Do African Americans Prefer to Live in Segregated Communities?

BY ROBERT DeFINA

Following Hurricane Katrina, many people were shocked by the extent of racial segregation in the New Orleans housing market. And yet, New Orleans is far from an isolated case. Forty years after passage of the Fair Housing Act, racially segregated neighborhoods are all too common in the United States. The reasons usually offered for this continued segregation include discrimination in the real estate and housing markets. Recently, these reasons have been challenged by a theory claiming that segregation exists because African Americans prefer to live together for positive reasons, such as to share and support a common heritage. In this article, Bob DeFina examines the evidence and notes that it casts doubt on the viability of the so-called self-segregation hypothesis.

The devastation caused by Hurricane Katrina shocked the country and revealed glaring inadequacies in the infrastructure of New Orleans. Images of homes and stores inundated by floods, residents trapped on roofs, and stories of lost children gripped the nation and left many asking how such outcomes were possible.

Perhaps just as surprising was another fact the storm laid bare. New Orleans, the country was to see, had a housing market sharply segregated by race. News stories of the storm's impact uncovered neighborhood after neighborhood overwhelmingly composed of African Americans. While the Crescent City obviously had white residents, they appeared to live in areas largely separate from African Americans.

New Orleans, it turns out, is not an isolated case. Forty years after the civil rights movement and the Fair Housing Act of 1968, racially segregated housing continues to be widespread. By most measures the extent of segregation has moderated somewhat during the past several decades. Yet analysts, such as Douglas Massey, find that two-thirds of African Americans currently live in metro areas racially divided enough to be classified as "highly segregated" or "hyper-segregated."

The fact that housing segregation has persisted into the 21st century is not disputed. But the reasons it has endured are less clear. Beginning in the 1970s and continuing into the 1990s, there seemed to be broad agreement that racial segregation was mainly due to past and ongoing discrimination in the real estate and lending markets. This view was buttressed by the careful work of scholars such as Douglas Massey and Nancy Denton and John Yinger.[1]

That thinking, however, has been challenged by an idea called the self-segregation hypothesis. Proponents, including Stephen and Abigail Thernstrom, and Orlando Patterson, argue that race relations have improved markedly over time. While discrimination may have underpinned housing segregation in the past, it no

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[1] See especially Yinger's 1995 study. To a lesser extent, racial differences in wealth and income have also been implicated. That is, African Americans have fewer financial resources, on average, and so might not be able to afford to live in the same neighborhoods as more affluent white families. Some researchers, such as Charles Leven, James Little, Hugh Nourse, Robert Read, and David Harris, have also suggested that whites avoid living near African Americans for nonracial reasons, such as a desire to avoid the crime and high poverty rates correlated with a neighborhood's percentage of African Americans. Still, racial discrimination was widely considered the main driving force. Camille Charles's 2003 study contains a comprehensive review of theories and evidence related to housing segregation.

longer plays an important role. Rather, according to this hypothesis, current levels of segregation reflect the preferences of African Americans to live together. These researchers also assert that desires for same-race neighbors stem from positive and natural inclinations to live with one's own racial or ethnic group and to preserve and support a shared and unique culture. Put simply, segregation continues because birds of a feather flock together.

The self-segregation hypothesis portrays housing segregation in a relatively positive light. From an economic perspective, voluntary choices in any market lead to the most efficient outcomes for society unless individual decisions affect others who are not part of the transaction. That is, if everyone is already doing what they want, it is not possible to make anyone better off. So it is when African Americans voluntarily choose to live in segregated communities. Far from being a problem, segregation would represent a set of choices to be respected. Nothing can be done to improve matters, nor should anyone try. In fact, economists have pointed out that segregated neighborhoods might provide some social benefits, as well as social costs.[2]

The process of self-segregation can be contrasted with one in which racial discrimination underpins segregation. With active discrimination, groups of individuals are unwillingly excluded from full participation in the market. This might result, for example, from racial "steering," whereby African Americans purposely are not shown properties in certain areas. It could also occur if African Americans are refused mortgage loans for reasons unrelated to their creditworthiness. In these cases, the prices and quantities transacted in the market will not

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fully incorporate the true demands for housing. The market will then be inefficient, and at least in theory, some people could be made better off by actions that eliminate the discrimination. Interventions would also be warranted since housing discrimination based on race is illegal.

Initial statements of the self-segregation hypothesis provided little in the way of supporting empirical evidence. But given the importance of understanding the sources of racial segregation and the different policy implications, researchers have spent considerable effort examining the theory. Their endeavors have included attempts at measuring African American preferences for same-race neighbors, explorations of the links between racial preferences and actual location decisions, and studies of the factors that underlie any preference for self-segregation. Taken together, the

evidence casts serious doubt on the self-segregation hypothesis. It appears that the sources of racial housing segregation lie elsewhere.

RECENT TRENDS IN RACIAL HOUSING SEGREGATION

Housing segregation refers to a situation where different racial groups are concentrated in particular neighborhoods within a metropolitan area. The uneven distribution could take various forms. For instance, one racial group might be overrepresented in certain neighborhoods that are scattered throughout a city, forming a sort of checkerboard pattern. Or the neighborhoods in which we see overrepresentation could be packed closely together in the center of the city.

Economists use numerical indexes to summarize the extent of segregation. Segregation index values are normally calculated for metropolitan statistical areas (MSAs), since such areas are thought to constitute housing markets. An MSA contains a city with at least 50,000 people along with surrounding counties that are thought to be economically integrated. The Philadelphia MSA, for example, includes the city of Philadelphia and eight other counties, including three in New Jersey. Index calculations require detailed information on the racial compositions of neighborhoods within each MSA that is available only from the decennial census. As a result, index estimates are available only once a decade.

Several alternative indexes are available.[3] Perhaps the one most fre-

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[2] David Cutler and Edward Glaeser have identified some possible benefits to African Americans from living in racially segregated communities. For example, they note that segregation might keep high-income and low-income African Americans together, thus providing low-income residents with better role models and more effective social networks that can lead to better jobs and other services. At the same time, the authors suggest that racial segregation can impose external costs on those who live in segregated communities. Indeed, they present empirical evidence that racial segregation *per se* has led to less educational attainment and more out-of-wedlock births among African Americans than otherwise would have occurred. Segregation can also lead to a spatial mismatch in which residents of segregated communities are separated from jobs. On net, they conclude that the external costs of racial segregation exceed the benefits to African Americans. Under such circumstances, some policy response might be warranted even with self-segregation.

[3] Different indexes emphasize different dimensions of segregation, such as the racial composition of neighborhoods and their spatial pattern, as just mentioned. Many tend to be quite correlated in practice. In their 1988 study, Douglas Massey and Nancy Denton describe the calculation of more than 20 possible segregation indexes and analyze the degree to which they are correlated.

quently used is the so-called dissimilarity index. The index varies between 0 and 1, with higher values indicating a higher degree of segregation (see the appendix: *Calculating the Dissimilarity Index*). Estimates of the dissimilarity index for U.S. MSAs show that African American segregation has generally declined since 1980 (see the Table). For example, between 1980 and 2000, values of the dissimilarity index fell in 97 percent of MSAs.[4] Furthermore, the decrease was at least 5 percent in 81 percent of the cases.

But despite the declines, the degree of segregation remains high. Researchers use a rule of thumb that dissimilarity index values greater than 0.6 indicate highly segregated MSAs. As explained in the appendix, this means that 60 percent of African Americans or whites would have to change neighborhoods to create an even distribution of races across neighborhoods. In 2000, two-thirds of all African Americans lived in an MSA in which the dissimilarity index had a value of at least 0.6. Indeed, the average value for all MSAs, weighted by their respective African American populations, was 0.64. Segregation tended to be higher in the Northeast and Midwest and lower in the South and West. Certain localities, such as the city of Philadelphia, had dissimilarity index values that approached 0.8.

According to the self-segregation hypothesis, these segregated housing patterns are best explained by people's preferences for same-race neighbors. This is a strong claim and one that has been investigated in a variety of ways.

DO AFRICAN AMERICANS PREFER SEGREGATION?

Assessing the validity of the self-segregation hypothesis begins with an understanding of African American racial housing preferences. That is, do African Americans prefer to live in communities with a high percentage of same-race neighbors? Researchers have examined the question using surveys to elicit attitudes about the racial composition of neighborhoods.

One approach involves what has been termed a "show card" experiment. These experiments were first conducted in Detroit in 1976 and then again in Atlanta, Boston, Detroit, and Los Angeles in the 1990s. The procedure entails showing participants five cards. Each card contains 15 houses meant to represent a neighborhood (see *Survey Data on Racial Housing Preferences*). The houses are pre-colored to indicate a particular mix of African American and white homeowners. Neighborhood configurations range from having one African American neighbor out of 14 to having all 14 African American neighbors. Participants are told they have found an attractive, affordable home that they like and are asked to rank the five hypothetical neighborhoods from most to least desired.[5]

The results from these experiments consistently indicate that the neighborhood composition most fre-

quently chosen by African American participants is one containing seven African American neighbors and seven white neighbors.[6] A 50-50 split can be interpreted as considerable sentiment among African Americans for integrated neighborhoods. However, because African Americans comprised only about 13 percent of the population at the time, the desire for 50 percent African Americans required a sizable overrepresentation of same-race neighbors. Consequently, the preference for a 50-50 split might also be interpreted as an inclination toward self-segregation.

Also telling is that a fair number of African Americans specified a preference for either a mostly black neighborhood or one that is completely black. Keith Ihlanfeldt and Benjamin Scafidi, for example, found that between 35 percent and 45 percent of African Americans desired mostly black or all black neighborhoods. These data suggest that a desire for self-segregation, while not necessarily the whole story, might be a significant factor in observed patterns of housing segregation.

A shortcoming of the show card experiments is that participants face restricted choices. They are allowed to choose only among five different neighborhood configurations. The limited choices could force respondents to choose either more or fewer African American neighbors than they would ideally want. For example, a respondent might prefer to have 40 percent of neighbors be African American but might indicate that 50 percent is the most preferred ratio because the 40

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[4] David Cutler, Edward Glaeser, and Jacob Vigdor present historical estimates of the dissimilarity index from 1890 to 1990. Their data show that the average dissimilarity index for cities, weighted by their African American population, climbed from 1890 to 1970, after which it declined.

[5] The show-card approach has its critics. For example, in his 1978 study, John Yinger argues that it is hard to separate African Americans' attitudes about living in neighborhoods with different racial compositions from their preconceptions of the types and levels of public services in those neighborhoods. Thus, uncovering a person's pure preferences about the racial composition of neighborhoods using surveys is difficult. Proponents counter that the problem is adequately handled by telling respondents that they have found an "affordable and attractive home that they like." Doing so, in their minds, eliminates concerns about the different quality of services in the different neighborhoods that residents might encounter.

[6] Examples of studies include those by Reynolds Farley, Charlotte Steeh, Tara Jackson, Maria Krysan, and Keith Reeves; Lawrence Bobo and Camille Zubrinsky; Reynolds Farley, Elaine Fielding, and Maria Krysan; Keith Ihlanfeldt and Benjamin Scafidi; and Maria Krysan and Reynolds Farley.

Trends in the Dissimilarity Index*
(African Americans versus Non-Hispanic Whites)

Area	Number of MSAs	Dissimilarity Index		
		1980	1990	2000
All MSAs	330	0.727	0.678	0.640
Selected Areas	220	0.730	0.682	0.645
Region				
Northeast	31	0.779	0.766	0.739
Midwest	53	0.822	0.788	0.741
South	114	0.660	0.605	0.581
West	22	0.714	0.625	0.559
Philadelphia MSA	1	0.781	0.768	0.720
Philadelphia City	--	0.839	0.829	0.767

* Data for all areas except the city of Philadelphia are from John Iceland, Daniel H. Weinberg, and Erica Steinmetz, "Racial and Ethnic Residential Segregation in the United States: 1980-2000," U.S. Census Bureau, mimeo. Selected MSAs are those 220 with at least 10 census tracts and 3 percent or 20,000 or more blacks in 1980. Averages are weighted by the size of the African American population. Data for the city of Philadelphia come from the Lewis Mumford Center's website: http://mumford.albany.edu.

percent choice is not available. Choice is also restricted in that the hypothetical neighborhoods contain only African American and white families. Other racial and ethnic groups, such as Latino and Asian households, are excluded, and this too can skew conclusions about preferences for self-segregation. Even if African Americans do prefer to live apart from whites, they might want to live in neighborhoods with members of other racial and ethnic groups. Knowing about these preferences can shed additional light on the desire for self-segregation. This is especially true in the United States, where the population has become increasingly diverse along racial and ethnic lines.

To get at this issue, researchers devised an alternative to the show card experiment, called the ideal neighborhood design approach (see *Survey Data on Racial Housing Preferences*). In this methodology, participants are given a card with 15 blank houses. They are asked to design their ideal neighborhood by indicating which of four racial and ethnic groups they would like to see in the neighborhoods' houses. The four groups are African Americans, whites, Latinos, and Asians. This approach allows more complex and varied neighborhood compositions than does the show card experiment. It can also help decrease any pressure participants in the show card experiment might feel to identify what they believe are socially acceptable neighborhood configurations.[7]

As with the show card results, the ideal neighborhood design evidence reveals an openness to integration with a desire for an overrepresentation

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[7] The 2001 study by David Harris and the one by Maria Krysan and Reynolds Farley discuss this concern.

Survey Data on Racial Housing Preferences

S urvey data on preferences or the desired racial composition of neighborhoods come primarily from the Multi-City Study of Urban Inequality (MCSUI). The MCSUI was conducted during the 1990s in four cities: Atlanta, Boston, Detroit, and Los Angeles. Questions elicited information about the socio-demographic attributes of the respondents and also their preferences and perceptions about neighborhood characteristics.

Two types of information on preferences about the racial composition of neighborhoods were obtained. The first is commonly referred to as a show card study. Here, respondents are shown five cards, each containing 15 houses. On each card, a certain number of houses are white and others black, indicating a particular proportion of African American and white households. Respondents are told that they are looking for a home and have found one they like and can afford in each neighborhood. They are then asked to rank the five neighborhood choices from most to least preferred. Respondents are also asked about their willingness to move into each of the neighborhoods regardless of their rankings. The five neighborhood choices shown to African American respondents are displayed below.

Neighborhood A   **Neighborhood B**   **Neighborhood C**

Neighborhood D   **Neighborhood E**
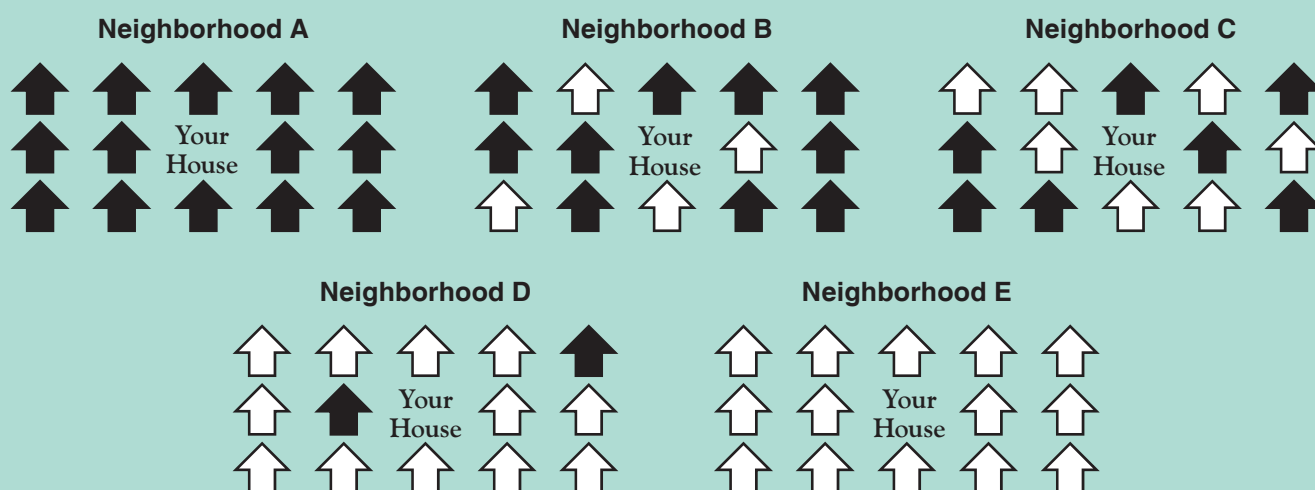
A second type of information comes from a variant of the show card strategy. Instead of being shown pre-designed neighborhoods, respondents are shown a single card with 15 blank houses and asked to place a letter in each. The letters stand for four racial/ethnic groups: A for Asian, B for Black, L for Latino, and W for White. The combination would then give the racial/ethnic composition of the neighborhood in which the respondent would most like to live. The "ideal neighborhood" approach was used in the Los Angeles phase of the MCSUI. The card shown to respondents is displayed below.
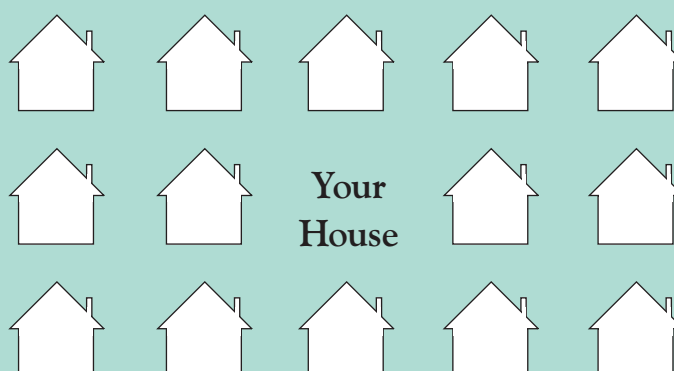
of African Americans (i.e., a fraction in the neighborhood greater than the MSA average). Camille Charles, a pioneer in using this approach, found that African Americans in Los Angeles prefer neighborhoods composed of 37 percent African Americans (see her 2000 study). Only 2.8 percent of African Americans wanted all African Americans in their neighborhoods. Of the four racial and ethnic groups that participated in the study, African Americans were most amenable to integration. That is, their desired own-group percentage was the lowest of the four groups. National data from the 2000 General Social Survey are broadly consistent: African Americans prefer 42 percent same-race neighbors, while about 6.5 percent prefer all same-race neighbors (see the 2003 study by Charles). [8]

Taken together, the survey evidence shows that African Americans tend to express a desire for integrated communities at levels that would coincide with an overrepresentation of same-race neighbors. For a non-negligible amount of respondents, the desired fraction of African American neighbors is high. Based on the diversity of preferences, it would be hard to conclude that desires for self-segregation can fully explain the extent of segregation that currently exists. But it would be likewise unreasonable to dismiss the possibility that they play some significant role.

Even if preferences for self-segregation are reflected in housing decisions to some degree, the question still remains as to what underlies them. A

[8] The General Social Survey is taken by the National Opinion Research Center at the University of Chicago. The survey, which has been conducted almost every year for the past several decades, asks respondents questions about their attitudes concerning numerous social, economic, and political issues.

key part of the self-segregation hypothesis is that preferences for predominantly black communities stem from warm feelings toward other African Americans in general — what has been called positive in-group feelings or neutral ethnocentrism.

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say about this issue thus far, although other social scientists, such as sociologists, have provided some evidence (see *What Do the Racial Preferences of African Americans Reflect?*). What economists have examined in-depth is the extent to which racial preferences influence individual location decisions.

DO PREFERENCES FOR SAME-RACE NEIGHBORS DRIVE LOCATION DECISIONS?

If self-segregation does play an important role, we would expect to see people distributed across neighborhoods of different racial compositions in ways that mirror their racial preferences. Segregated communities would be composed primarily of individuals with a preference for lots of same-race neighbors, while integrated communities would be home to those wanting a more even split.

A correspondence between racial preferences and neighborhood racial mix might occur, but there is no guarantee. Racial preferences could be a concern, but perhaps only one of many. Other neighborhood characteristics, such as school quality, closeness to work, crime rates, and local taxes, can also matter. Location decisions will likely reflect trade-offs among a

neighborhood's various attributes. In the end, racial preferences might take a back seat to the others. It is also possible that racial discrimination might prevent individuals from living where they would most like. Communities with higher fractions of white families might not be fully available to African

Americans who prefer such places. If such areas are not available, they might be forced to live in neighborhoods with a higher than ideal fraction of same-race families. Oddly enough, African Americans could end up in neighborhoods with racial mixes very different from their preferences even if preferences matter a lot and even if they can freely choose among different communities (see *Racial Tipping and Neighborhood Change*).

Economists have presented two types of evidence on the extent to which the racial mix of neighborhoods reflects housing preferences. One is indirect and uses market prices to infer the role of preferences in home purchases. The strategy is to examine home purchases and rentals by African Americans and to measure whether they paid more to live in predominately African American neighborhoods than in other, more integrated areas. This is done after accounting for other factors that might cause prices and rents to differ among neighborhoods. Again, those other factors can include things like school quality and the amount of public services. If, after controlling for other factors, they were willing to pay more, the logic goes, one can infer both that they had preferences for

What Do the Racial Preferences of African Americans Reflect?

Ethnocentrism might explain racial housing preferences to some degree, but it need not be the only underlying factor. A desire for segregation could also arise from fears of hostility and ill-treatment by those in other racial groups. That is, segregation could reflect a "circling of the wagons" and not "birds of a feather flocking together." If so, the idea of voluntary choice about same-race neighbors would be seen in a different light, one at odds with the self-segregation hypothesis.

As one way to illuminate the issue, several sociologists have modeled the preferences of African Americans concerning neighborhood racial composition. In one set of studies, Charles (her 2000 article) and Krysan and Farley used results from the show card studies. In addition to the question asked about their most preferred neighborhood configuration, participants were also queried about how important racial group membership is to them and their future. Specifically, they were asked: "Do you think what happens to (respondent's group) in this country will have something to do with your life?" If a respondent answered "yes," he or she was asked: "A lot"? "Some"? Or "not very much"? Answers to this "common fate identity" question are taken to measure the strength of a respondent's solidarity and identification with his or her own racial or ethnic group.

The researchers then investigated whether a respondent's attitude about common fate identity was statistically linked to his or her preferences about neighborhood racial composition. That is, do those respondents who prefer the most African American neighbors also have the strongest in-group feelings? As always, the statistical models control for other factors that could influence those preferences. Neither Charles nor Krysan and Farley found any significant link.

A related study by Bobo and Zubrinsky came to the same conclusion using a different survey and an alternative measure of in-group affiliation. They conducted a telephone survey in Los Angeles that elicited information about African Americans' willingness to live in neighborhoods that were 50 percent white. They also asked respondents to rate their feelings toward other racial groups, including their own. A statistical model that linked the strength of in-group feelings to preferences about neighborhood composition found no significant relationship, again accounting for other possible influences on preferences.

Finally, Krysan and Farley analyzed answers to open-ended questions about why respondents chose their most preferred racial composition in the show card studies. The answers were varied but only infrequently reflected ethnocentrism. Moreover, such concerns were voiced almost exclusively by respondents preferring completely segregated neighborhoods. But even for that select group (about 20 percent of the respondents), ethnocentrism was mentioned less than half the time.

more segregated communities and that they acted on those preferences.[9]

An early study by Thomas King and Peter Mieszkowski examined data on rental housing in New Haven, Connecticut. The authors determined that African Americans were willing to pay more to live in highly segregated areas compared with more integrated neighborhoods. Thus, segregation did seem to reflect racial preferences. However, subsequent work challenged that conclusion. In his 1978 study, John Yinger pointed out that King and Mieszkowski did not adequately control for the possibility that discrimination, not preferences, caused African Americans to pay more for housing in more segregated areas.[10] After adjusting King and Mieszkowski's model to fix the shortcoming, Yinger applied it to data on African American home buy-

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[9] Ideally, one would want to measure how a person's willingness to pay changed as a neighborhood's actual racial mix varied from the person's preferred mix. If the actual percentage of African Americans was less than the preferred fraction, willingness to pay should increase as the actual percentage increases, since the neighborhood mix is moving closer to the person's preferences. But if the actual fraction exceeds the preferred mix, further increases in the percentage of African Americans should decrease willingness to pay, since the neighborhood mix is moving further away from the person's preferences. This means that the true relationship between a person's willingness to pay for housing and a neighborhood's percentage of African Americans could be nonlinear. The studies discussed in the following paragraph did not factor in the possibility of a nonlinear relationship, although it is not clear how the conclusions would change if they had.

[10] Yinger suggests, for example, that there could be significant barriers facing African Americans who want to live in integrated areas, thus restricting them to segregated neighborhoods. As the population of African Americans grows, home prices in the segregated areas would rise as the restricted supply of houses confronted a rising demand. African Americans would have to pay these higher prices because they were prevented from moving into lower cost, more integrated areas. So higher prices need not reflect stronger preferences but rather discrimination and the resulting restricted choice.

Racial Tipping and Neighborhood Change

Even if individuals give high weight to a neighborhood's racial composition and freely make decisions based on their preferences, they could end up in neighborhoods with racial compositions that are far from their desired mix. This possibility was raised by economist Thomas Schelling in a famous and influential article.

Schelling assumes that African Americans and whites each prefer a slight majority of same-race neighbors. He then posits that one type of family, say, African American, moves into a neighborhood that satisfies its preferences. Doing so tips the racial mix more toward an African American majority and away from a white majority. This causes a white family to move out, since the racial composition is now too different from its preferred mix. The white family that moved out is then replaced by an African American family, since the neighborhood is now more consistent with African American preferences. This once again causes the fraction of African Americans to rise and leads yet another white family to move out. The process is repeated until the neighborhood ends up overwhelmingly African American. This happens even though each African American family preferred only a slight majority of same-race neighbors!

Schelling's message is that segregation could occur for a wide range of preferences concerning neighborhood racial composition as long as the preferences of African Americans and whites differ. His model has been studied and modified through the years, but the basic insight has held up. The study by Rajiv Sethi and Rohini Somanathan is a good example of recent work on the topic.

ers in St. Louis. He found no evidence that they were willing to pay more for housing in areas with higher fractions of same-race neighbors. George Galster further modified Yinger's approach to measure the relationship between house prices and racial composition even more precisely. His analysis confirmed Yinger's findings. More recently, Cutler, Glaeser, and Vigdor explored the issue using housing price data for a broader selection of cities and MSAs. Like Yinger and Galster, they conclude that African Americans have not been willing to pay relatively more to live in more segregated areas.

Other researchers have employed more direct tests that use responses from the show card experiments. Keith Ihlanfeldt and Benjamin Scafidi developed a statistical model of the actual percentage of African Americans in the respondents' neighborhood. Among the explanatory variables was each respondent's most preferred neighborhood configuration. If the self-segregation hypothesis is valid, the correlation between preferences and the percentage of African Americans in the neighborhood should be positive. That is, respondents who prefer more same-race neighbors should live in more segregated areas and those who prefer fewer same-race neighbors should tend to live in less segregated areas. Their model takes account of numerous other variables that conceivably might affect a respondent's neighborhood selection, including the respondent's income, occupation, education level, and perceptions of white hostility, among others. Models were estimated using data for Atlanta, Detroit, and Los Angeles.

Ihlanfeldt and Scafidi determined that racial preferences of respondents were indeed positively correlated with the percentage of African Americans in their neighborhood of residence. They found some differences among the cities. For instance, the estimated links were stronger in Atlanta and Detroit than in Los Angeles. Nonetheless, the positive relationships between preferred and actual percentage of African Americans in neighborhoods lend some support to the self-segregation hypothesis.

Of course, statistical significance is only one part of the story. Statistical significance means only that a researcher is reasonably sure that the impact of a variable is not zero. Also important is the amount by which preferences affect each city's racial composition. That is, a relationship could be statistically significant but have little practical importance.

To quantify the specific impact of preferences, Ihlanfeldt and Scafidi used their estimates to simulate what the racial composition of neighborhoods would be if all respondents preferred complete integration. Complete integration would occur if all neighborhoods had a percentage of African Americans that matched the percentage for the MSA as a whole. For the sample period studied, this would mean that each Atlanta neighborhood would have an African American

population share equal to 27 percent; the shares in Detroit and Los Angeles would be 25 percent and 22 percent, respectively.

The researchers found that even if all respondents preferred complete integration, the percentage of African Americans in the respondents' neighborhoods predicted by their models would remain high. Specifically, the average African American in Atlanta, Detroit, and Los Angeles would still live in a neighborhood where the African American population shares equal 65 percent, 83 percent, and 76 percent. So even if African Americans had housing preferences that were neutral with regard to race, the cities would continue to be marked by substantial segregation.

Lance Freeman took a somewhat similar approach. He first used the information from show card experiments to construct an index that indicated how receptive African Americans were to integration with whites. He then estimated models, comparable to those of Ihlanfeldt and Scafidi, which predicted the percentage of whites in the neighborhoods of the African American respondents. Consistent with Ihlanfeldt and Scafidi, he found that preferences mattered in a statistical sense. However, he also determined that respondents' preferences had a relatively small impact on the actual racial compositions of their neighborhoods.

In sum, indirect evidence based on market prices fails to support the idea that racial preferences drive housing location decisions. More direct evidence that uses survey responses about preferences indicates that they play at most a limited role. To the extent that preferences do get reflected in housing decisions, they do not appear capable of explaining anything close to current levels of segregation.

CONCLUSION

The self-segregation hypothesis suggests that the persistence of racial segregation of African Americans results from preferences to live together based on positive feelings. If these preferences are important, the significance of racially separated neighborhoods would be less bothersome and the case for policy intervention much weaker. Researchers have examined the idea from numerous angles using different techniques and data sets. The evidence provided suggests that self-segregation, especially for positive reasons, helps little in understanding racial housing segregation. The sources appear to lie elsewhere, and unfortunately, the other possibilities can be far from benign. These include ongoing discrimination in real estate markets and racial stereotyping (see Yinger's 1998 study). Forty years after the civil rights movement, it appears that much work remains to be done. **BR**

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Calculating the Dissimilarity Index

Housing segregation refers to the residential patterns of different racial and ethnic groups across neighborhoods within a larger area, usually a metropolitan statistical area (MSA). MSAs are the focus of segregation measurement, since they are generally thought to comprise a housing market. A commonly used measure of the degree of housing segregation is the dissimilarity index, although others exist.* The index is generally applied to two groups — say, African Americans and whites — and measures the fraction of African Americans that would have to move to achieve a perfectly even distribution across neighborhoods. The index ranges from 0 to 1, with 0 indicating perfect integration. So if an MSA was 20 percent African American, the dissimilarity index would be 0 if the population of each neighborhood within the MSA was 20 percent African American. An index value of 0.25 would indicate that 25 percent of African Americans or 25 percent of whites would have to move to a different neighborhood in order to be evenly spread across neighborhoods in the MSA. An MSA with a value of 0.6 or greater is generally classified as "highly segregated."

The formula for the index is:

$$\text{Dissimilarity} = 0.5 \sum_{i=1}^{N} \left| \frac{\text{Black population in area i}}{\text{Black population in MSA}} - \frac{\text{White population in area i}}{\text{White population in MSA}} \right|,$$

for the N areas within the MSA. When the index is calculated, the areas within the MSA are often taken to be official census tracts, which usually contain about 4,000 people and are meant to represent neighborhoods.

As an example of how the dissimilarity index is calculated and interpreted, suppose that an MSA has 40 African Americans and 160 whites, for a total population of 200. So 20 percent of the population is African American and 80 percent is white. Also suppose that there are two neighborhoods. In the first, there are 20 African Americans and 40 whites. In the second, there are 20 African Americans and 120 whites. In this case, the dissimilarity index equals:

$$0.5 * \{|(20/40) - (40/160)| + |(20/40) - (120/160)|\} = 0.25.$$

Thus, segregation is low in the example. As mentioned, the dissimilarity value of 0.25 means that 25 percent of the African American population or 25 percent of the white population has to change neighborhoods to achieve an even distribution in which dissimilarity equals 0. The total African American population is 40, so 25 percent is 10 people. If 10 left neighborhood 1 and went to neighborhood 2, neighborhood 1 would have 10 African Americans and neighborhood 2 would have 30. The dissimilarity index would then equal:

$$0.5 * \{|(10/40) - (40/160)| + |(30/40) - (120/160)|\} = 0.$$

That is, there would be complete integration because the fraction of African Americans and whites in each neighborhood — 20 percent and 80 percent — equals their fractions for the population as a whole. A similar outcome would obtain if 25 percent of the white population, or 40 people, moved from neighborhood 2 to neighborhood 1:

$$0.5 * \{|(20/40) - (80/160)| + |(20/40) - (80/160)|\} = 0.$$

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* For a thorough discussion of numerous segregation measures, see Douglas S. Massey and Nancy A. Denton, "The Dimensions of Residential Segregation," *Social Forces*, 67 (December 1988), pp. 281-315.

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Stock Prices and Business Investment

BY YARON LEITNER

Is there a link between the stock market and business investment? Empirical evidence indicates that there is. A firm tends to invest more when its stock price increases, and it tends to invest less when the price falls. In this article, Yaron Leitner discusses existing research that explains this relationship. One question under consideration is whether the stock market actually improves investment decisions.

Empirical evidence points to a link between the stock market and the amount of money firms spend on investment. A firm tends to invest more after the price of its stock increases, and it tends to invest less after the price falls. Investment could be in capital (for example, buying machines or buying a new plant) or in research and development (for example, developing a new drug).

Recent research has tried to come up with theoretical explanations and test them empirically. One important issue is whether the stock market actually improves investment decisions. This might be the case, for example,

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if the firm's stock price tells the firm something about the profitability of its investments — which might be the case if market participants have useful information or knowledge that the firm does not have. Interestingly, recent research has also suggested that while informed participants make prices more informative and therefore improve the firm's investment decisions, informed participants might also attempt to manipulate a firm's investment policies.

THE STOCK MARKET CAN GUIDE INVESTMENT DECISIONS

Stock Prices Reflect Investors' Information About the Firm. Investors hold stocks because they expect to obtain dividends and/or make capital gains. When investors expect future profits to be high, they pay more to hold the stock; when investors expect profits to be low, they pay less. Investors do not know what future profits will be, but they can collect pieces of information that may help them assess the firm's value. For example, investors can look at the firm's financial statements as well as the financial statements of other firms in the industry. They can collect information about the firm's technology, the demand for its products, and its competitive environment. They can also look at other macroeconomic indicators; for example, a strong GDP report might strengthen investors' beliefs that demand for the firm's products is going to be solid. Using these pieces of information, each investor can come up with his own assessment of the firm's value. The stock price reflects these assessments.

When new information arrives, prices adjust. For example, the stock price of a biotech firm will rise after it announces that it passed the initial tests for approval of a new drug, and the price is likely to fall if the firm gets involved in a lawsuit. Passing the initial tests means that the firm is likely to generate more profits, and therefore, investors are willing to pay more to hold the stock. In contrast, being involved in a lawsuit means that the firm is likely to generate less profits, and therefore, investors are willing to pay less.

Investors May Have Information the Firm Does Not Have. Some of the information that investors have may be publicly available (for example, the firm's financial statements). However, some investors may have information no one else has.

Consider the following example: A large hedge fund, Short-Term Management (STM), hires a group of analysts whose job is to help choose which

stocks to buy. These analysts carefully study the demand for a firm's products (for example, who will use a new drug) as well as the firm's position relative to its competitors'. The firm can also hire its own analysts, but since the firm is not in the business of choosing stocks, the cost of having its own group of analysts may outweigh the benefits.

STM may have a better assessment than the firm (as well as other investors) of the future demand for the firm's products and the firm's position relative to its competitors'. This assessment is called *private information*. In other words, private information refers to the data that STM's analysts gather as well as to their analysis of these data. The private information STM has allows it to evaluate the firm better than anyone else.[1]

How could STM use its private information to make a profit? Very simple: If STM thinks the firm's stock is undervalued (that is, the firm's prospects are better than those reflected in the current price), it will buy the stock; if the stock is overvalued, STM will sell it. STM may not be correct all the time. After all, no one can fully predict the future. But STM may be correct on average; that is, the number of times it makes a correct decision (buy an undervalued stock or sell an overvalued stock) will be higher than the number of times it makes mistakes. This will allow STM to make a profit even after paying its analysts' wages.

To keep its information advantage, STM will try to hide its information. However, once STM trades, its information (or at least part of it)

gradually becomes reflected in prices. STM's buy orders (positive information) will tend to push the price up, and its sell orders (negative information) will push the price down.

In particular, suppose someone had to guess whether STM has positive information or negative information by looking at aggregate buy and sell orders. Any order could come either from STM or from some other investors who do not have private information. The other investors buy

and sell not because they have private information but for other reasons; for example, they need to rebalance their portfolio or buy a new house. Now suppose you see that there are many more buy orders than sell orders. A buy order increases the chance that STM has positive information; after all, STM buys only in this case. Similarly, a sell order increases the chance that STM has negative information. Thus, buy orders move the price up, and sell orders move the price down.[2]

The Information in Prices Can Help the Firm Make Investment Decisions. When some investors have better information than the firm, the firm can use the stock price as a guide in its investment decisions.

Consider the following example. Suppose a firm wants to expand its business overseas, which requires an upfront investment of $1 million. The firm does not know whether demand

for its products will be high or low, but it knows that if the demand is high, the investment will yield a gross return of $6 million (that is, a profit of $5 million), and if the demand is low, the investment will yield a gross return of zero (that is, a loss of $1 million). Should the firm make this investment?

If the firm knew for sure that demand was going to be high, it would make the investment; if it knew for sure that demand was going to be low, it would not. However, the firm does

not have that information. Suppose that the only thing the firm knows is that there is a 50-50 chance for high or low demand. This means that if the firm invests, on average, it would earn a profit of $2 million ($\frac{1}{2}*5 - \frac{1}{2}*1=2$). Therefore, without further information, the firm will make the investment — and this will be the right decision, given the information the firm had at the time it invested.

Now go back to STM and its team of analysts. Once they learn that the firm is considering expanding its business overseas (say, the firm announced it), they work day and night and eventually conclude that the investment is not likely to generate anything. They advise STM's senior management to sell the stock, and when STM does so, the price goes down.

The firm does not have STM's information, but when the firm sees that its price goes down, it may infer that STM does not think that the investment is likely to succeed. The firm can use this information and forgo the investment. Assuming that STM's analysts are correct, the firm saves $1 million.

When some investors have better information than the firm, the firm can use the stock price as a guide in its investment decisions.

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[1] The fact that some investors (like STM) have better information than the firm in some respects does not mean that they have better information in all respects. For example, STM may know more about the demand for the firm's products, but the firm may know more about the technology it uses. In other words, the firm may also have some private information.

[2] There is an extensive literature that studies the way prices adjust to information. Two of the earlier theoretical contributions are the paper by Albert Kyle and the paper by Lawrence Glosten and Paul Milgrom.

The Value of Information. The fact that the firm can use the information in stock prices increases its value. In the example above, the firm can avoid making a bad investment if it learns that demand is low. The firm will invest only if it learns that demand is high. This strategy gives an expected profit of $2.5 million ($1/2*5+\frac{1}{2}*0 =2.5$). Remember, if the firm makes the investment without knowing what demand will be (that is, without looking at the price), its expected profit is only $2 million. Therefore, STM's trading activities increase the value of the firm by $1/2 million. The information is valuable because it helps the firm make better investment decisions.

Empirical Evidence. If firms learn from stock prices, changes in stock prices are more likely to affect investment when the stock price contains more private information, that is, when prices are more likely to reflect the trading activities of investors like STM. The logic is simple: If investors like STM trade based on their private information, the firm can learn from prices, and price changes affect future investment decisions. On the other hand, if there are no investors like STM who trade based on private information, the firm cannot learn from prices, and price changes do not affect investment.[3]

Qi Chen, Itay Goldstein, and Wei Jiang provide empirical evidence that supports the view that firms learn from stock prices when they make their investment decisions. They show that

a firm's investment is indeed more sensitive to its stock price when the price reflects more private information. A key to their analysis is determining when stock prices contain more private information. Chen, Goldstein, and Jiang use two measures and find that the implication holds for both. To learn more, see *Measures of Private Information.*

STOCK MARKET AFFECTS FIRM'S ABILITY TO FINANCE INVESTMENTS

In the previous section, we focused on a firm that was considering an investment opportunity (a business expansion). The problem was that the firm did not know whether the investment was profitable. In this section, we consider a similar situation but assume that the firm knows whether its investment is profitable. Now the problem is that the firm may find it too expensive to finance its investment because the stock price does not reflect the investment's true prospects.

Stock Prices May Not Reflect the Firm's True Value. A firm's stock price reflects two things. The first is the firm's (true) prospects, that is, the expected cash flows the firm is going to generate from its operations. The value of these cash flows in today's terms is the firm's *fundamental value.* The second — called the *nonfundamental component* — reflects factors that affect the price but that have nothing to do with the firm's prospects. An example is investor sentiment (that is, the market mood): Low sentiment pushes prices down; high sentiment pushes prices up.[4] In a world without

frictions — for example, all investors have the same information and same assessments of the firm's profitability — the stock price would equal the fundamental value because otherwise investors could make "free money" by buying undervalued stocks and selling overvalued stocks. But when there are frictions, as happens in reality, the stock price may sometimes deviate from its fundamental value.

When Prices Do Not Reflect Fundamentals, Equity Financing May Be Too Costly. Consider a firm with a profitable investment opportunity. How can the firm finance its investment? If the firm has a lot of cash, it can finance its new investment using internal funds. For example, if the firm keeps most of its profits rather than distributing them as dividends, the firm is likely to have enough cash to finance profitable investment opportunities that come its way. However, when the firm does not have enough cash at hand, it needs to raise money from an external source. It can do so either by borrowing (issuing debt) or selling more shares of stock (issuing equity).

Issuing equity is sometimes the only option. In particular, lenders, who want to get their money back, may be willing to lend only to the point where the risk of default is not too high. In addition, lenders often require collateral, and the firm may not have enough of it. Therefore, a firm that has already borrowed a lot (up to its limit) and that has no stockpile of cash can finance a new investment only if it issues equity. We will refer to such a firm as "equity dependent" because its ability to finance a new investment depends on its ability to issue a new equity.

Before making the investment, an equity-dependent firm must consider two things. First, it needs to consider the "stand-alone" value of the investment, that is, the value of the

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[3] There may be a relationship between price changes and investment even when the price contains no private information. For example, a strong GDP report may move up prices as well as investment. In this case, the firm does not need to rely on prices for its investment; it can look directly at the GDP report. But when the price contains private information, the relationship between prices and investment is likely to be stronger.

[4] In 1996, former Federal Reserve Chairman Alan Greenspan used the phrase "irrational exuberance" to describe the market mood at that time. This phrase was also the title of a 2000 book by Yale economics professor Robert Shiller, who argued that the stock market had indeed become dangerously overvalued.

Measures of Private Information

The finance literature has come up with two measures to assess the amount of private information in stock prices. Qi Chen, Itay Goldstein, and Wei Jiang showed that their results hold for both measures.

The first measure, developed by Richard Roll, is based on what economists call firm-specific variation. The idea is as follows. The price of a given stock often changes because of market-related and industry-related events. For example, release of a GDP report is likely to affect the prices of most stocks. But a stock's price also moves because of events unique to the firm, for example, the firm's plans to acquire a new plant. Roll's measure calculates how much of the overall variation in the firm's stock price is attributable to firm-specific rather than economy- or industry-wide factors. The measure is higher when the firm's stock price is more likely to move because of firm-specific events, rather than economy-wide or industry-wide events.[*]

Focusing on firm-specific variation as a measure of trade based on private information makes sense because market- and industry-related price movements are likelier to reflect public information, that is, information available to all. Indeed, Roll showed that firm-specific variation is largely unassociated with public news releases and argued that firm-specific variation mainly reflects trading by investors with private information (for example, STM). Roll mentioned that there might be another explanation, namely, that firm-specific variation simply reflects noise, for example, factors unrelated to fundamentals. However, empirical evidence documented since then provides strong support to the hypothesis that firm-specific variation reflects more private information than noise. For example, Artyom Durnev, Randall Morck, Bernard Yeung, and Paul Zarowin showed that firm-specific variation is highly correlated with stock prices' ability to predict firms' future earnings.

The second measure, developed by David Easley, Nicholas Kiefer, and Maureen O'Hara, captures the probability that a trade will come from a trader who has private information. The measure is based on a model where some individuals have private information and some do not. The first group of traders is called informed and the second uninformed. Informed individuals trade only on days on which they receive private information (that is, they privately learn something about the firm). They

trade in order to profit from their private information; they buy if they receive good news about the firm and sell if they receive bad news. The uninformed trade every day, and their trading activity does not reflect any information regarding the firm; for example, they buy and sell to rebalance their portfolios.

To calculate the probability of a trade by an informed investor, we first need to fit the model to the data. In particular, we can look at daily order flows over some period (say, a year) and then use statistical methods to estimate the probability that a given order comes from an informed trader.

The estimated probability (of informed trading) is low when the number of buy and sell orders does not fluctuate much from one day to another. In contrast, when there are large fluctuations in order flows, the estimated probability of informed trading is high. Intuitively, if the number of uninformed investors is high (so the probability of informed trading is low), there is no reason to expect that all of them will decide to buy or that all of them will decide to sell on the same day. Instead, we can expect that the number of uninformed investors who decide to buy will be roughly the same on any given day and so will the number of investors who decide to sell. Therefore, we will not see large fluctuations in order flows, and the estimated probability of informed trading will indeed be low. In contrast, when there are large fluctuations in order flows, the estimated probability of informed trading is high because under the model above, large deviations from the "normal" order flow indicate that it is likely that trades are coming from investors who have received private information; for example, on a day on which informed investors receive good news about the firm, they will all buy, and the number of buy orders on that day will be larger than normal.

Finally, note that, in principle, the two measures above may reflect not only the trading activity of investors like STM but also the trading activity of the firm's managers, who may also have superior information regarding some aspects of the firm. If this were the case, the measure above may capture information that the firm already knew, which is not consistent with the idea that the firm learns from prices. Chen, Goldstein, and Jiang validate their results by performing some tests that suggest that while the two measures may reflect some information the firm already knew, it also reflects information the firm did not know.

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[*] To calculate this measure, one needs to run a regression where a firm's return is explained by the return on the market and by the return on the industry to which the firm belongs. The measure is estimated by $1\text{-}R^2$, where R^2 is R-square from the regression. In other words, R^2 is the share of variation in stock returns that can be explained by general (market) or industry-wide factors, and what's left over $(1\text{-}R^2)$ measures private information.

investment if the firm had the cash to finance it. Second, given that the firm is equity dependent, it needs to take into account the cost of issuing equity. In particular, if the stock price equals the firm's fundamental value, the firm knows that it is selling the stock for what it is worth. But if the firm believes that its stock is undervalued (its price is less than the fundamental value), the firm knows that it is losing money when it sells its stock. In other words, the firm receives less than what the stock is really worth. In this case, a firm may decide to forgo some investments, even though the firm would make the investments if it had its own money. In other words, an equity-dependent firm may decide to forgo its investment because the cost of issuing new shares is too high compared with the revenues the firm expects to obtain from the new investment.[5]

Empirical Evidence. The discussion above implies that the investment of equity-dependent firms will be more sensitive to the nonfundamental component in stock prices than the investment of firms that are less equity dependent. In particular, an equity-dependent firm will tend to invest less when its stock price is below the fundamental value, that is, when the nonfundamental component is negative. This occurs not because investment opportunities change but because

an undervalued stock increases the cost of obtaining the money the firm needs for its investment.

Malcolm Baker, Jeremy Stein, and Jeffrey Wurgler found empirical evidence consistent with the implication above. A challenging issue in their analysis was how to measure the nonfundamental component in stock prices. Baker, Stein, and Wurgler tried to tackle this issue by looking at the actual return on the stock in the long term; specifically, they looked at returns over the three years subsequent to the investment. Their idea is that the firm expected these returns when it considered its investment and that the firm used these returns to determine whether its stock was under- or overvalued. Of course, the firm did not and could not know for sure how future returns would turn out. However, using future returns as a proxy for the firm's expected returns is a way for the authors (and us) to have a reasonable estimate of what the firm might have had in mind. Using this logic they find that the investment of equity-dependent firms is indeed more sensitive to the nonfundamental component in stock prices than the investment of firms that are less equity dependent.[6]

Lenders Also Look at Stock Prices. Stock prices may also affect the cost of borrowing. In particular, potential lenders (banks) can learn from stock prices just as the firm in the previous section did. Banks can then use the information in stock prices to evaluate a loan.[7] When stock prices reflect fundamentals, there is no problem: Banks have correct information about the firm, and a firm with a

profitable investment opportunity can raise money because the stock price reflects that. But if the price does not reflect fundamentals, a firm with a good investment opportunity may need to forgo it. In particular, when banks see that the stock price is low, they may wrongly conclude that the firm's prospects are not so good, and therefore, they may be unwilling to lend, or they may agree to lend only at a very high interest rate.[8]

TRADERS CAN MANIPULATE INVESTMENT DECISIONS

We have seen that the stock market may affect investment decisions because it provides information both to the firm that makes the investment and to those who provide the money for the investment. Itay Goldstein and Alexander Guembel developed a model to show that while this may improve investment decisions, it may also open the door for manipulation.

Let's go back to the example where a firm was considering an investment opportunity ($1 million payment upfront, which results in either a $5 million profit or a $1 million loss). Suppose the firm does not know whether the investment will succeed or fail, but STM does. As we saw earlier, STM can use its private information to

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[5] Issuing equity may raise another problem: If the firm knows more than its investors, investors may fear that the firm is selling equity not because it needs to finance a profitable investment but because the firm thinks that its stock is overvalued. Therefore, once the firm decides to sell more shares, investors may pay even less than what the initial price was. According to the pecking order theory, the firm will issue equity only as a last resort. In particular, a firm that needs to raise money will do it in the following order: First, the firm will use its internal funds, then it will borrow; only after it has borrowed as much as it can will it issue equity. To learn more about the pecking order theory, read the paper by Stewart Myers.

[6] To determine how equity dependent a firm is, Baker, Stein, and Wurgler construct an index. According to the index, a firm is more equity dependent if it has borrowed a lot; it is less equity dependent if it has higher operating cash flows or higher cash balances or if it pays higher dividends.

[7] Indeed, widely used measures of default risk (for example, Altman's Z-Score) include the firm's stock price. The Z-score was developed in 1968 by Edward Altman for forecasting the probability that a company will enter bankruptcy within a two-year period. The Z-score combines five common business ratios, one of which is the ratio between the market value of equity and the book value of debt. (The market value of equity is the stock price times the number of shares outstanding.) Banks and industrial companies regularly use updated and refined proprietary versions of Altman's Z-score model.

[8] In this section we focused on the case where prices that do not reflect fundamentals make it hard for a firm to finance its project. Prices that do not reflect fundamentals would also make it hard for the firm in the previous section to learn from prices.

make a profit by buying undervalued stock and selling overvalued stock. If STM does so, the stock price reflects STM's private information and can help the firm make better investment decisions. In particular, a price decline indicates to the firm that STM thinks the investment is a failure, and the firm can save money by not investing.

Goldstein and Guembel show that an investor like STM may choose to trade even if it has no information at all.[9] In this case, the only purpose of STM's trade is to manipulate the firm's investment decisions and make money out of it. In particular, they assume that sometimes STM has private information about the firm and sometimes it does not. They show that STM may choose to trade not only in the first case but also in the second case.

Manipulation Is Possible Through Short Sales. When STM has no information, it can make a profit by *short selling* the stock. Short selling means that an investor (in our case, STM) borrows the stock from someone else and sells it. Then, at a later date, the investor buys the stock and returns it to whomever he borrowed it from. In other words, a short seller sells a stock that he does not own. Short selling might be a good strategy if one expects prices to fall. In this case, the short seller can make a profit by buying the stock at a lower price than the price at which he sold the stock.

But why should STM expect to be able to buy the stock at a lower price? The main idea is as follows: By selling the stock, STM drives down the price. The firm infers that the lower price may indicate that STM thinks the firm's investment is likely

to fail. Therefore, the firm does not invest. This by itself reduces the value of the firm and the price of the stock even further, thereby allowing STM to buy the stock at a lower price than it initially sold it for. In other words, initially, investors thought the firm had an investment expected to yield a profit of $2.5 million, so they were willing to pay more to hold the stock. Once they learn the firm is not making the investment, they are willing to pay less and the price of the stock falls.

You might ask: What's so special about STM? Why can't anyone follow the same strategy and make a profit? The logic is as follows: For the average investor, who never has private information, short selling is a recipe for losing money because the average investor competes with investors, like STM, who are likely to be better informed. Since the more informed investors make money, the less informed lose. Remember, there must be an investor on the other side of each of STM's trades. However, for an investor like STM, short selling can be a winning strategy *even when it has no private information about the stock.* The reason is that only STM knows whether it does or does not have information — and this by itself is a very important piece of information. In other words, STM has an information advantage not only when it has private information about the firm but also when it does not. In the first case, it knows whether the investment will succeed or fail. In the second case, it does not know that, but it knows that no one else knows. In contrast, the average investor, who never obtains private information, always needs to take into account the possibility that he or she is trading with another investor (STM) with better information.

To summarize, by short selling, an investor can manipulate the stock price and the firm's investment deci-

sions. Indeed, many firms complain about short sales, arguing that they may be manipulative and therefore costly to shareholders. For example, in a letter to the Securities and Exchange Commission (SEC), Medizone International Inc. claims that "short-selling… and other actions that have served to limit our access to capital, diminished or suppressed the value of our shares… This short selling has proven extremely detrimental to our company and our shareholders."[10]

One of the interesting features of the model above is that manipulation is profitable only through short sales. In particular, STM can profit by selling the stock initially and buying it later, but STM cannot profit from doing the opposite, that is, buying first and selling later. The reason is that if STM trades when it has no information, the trades distort prices as well as the firm's investment decisions. In particular, STM's selling the stock leads to a price decline and an inefficient decrease in investment; STM's buying the stock drives the price up, leading to an inefficient rise in investment. In both cases, the firm makes a wrong investment decision, and the stock price falls at a later time to reflect that. In other words, regardless of whether STM manipulates by buying or selling, the price eventually drops. This means that STM can profit only if it sells initially.

Finally, note that even though manipulation distorts investment

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[9] Goldstein and Guembel use the word speculator to refer to an investor like STM, which may or may not have private information.

[10] This example is provided by Goldstein and Guembel. The letter can be found at http://www.sec.gov/rules/concept/s72499/marshal2.txt. Regulatory bodies (for example, the SEC in the United States) have introduced restrictions such as the "up-tick" rule on short sales. According to the up-tick rule, established by the SEC, every short-sale transaction must be entered at a price that is higher than the price of the previous trade. The up-tick rule prevents short sellers from adding to the downward momentum when the price of an asset is already experiencing sharp declines.

decisions, which is bad for the firm, overall, the stock market produces better decisions, which is good for the firm. Otherwise, the firm would have ignored the information in the stock price. In other words, if the firm (or other investors) knew that the stock market reflects wrong information too often, they would have ignored it when they made their decisions. However, if the price usually reflects correct information and only seldom reflects incorrect information (which is the case if STM is likely to have private information), the firm as well as investors would consider the price when they make their decisions.

CONCLUSION

Stock prices may affect investment decisions because they provide information to firms about the profitability of their investment opportunities. Stock prices may also affect firms' ability to finance new investments. In particular, when prices do not reflect fundamentals, a firm with a profitable investment opportunity may need to forgo it.

We have also seen that while short selling may make stock prices more informative about the firm's prospects and therefore may improve the firm's investment decisions, the ability to short sell may also open the door to manipulation. In particular, by short selling a stock, an investor with no information may cause a firm to believe that its investment is likely to fail. This may cause the firm to forgo some profitable investment opportunities. The SEC administers regulations concerning short sales. For example, the SEC does not permit short sales when a stock price is falling. Much of the discussion about regulation of short sales centers on the tradeoff between making stock prices more informative and the danger of manipulation. The work discussed in this article can help clarify the terms of this tradeoff. **BR**

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What Do We Know About Chapter 13 Personal Bankruptcy Filings?

BY WENLI LI

S ince 1980, the number of households filing for bankruptcy has more than tripled. This drastic increase in personal bankruptcy filings led to substantial debate among economists and policymakers. That debate subsequently resulted in the enactment of extensive reforms in 2005 when Congress passed the Bankruptcy Abuse Prevention and Consumer Protection Act. Ultimately, the rationale for this legislation is the presumption that Chapter 13 leads to more appropriate outcomes compared with either Chapter 7 filings or other options outside bankruptcy. In this article, Wenli Li outlines the results of two recent studies that have taken a more detailed look at actual outcomes in Chapter 13.

The U.S. personal bankruptcy filing rate has gone up dramatically for the past two decades. In 1980, for every 1,000 households, only four filed for bankruptcy. Today, the number has more than tripled. About one-third of the bankruptcies were filed under Chapter 13 (Figure 1). The U.S personal bankruptcy code has two key features: Chapter 7 and Chapter 13. Under Chapter 7, debtors sacrifice part of their assets in exchange for a discharge of their debts. Under Chapter 13, debtors sacrifice part of their future earnings in exchange for a partial discharge of their debts. This drastic increase in personal bankruptcy filing rates led to substantial debate, academic as well as legislative, and finally resulted in the enactment of extensive bankruptcy reforms in 2005 with the passage of the Bankruptcy Abuse Prevention and Consumer Protection Act. The core of the legal reform is to further restrict debtors' access to Chapter 7 personal bankruptcy and to force some debtors to file under Chapter 13 or not at all, so that debtors with sufficient income would be forced to repay at least part of their debt through their future earnings.[1]

Ultimately, the rationale for this legislation is the presumption that Chapter 13 leads to more appropriate outcomes (for some debtors) compared with either Chapter 7 or options outside of bankruptcy. But what do debtors and creditors really achieve under Chapter 13? Or more important, how does the Chapter 13 bankruptcy system serve its two conflicting objectives: to provide debtors with a partial financial fresh start by discharging some of their debt, and to help creditors collect their defaulted loans by enforcing debtors' obligation to repay?

Two recent studies have taken a more detailed empirical look at actual outcomes in Chapter 13. One is my study with Hülya Eraslan and Pierre-Daniel Sarte, and the other is a study by Scott Norberg and Andrew Velkey.

FEATURES OF U.S. BANKRUPTCY LAW

The key feature of U.S. personal bankruptcy law, both before and after passage of the 2005 reform act, is that it contains two basic types of bankruptcy proceedings: Chapter 7 and Chapter 13. Before passage of the 2005 reform act, a debtor's bankruptcy decision and choice between chapters were

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[1] Some of the other significant changes the Bankruptcy Reform Act introduced to bankruptcy doctrine include increasing the amount of paperwork that must be filed by every debtor; requiring pre-filing counseling and post-filing financial education for debtors whose debts are primarily consumer debts; and making Chapter 13 less attractive by, among other things, requiring five-year payment plans (for above-median debtors) rather than the three-year plans that were previously the norm.

FIGURE 1

Annual Household Bankruptcy Filing Rate

Total Filings/Total Households

[Chart showing three lines from 1980 to 2005: Total, Chapter 7, and Chapter 13, with y-axis from 0 to 1.6]

Total

Chapter 7

Chapter 13

1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0

80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05

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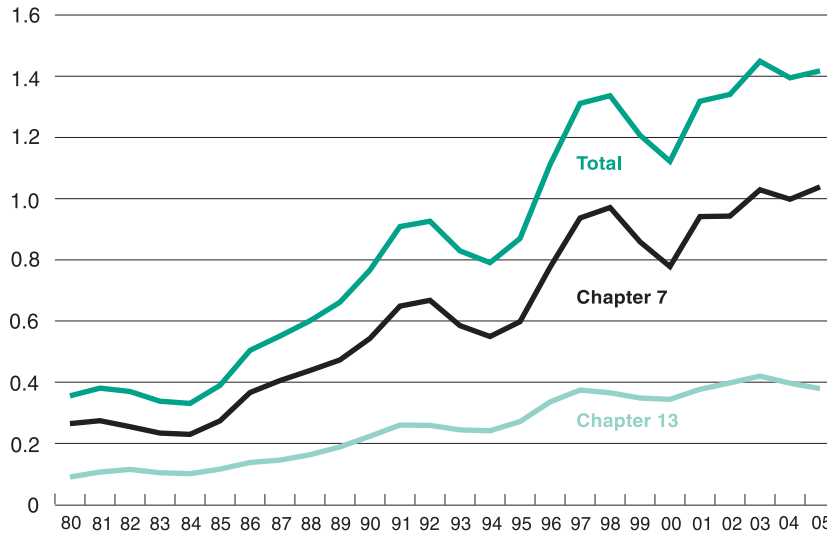
mostly voluntary. The 2005 reform act abolished some debtors' right to choose between chapters. To file under Chapter 7, debtors whose incomes are above their state median family income must now pass a "means test" that requires that (i) their monthly income net of allowable expenses calculated according to IRS rules be less than $166.67 per month and (ii) their net monthly income multiplied by 60 be less than 25 percent of their unsecured debt.[2] If their incomes are above the median level and they fail the means test, debtors must file under Chapter 13 if they file for bankruptcy at all.

Chapter 7 is often called liquida-

tion. Under Chapter 7, a debtor gives up all of his assets above a certain exemption level. In exchange, the debtor gets almost all of his unsecured debt discharged. The exemption level varies with states. A debtor cannot file for bankruptcy for six years after the last filing.

Chapter 13 is also called a wage earner's plan. Under Chapter 13, a debtor gets to keep all of his assets. However, he must repay some of the unsecured debt out of future earnings through a repayment plan over three to five years. Only after the completion of the repayment plan will the debtor obtain a legal discharge of his remaining debts. In principle, a debtor can file for Chapter 13 repeatedly without a time limit between the two adjacent filings. In practice, bankruptcy courts often require a 180-day gap.

A debtor can also choose to remain delinquent on his loans with-

out filing for bankruptcy, something known as informal bankruptcy. In that case, if the loan is secured by a house or a car, lenders can seize the house or the car, a process legally called foreclosure. If the loan is unsecured, such as credit card debt, lenders will immediately start adding finance charges and late fees to the amount owed. They will also likely make phone calls and write letters soliciting payments. Shortly after that, unsecured lenders typically sell their debts to collection agencies. Unsecured creditors as well as collection agencies can also sue the debtor and obtain a court judgment against the debtor. They collect the judgment by garnishing the debtor's wages.[3]
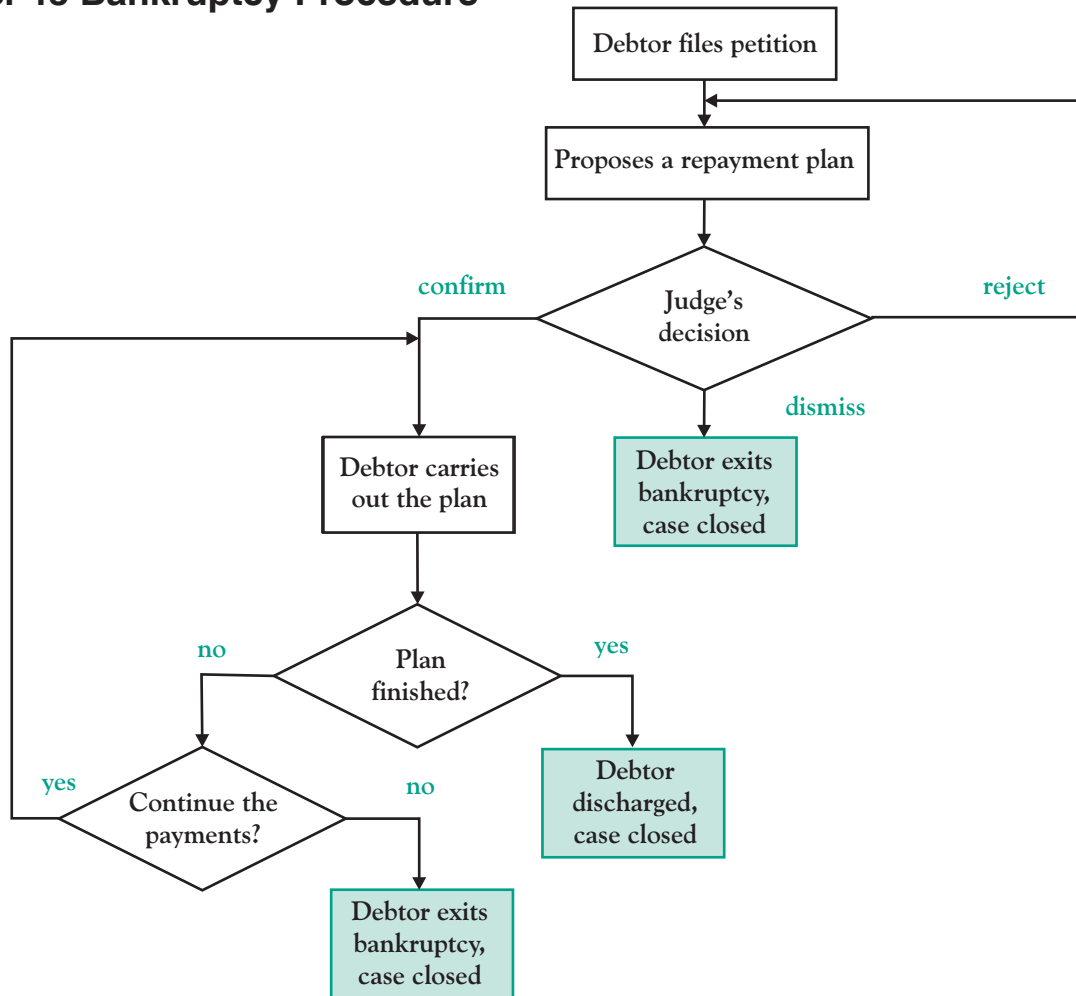
Individuals who choose informal bankruptcy over formal bankruptcy and debt payment are often those who do not have regular jobs, assets, or bank accounts. This means that even if a creditor obtained a judgment against a debtor, it would be nearly impossible for the creditor to collect on it. In their study of informal bankruptcy, Amanda Dawsey and Lawrence Ausubel point out that high bankruptcy costs also contribute to informal bankruptcy.

HOW DOES CHAPTER 13 BANKRUPTCY WORK?

Figure 2 lists the basic steps of a typical Chapter 13 case. The case starts with the debtor's submitting a petition and a repayment plan. Prior to April 2006, the filing fee for a Chapter 13 case was $185; it's now $235 plus a $39 miscellaneous administrative fee. In general, the filing fee is due at the time of petition. The court sometimes may allow the debtor to pay this filing fee in installments if the debtor cannot

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[2] The state median income divides the higher half of the population in the state from the lower half in terms of income level. In other words, half of the population in the state has income greater than the median, and half have income less than the median.

[3] See Robert Hunt's *Business Review* article for more details.

Chapter 13 Bankruptcy Procedure

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                                    ┌─────────────────────┐
                                    │ Debtor files petition│
                                    └─────────────────────┘
                                              │
                                    ┌─────────────────────┐
                                    │Proposes a repayment │◄────────┐
                                    │       plan          │         │
                                    └─────────────────────┘         │
                                              │                     │
         confirm                      ◇ Judge's ◇        reject     │
              ┌────────────────────◇   decision   ◇─────────────────┘
              │                         ◇       ◇
              │                             │ dismiss
              │                    ┌──────────────────┐
         ┌──────────────┐          │ Debtor exits      │
         │Debtor carries│          │ bankruptcy,       │
         │out the plan  │          │ case closed       │
         └──────────────┘          └──────────────────┘
              │
          ◇ Plan ◇       yes    ┌──────────────┐
    no  ◇ finished? ◇──────────►│Debtor         │
   ┌───◇         ◇              │discharged,    │
   │    ◇       ◇               │case closed    │
   │      no                    └──────────────┘
   │  ◇ Continue the ◇
  yes◇  payments?  ◇  no   ┌──────────────┐
   └─◇          ◇─────────►│Debtor exits   │
      ◇        ◇           │bankruptcy,    │
                           │case closed    │
                           └──────────────┘
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pay all at once.[4] If the debtor hires a private attorney, he will also have to pay the attorney's fees. The attorney's fees can be anywhere from a couple of hundred dollars to a few thousand, depending on the complexity of the case and the experience of the attorney.

As soon as a debtor files for bankruptcy, something called the "automatic stay" goes into effect. The automatic stay prohibits virtually all creditors from taking any action directed at collecting the debts the debtor owes them until the court says otherwise. These actions include foreclosures, termination of contracts for deed, repossession actions, and lawsuits to obtain judgments on debts and pressure to sell off equipment, crops, and livestock.

The petition contains schedules A to J, which detail the debtor's assets (real estate assets such as housing, and personal assets such as furniture and jewelry); income, expense, and debts (secured, unsecured priority, and unsecured nonpriority); pend-ing lawsuits, including foreclosures; and past income.[5] Together with the

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[4] The filing fee may be waived entirely only for individuals who qualify under very strict fee-waiver provisions.

[5] Types of unsecured priority claims include, among others, alimony, maintenance and support, taxes and certain other debts owed to government entities, and money owed to employee benefit plans for services rendered within the 180 days immediately preceding filing of the original petition. Unsecured nonpriority claims are mostly credit card debt. The plan must pay priority claims in full before unsecured nonpriority creditors receive any money unless a particular priority creditor agrees to different treatment of the claim or, in the case of a domestic support obligation, unless the debtor contributes all "disposable income"— discussed below — to a five-year plan.

petition, the debtor must also submit a repayment plan that devotes all of his disposable income – income net of necessary expenses – to the payment of claims.

For a proposed payment plan to be confirmed, it must extend for at least three years, but it cannot exceed five years. It must also be filed in good faith. In particular, the plan must propose to pay at least as much as the value of the assets creditors would have received under Chapter 7. Finally, the plan must make up all missed payments on secured debt before submitting payments to unsecured creditors.

Within a few days after the debtor files the bankruptcy petition, the bankruptcy court assigns a Chapter 13 trustee to oversee the case. The trustee may be a local bankruptcy attorney, who will be very knowledgeable about Chapter 13 bankruptcy generally, as well as the local court's rules and procedures specifically. In some courts, trustees are not attorneys but business people with specialized knowledge of finance or personal bankruptcy. The trustee serves primarily as a mediator between the debtor and his creditors. In almost all cases, the debtor deals mostly with the trustee, and a bankruptcy judge follows the recommendations of the trustee.

Shortly after his appointment, the trustee schedules a section 341 meeting for creditors to attend. This is the first court appearance for the debtor. At the meeting, creditors will be given an opportunity to ask any questions regarding the debtor's financial situation that may affect the plan. Although they can raise objections, creditors do not actively vote on a repayment plan. After the meeting, the judge decides whether to dismiss the case, reject the plan, or confirm the plan.

The plan can be dismissed either because it was not filed in good faith or because it is not viewed as feasible.

When the repayment plan is dismissed, the case ends. But several important consequences remain. First, all liens on the debtor's property are reinstated. The automatic stay is lifted. Creditors can resume their legal remedies outside of bankruptcy to pursue the payment of their debts. Interest (and in some cases penalties) that stopped accruing during the bankruptcy will be added to the debts. In other words, interest and penalties are retroactive from the time of the stay.

> Although they can raise objections, creditors do not actively vote on a repayment plan.

Sometimes, the court does not dismiss the case outright. Instead, the plan is simply rejected and the debtor is given a chance to propose a modified plan. After modification, the plan will again be subject to court decision.

If the plan is confirmed, the debtor starts making payments according to the confirmed plan.[6] The debtor will be discharged only upon completion of the plan. A confirmed plan can be renegotiated. For example, the debtor can prepay in the event that his assets appreciate or he receives additional income from other sources, such as an inheritance. The debtor can also convert the case into Chapter 7 with the court's agreement or simply default on the confirmed plan and then have the plan dismissed. The trustee can

also force the debtor to alter the plan when he observes that the debtor has had a substantial increase in income.

CHAPTER 13 BY THE NUMBERS

In my research project with Hülya Eraslan and Pierre-Daniel Sarte on the realities and dynamics of Chapter 13 personal bankruptcies, we collected all Chapter 13 bankruptcy filings between August 1, 2001, and August 1, 2002, in the federal bankruptcy court, district of Delaware. About 10 percent of the cases were excluded from the sample because of incomplete information resulting either from a filing error (deficient filing) or a court recording error. Almost all of these excluded cases were dismissed subsequently. The final sample contained 904 cases.[7] At the time of the writing of this article, about 190 cases remain open.

In another study, Scott Norberg and Andrew Velkey examined a sample made up of 795 Chapter 13 cases filed in 1994 in seven federal judicial districts, which comprise 14 Chapter 13 trusteeships. The seven federal judicial districts are Northern District of Georgia, Southern District of Georgia, Middle District of North Carolina, Middle District of Tennessee, Western District of Tennessee, District of Maryland, and Western District of Pennsylvania. In each district, a quota sample of roughly 1 percent of the Chapter 13 cases filed in 1994, but not fewer than 100 cases, was pulled.[8]

Each sampling approach has its merits. The two benefits of my study

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[6] Often, debtors start making payments to the trustee as soon as they submit their proposed plans. The payment minus court expenses will be refunded to debtors if their cases are dismissed. This requirement militates against the possibility of debtors' lingering in bankruptcy court, reaping all the gains without making any payments.

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[7] For the purposes of this article, we do not include the 72 cases filed initially under Chapter 13 but converted to Chapter 7. Since this article was written, more cases have closed. See our Working Paper for updated information.

[8] The data source for both studies is the U.S. Public Access to Court Electronic Filing Service Center, the federal judiciary's centralized registration, billing, and technical support center for electronic access to U.S. district, bankruptcy, and appellate court records.

with Eraslan and Sarte are: (i) The data are recent. This is important, since there was a significant increase in personal bankruptcy in the 1990s. (ii) For further analysis, it is helpful to look at a more homogeneous population. For example, if we want to examine the effect of family income on bankruptcy outcomes, we prefer that unobserved differences between families in different states not affect our results. The benefit of Norbert and Velkey's study is that their sample is more representative of the nation as a whole.

WHO FILES FOR CHAPTER 13 PERSONAL BANKRUPTCIES?

Table 1 presents profiles of the Chapter 13 filers in the two studies. To draw a comparison with an average household, I've also included, when available, information derived from the 2001 Survey of Consumer Finances. As can be seen, Chapter 13 filers are far from being the most destitute of the general population. Both studies indicate that these people tend to have regular jobs, and the unemployment rate among filers is far lower than the state or national unemployment rate. Thus, they all receive regular incomes, although their incomes fall short of the national average by 30 to 60 percent.

The majority of the debtors also own their homes, and the homeownership rate among the debtors is substantially higher than the national average in our more recent sample. The homeownership rate is lower among debtors than among the general population by about 10 percentage points in Norberg and Velkey's sample. But the rates among debtors vary quite a bit among the seven districts in their sample, ranging from 33 percent in the Middle District of Tennessee to 79 percent in the Western District of Pennsylvania.

Not surprisingly, despite their

TABLE 1			
Profiles of Chapter 13 Filers			
	Eraslan, Li, and Sarte	Norberg and Velkey	National Data (SCF)
Male	29.8%	36.7%	
Female	35.1%	36.3%	
Joint filing	35.1%	27.0%	
Marriage	41%		40%
Average household size	2.67	2.69	2.50
Homeownership rate	87%	54%	72%
Average monthly income ($)	1646	946	2297
Debt excluding mortgages-annual income ratio	1.36	1.29	0.28
With previous filing history	22%	32%	

Note: Monthly income is real income constructed by deflating nominal income by the consumer price index, setting 1982-84 to 100.

income and assets, the Chapter 13 filers are heavily indebted. The debt to income ratio, excluding mortgages, averages 1.36, with a median of 1.02. According to the 2001 Survey of Consumer Finances, the average debt to income ratio, excluding mortgages, is 0.28 and the median is 0.06 for the nation. Norberg and Velkey found similar numbers for their 1994 sample.

Another remarkable finding is that a substantial portion of filers, over 20 percent in our sample and nearly 32 percent in Norberg and Velkey's, have filed for bankruptcy previous to the case under study.

In terms of other demographics,

Chapter 13 filers in both studies do not differ much from the general population in terms of marital status and household size.[9]

The profiles of Chapter 13 filers uncovered in the two studies are in contrast to those of Chapter 7 filers documented by other studies. For example, in their study, Scott Fay, Erik

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[9] We also report filing status by gender, and we infer debtors' gender from their first names.

[10] Fay, Hurst, and White's sample consists of both Chapter 7 and Chapter 13 filers. Given the relatively small number of Chapter 13 filers in their sample, the reported sample statistics reflect mostly those of Chapter 7 filers.

Furst, and Michelle White find that Chapter 7 filers have the same rate of unemployment as the general population.[10] The homeownership rate in their study is far lower than the general population's. The average monthly income is about 50 percent below the nation's average. Most important, filers in this study experienced, on average, a much higher income drop at the time of filing.

HOW SUCCESSFUL HAS THE CHAPTER 13 SYSTEM BEEN?

The success of the bankruptcy system depends on how well it serves its dual goals: maximizing return to creditors by enforcing debtors' obligation to repay their debts and providing debtors with a financial fresh start by discharging some of their debt. The two goals are obviously at conflict. Unfortunately, the law does not explicitly specify how the two goals should be balanced.

Even without a precise way of evaluating the success or failure of Chapter 13, we can make headway by thinking about some features of a desirable bankruptcy procedure. First, all confirmed cases should eventually be discharged. Remember, a case that is not discharged shifts the debtor and his creditors back into a private collection procedure. Second, recovery rates for unsecured creditors should not be lower than those gained from other solutions to borrower default. From the creditors' standpoint, a higher recovery for unsecured debt is the primary advantage of Chapter 13 over Chapter 7 and other remedies outside of bankruptcy. Finally, multiple filings should be the exception, not the rule, especially for those who had successfully obtained a previous discharge.

The Grim Realities of Chapter 13 Personal Bankruptcy. I summarize the performance measures in the two studies in Table 2. Several findings emerge from the two studies. First, although a large percentage of Chapter 13 filers do have their proposed plans confirmed, the success rate measured by the percentage of cases discharged is low.[11] In our sample, about 18 percent of the cases remained open as of October 30, 2006. Even if we assume that all of the cases still open will be ultimately discharged, the maximum rate of discharge would be 51 percent, about half of the cases. In 1994, according to Norberg and Velkey, only 33 percent of the cases obtained a discharge. This strongly suggests that a substantial fraction of repayment plans were unrealistic in the first place, either because the debtors were "forced" to agree on a plan that demands an "unrealistic" amount of repayment or because the debtors did not fully take into account the possibility of future adverse events that would affect their ability to pay.[12]

Related to the low discharge rate is the finding that creditors, secured and unsecured, receive very little on their debts. Specifically, on average, secured creditors receive at most 36 cents on the dollar in our sample, assuming that the remaining open cases will result in a 100 percent recovery rate. In Norberg and Velkey's sample, they receive only 31 cents on the dollar, even though secured creditors are supposed to receive full payments in a successful Chapter 13 case, according to the bankruptcy law.[13]

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[11] Recall that a Chapter 13 bankruptcy case is ultimately either dismissed or discharged. A discharge is granted only after a debtor successfully finishes his confirmed repayment plan.

[12] Of course, some consumers certainly did experience adverse events subsequent to filing a plan. But it seems unlikely that plans that are unsuccessful between 50 to 70 percent of the time can be ascribed to pure bad luck.

[13] Because a trustee's commission is proportional to the amount of payments under Chapter 13, debtors often choose to have their regular mortgage or car loan payment outside of their repayment plans to reduce the payment amount under bankruptcy. Arrears, however, have to be paid through repayment plans.

TABLE 2

Performance of the Chapter 13 Bankruptcy System

	Eraslan, Li, and Sarte Study	Norberg and Velkey Study
Confirmation rate	82%	77%
Discharge rate	33%	33%
Recovery rate of all debt	27%	30.1%
Recovery rate of secured debt	22%	30.6%
Recovery rate of unsecured debt	16%	19.5%
Subsequent refiling rate	30%	33%

Note: Eraslan, Li, and Sarte's sample is as of October 30, 2006.

Unsecured creditors fare worse, receiving, on average, at most 31 cents on the dollar in our sample and 20 cents on the dollar in Norberg and Velkey's. Over half of the creditors in our sample, secured as well as unsecured, receive absolutely nothing and just a few cents on the dollar in Norberg and Velkey's sample. Although it is not directly comparable, according to the 2001-2002 Reports of Income and Financial Conditions from the nation's commercial banks, the recovery rate for overdue credit card loans is 23 cents per dollar.

The payoffs to the creditors are strikingly low considering the substantial cost associated with Chapter 13 bankruptcy cases. In addition to the filing fee and attorney's fees, the debtor pays the trustee 3 to 10 percent of each payment he makes to his creditors through the trustee. Thus, for every dollar owed to creditors, it costs 0.6 to 3 cents in trustee fees alone to collect 20 to 30 cents.

Another striking finding that emerges from both studies is the high rate at which debtors file again after the termination of the case under study. Of the 726 debtors who have exited bankruptcy through either discharge or dismissal, 30 percent of them filed again at least once. The refiling rate is as high as 33 percent for Norberg and Velkey's sample. Even for those who emerged successfully from their cases through discharge, the refiling rate exceeds 20 percent. These numbers are very high considering that from the mid-1990s to 2006, the unconditional bankruptcy filing rate for households in general is less than 1.4 percent in the U.S.

To sum up, the numbers uncovered from both studies show that debtors did not succeed in completing their plans in the majority of cases, and when they did succeed, a substantial fraction of them were still at risk

of filing again. Furthermore, creditors did not recover much under Chapter 13: median creditors received close to nothing. Thus, the performance of Chapter 13 poses a challenge to any argument that it is an efficient mechanism for resolving the two objectives of the bankruptcy law: debt relief and debt collection. In particular, proponents of the 2005 law would instead have to base their support for the law

on the possibility that Chapter 13 has strong, desirable benefits in disciplining consumers, lenders, or both.

POSSIBLE CONSEQUENCES OF THE 2005 REFORM ACT

As mentioned earlier, at the center of the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act is a means test that intends to move a potentially large number of would-be Chapter 7 filers into Chapter 13. The purpose is to return more money to general unsecured creditors than the creditors would otherwise receive. Whether this purpose is served depends on the actual effectiveness of Chapter 13 bankruptcy as a means to collect debts.

According to the two studies reviewed here, however, Chapter 13 bankruptcy is an ineffective collection device. Median creditors receive almost nothing *after discharge* and nearly half of debtors do not get their debt discharged. If those who end up in Chapter 13 because of the new law are mostly people who fail the means test

narrowly, our evidence indicates that Chapter 13 collection procedures are unlikely to be effective against them.[14] This suggests that the rationale for the new bankruptcy act must be sought in its other effects, such as deterring bankruptcy altogether among those who have the capacity to repay.

Of course, what we have discussed so far concerns Chapter 13 bankruptcy provisions from an efficiency stand-

Lenders in states with relatively more generous bankruptcy laws take into account the potentially higher personal bankruptcy filing rate in those states and consequently charge a higher rate to borrow.

point *after the fact*. That is, we ask: once a debtor has entered bankruptcy, how well does Chapter 13 perform? It should be kept in mind that bankruptcy law has broader effects. For example, researchers Reint Gropp, John Scholz, and Michelle White, and Emily Lin and Michelle White find that bankruptcy law affects the supply of credit. Specifically, lenders in states with relatively more generous bankruptcy laws take into account the potentially higher personal bankruptcy filing rate in those states and consequently charge a higher rate to borrow.

Jeremy Berkowitz and Michelle White and Wei Fan and Michelle White find that bankruptcy law also affects the incentive to take risks, in particular, the decision to become

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[14] Recall that a large number of Chapter 13 filers have income less than their state median income. We can't make the same statement for relatively high-income debtors who may be forced to choose Chapter 13 instead of Chapter 7 under the new law because they differ in fundamental ways from our sample of Chapter 13 filers.

entrepreneurs. Both homeowners and renters respond strongly to increases in homestead exemptions in making their decisions to be self-employed.

In light of these studies, an outcome that looks inefficient conditional on the borrower's entering bankruptcy may have positive effects. For instance, consumers or lenders may be more prudent in their borrowing or lending decisions when they expect to fare poorly in bankruptcy. Whether Chapter 13 outcomes we observed can be rationalized in a broader view of the goals of bankruptcy will require further research.

CONCLUSION

Two recent studies of Chapter 13 personal bankruptcy provide a detailed picture of who enters Chapter 13 and how well borrowers and creditors fare. The two studies uncover evidence that paints a rather grim picture of the realities of Chapter 13 personal bankruptcy. Plans are seldom completed successfully, creditors recover relatively little, and borrowers are very likely to re-enter bankruptcy. Thus, these findings raise some flags about the stated rationale for the reform, moving more borrowers from Chapter 7 to Chapter 13. To put it simply, despite some caveats mentioned in the article, based on our research, the Chapter 13 bankruptcy system has a long way to go in terms of providing debt relief for borrowers and debt collection for creditors. **BR**

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IMPLICATIONS OF MEANS-TESTING IN CHAPTER 7 BANKRUPTCY

The authors study, theoretically and quantitatively, the general equilibrium of an economy in which households smooth consumption by means of both a riskless asset and unsecured loans with the option to default. The default option resembles a bankruptcy filing under Chapter 7 of the U.S. Bankruptcy Code. Competitive financial intermediaries offer a menu of loan sizes and interest rates wherein each loan makes zero profits. The authors prove the existence of a steady-state equilibrium and characterize the circumstances under which a household defaults on its loans. They show that their model accounts for the main statistics regarding bankruptcy and unsecured credit while matching key macroeconomic aggregates and the earnings and wealth distributions. They use this model to address the implications of a recent policy change that introduces a form of "means-testing" for households contemplating a Chapter 7 bankruptcy filing. They find that this policy change yields large welfare gains. (Revision forthcoming in *Econometrica*)

Working Paper 07-16, "A Quantitative Theory of Unsecured Consumer Credit with Risk of Default," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia; Dean Corbae, University of Texas at Austin; Makoto Nakajima, University of Illinois; and Jose-Victor Rios-Rull, University of Pennsylvania

EFFECTS OF TRADE LIBERALIZATION ON WELFARE, TRADE, AND EXPORTS

The authors study a variation of the Melitz (2003) model, a monopolistically competitive model with heterogeneity in productivity across establishments and fixed costs of exporting. They calibrate the model to match the employment size distribution of U.S. manufacturing establishments. Export participation in the calibrated model is then compared to the data on U.S. manufacturing exporters. With fixed costs of starting to export about 3.9 times as large as the costs of continuing as an exporter, the model can match both the size distribution of exporters and transition into and out of exporting. The calibrated model is then used to estimate the effect of reducing tariffs on welfare, trade, and export participation. The authors find sizable gains to moving to free trade. Contrary to the view that the gains to lowering tariffs are larger in models with export decisions, they find that steady state consumption increases by less in their benchmark model of exporting than in a similar model without fixed costs. However, they also find that comparisons of steady state consumption understate the welfare gains to trade reform in models with fixed costs and overstate the welfare gains in models without fixed costs. With fixed costs, tariffs lead to an over-accumulation of product varieties that can be used more effectively along the transition to the

new steady state. Thus, following trade liberalizations, economic activity overshoots its steady state, with the peak in output coming 10 years after the trade reform. Finally, the authors explore the impact of the key modeling assumptions in the theoretical literature for quantitative results.

Working Paper 07-17, "Establishment Heterogeneity, Exporter Dynamics, and the Effects of Trade Liberalization," George Alessandria, Federal Reserve Bank of Philadelphia, and Horag Choi, University of Auckland

THE RELATIONSHIP BETWEEN ESTABLISHMENT AGE AND EMPLOYMENT GROWTH

This paper presents new evidence on the relationship between a metropolitan area's employment growth and its establishment age distribution. The author finds that cities with a relatively younger distribution of establishments tend to have higher growth, as well as higher job and establishment turnover. Geographic variations in the age distribution account for 38 percent of the geographic differences in growth, compared to the 32 percent accounted for by variations in industry composition. Differences are disproportionately accounted for by entrants and young (five years or younger) establishments. Furthermore, the relationship between age and growth is robust to controls for urban diversity and education. Overall, the results support a micro-foundations view of urban growth, where the benefits of agglomeration affect firms not through some production externality but through a process that determines which firms enter, exit, and thrive at a given location.

Working Paper 07-18, "The Relationship Between the Establishment Age Distribution and Urban Growth," R. Jason Faberman, Federal Reserve Bank of Philadelphia

FLUCTUATIONS IN SEPARATION RATES AND UNEMPLOYMENT

This paper uses CPS gross flow data, adjusted for margin error and time aggregation error, to analyze the business cycle dynamics of separation and job finding rates and to quantify their contributions to overall unemployment variability. Cyclical changes in the separation rate lead those of unemployment, while the job finding rate and unemployment move contemporaneously. Fluctuations in the separation rate explain between 40 and 50 percent of fluctuations in unemployment, depending on how the data are detrended. The authors' results suggest an important role for the separation rate in explaining the cyclical behavior of unemployment.

Working Paper 07-19, "The Cyclicality of Separation and Job Finding Rates," Shigeru Fujita, Federal Reserve Bank of Philadelphia, and Garey Ramey, University of California, San Diego

STANDARD SETTING, PATENTS, INTELLECTUAL PROPERTY, AND ELECTRONIC PAYMENT SYSTEMS

For many reasons, payment systems are subject to strong network effects; one of those is the necessity of interoperability among participants. This is often accomplished via standard-setting organizations. The goal of the Single European Payments Area (SEPA) is to establish modern cross-boarder consumer payment systems for Europe. This too will require a standard-setting arrangement. But patents are also becoming an important feature of electronic payment systems, and thus standard setting under SEPA should incorporate a policy to address the ownership and licensing of essential intellectual property. Using examples from the experience of European mobile telephony and financial patenting in the United States, the authors argue that the lack of a well-developed IP policy creates significant risks for participants in the new SEPA payment systems.

Working Paper 07-20, "Intellectual Property Rights and Standard Setting in Financial Services: The Case of the Single European Payments Area," Robert M. Hunt, Federal Reserve Bank of Philadelphia; Samuli Simojoki, Attorneys at Law Borenius and Kemppinen; and Tuomas Takalo, Bank of Finland

PATENTS ON BUSINESS METHODS

Nearly a decade after the federal circuit decision in *State Street*, patents on computer-implemented methods of doing business have become commonplace. To date, there is little evidence of any effect on the rate of innovation or R&D among firms in financial services. Indeed, measuring such effects presents difficult problems for researchers. We do know that some of these patents are successfully licensed and others are the subject of ongoing litigation. Looking ahead, a number of recent Supreme Court decisions are likely to have a significant effect on how business method patents are enforced. Congress is also considering significant reforms to U.S. patent law.

Working Paper 07-21, "Business Method Patents for U.S. Financial Services," Robert M. Hunt, Federal Reserve Bank of Philadelphia

DESIGNING AN EFFICIENT PAYMENT SYSTEM

The authors study the design of efficient intertemporal payment arrangements when the ability of agents to perform certain welfare-improving transactions is subject to random and unobservable shocks. Efficiency is achieved via a payment system that assigns balances to participants, adjusts them based on the histories of transactions, and periodically resets them through settlement. The authors' analysis addresses two key issues in the design of actual payment systems. First, efficient use of information requires that agents participating in transactions that do not involve monitoring frictions subsidize those that are subject to such frictions. Second, the payment system should explore the trade-off between higher liquidity costs from settlement and the need to provide intertemporal incentives. In order to counter a higher exposure to default, an increase in settlement costs implies that the volume of transactions must decrease but also that the frequency of settlement must increase.

Working Paper 07-22, "A Dynamic Model of the Payment System," Thorsten Koeppl, Queen's University; Cyril Monnet, Federal Reserve Bank of Philadelphia; and Ted Temzelides, University of Pittsburgh

POPULATION DENSITY AND OCCUPATIONAL CHANGES

Using U.S. census micro-data, the authors show that, on average, workers change occupation and industry less in more densely populated areas. The result is robust to standard demographic controls, as well as to including aggregate measures of human capital and sectoral mix. Analysis of the displaced worker surveys shows that this effect is present in cases of involuntary separation as well. On the other hand, the authors actually find the opposite result (higher rates of occupational and industrial switching) for the sub-sample of younger workers. These results provide evidence in favor of increasing-returns-to-scale matching in labor markets. Results from a back-of-the-envelope calibration suggest that this mechanism has an important role in raising both wages and returns to experience in denser areas.

Working Paper 07-23, "Thick-Market Effects and Churning in the Labor Market: Evidence from U.S. Cities," Hoyt Bleakley, University of Chicago, and Jeffrey Lin, Federal Reserve Bank of Philadelphia

PLANT AND AGGREGATE INVESTMENT DYNAMICS

The authors study a model of lumpy investment wherein establishments face persistent shocks to common and plant-specific productivity and nonconvex adjustment costs lead them to pursue generalized (S,s) investment rules. They allow persistent heterogeneity in both capital and total factor productivity alongside low-level investments exempt from adjustment costs to develop the first model consistent with the cross-sectional distribution of establishment investment rates. Examining the implications of lumpy investment for aggregate dynamics in this setting, the authors find that they remain substantial when factor supply considerations are ignored but are quantitatively irrelevant in general equilibrium.

The substantial implications of general equilibrium extend beyond the dynamics of aggregate series. While the presence of idiosyncratic shocks makes the time-averaged distribution of plant-level investment rates largely invariant to market-clearing movements in real wages and interest rates, the authors show that the dynamics of plants' investments differ sharply in their presence. Thus, model-based estimations of capital adjustment costs involving panel data may be quite sensitive to the assumption about equilibrium. The authors' analysis also offers new insights about how nonconvex adjustment costs influence investment at the plant. When establishments face idiosyncratic productivity shocks consistent with existing estimates, the authors find that nonconvex costs do not cause lumpy investments but act to eliminate them.

Working Paper 07-24, "Idiosyncratic Shocks and the Role of Nonconvexities in Plant and Aggregate Investment Dynamics," Aubhik Khan, Federal Reserve Bank of Philadelphia, and Julia K. Thomas, Federal Reserve Bank of Philadelphia and NBER

ADAPTING TO INNOVATION: WHERE DOES NEW WORK GO?

Where does adaptation to innovation take place? The supply of educated workers and local industry structure matter for the subsequent location of new work – that is, new types of labor-market activities that closely follow innovation. Using census 2000 micro-data, the author shows that regions with more college graduates and a more diverse industrial base in 1990 are more likely to attract these new activities. Across

metropolitan areas, initial college share and industrial diversity account for 50 percent and 20 percent, respectively, of the variation in selection into new work unexplained by worker characteristics. He uses a novel measure of innovation output based on new activities identified in decennial revisions to the U.S. occupation classification system. New work follows innovation, but unlike patents, it also represents subsequent adaptations by production and labor to new technologies. Further, workers in new activities are more skilled, consistent with skill-biased technical change.

Working Paper 07-25, "Innovation, Cities, and New Work," Jeffrey Lin, Federal Reserve Bank of Philadelphia

DESIGNING AN OPTIMAL CARD-BASED PAYMENT SYSTEM WHEN CASH IS AN ALTERNATIVE

Payments are increasingly being made with payment cards rather than currency — this despite the fact that the operational cost of clearing a card payment usually exceeds the cost of transferring cash. In this paper, the authors examine this puzzle through the lens of monetary theory. They consider the design of an optimal card-based payment system when cash is available as an alternative means of payment and derive conditions under which cards will be preferred to cash. The authors find that a feature akin to the controversial "no-surcharge rule" may be necessary to ensure the viability of the card payment system. This rule, which is part of the contract between a card provider and a merchant, states that the merchant cannot charge a customer who pays by card more than a customer who pays by cash.

Working Paper 07-26, "Optimal Pricing of Payment Services When Cash Is an Alternative," Cyril Monnet, Federal Reserve Bank of Philadelphia, and William Roberds, Federal Reserve Bank of Atlanta

IMPLEMENTATION ISSUES AND OPTIMAL MONETARY POLICY

Currently there is a growing literature exploring the features of optimal monetary policy in New Keynesian models under both commitment and discretion. With respect to time-consistent policy, the literature focuses on solving for allocations. Recently, however, King and Wolman (2004) have examined implementation issues involved under time-consistent policy when the monetary authority chooses nominal money balances. Surprisingly, they find that equilibria are no longer unique under a money stock regime. Indeed, there exist multiple steady states. Dotsey and Hornstein find that King and Wolman's conclusion of nonuniqueness of Markov-perfect equilibria is sensitive to the instrument of choice. If, instead, the monetary authority chooses the nominal interest rate rather than nominal money balances, there exists a unique Markov-perfect steady state and point-in-time equilibria are unique as well. Thus, in King and Wolman's language, monetary policy is implementable using an interest rate instrument, while it is not implementable using a money stock instrument.

Working Paper 07-27, "Interest Rate Versus Money Supply Instruments: On the Implementation of Markov-Perfect Optimal Monetary Policy, "Michael Dotsey, Federal Reserve Bank of Philadelphia, and Andreas Hornstein, Federal Reserve Bank of Richmond

INNOVATION AND LOCAL ECONOMIC CHARACTERISTICS

This paper extends the research in Carlino, Chatterjee, and Hunt (2007) to examine the effects of local economic characteristics on the rate of innovation (as measured by patents) in more than a dozen industries. The availability of human capital is perhaps the most important factor explaining the invention rate for most industries. The authors find some evidence that higher job market density is associated with more patenting in industries such as pharmaceuticals and computers. They find evidence of increasing returns with respect to city size (total jobs) for many industries and more modest effects for increases in the size of an industry in a city. This suggests that inter-industry spillovers are often at least as important as intra-industry spillovers in explaining local rates of innovation. A more competitive local market structure, characterized by smaller establishments, contributes significantly to patenting in nearly all industries. More often than not, specialization among manufacturing industries is not particularly helpful, but the authors find the opposite for specialization among service industries. Industries benefit from different local sources of R&D (academia, government labs, and private labs) and to varying degrees.

Working Paper 07-28, "Innovation Across U.S. Industries: The Effects of Local Economic Characteristics," Gerald A. Carlino, Federal Reserve Bank of Philadelphia, and Robert M. Hunt, Federal Reserve Bank of Philadelphia

VIOLATING PPP ACROSS COUNTRIES

The authors show that deviations from the law of one price in tradable goods are an important source of violations of absolute PPP across countries. Using highly disaggregated export data, they document systematic international price discrimination: At the U.S. dock, U.S. exporters ship the same good to low-income countries at lower prices. This pricing-to-market is about twice as important as any local nontraded inputs, such as distribution costs, in explaining the differences in tradable prices across countries. The authors propose a model of consumer search that generates pricing-to-market. In this model, consumers in low-income countries have a comparative advantage in producing nontraded, nonmarket search activities and therefore are more price sensitive than consumers in high-income countries. The authors present cross-country time-use evidence and evidence from U.S. export prices that is consistent with the model.

Working Paper 07-29, "Pricing-to-Market and the Failure of Absolute PPP," George Alessandria, Federal Reserve Bank of Philadelphia, and Joseph Kaboski, Ohio State University

CYCLICAL PROPERTIES OF THE PRIVATE RISK PREMIUM

This paper studies cyclical properties of the private risk premium in a model where a continuum of heterogeneous entrepreneurs are subject to aggregate as well as idiosyncratic risks, both of which are assumed to be highly persistent. The calibrated model matches highly skewed wealth and income distributions of entrepreneurs found in the Survey of Consumer Finances. The authors provide an accurate numerical solution to the model, even though the model is shown to exhibit serious nonlinearities that are absent in incomplete market models with idiosyncratic labor income risk. The model is able to generate the aggregate private risk premium of 2 to 3 percent and the low risk-free rate. However, it generates very little variation in these variables over the business cycle, suggesting that the model lacks the ability to amplify aggregate shocks.

Working Paper 07-30, "Private Risk Premium and Aggregate Uncertainty in the Model of Uninsurable Investment Risk," Francisco Covas, Board of Governors of the Federal Reserve System, and Shigeru Fujita, Federal Reserve Bank of Philadelphia

PERSONAL BANKRUPTCY FILINGS UNDER CHAPTER 13

By compiling a novel data set from bankruptcy court dockets recorded in Delaware between 2001 and 2002, the authors build and estimate a structural model of Chapter 13 bankruptcy. This allows them to quantify how key debtor characteristics, including whether they are experiencing bankruptcy for the first time, their past-due secured debt at the time of filing, and income in excess of that required for basic maintenance, affect the distribution of creditor recovery rates. The analysis further reveals that changes in debtors' conditions during bankruptcy play a nontrivial role in governing Chapter 13 outcomes, including their ability to obtain a financial fresh start. The authors' model then predicts that the more stringent provisions of Chapter 13 recently adopted, in particular those that force subsets of debtors to file for long-term plans, do not materially raise creditor recovery rates but make discharge less likely for that subset of debtors. This finding also arises in the context of alternative policy experiments that require bankruptcy plans to meet stricter standards in order to be confirmed by the court.

Working Paper 07-31, "The Anatomy of U.S. Personal Bankruptcy Under Chapter 13, "Hülya Eraslan, University of Pennsylvania; Wenli Li, Federal Reserve Bank of Philadelphia; and Pierre-Daniel Sarte, Federal Reserve Bank of Richmond

ESTIMATING PAYMENT NETWORK SCALE ECONOMIES FOR EUROPE

The goal of SEPA (Single Euro Payments Area) is to facilitate the emergence of a competitive, intra-European market by making cross-border payments as easy as domestic transactions. With cross-border interoperability for electronic payments, card transactions will increasingly replace cash and checks for all types of payments. Using different methods, the authors estimate card and other payment network scale economies for Europe. These indicate substantial cost efficiency gains if processing is consolidated across borders rather than "piggybacked" onto existing national operations. Cost reductions likely to induce greater replacement of small value cash transactions are also illustrated.

Working Paper 07-32, "Payment Network Scale Economies, SEPA, and Cash Replacement," Wilko Bolt, De Nederlandsche Bank, and David Humphrey, Florida State University, and Visiting Scholar, Federal Reserve Bank of Philadelphia