wages and Salaries in 1984	0.0026 (.0088)		0.0106 (0.0094)	
Net Worth in 1984 <\$5,000 (<i>lowest quintile</i>) (<i>baseline is Net Worth in 1984 >\$200,000</i>)		-0.0259** (.0105)	-0.0191* (.0104)	-0.0104* (.0111)
Net Worth in 1984 between \$5,000 and \$30,000		-0.0131** (.0065)	-0.0083 (.0068)	-0.0039 (.0065)
Net Worth in 1984 between \$30,000 and \$90,000		-0.0060 (.0083)	-.0017 (.0081)	0.0013 (.0077)
Net Worth in 1984 between \$90,000 and \$200,000		-0.0118* (.0070)	-0.0098 (.0072)	-0.0077 (.0065)
Whether Head is African American	-0.0227* (.0136)	-0.0191 (.0121)	-0.0184 (.0120)	
Whether Head Completed College by 2011	-0.0047 (.0043)	-0.0027 (.0042)	-0.0046 (.0041)	
Whether Head Had an Employer Retirement Pension 84-11	-0.0093* (0.0059)	-0.0094** (.0049)	-0.0092** (.0049)	-0.0099* (.0054)
Whether Head was Married 84-11	0.0030 (.0056)	0.0009 (.0057)	0.0021 (.0058)	
Ratio of Returns Observations Reported in Negative Years to Positive years 84-11	-0.1514*** (.0241)	-0.1539*** (.0260)	-0.1552*** (.0258)	-0.1525*** (.0269)
Pearson Residuals	-0.0059* (.0042)	-.00057 (.0058)	-0.0058 (.0060)	
Inverse Mills Ratio	0.6508*** (.2512)	-0.2401 (.2463)	-0.2369 (.2441)	

Table 1.5 Continued

Constant	0.0845*** (.0122)	0.1145*** (.0174)	0.1086*** (.0165)	0.0974*** (.0136)
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***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 1.6. In-Sample Standard Deviation of the Observed and Counter-Factual Total Income Variables By Survey Year

	1989	1994	1999	2001	2003	2005	2007	2009	2011
Observed	\$31,752	\$33,857	\$41,221	\$62,573	\$65,829	\$92,253	\$64,878	\$80,613	\$66,969
Counter Factual	\$30,043	\$28,601	\$40,271	\$42,615	\$35,094	\$71,574	\$39,514	\$46,318	\$43,916
Percent Diff.	-5%	-16%	-2%	-30%	-47%	-22%	-39%	-43%	-34%

Table 1.7. Share of Total Reported Income Reported by Families in the Top 10% of the Income Distribution in the Observed and Counter-Factual Samples By Survey Year

	1989	1994	1999	2001	2003	2005	2007	2009	2011
Observed Total Income	28%	29%	28%	34%	34%	38%	34%	37%	36%
Counter-Factual Total Income	27%	27%	27%	30%	28%	32%	30%	32%	31%
Percent Difference	-4%	-7%	-4%	-12%	-18%	-17%	-12%	-14%	-14%

Table 1.8. Share of Income and Net Worth Effects on Rates of Return Earned Explained by Various Mechanisms

Controls in Models	Lagged Standardized Total Family Net Worth	% of Net Worth Effect Explained	Lagged Standardized Total Family Net Worth)	% of Income Effect Explained
Gross Effect	-0.00159		0.0054**	
Returns Earned Within Asset Classes	0.0195***	<i>Suppressor</i>	-0.0016	100%
Proportion of Wealth in Low-Risk Assets	0.0174***	9.9%	-0.0025	<i>N/A</i>
<i>Composition of Risky assets</i>				
Proportion of Wealth in Real Estate Assets	0.0103**	36.5%	-0.0045	<i>N/A</i>
Proportion of Wealth in Private Businesses	0.0044	30%	-0.0011	<i>N/A</i>
% Leverage	0.0023	11%	-0.00002	<i>N/A</i>

Chapter Two

Table 2.1. Summary of Data Sources, Population, and Investment Proxies by Sub-Period

	Source	Population	Measurement
1918-1940	Consumer Expenses Survey of 1918 and 1936 (N: 12 341)	Urban, white, native, employed, married males with at least a child who are employed and earn less than \$3,000 (1937 USD)	Annual Savings in Real Estate and Corporate Securities as a Share of Income
	Statistics of Income 1918 to 1926 and 1937 (N: 3600)		
	US Census 1920, 1930, 1940.		
1936-1950	Consumer Expenses Survey of 1936	Urban, white, employed, married males who are employed	Annual Savings in Real Estate and Corporate Securities as a Share of Income
	Survey of Consumer Finances of 1947 and 1950		
1950-1968	Survey of Consumer Finances of 1950, 1953, 1963, 1968	Urban Population	Share of Assets held in Real Estate and Corporate Securities
1953-2013	Survey of Consumer Finances of 1953, 1963, 1968, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013.	Entire Mainland US Population	Share of Assets held in Real Estate and Corporate Securities

Chapter Three

Table 3.1. Ratio of Savings in Real Estate and in Corporate Securities to Annual Income in 1918-1919 and 1935-1936 among Families Earning less than \$3,000

	Mean Savings in RE/Income	Mean Savings in Securities/Income	Mean Income (1936 USD)	Mean Income/ GDP per Capita
1918-1919 (N: 8620)	2.6%	0.02%	\$767	0.69
1935-1936 (N:979)	1.5%	0.1%	\$875	0.78

Table 3.2. Change in the Ratio of Savings in Real Estate and in Corporate Securities to Family Income between 1918 and 1936 among Families Earning less than \$3,000

	Savings in RE /Total Income	Savings in Securities /Total Income
1935 versus 1918	-0.0045 (0.005)	0.005*** (0.0009)
Age	0.0008** (0.0004)	-0.0002*** (0.00004)
Income Per Family Member	0.00002* (0.00001)	-2.31e-06 (4.16e-06)
Size of Family	-0.003*** (0.001)	-0.0002 (0.0012)
Whether Family Lives in a City >1,000,000	-0.024*** (0.004)	0.0023 (0.0043)
Size of Savings in Other Asset Classes (than RE or Sec.) / Family Income	8.31e-06*** (7.93e-06)	3.40e-06*** (1.56e-06)
Intercept	0.021*** (0.007)	0.0028* (0.0017)
Variance Parameter (Cohorts)	0.004 (0.001)	0.005 (0.002)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.3. Change in the Odds of Savings in Real Estate and in Corporate Securities versus Not between 1918 and 1936 among Families Earning Less than \$3,000: Coefficient Estimates

	Odds of Savings in RE	Odds of Savings in Securities
1935 versus 1918	0.936 (0.083)	2.222*** (0.746)
Age	1.037*** (0.005)	1.005 (0.018)
Income Per Family Member	1.001*** (0.00001)	1.013*** (0.205)
Size of Family	1.041 (0.052)	-0.0002 (0.0012)
Whether Family Lives in a City >1,000,000	0.331*** (0.061)	1.128 (0.697)
Size of Total Savings / Family Income	1.001*** (0.0002)	1.001*** (0.0002)
Intercept	0.2794*** (0.011)	0.0033*** (0.0008)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.4. Change in the Ratio of Savings in Real Estate and in Corporate Securities Between 1918 and 1936 among Families Earning Less than \$3,000, Conditional on Ownership

	Savings in RE /Total Income	Savings in Securities /Total Income
1935 versus 1918	-0.0322 (0.0273)	0.208 (0.199)
Age	0.0008 (0.001)	-0.007 (0.009)
Size of Family	-0.0183*** (0.006)	0.072 (0.073)
Whether Family Lives in a City >1,000,000	-0.069*** (0.023)	0.090 (0.167)
Size of Savings in Other Asset Classes (than RE or sec) / Family Income	-7.82e-06	0.00006 (0.00015)
Inverse Mills Ratio	-0.1255*** (0.054)	0.1505 (0.825)
Intercept	0.117*** (0.027)	-0.169 (0.5232)
Variance Parameter (Cohorts)	0.004 (0.001)	0.005 (0.002)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.5. Odds of Owning a Home As a Function of Income
Between 1920 and 1940

	Odds of Owning a Home
Income	1.007*** (0.001)
1930	1.092 (0.0699)
1940	1.074 (0.127)
1930*Income	1.006*** (0.001)
1940*Income	1.004** (0.002)
Age of HH head	1.054*** (0.006)
Num. of Members in HH	1.018 (0.015)
Whether Family Lives in a Larger Metro Area	0.596*** (0.007)
Intercept	0.035*** (0.013)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.6. Ratio of Savings in Real Estate and in Corporate Securities to Family Income between 1935 and 1950 by Income Bracket

	1935	1947	1950
Total Savings in Real Estate /Total Family Income			
\$500-\$1,500	0.0138 (N:581)	0.0426 (N:324)	0.0393 (N:225)
>\$1,500-\$5,000	0.0301 (N:1138)	0.0730 (N:1060)	0.0662 (N:1070)
>\$5,000-\$10,000	0.0300 (N:49)	-0.0310 (N:45)	0.0168 (N:60)
>\$10,000	0.0224 (N:9)	0.1112 (N:11)	0.0279 (N:9)
Grand Mean	0.0247 (N:1777)	0.0641 (N:1440)	0.0641 (N:1363)
Total Savings in Securities /Total Family Income			
\$500-\$1,500	0.0003	0.000	0.000
>\$1,500-\$5,000	0.0029	-0.0002	0.0018
>\$5,000-\$10,000	0.0185	0.0262	0.0323
>\$10,000	-0.0086	0.0290	0.0200
Grand Mean	0.0024	0.0001	0.0021
Total Savings /Total Family Income			
\$500-\$1,500	0.019	0.008	0.039
>\$1,500-\$5,000	0.094	0.099	0.093
>\$5,000-\$10,000	0.180	0.128	0.116
>\$10,000	0.270	0.200	0.191
Grand Mean	0.072	0.077	0.083

Table 3.7. The Effect of Income on Ratio of Savings in Real Estate and in Corporate Securities between 1935 and 1950

	Savings in Real Estate / Income	Savings in Securities / Income
Income	0.339*** (0 .094)	2.416*** (0.589)
1947 versus 1935	0.041 (0.167)	0.260 (1.757)
1950 versus 1935	0.004 (0.144)	0.226 (0.702)
1947* Income	-0.124 (0.186)	3.623 (3.439)
1950* Income	-0.395*** (0.1617)	-0.351 (.00105)
Size of Family	0.080** (0.042)	0.681** (0.516)
Whether Family Lives in a City >1,000,000	-0.085 (0.146)	-2.184 (2.224)
Savings in Other Assets /Total Family Income	-0.091*** (0.016)	-0.6550*** (0.207)
Age	0.017*** (0.005)	-0.0838 (0.0575)
Constant	0.844*** (0 217)	-0.2290 (2.256)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.8. The Effect of (Income/GDP per capita) on Ratio of Savings in Real Estate and in Corporate Securities between 1935 and 1950

	Savings in Real Estate / Income	Savings in Securities / Income
Income / GDP per capita	0.470*** (0.134)	3.730*** (0.872)
1947 versus 1935	0.058 (0.172)	1.269 (2.126)
1950 versus 1935	0.005 (0.149)	0.803** (.745)
1947* Income / GDP per capita	-0.148 (0.172)	1.583 (1.274)
1950* Income / GDP per capita	-0.472** (.310)	1.934 (1.674)
Size of Family	0.095** (0.051)	1.354** (0.666)
Whether Family Lives in a City >1,000,000	-0.063 (0.145)	-2.093 (2.290)
Savings Income in Other Assets / Income	-0.090*** (0.017)	-0.648*** (0.208)
Age	0.0174*** (0.005)	-0.079 (0.055)
Constant	0.786*** (0.232)	-2.781** (2.647)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.9. The Effect of Income on Ratio of Savings in Real Estate and in Corporate Securities between 1935 and 1950, Excluding the 1947 Sample

	Savings in Real Estate / Income	Savings in Securities / Income
Income / GDP per capita	0.423*** (0.110)	2.911*** (0.527)
1950 versus 1935	0.545*** (0.241)	0.527 (.714)
1950* Income / GDP per capita	-0.566** (.312)	1.002 (1.209)
Size of Family	0.021 (0.049)	0.453** (.217)
Whether Family Lives in a City >1,000,000	-0.333*** (0.137)	1.245 (1.302)
Savings Income in Other Assets / Income	-0.098*** (.0265)	-0.593*** (.229)
Age	0.0296*** (.0042)	-0.024 (0.042)
Constant	0.682*** (.279)	-0.285 (1.106)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.10. The Effect of Income on the Odds of Saving in Real Estate and in Corporate Securities between 1935 and 1950

	Odd of Saving in Real Estate	Odds of Saving in Securities
Income / GDP per capita	1.556*** (0.125)	2.416*** (0.299)
1950 versus 1935	5.090*** (0.464)	0.997 (0.247)
1950* Income / GDP per capita	1.335* (.250)	1.546** (0.372)
Size of Family	1.240*** (0.055)	1.015 (0.092)
Whether Family Lives in a City >1,000,000	0.803** (0.098)	0.866 (0.302)
Savings Income in Other Assets / Income	0.574* (0.194)	0.324*** (0.135)
Age	1.029*** (.004)	1.006 (0.011)
Constant	0.166*** (0.030)	0.026*** (0.009)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.11. The Effect of Income on Ratio of Savings in Real Estate and in Corporate Securities between 1935 and 1950, Conditional on Saving Some Amount

	Savings in Real Estate / Income	Savings in Securities / Income
Income / GDP per capita	0.106 (0.321)	-1.318** (0.594)
1950 versus 1935	-5.319*** (0.455)	-0.881 (0.733)
1950* Income / GDP per capita	-1.449*** (0.533)	0.131 (0.445)
Size of Family	-0.411*** (0.101)	0.209 (0.246)
Whether Family Lives in a City >1,000,000	-0.088 (0.251)	1.849*** (0.693)
Savings Income in Other Assets / Income	-0.351*** (0.055)	-0.597*** (0.092)
Age	N/A	0.014 (0.027)
Inverse Mills Ratio	-1.287*** (0.127)	-1.407*** (0.412)
Constant	11.03*** (0.812)	10.46*** (2.947)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.12. The Effect of Income and Net Worth on Share of Real Estate and Corporate Securities in Portfolio between 1950 and 1968

	Share of Real Estate in Portfolio	Share of Securities in Portfolio
Family Income	-0.0061*** (.0004)	0.0491 (.115)
Net Worth	0.0229*** (.0019)	0.0141*** (.0043)
Net Worth ²	-0.0002*** (.00005)	0.0011*** (.0002)
1953	0.0130 (.0323)	0.343*** (.199)
1963	0.2001*** (.0373)	0.269 (.171)
1968	0.2470*** (.0346)	0.490*** (.163)
1953*Income	-0.0007 (.0005)	0.355** (.0049)
1963*Income	0.0014** (.0007)	0.880*** (.0242)
1968*Income	0.0030*** (.0004)	0.593*** (.1737)
1953*Net Worth	0.0057*** (.0026)	-0.0091* (.0067)
1963* Net Worth	-0.0030 (.0033)	-0.0073 (.0052)
1968* Net Worth	-0.0110*** (.0020)	0.0038 (.0052)
1953*Net Worth ²	-0.0001 (.00008)	-0.0005** (.0003)
1963* Net Worth ²	-0.0001** (.00009)	-0.0005** (.0003)
1968* Net Worth ²	-0.0001** (.00006)	-0.0005** (.0002)
Whether Head is Unemployed	0.0117 (.0279)	-0.1103 (.2858)
Whether Head is Self-employed	-0.0660*** (.0264)	0.1626 (.1837)

Table 3.12 Continued

Whether Head Went to College	-0.1767*** (.0275)	1.3080*** (.1793)
Whether Head is Female	-0.1124*** (.0431)	0.2722 (.2820)
Whether Head is African American	0.2707*** (.0433)	-2.5449*** (.6410)
Number of Persons in Family Unit	0.0504*** (.0036)	-0.0405 (.0247)
Whether Head is Married	0.0451 (.0532)	-0.1553 (.2635)
Whether Family is a Secondary Unit	-0.3409*** (.0904)	-0.4789 (.5930)
Inverse Mills Ratio		0.905*** (0.547)
Age of Head	0.0020** (.0009)	0.0087* (.0052)
Intercept	0.9969*** (.0618)	0.328 (0.252)
Variance of Intercept Across Cohorts	0.0004 (.0004)	
Variance of Net Worth Slope Across Cohorts	1.15e-09 (6.72e-10)	
Variance of Net Worth ² Slope Across Cohorts	0.00001 (6.24e-06)	

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.13. The Effect of Income and Net Worth on the Odds of Owning Real Estate and Corporate Securities in Portfolio between 1950 and 1968

	Odds of Owning Real Estate	Odds of Owning securities
Family Income	0.9752*** (.0027)	0.9626 (.007)
Net Worth	1.1107*** (.0051)	1.0453*** (.0056)
Net Worth ²	0.9996*** (.00001)	1.0002 (.0001)
1953	0.8696 (.1146)	1.2750 (.3121)
1963	4.2506*** (.7271)	4.7112*** (1.4038)
1968	9.9805*** (1.7565)	13.6158*** (4.3499)
1953*Income	0.9942 (.0046)	1.27** (.132)
1963*Income	0.9992 (.0046)	1.740*** (.034)
1968*Income	1.0006 (.0043)	1.301 (.157)
1953*Net Worth	1.0223** (.0094)	0.9901 (.0068)
1963* Net Worth	1.0105 (.0081)	0.9948 (.0063)
1968* Net Worth	1.0027 (.0067)	0.9981 (.0062)
1953*Net Worth ²	0.9994** (.00002)	0.9986 (.0002)
1963* Net Worth ²	0.9989*** (.0003)	0.9998* (.0002)
1968* Net Worth ²	0.9990*** (.0002)	0.9996* (.0002)
Whether Head is Unemployed	0.7571* (.1112)	1.1315 (.1727)
Whether Head is Self-employed	0.8157 (.1171)	0.9525 (.1139)

Table 3.13 Continued

Whether Head Went to College	0.4703*** (.0469)	2.9133*** (.2481)
Whether Head is Female	0.6324** (.1256)	0.9966 (.1794)
Whether Head is African American	2.1023*** (0.3351)	0.4893*** (.1124)
Number of Persons in Family Unit	1.2969*** (.0412)	0.9997 (.0316)
Whether Head is Married	1.0398 (.1870)	.7907 (.1311)
Whether Family is a Secondary Unit	0.1131*** (.0365)	2.5191*** (.7828)
Age of Head	0.9931* (.0036)	0.9567** (.0158)
Intercept	2.1768*** (.4225)	0.0829*** (.0410)
Variance of Intercept Across Cohorts		0.0323 (.0242)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.14. The Effect of Income and Net Worth on Share of Real Estate and Corporate Securities in Portfolio between 1950 and 1968, Conditional on Ownership

	Share of Real Estate in Portfolio	Share of Securities in Portfolio
Family Income	-0.0021*** (.0004)	0.1116*** (.0403)
Net Worth	0.0006*** (.0008)	-0.0409 (.1348)
Net Worth ²	-0.0001*** (.00002)	0.0043*** (.0019)
1953	0.0674*** (.0221)	1.1948 (2.6615)
1963	-0.1118 *** (.285)	-3.2622 (3.0409)
1968	-0.2173*** (0.2401)	-0.2648 (3.8923)
1953*Income	0.0003 (.0005)	-0.0249 (0358)
1963*Income	-0.0001 (.0002)	0.0076 (.0237)
1968*Income	0.0010** (.0005)	-0.0267* (.0132)
1953*Net Worth	0.0014* (.0008)	-0.0551 (.1471)
1963* Net Worth	-0.0008** (.0004)	0.1073 (.1149)
1968* Net Worth	-0.0025*** (.0005)	0.0966 (.1079)
1953*Net Worth ²	-0.00002 (.000002)	-0.0001 (.0029)
1963* Net Worth ²	6.29e-06 (.00003)	-0.0012 (.0021)
1968* Net Worth ²	0.00001 (.00001)	-0.0013 (.0019)
Whether Head is Unemployed	-0.0194 (.0180)	1.6612* (.9541)
Whether Head is Self-employed	0.0075 (0112)	-0.6219 (.6555)

Table 3.14 Continued

Whether Head Went to College	-0.0656*** (.0140)	5.3484*** (2.2168)
Whether Head is Female	-0.0305** (.0152)	2.4514*** (1.0249)
Whether Head is African American	0.0638** (0.0277)	-4.3952* (2.3767)
Number of Persons in Family Unit	0.0135*** (.0049)	-0.6429*** (.1556)
Whether Family is a Secondary Unit	-0.2308 (.1913)	7.1754*** (2.9296)
Age of Head	-0.0025*** (.0008)	-0.0212 (.0250)
Inverse Mills Ratio	0.0684** (.0299)	11.1509** (5.2886)
Intercept	1.6220*** (.0284)	15.6306*** (12.6769)
Variance of Intercept Across Cohorts	0.0004 (.0001)	

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.15. The Effect of Income and Net Worth on Share of Real Estate and Corporate Securities in Portfolio between 1953 and 2013

	Share of Real Estate in Portfolio	Share of Securities in Portfolio
Family Income	-0.037*** (.016)	0.409*** (.127)
Family Income ²		-.0310*** (.004)
Net Worth	0.146*** (.009)	0.458*** (.036)
Net Worth ²	-0.003*** (.0002)	-0.011*** (.001)
1963*Income	-0.030 (.024)	0.286 (0.217)
1968*Income	-0.033 (.022)	0.356* (.158)
1989*Income	0.057*** (.020)	-0.161 (.144)
1992*Income	0.041** (.019)	-0.072 (.136)
1995*Income	0.052*** (.018)	-0.052 (.136)
1998*Income	0.032* (.019)	-0.078 (.134)
2001*Income	0.057*** (.018)	-0.163 (.132)
2004*Income	0.063*** (.018)	-0.132 (.133)
2007*Income	0.063*** (.018)	-0.154 (0.133)
2010*Income	0.054*** (.018)	-0.109 (.132)
2013*Income	0.054** (.018)	-0.137 (.132)
1963* Net Worth	-0.036*** (.014)	0.231** (0.126)
1968* Net Worth	-0.052*** (.012)	-0.024 (0.081)

Table 3.15 Continued

1989* Net Worth	-0.092*** (.011)	-0.003 (.068)
1992* Net Worth	-0.082*** (.010)	-0.145** (.0599)
1995* Net Worth	-0.102*** (.0005)	-0.097 (.0597)
1998* Net Worth	-0.104*** (.010)	-0.115** (.057)
2001* Net Worth	-0.115*** (.010)	-0.129** (.057)
2004* Net Worth	-0.106*** (.010)	-0.127** (.058)
2007* Net Worth	-0.101*** (.010)	-0.135 (.089)
2010* Net Worth	-0.115*** (.010)	-0.127** (.057)
2013* Net Worth	-0.124*** (.010)	-0.104* (.066)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table 3.16. The Effect of Income on Investment Behavior,
Depending on Population and Covariates

	Savings in Real Estate/Income	Real Estate /Total Assets	Savings in Securities/Income	Securities /Total Assets
Model 1	0.0061* (.0031)	0.0009 (.0011)	0.0373** (.0178)	0.0211*** (.0056)
Model 2	-0.0068*** (.0036)	-0.0056*** (.0010)	0.0142 (.0188)	0.0111*** (.0054)
Model 3	-0.0107*** (.0025)	-0.0065*** (.0011)	0.0056 (.0045)	0.2312*** (.0045)
Model 4	-0.0097*** (.0026)	-0.0058*** (.0006)	0.0082 (.0094)	0.0207*** (.0048)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Chapter Four

Table 4.1. The Structure of Mortgage Loans between 1920 and 1950

	1920	1934	1950
Mean Interest Rate (%)	6.1%	6.18%	5.0%
Mean Ratio of Loan Value to Home Value (%)	52%	55%	71%
Mean Term (Years)	7.2	8.4	16.1
Proportion of Loans Fully Amortized (%)	N.A.	39.3%	90.1%
Proportion of Loans by Non-Institutional Lenders (%)	43%	36%	19%

SOURCE: Grebler et al., 1956.

Line 1: Table O-3 Line 2-3: Estimated Average from Tables 67 and N-2.

Line 4: Table 0-5 Line 5: Table N-1

Chapter Five

Table 5.1. Housing Costs, Access to Mortgage Credit, and Homeownership in 1935-1936

	Odds of Owning a home
Income	1.0010** (0.0005)
Income * Median Housing Costs in State (Median Rent/Median Income)	0.9998 (.00003)
Income * Proxy for Availability of Amortized Mortgages	.999992*** (3.17e-06)
Income * Proportion of Homes that are Mortgaged	1.00004*** (.000013)
Median Housing Costs in State	0.9047** (.0541)
Proxy for Availability of Amortized Mortgages	1.0195*** (.0514)
Proportion of Homes that are Mortgaged	0.9937 (.0084)
Proportion of Loans with Term of 15 Years or More	1.0248 (.0415)
Proportion of Single-Family Units in the Rental Market	0.9826** (.0087)
Household Head Lives in a Metropolitan Area	0.8057 (.1858)
Family Size	1.0896* (.0598)
Age	1.0608*** (.0069)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Appendices

Table A.1. Summary of Data Available and Missing in PSID Data for Calculating Rates of Returns

	Data on Capital Initially Invested	Data on Savings and Withdrawals	Data on Capital Left at End of Investment Period	Data on Rents, Dividends, or Interests
Cash, Deposits, and Government Bonds	Y	N	Y	Y
Stocks and Other Corporate Securities (Direct or Indirect Ownership)	Y	N	Y	Y
Main Residence	Y	Y	Y	N
Real Estate Other than Main Residence	Y	N	Y	Y
Private Businesses	Y	N	Y	Y
Other Assets	Y	N	Y	N/A

Note: Y: Data collected by PSID, N: Data not collected by PSID

Table A.2. Data Sources and Assumptions Made in Rates of Return Calculations, by Asset Class

	Capital Initially Invested	Asset Appreciation(AA) Calculation	Earnings
Cash, Deposits, and Government Bonds	Data: PSID	Assumption: AA = (Capital Invested in Bonds, Deposits, Cash)*(-Inflation Rate During Investment Period) Data: Consumer Price Index, Bureau of Labor Statistics	Interests Data: PSID
Stocks (Direct or Indirect Ownership)	Data: PSID	Assumption: AA = (Capital Invested in stocks)*(Inflation Adjusted Stock Price Index Growth during Period – 1% Annual Management Fee) Data: Wilshire 5000 Stock Price Index, and Consumer Price Index	Dividends Data: PSID
Main Residence	Data: PSID	Assumption: AA = (Home Equity at the End of Investment Period) – (Home Equity at the Beginning of Investment Period) - Mortgage Payments – (Additions, Major Repair, or Home Upgrade) - Maintenance Costs during Period*. Data: PSID for Home equity, Mortgage Payments, Additions, Repairs and Upgrade. Harding et. al, 2007 for maintenance costs	Assumption : Implicit Rent Data = (Home Equity at Beginning of Period)*(Annual Rent-to-Value Ratio)* # of Years in Investment Period + Any Rents from Boarders Data: PSID and Bureau of Labor Statistics, for Rent-to-Value Ratio Data

Table A.2 Continued

Real Estate Other than Main Residence	Data: PSID	Assumption: $AA = (\text{Capital Invested in Real Estate}) * (\text{Inflation-Adjusted Case-Shiller Price Index Annual Rate of Return for the Investment Period})$ Data: Case-Shiller Inflation-Adjusted Home Price Index	Rents Data: PSID
Private Businesses	Data: PSID	Assumption: $AA = 0$ (Equals Inflation Rate)	Proprietor's Income Data: PSID
Other Assets	PSID	Dropped	Dropped

* I assume that additions and major repairs are made at the beginning of the investment period.

Table D.1. Composition of Savings Variables

CES 1918-1919 Sample	CES 1935-1936 Sample	SCF 1947 and 1950 Sample
Bank Accounts and Currency		
		Changes in savings account balances.
Deposits in Savings, Checking, and Building and Loan Accounts + Currency On-Hand – Withdrawals and Currency Lost or Stolen.	Deposits in Savings, Checking, and Building and Loan accounts + Currency On-Hand – Withdrawals and Currency Lost or Stolen.	In both 1947 and 1950, this variable is available only in brackets (relatively small, usually \$500 difference between brackets). I transformed these brackets into amounts using the mid-points of the brackets.
Real Estate (Including Main Residence)		
Amount Paid on Real Estate Bills + investment in a Home + Investment in Other Real Estate + Investment in Fixer-Ups + Repairs and Improvements to Home or Real Estate + Paid Mortgage Principal - Sold Land - Sold House - Borrowed on Mortgage Principal	Amount Paid on Real Estate Bills + Investment in a Home + Investment in Other Real Estate + Investment in Fixer-Ups + Repairs and Improvements to Home or Real Estate + Paid Mortgage Principal - Sold Land - Sold House - Borrowed on Mortgage Principal + Investment in a Vacation Home + Repairs and Improvement to Vacation Home	Mortgage Principal Repayment + Real Estate Bought + Real Estate Sold + Value of Homes Bought – Value of Home Sold + Additions and Repairs to Homes. * I do not have additions and repairs to real estate other than main residence. * In 1947, I have only intervals for all these values, not amounts. I converted intervals to amounts using the mid-points of intervals.

Table D.1 Continued

Farms and Private Businesses

		Value of business sold - value of private business bought.
Investment in Livestock + Investment in Farm - Sold Livestock	Expenses in Farm Machinery or Livestock + Farm Repairs + Investment in Private Business - Sold Private Business	* Value of savings and dissavings in private businesses are available only in intervals in both 1947 and 1950. I transformed intervals into amounts using interval mid-points.

Loans to Others

Loans Made to Others	Loans Made – Previous Loans that were Reimbursed.	Loans Made to Others. *Previous loans reimbursed were not asked about.
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War Savings, Liberty Bonds, War Stamps, and Other Federal Government Securities

Liberty Bonds, War Stamps, Thrift Stamps Bought - Liberty Bonds, War Stamps, Thrift Stamps Sold - Amount Borrowed Against Liberty Bonds	In 1935, war savings were embedded in the “others category,” and I cannot single out government securities from this category. The “other savings” category is, at any rate, extremely low, which I find puzzling, given the enormous size of savings in US securities in 1918.	Value of Savings Bonds A to F Bought - Value of Savings Bonds A to F Sold + Value of Interest-Yielding US Bonds Bought - Value of Interest-Yielding US Bonds Sold
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Corporate and Municipal Securities

Stocks Bought - Stocks Sold + Municipal Bonds Bought	<p>Stocks and Bonds Bought - Stocks and Bonds Sold. Stocks and bonds were not broken up in this survey. However, based on the 1918 survey and the 1946 survey of consumer finances, municipal and state securities are very marginal in the savings of American families. In addition, federal bonds had to be nearly inexistent in 1935-1936. Liberty bonds were not in circulation anymore in 1935, since the federal government had reimbursed the near totality of its war debt by 1930 (Garbade, 2012). In addition, the savings bonds program did not start before 1935 and remained an extremely unpopular until the US joined allied forces in the Second World War in 1941 (United States, Department of the Treasury, U. S. Savings Bonds Division, 1984). I believe the lion's share of the amount reported here to be held in stocks and corporate bonds. ICPSR appears to be of the same opinion, since they have called the variables referring to the line "Stocks and Bonds" on the Survey Schedule "value of stocks purchased" and "value of stocks sold." I only noticed that this variable should, in theory, contain both stocks and bonds when looking at the actual survey schedule.</p>	Municipal Bonds Sold - Municipal Bonds Bought + Change in the Amount of Corporate Stocks and Bonds Owned that is Not the Result of Price Change.
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Table D.1 Continued

Other Assets

Postal and School Savings Bought + Amount Invested in Pension Funds	Postal Savings Bought - Postal Savings Sold + Amount Invested in Pension Funds	N/A
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Total Savings

Sum of all of the above. Since only employed persons are sampled in the 1918, and no questions appear to have been asked about private businesses, I have decided not to compare investment in private businesses across samples whenever the 1918-1919 sample is used.

Sum of the above

Sum of the above

Table E.1. Share of Real Estate and of Corporate Securities in Portfolio as a Function of Share of Income Spent in these Assets in 1950

	Real Estate/Total Assets	Securities/Total Assets
Savings in Real Estate/Income	0.0719*** (.0067)	
Savings in Securities/ Income		0.0172 (.0133)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table E.2. The Effect of Income and Net Worth on Asset-Based and Savings-Based Proxies of Investment Preferences

	Income	Net Worth
Savings in Real Estate / Income	-0.0097*** (.0026)	0.024*** (.002)
Share of Real Estate in Portfolio	-0.007*** (.0007)	0.019*** (.0007)
Savings in Corporate Securities / Income	0.008* (0.007)	0.0174** (0.008)
Share of Corporate Securities in Portfolio	0.024*** (.005)	0.022*** (.005)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table F.1. Summary of Changes in Federal Taxation of Receipts 1918-1937

	Non-taxable Receipts	Major Changes In Taxable Receipts
1918	Pay from military exceeding \$3,500, interest on liberty bonds lower than \$105,000 total, state bonds, farm loan bonds, gifts, insurance proceeds, and amounts received after work accidents.	-
1919	Pay from military exceeding \$3,500, interest on liberty bonds lower than \$105,000 total, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and dividends on federal reserve banks stock. Interest from war finance corporation bonds, as well.	Dividends on federal reserve banks become non-taxable. Perhaps this reduces the net income of wealthy families a bit.
1920	Pay from military exceeding \$3,500, interest on liberty bonds lower than \$105,000 total, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and dividends on federal reserve banks stock. Interest from war finance corporation bonds, as well.	-
1921	Interest on liberty bonds lower than \$160,000 total, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and interest from war finance corporation bonds. Pensions and benefits received by veterans under the war risk insurance, and rental value of home furnished to ministers of the gospel, as well.	The threshold for non-taxable interest is higher. This should not affect lower-income families too much. But it could make high-income families go down a bracket or two in net income. Also, dividends from the federal reserve stop being tax-exempt. At the same time, all military people are coming back into the labor force, and they are not tax-exempt any more.
1922	Interest on liberty bonds lower than \$160,000 total, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and interest from war finance corporation bonds. Pensions and benefits received by veterans under the war risk insurance and rental value of home furnished to ministers of the gospel, as well.	-

Table F.1 Continued

1923	<p>Interest on liberty bonds lower than \$160,000, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and interest from war finance corporation bonds. Pensions and benefits received by veterans under the war risk insurance, dividends and interests not exceeding \$300 from building and loans associations that make only loans to members, and rental value of home furnished to ministers of the gospel, as well.</p>	<p>Dividends not exceeding \$300 from building and loans become tax-exempt. This should contribute to a certain decrease in the dividends ratio.</p>
1924	<p>All interest on liberty bonds 3 1/2%, interest below \$50,000 on 4/12% liberty bonds, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and interest from war finance corporation bonds. Pensions and benefits received by veterans under the war risk insurance, dividends and interests not exceeding \$300 from building and loans associations that make only loans to members, and rental value of home furnished to ministers of the gospel, as well.</p>	<p>The part of the interest income that is tax-exempt gets a bit higher. Should affect mainly the high incomes; their overall net income should become lower.</p>
1925	<p>All interest on liberty bonds 3 1/2%, interests below \$50,000 on 4/12% liberty bonds, state bonds, farm loan bonds, gifts, insurance proceeds, amounts received after work accidents, and interest from war finance corporation bonds. Pensions and benefits received by veterans under the war risk insurance, dividends and interests not exceeding \$300 from building and loans associations that make only loans to members, and rental value of home furnished to ministers of the gospel, as well.</p>	<p>-</p>
1926	<p>All interest from federal and state bonds, liberty bonds (any over \$5,000 are subject to surtax if net income is over \$6,000), farm loan bonds, gifts, insurance proceeds, and amounts received after work accidents are exempt. Interest from instrumentalities of the US, such as the Federal Farm Mortgage Corporation or the Home Owners Loan Corporation, are exempt (subject to surtax if net income is over \$1,000). Pensions and benefits received by veterans under the war risk insurance, rental value of home furnished to ministers of the gospel, and amounts earned by non-residents from foreign sources, as well.</p>	<p>Amounts by non-residents become tax-exempt. Some amounts become subject to surtax only, but this should not change the computation of gross and net income.</p>

Table F.1 Continued

All interest from federal and state bonds, liberty bonds (any over \$5,000 are subject to surtax if net income is over \$6,000), farm loan bonds, gifts, insurance proceeds, and amounts received after work accidents are exempt. Interest from instrumentalities of the US, such as the Federal Farm Mortgage Corporation or the Home Owners Loan Corporation, are exempt (subject to surtax if surtax net income is over \$1,000). Pensions and benefits received by veterans under the war risk insurance, rental value of home furnished to ministers of the gospel, and amounts earned by non-residents from foreign sources, as well.

Table G.1. Evolution of the Dividends to Total Income Ratio by Income Bracket from 1937 to 1948

Year	Income Bracket	Dividend/Income Within Bracket (%)	Overall Dividend /Income (%)	Dividend to Income Ratio within Income Class/Overall Dividend to Income Ratio	Mean Total Gross Income	GDP per Capita	Percent of Tax Returns within Bracket
1937	\$1,000 to \$2,000	3.99%	16.0%	0.25	\$1,583	\$497	5.6% from bottom to 53.4%
1943	\$2,000 to \$4,000	1.10%	8.4%	0.38	\$2,983	\$956	9% to 62.5%
1947	\$2,250 to \$4,500	0.7%	3.1%	0.22	\$3,028	\$1,125	7.5% to 56.8%
1948	\$2,500 to \$5,114	0.6%	3.3%	0.18	\$3,424	\$1,243	6.4% to 56.0%

Table G.2. Evolution of the Income Effect on the Log Odds of Owning a Home between 1920 and 1960

	Log Odds of Owning a Home
Income	1.012*** (0.001)
1920 versus 1930	0.871*** (0.025)
1960 versus 1930	2.716*** (0.064)
1920*Income	0.994*** (0.002)
1960*Income	1.001 (0.001)
Age of Family Head	1.045*** (0.001)
Num. of Members in Family	1.046*** (0.006)
Whether Family Lives in a Large Metro area	0.946*** (0.018)
Intercept	0.733*** (0.016)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table H.1. Stock Ownership among African Americans and Other Americans Possessing Net Worth in the Bottom 70% of the Net Worth Distribution between 1950 and 1968

	Proportion of Corporate Securities Owners (%)		Mean (Corporate Securities Value/Total Net Worth) _{ingroup}	
			Grand Mean (Corporate Securities/Total Net Worth)	
	African Americans	Other Americans	African Americans	Other Americans
1950	0	4	0	0.37
1953	0	4	0	0.40
1963	1	9	0.4	0.40
1968	5	10	0.12	0.42

Table H.2. Real Estate Ownership among African Americans and Other Americans Possessing Net Worth in the Bottom 70 % of the Income Distribution between 1950 and 1968

	Proportion of Real Estate Owners (%)		Mean (Real Estate Value / Total Net Worth) _{ingroup}	
			Grand Mean (Real Estate Value/Total Net Worth)	
	African Americans	Other Americans	African Americans	Other Americans
1950	26	36	1.08	0.76
1953	23	31	1.03	0.71
1963	48	37	1.02	0.89
1968	44	60	1.04	0.95

Table H.3. Regression Analysis for Real Estate and Corporate Securities Ownership among African Americans between 1950 and 1968

	(Corporate Securities Value /Total Net Worth)	(Real Estate Value /Total Net Worth)
	Grand Mean (Corporate Securities/Total Net Worth) (N:447, R ² : 0.12)	Grand Mean (Real Estate Value/Total Net Worth) (N:447, R ² : 0.49)
Income (centered on mean)	0.0005 (.0010)	-0.0059*** (.0012)
Net Worth (centered on mean)	0.0030*** (.0015)	0.0234*** (.0017)
1953	-0.0433 (.0397)	-0.113 (.0943)
1963	0.2075* (.1023)	-0.0517 (.0964)
1968	0.1519** (.0706)	-0.0007 (.0049)
Whether Head Attended College	-0.0632 (.0954)	-0.2588*** (.0722)
Whether Head is Female	0.3645 (.2718)	-0.2028** (.0972)
Family Size (N)	-0.0007 (.0073)	0.0433*** (.0166)
Whether Head is Married	-0.0179 (.0379)	0.0103 (.0911)
Age of Head (centered at 50)	-0.0038 (.0033)	0.0048** (.0023)
Intercept	0.0150 (.0366)	1.2791*** (.1058)

***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Table I.1. Availability of Amortized Mortgages and Homeownership Rates among Working- and Middle-Class Families in 1919-1920 and 1930

	Odds of Owning a Home	
	1919-1919 CES N:12,817	1930 US Census N: 128,887
Proxy for Availability of Amortized Mortgages	1.0077*** (.0016)	1.0029*** (.0002)
Median Housing Costs in State (Median Rent/Median Income)	1.0550*** (.0211)	0.9176*** (.0248)
Income	1.0012*** (.0001)	1.0114*** (.0006)
Income * Median Housing Costs in State		0.9974*** (.0005)
Income * Proxy for Availability of Amortized Mortgages		0.99998*** (3.74e-06)
Family Size	1.0184* (0.0185)	1.0451*** (.0032)
Age	1.0503*** (.0032)	1.057*** (.0006)
Household Head Lives in a Metropolitan Area	0.3671*** (.0413)	0.7370*** (.0105)
Median Home Value / Median Rent in State		0.9826*** (.0018)
Household Head is Not Married		0.6881*** (.0159)
Household Head is African American		0.4261*** (.0106)
Household Head is Unemployed		0.7960*** (.0193)

Table I.1 Continued

Household Head is Self-Employed		1.903*** (.0278)
Household Head is a Woman		1.0029 (.0171)
Household Head Was Not Born in the US		1.0827*** (.0149)
Intercept	0.0538*** (.0156)	0.0519*** (.0028)

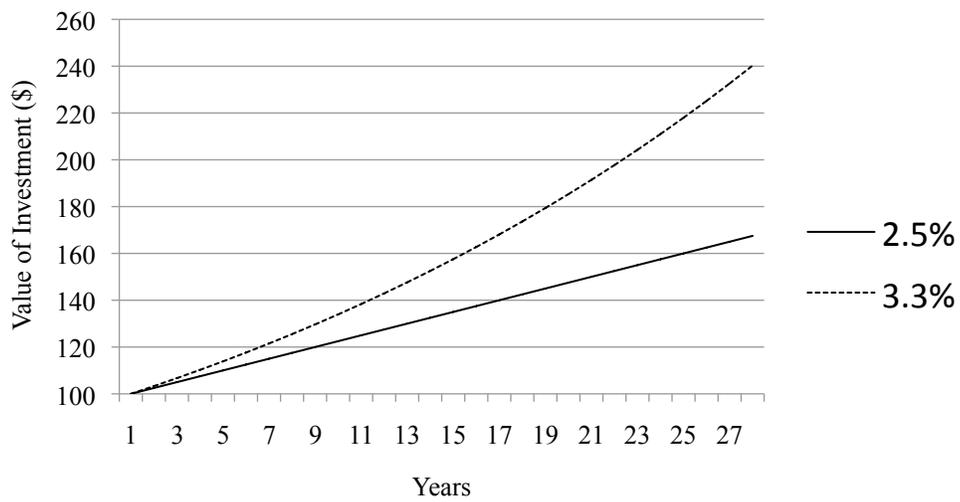
***: $p \leq 0.01$, **: $p \leq 0.05$, *: $p \leq 0.1$. Two-tailed tests.

Appendix K

Figures¹

Chapter One

Figure 1.1. Growth of a \$100 Investment Over 27 Years
When Yielding 2.5% and 3.3% Annually



¹ All figures are by the author unless specified otherwise.

Part Two

Figure 2.1. Savings by Asset Categories as a Ratio of Income among Households in the Bottom 60% of the Income Distribution

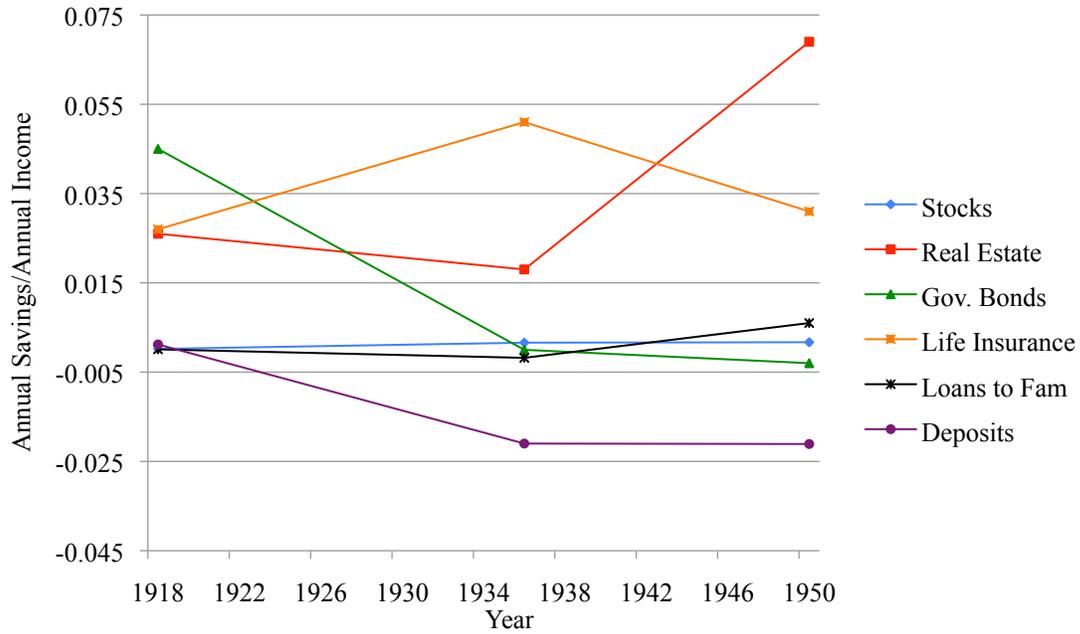


Figure 2.2. Savings in Corporate Securities as a Ratio of Income among Households in the Bottom 60% of the Income Distribution

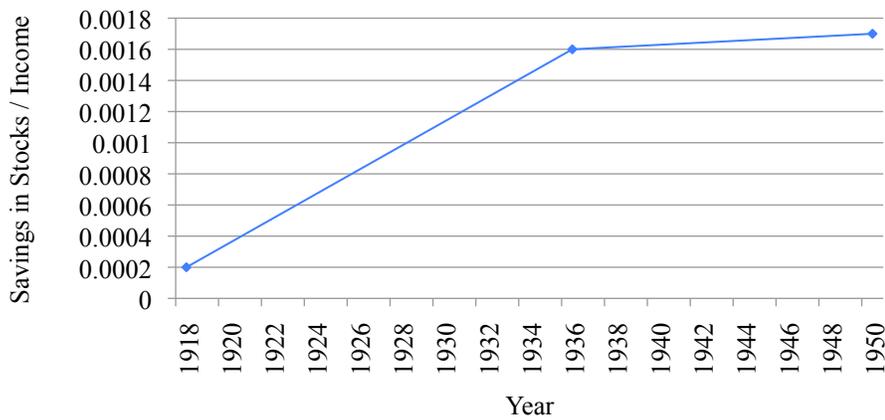


Figure 2.3. Savings as a Share of Income between 1918 and 1950
by Income Category

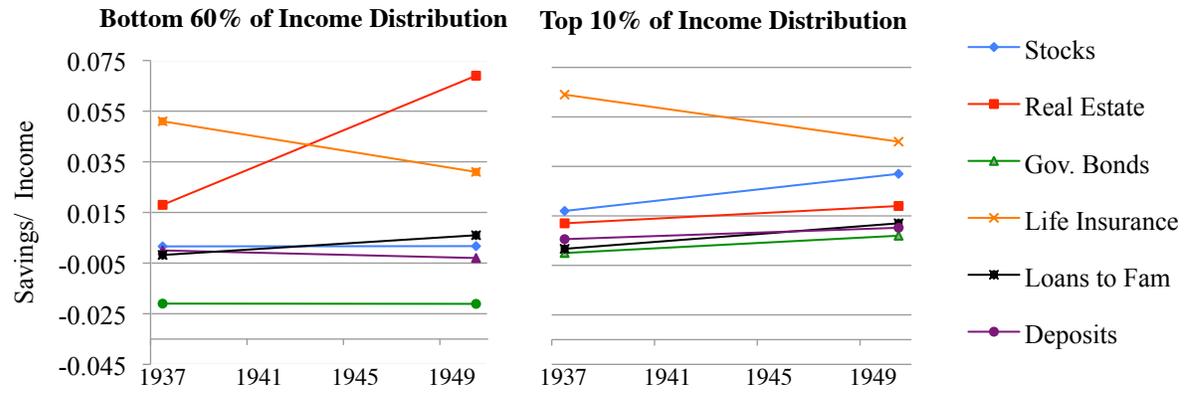


Figure 2.4. Average Share of Real Estate and of Securities in Portfolio between 1950 and 2013 by Net Worth Category

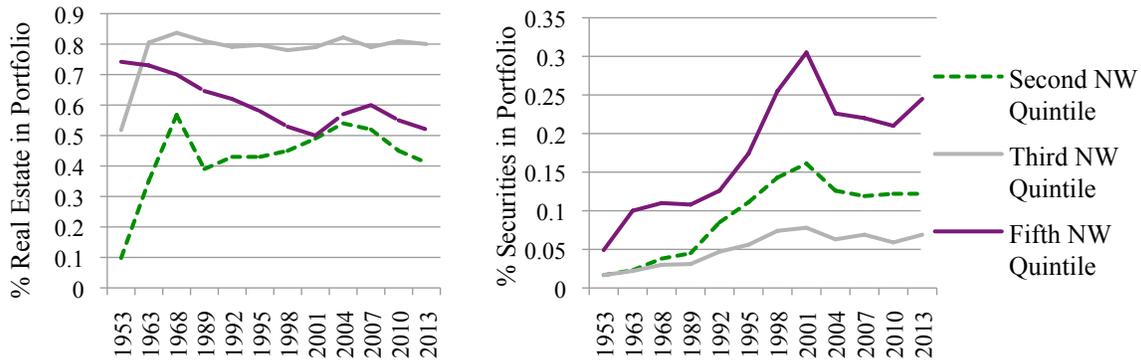


Figure 2.5. Average Share of Dividends in Total Income Earned between 1918 and 1950, by Income Group

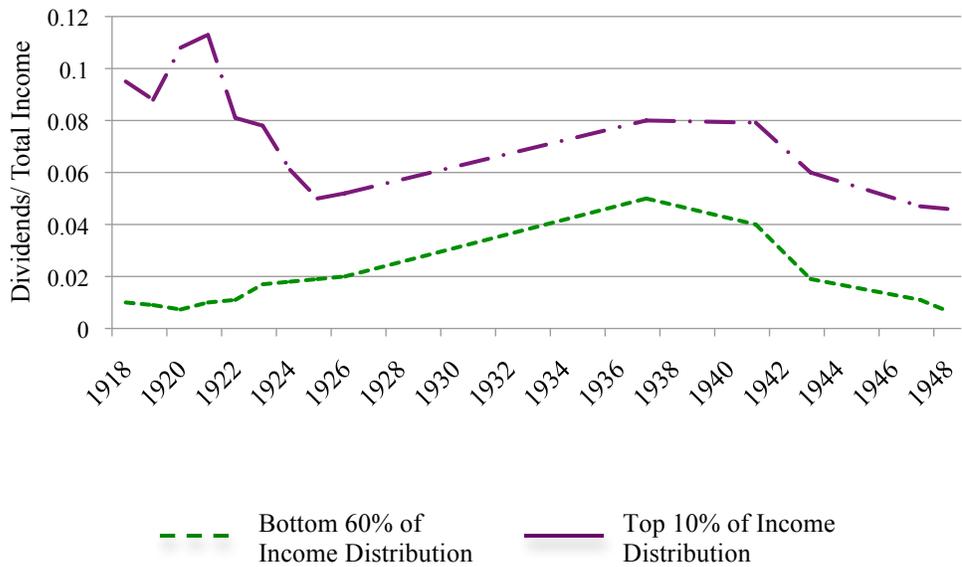
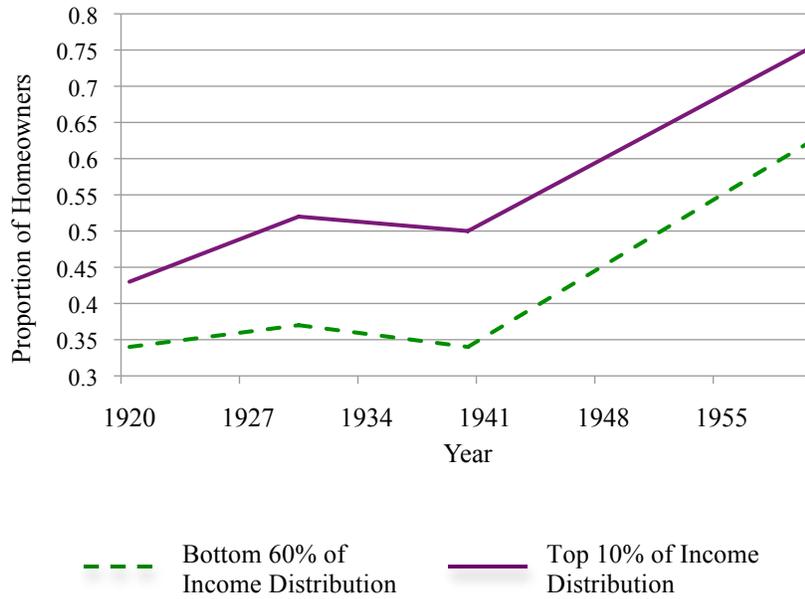


Figure 2.6. Proportion of Homeowners between 1950 and 1960 by Income Category



Chapter Three

Figure 3.1. Dividend to Income Ratio in the Bottom 60% of the Income Distribution as a Ratio of the Dividend to Income Ratio in the Top 10% of the Income Distribution from 1918 to 1937

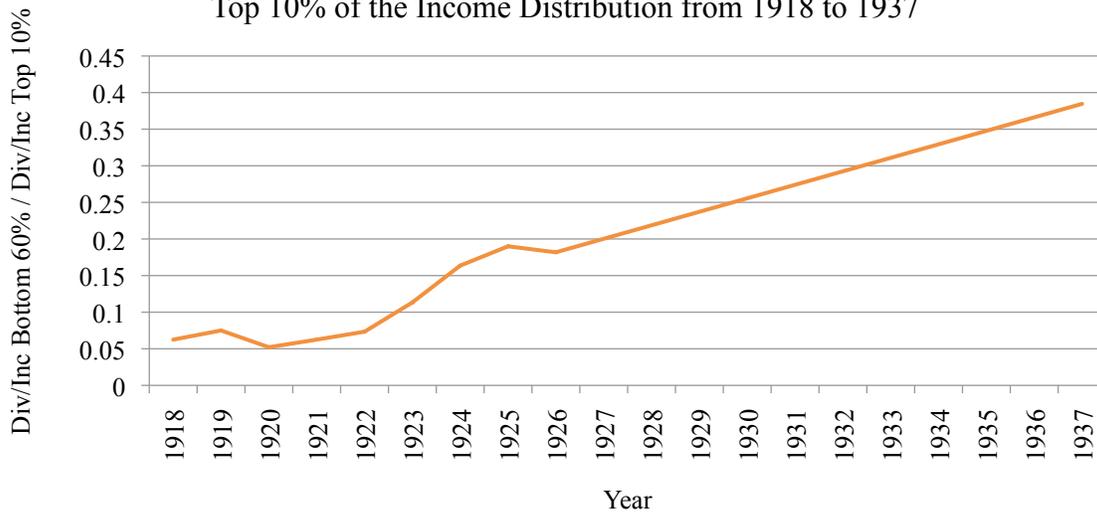


Figure 3.2. Proportion of Homeowners by Income Group from 1920 to 1940

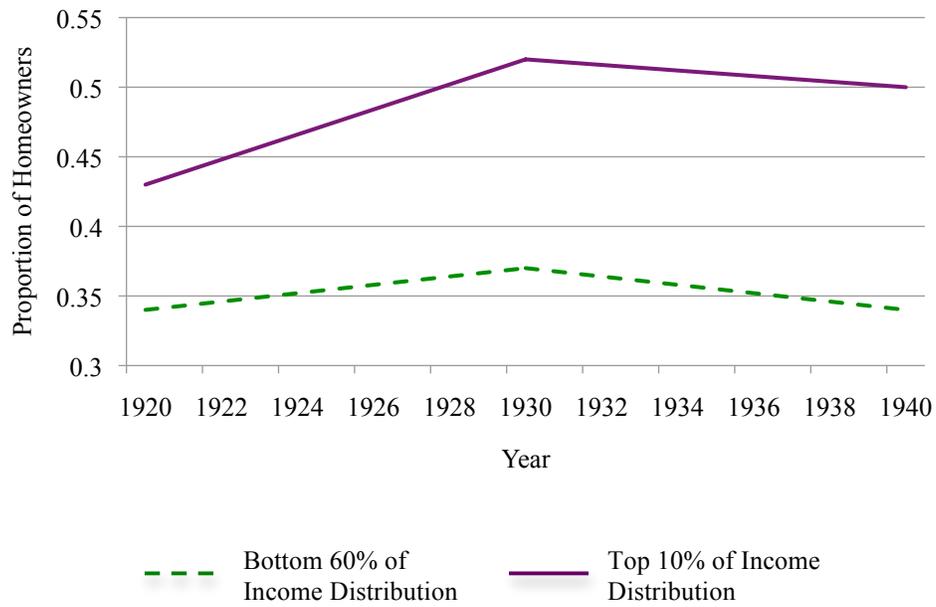


Figure 3.3. Share of Real Estate in Portfolio by Income Quintile from 1950 to 1968

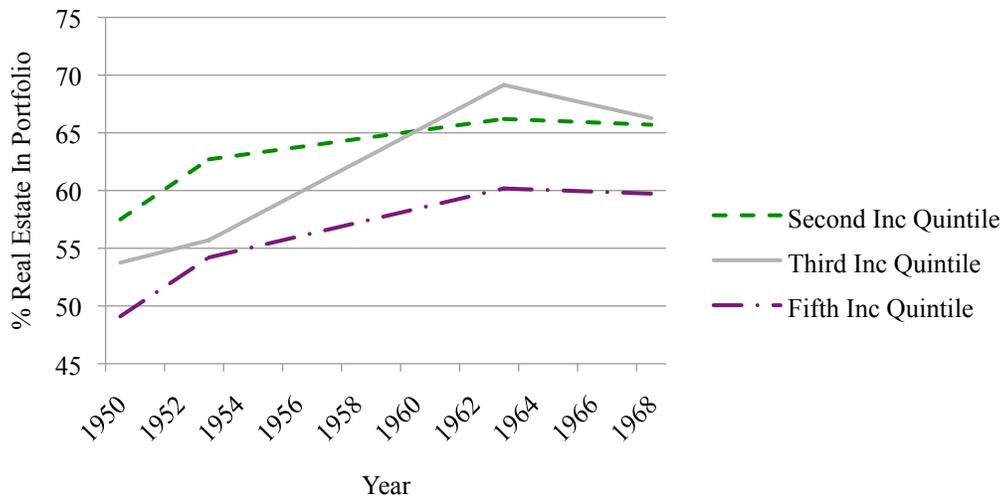


Figure 3.4. Share of Real Estate in Portfolio by Net Worth Quintiles from 1950 to 1968

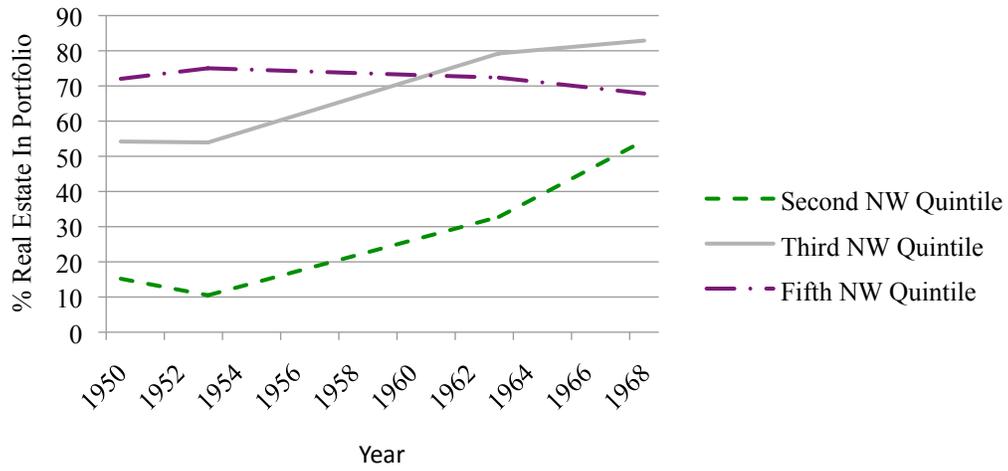


Figure 3.5. Share of Corporate Securities in Portfolio by Income Quintile from 1950 to 1968

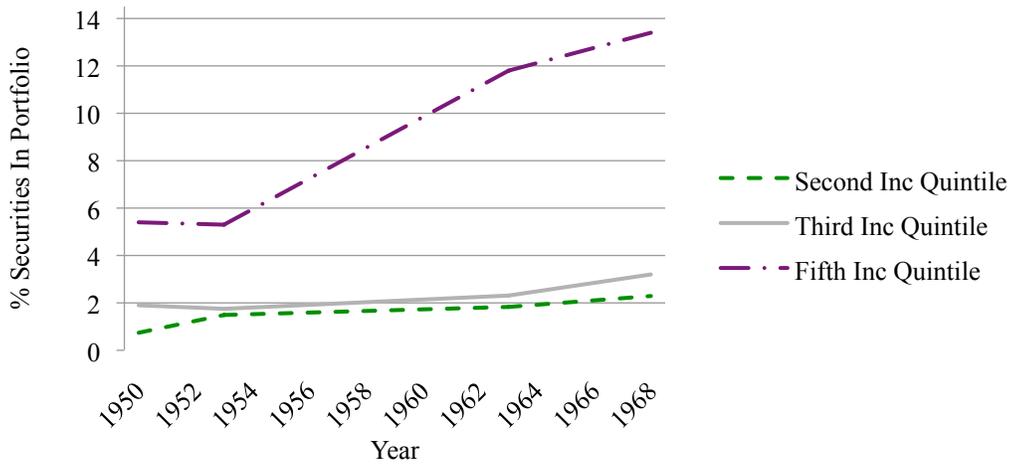


Figure 3.6. Share of Corporate Securities in Portfolio by Net Worth Quintile from 1950 to 1968

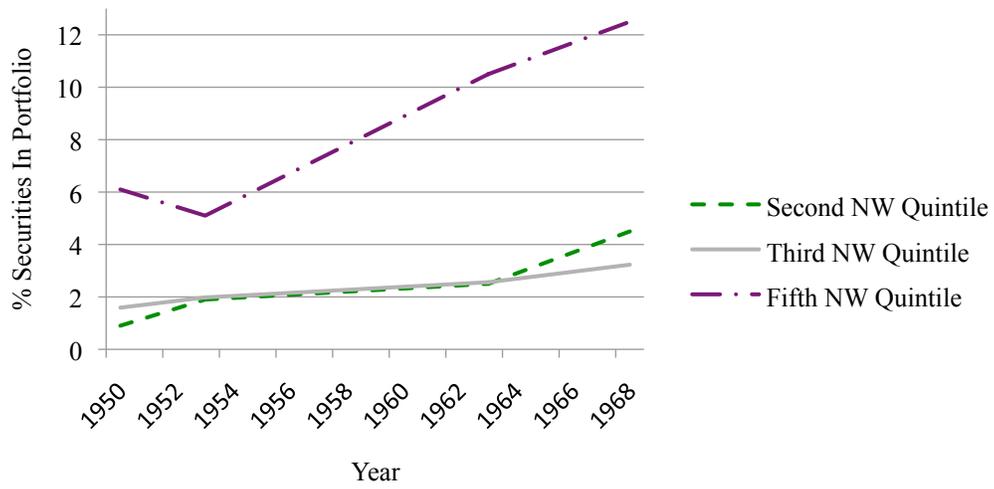


Figure 3.7. Predicted Share of Real Estate in Portfolio as a Function of Net Worth in 1950 and 1968

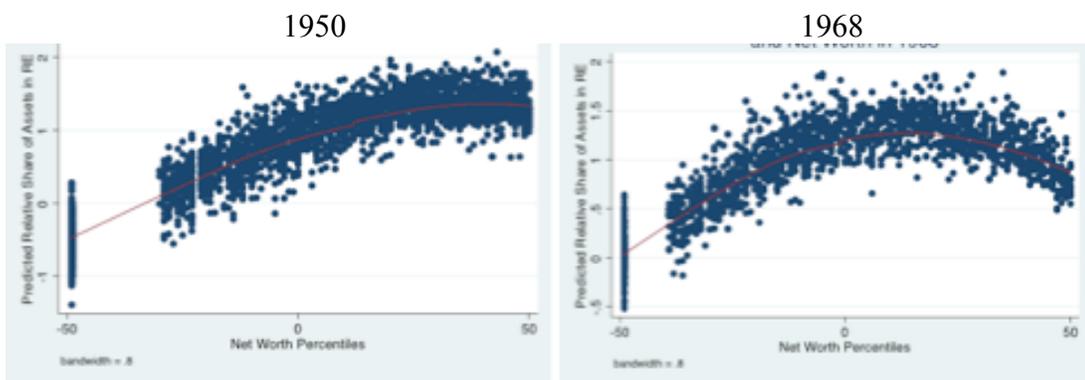


Figure 3.8. Share of Real Estate in Portfolio by Income Quintile between 1953 and 2013

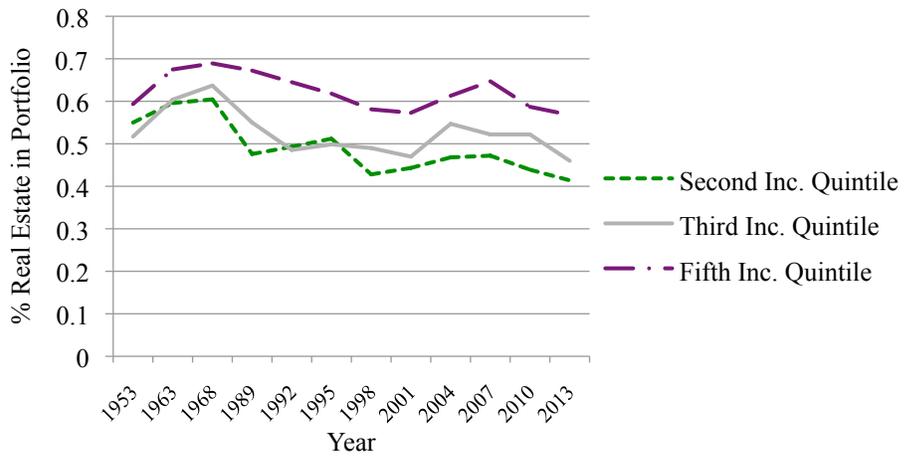


Figure 3.9. Share of Real Estate in Portfolio by Net Worth Quintile between 1953 and 2013

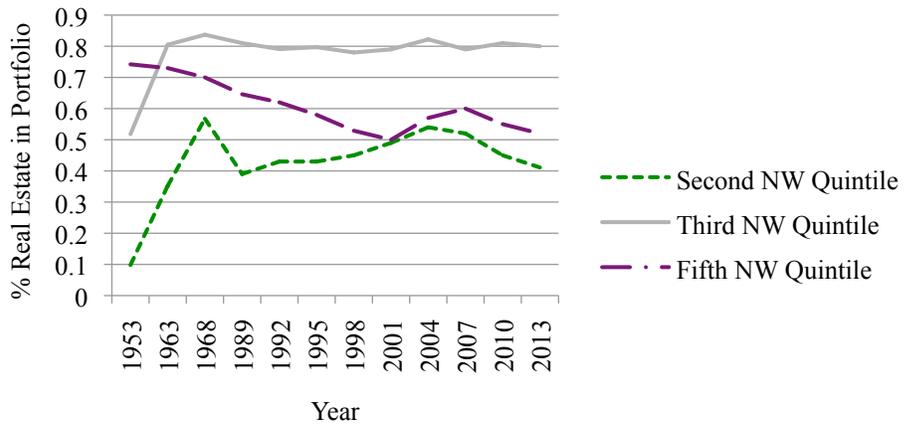
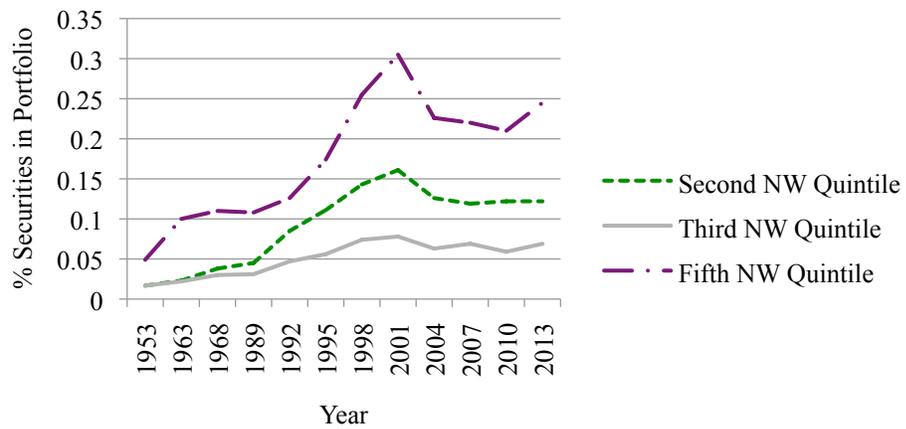


Figure 3.10. Share of Corporate Securities in Portfolio by Income Quintile between 1953 and 2013



Figure 3.11. Share of Corporate Securities in Portfolio by Net Worth Quintile between 1953 and 2013



Chapter Four

Figure 4.1. Liberty Loan Drive Advertising Poster



SOURCE: H.F. Rawll (1917)

Chapter Five

Figure 5.1. Housing Costs and Homeownership by Income Percentile Group in 1935-1936

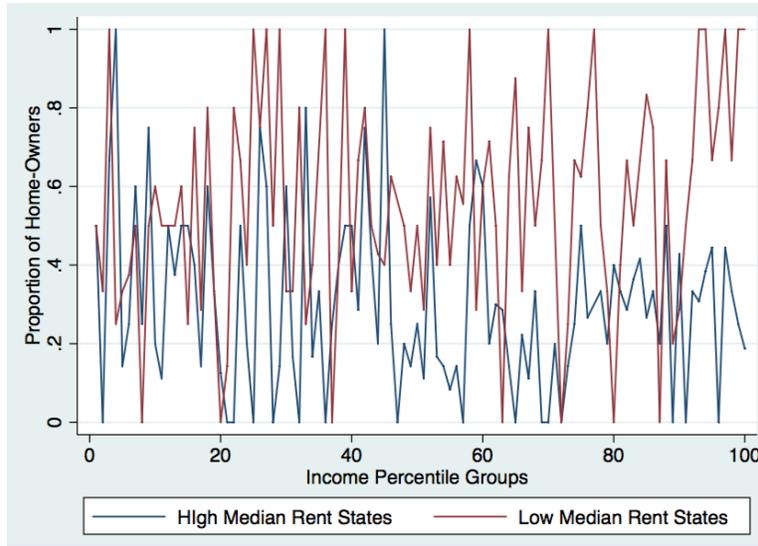
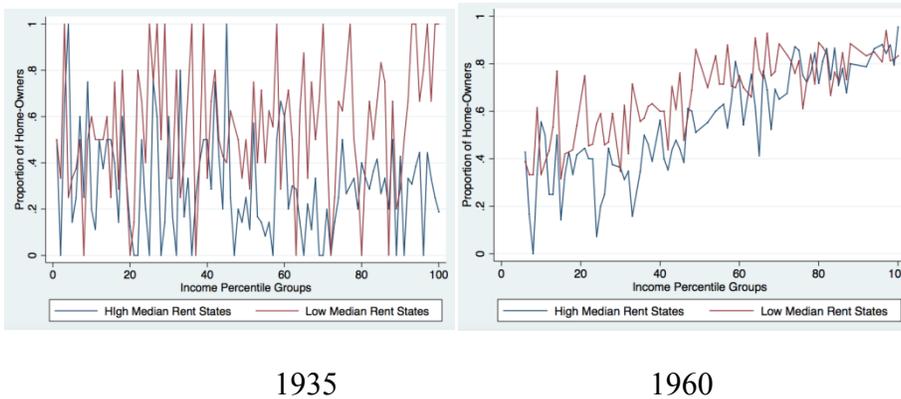


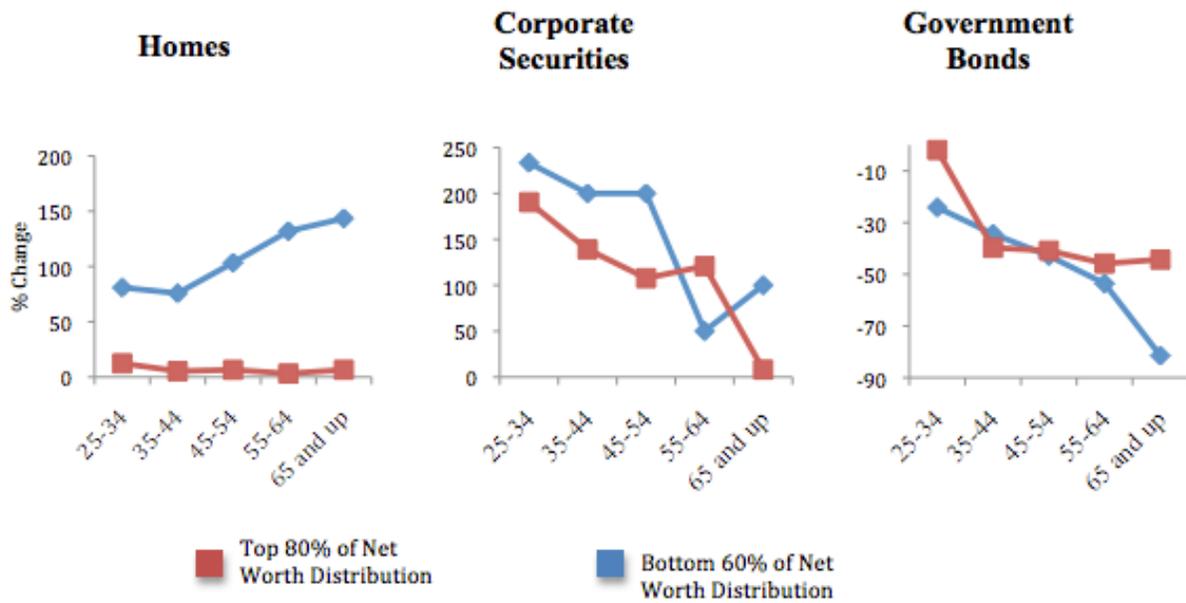
Figure 5.2. Housing Costs and Homeownership by Income Percentile Group in 1935-1936 vs. 1960



1935

1960

Figure 5.3. Changes in the Age Structure of Owners of Select Asset Classes between 1950 and 1968



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