

TIME ON THE MARKET AND SALE PRICE OF NON-PERFORMING LOAN ASSETS

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ABSTRACT

The correlation between time on the market (TOM) and offer price or transaction price has been analyzed in a number of studies. Unlike previous studies, this paper focuses on atypical property (non-performing assets (NPAs)) and adopts a two-stage least squares regression (2SLS) model to test whether value enhancement strategies would enhance the disposal price in Kaohsiung city. The empirical results show that investors can't profit just from increasing the time on the market (TOM). Investors have to adopt an enhancement strategy to increase NPA value as well. This is the important finding from the comparison of auction and value enhancement strategy in this paper. The Taiwanese experience reported in this paper shows that value increment can be achieved via the combination of longer TOM and value enhancement strategy.

Keywords: time on the market, non-performing loans, non-performing assets, Taiwan, property management

INTRODUCTION

A loan is non-performing when payments of interest and principal are overdue by 90 days or more (Zhu 2006). In Taiwan, when borrowers default on their mortgage, it is common that bank officers adopt a passive management attitude. Basically they do nothing to improve the property because they think that no matter what they do, there is little benefit from their management activities. Therefore, the banks prefer to dispose of the Non-Performing Assets (NPAs), collaterals of Non-Performing Loans (NPLs), by public auction. However, public auction is an inefficient means to dispose of NPAs and NPLs because it is subject to lengthy processing time and statutory price reduction after a failed auction. As Taiwanese bankers tend to do nothing, the NPL ratio has increased rapidly. In 2000, the Taiwanese government took the initiative to solve the problems associated with NPAs. The result was that an increasing number of financial organizations sold their NPLs and there is growing concern about the dealing with NPL and NPA related issues.

NPAs are highly risky products, having regard to the special characteristics of the NPAs trading platform, its market mechanism and longer disposal duration. Nevertheless they do not deter asset management companies (AMCs) which are more efficient and their disposal methods, such as debt negotiation, improving asset quality and private auction are more flexible. To the AMCs, the return from NPAs is often better than that from the sale of normal real estate assets in Taiwan. This study is interested in why the "bad" assets could have better performance.

It is well known that the sale of property needs considerable time exposure and requires a proper marketing strategy prior to reaching a transaction agreement. Some research studies on time on the market (TOM) and sale price claim that TOM and sale price display a negative correlation (Kang and Gardner 1989, Haag et al 2000, McGreal et al 2009) while others suggest that both are positively correlated (Trippi 1977, Anglin et al 2003). It appears that scholars have not yet reached an agreement about the relationship between TOM and sale price.

Previous studies on TOM were mostly based on ordinary real estate. In regard to NPAs in Taiwan, the sale price is usually lower; the tolerable TOM could potentially be longer which allows for more opportunity to improve the condition of the asset before the sale. Accordingly, some researchers argue that the NPAs disposal price may increase as TOM increases and may be related to the strategy of disposition.

Once the AMC's have acquired NPAs, the marketing strategy starts. The TOM can be counted as the holding period for NPAs. Holding period in this context means the time needed from purchasing the NPA to the completion of its disposal. Given that the NPAs transaction mechanism in Taiwan is quite unique compared to the general real asset market, the TOM is an important issue for AMC's to realize the maximum disposal price. This study aims to identify the relationship of TOM and Sales Price of NPAs. A two-stage least squares regression model (2SLS) is adopted to test the relationship between the length of time on the market and the disposal price. The paper also reviewed relevant previous studies to construct the regression model and to justify the research outcome.

LITERATURE REVIEW

Relationship between sale price and TOM

Property pricing refers to the mutual agreement between a buyer and a seller on the value of a particular real asset. The price is influenced by various factors including the behaviour of both parties during the period, the market condition and the unique features of the property. In the course of selling the property, if increasing TOM promotes a buyer's interest to treat or leads to a favourable sale price, it indicates that there is a positive correlation between the TOM and the sale price. On the contrary, if increasing the TOM decreases the willingness of a buyer to treat or the sale price, it indicates that there is a negative correlation.

Read (1988) believed that it is difficult to control the idiosyncratic characteristics of a property, such as window view and the like, that contribute to the sale price. Therefore, increasing the TOM exerts a negative impact on the sale price. Kang and Gardner (1989) found that varying the TOM has a negative correlation with the sale price of real estate. Haag et al (2000) also pointed out that an increasing TOM had a negative impact on sale prices. Moreover, it is unhelpful to get a higher sale price if the TOM is increased for certain reasons such as that the building must have some improvement or refurbishment like new painting or roof reconstruction before it can be sold. In other words, this type of improvement strategy does not really improve the value of the real estate. In addition, Allen et al (2005) analysed the correlation between the TOM and the sale price under a different bidding strategy. The authors found that no matter what kind of pricing strategy was employed, the correlation still was negative.

Trippi (1977) illustrated that as the TOM increased, the capitalization rate decreased, ie: the price was higher. In other words, it indicates a positive relationship between TOM and sale price. Miller's (1978) analysis also confirms the same result. Moreover, Miller assumed that this was a result of the increased costs due to house hunting. The research carried out by Asabere and Huffman (1993) in three cities within Pennsylvania verified the assumption that a longer TOM results in a higher sale price; this supported the research results from Trippi (1977) and Miller (1978). The study of Rutherford et al (2001) also supported the above results. In addition, the empirical studies in Texas carried out by Anglin et al (2003) found that market behaviour is quite complicated - as the listed price increased, the TOM extended as well.

Haurin (1988) pointed out that, for a typical property, the list price, the sale price and the TOM increased in equal measure. This means that as TOM increases so does the disposal price. Haurin et al (2010) also indicated atypical dwellings take longer to sell. Johnson et al (2009) applied the hedonic price model and found that the results were inconsistent when using the generalized least squares approach on the dependent and independent variables. Thus, an analysis of the data by a 2SLS approach shows that no matter whether the independent variable is TOM or the sale price, the results indicate a consistently positive significance.

Sirmans et al (2005) reviewed the price factor in 18 research papers on TOM. They indicated that there was only one study which demonstrated that the TOM and sale price were positively correlated; eight studies displayed a negative correlation and nine studies showed that the correlation is insignificant.

The conclusion of the above literature review is that there is no agreement on the relationship between sale price and TOM.

The price of foreclosure property

A property goes into a distressed status when the borrower/home owner misses mortgage payments. The lender will carry out a short sale if requested by the homeowner. However, if a short sale is not requested then the lender will continue the foreclosure process. Moreover, the lender will pursue the real estate ownership (REO) after an unsuccessful sale at a foreclosure auction. After that the lender may package up a pool of NPLs and NPAs and sell it to AMCs. Basically, a foreclosed property is an atypical property; it is always sold at a discount.

Some literature indicated that there was over 20% discount on distressed properties. Shilling et al (1990) estimated a 24% discount on residential condominium units in Louisiana in 1985 because most lenders expected to sell foreclosed properties quickly and avoid the holding cost. Forgey et al (1994) found a high foreclosure discount of 23% in Arlington between 1991 to 1993 because sellers wanted to reduce the holding cost and shorten listing time. William and Marvin (1996) also estimated a 22% discount on foreclosed apartment complexes sold in Phoenix in 1993 and 1994 because of meeting regulatory requirements related to the risk. Pennington-Cross (2006) concluded that foreclosed single-family properties appreciate less than the price of non-foreclosed properties. The foreclosure discount is sensitive to housing conditions, legal constraints and loan characteristics, but the average discount is 22% in the US metropolitan area. The longer a lender owns a foreclosed property, the larger the foreclosure discount.

Springer (1996) used single-family data in Arlington, from 1991 to 1993, as Forgey et al (1994). He found that if seller motivation was controlled, the discount would be around 5%. Carroll et al (1997) argued 23% discount was too high. They controlled the neighbourhood effects further, and they found that the discount on residential property in Las Vegas was 12.18% to 13.96%. They controlled the location by postcode and the discount was 8.45% to 9.72%. Furthermore, they found that by controlling for the foreclosure/non-foreclosure variable in advance, the discount would be smaller, ranging from 0.17% to 2.58%. Clauretie and Daneshvary (2009) agreed with the opinion of Carroll et al (1997). The authors considered the characteristics of property condition, occupancy status and cash transactions, finding that as much as one-third of the negative effect of foreclosure status could be attributed to previous associated characteristics that also negatively affected price in Las Vegas from 2004 to 2007. Daneshvary et al (2011) estimated a short-term discount, 10% to 19%, on distressed property in the “crashed” Las Vegas market.

No matter what discount there may be, foreclosure property is definitely a “bad” asset. Its TOM is expected to be longer than ordinary property as previous literature mentioned. This study focuses on

the process after AMC's get NPAs and NPLs with the study being quite different from previous research.

Dispositions of NPAs in Taiwan

In Taiwan, AMC's do not directly put the NPL properties on the open market. They always try to sell them either through future auctions or negotiation in private while removing the liens and other debts.

Previous studies discussed the relationship between the TOM and sale price for general property. In an ordinary market, sellers generally adopt a passive attitude after they have appointed a broker to sell the property and will rarely intervene in the marketing of it. In contrast, the NPAs are always stigmatized by the fact that they are non-performing loans, returning less income and have below average condition. AMC's recognize they need to be more active in dealing with NPAs by the way of debt negotiation, voluntary sale and/or holding to maturity. In addition, the NPAs market is less open to the public in Taiwan. There are less buyers and the information to investors is limited. If the disposal time can be extended, potential buyers would have more opportunity to explore the market and to get more information. Accordingly, increasing exposure may increase the number of potential buyers and reap higher returns than anticipated. Thus, from the perspective of asset holders, a longer TOM may raise the rate of return as it increases the opportunity cost.

Furthermore, NPAs which have special features or have been owned by separate owners for a long time could be improved and have their value enhanced through the assembly of separate real estate interests. Although this may prolong the TOM, it will help increase the asset value. AMC's may initiate various active measures, such as applying to the court to remove title encumbrances or to terminate existing occupation leases and/or implement a property management policy. Thus, in order to increase the sale price and stimulate the willingness of investors, AMC's are often willing to endure longer time to go through the required legal procedures to remove or negotiate with the occupiers.

Poorly managed income-producing NPA properties often have multiple debtors' problems. AMC's will try to restructure the management to improve the cash flow capabilities of the NPAs. The successful application of a strategy like this will stimulate more interest from investors and more incentive to potential buyers. Therefore, through the various value enhancement strategies, the disposal price may increase notwithstanding that the TOM also increases. In other words, auction is the more easy and popular strategy for AMC's because it takes a shorter time than other strategies. In contrast, value enhancement strategies are a high performance mechanism although taking longer.

Considering the special aspects of the NPAs platform and market mechanism, this study categorizes NPAs as an "atypical property". Under such circumstances the relationship between the NPAs disposal price and the TOM would be difficult to prove, as argued by Pryce and Gibb (2006). Miller et al (1978) wonder if an increase in TOM would also translate into an increase in the disposal price.

This paper will analyse the NPAs sales data from an AMC in Kaohsiung City and conduct an in-depth exploration into the factors associated with the sales and TOM. This study is expected to make a positive contribution to the development of NPAs disposal mechanisms.

METHODOLOGY

Sirmans et al (2005) noted that the natural logarithm of the price will tend to be a normal distribution and reduce heteroscedasticity problems (Allison, 1999). Söderberg (2002) found that a

semi-log-linear model results and the actual situation are more consistent and relatively stable. Vanderford et al (2005) found that a semi-log-linear model generally performs better. In order to estimate the relationship of disposal price and disposal duration, disposal price is used as a dependent variable and disposal duration (TOM) as an independent variable. The other variables are property characteristics.

The basic regression model can be expressed as:

$$\ln DP = \beta_0 + \beta_1 \cdot TOM + \beta_2 \cdot auction + \sum_{i=3}^m \beta_i \cdot PC_i + \sum_{i=m+1}^n \beta_i \cdot D_i + \varepsilon$$

Equation 1

In Equation 1, β_0 is the constant term, ε is assumed to be the residuals that comply with normal distribution and the expected value of the error term is 0. TOM refers to the days AMCs needed from purchasing the NPAs to completing the disposal, which may be positively or negatively correlated with sale price (Sirmans et al 2005). It is intended to illustrate higher benefit in the deposition of NPAs in Taiwan. Therefore, positive correlation with disposal price is expected. The strategies of auction and value enhancement are quite different in Taiwan. In the analysis, a dummy variable value of “1” is used for “auction”. A value of “0” is used if the disposal is by value enhancement strategies (i.e. disposal strategy other than auction) which includes but is not limited to debt negotiation, voluntary sale or management to improve the cash flow capabilities of the property. Due to the limitation of information available, the physical characteristics were adopted. The corresponding variables include lot area, building area, building type, building age and districts. The expectation of the physical characteristics is as usual.

To observe if the disposal strategy impacts disposal price and duration, an “auction” variable was included in the model. If it is statistically significant then the data will be separated into two groups to observe the relationship of disposal price and TOM in more detail.

In this study, the TOM and disposal price are selected as the dependent variable and independent variable, respectively, in the regression analysis. That means the TOM and disposal price are mutually influenced. Therefore, this study uses the 2SLS regression method which Clauretie and Daneshvary (2009) and Johnson et al (2009) had previously adopted. The disposal price and the TOM are the endogenous variables and the others are the exogenous variables.

The 2SLS regression can be expressed as:

$$\ln DP = \beta_0 + \beta_1 \cdot TOM + \beta_2 \cdot LA + \beta_3 \cdot BA + \beta_4 \cdot AGE + \beta_5 \cdot BT + \sum_{i=6}^m \beta_i \cdot D_i + \varepsilon$$

Equation 2

$$TOM = \lambda_0 + \lambda_1 \cdot LA + \lambda_2 \cdot BA + \lambda_3 \cdot AGE + \lambda_4 \cdot BT + \lambda_5 \cdot INT + \lambda_6 \cdot DP + \sum_{i=7}^n \lambda_i \cdot D_i + \mu$$

Equation 3

where:

- DP represents disposal price;
- TOM represents disposal duration;
- LA represents lot area;
- BA represents building area;
- D represents district;
- AGE represents building age;
- BT represents building types; and
- INT represents interest rate.

The relevant literature and the availability of other data help determine other variables in the model. The lot area and the building area account for different conditions of plottage or plattage (Colwell and Munneke 1997). In this study, the properties concerned are residential buildings located in Kaohsiung City which are mainly non-single dwelling properties and rarely oversized, thus the plattage related problems can be avoided. Beside the characteristics, the most important variables are age and “TOM”. The studies by Anglin et al (2003) and Allen et al (2005) indicated that building age significantly affects property price and the TOM.

This study tests whether, as lot area and the building area increase, so does the disposal price as well as the TOM. It also tests whether, as the building age increases, the disposal price becomes less and the TOM becomes longer. Since the legal rights of non-single dwelling property are far more complicated than a single dwelling property, it is expected that the price of non-single dwelling property will be relatively lower and the TOM will be relatively longer.

Inaltekin et al (2011) showed that both the expected TOM and sale price decrease as interest rate increases. However, after using the trial and error method, it was found that interest rate is not directly significant to the disposal price but is more significant to TOM in Kaohsiung City. Therefore, interest rate was considered to be an instrumental variable only. In regard to the district variable, a value of “1” is given to the subject administrative area and a value of “0” is assigned to other areas. Table 1 outlines the expected sign of the variables used in the model.

Independent Variable	Dependent Variable		Description
	DP	TOM	
DP		–	The sale price.
TOM	+		The time needed from the purchase of the NPA to the completion of its disposal, measured in days.
BA	+	+	The building area of NPA, measured in “ping”. 1 “ping” = 3.3058sqm.
LA	+	+	The lot area of NPA, measured in “ping”. 1 “ping” = 3.3058sqm.
BT	–	+	A dummy variable with a value of “1” for an apartment unit and 0 for a single dwelling house.
AGE	–	+	Time calculated from the date of construction of the building to the date of its disposal, calculated in years.
INT		+	The yearly interest rate measured in %.

Expected sign for each empirical variable of 2SLS

Source: Authors

Table 1

There are 10 exogenous variables (K=10) in the model with 2 endogenous variables (m=2) and 8 exogenous variables (k=8) in Equation 2 and 9 exogenous variables (k=9) in Equation 3. On the

basis of $K - k \geq m - 1$ in Equation 2 and Equation 3, the order condition of the 2SLS model is determined.

This study is based on 434 defaulted mortgaged residential properties of NPAs from 2003 to 2006. During this period the market condition in Kaohsiung City was relatively flat. In order to avoid the influence of time and inflation, this study uses the adjusted price of NPAs disposition based on the indicators published by Sinyi Real Estate Agent. These transactions are NPL disposals from a single AMC during the study period. In the NPAs portfolio there are some assets that may have not been disposed of successfully. Due to the difficulty in obtaining data concerning these transactions, they are not included in this empirical analysis.

In this period, the AMC bought the NPLs from the lenders and sold them by auction and other than auction via value enhancement strategies, such as debt negotiation, voluntary sale and restructuring the management to improve the cash flow capabilities. Once the transactions with missing values or abnormal data were removed, the data used for the actual empirical analysis is 382 cases, 311 for auction and 72 for value enhancement strategies. The descriptive statistics for the continuous variables is shown in Table 2.

Data set	Variables	Minimum	Maximum	Mean	Standard Deviation
All sales	LnDP	11.57	17.18	14.24	0.9
	TOM	20	865	356	190
	LA	0.31	196.06	11.83	18.21
	BA	6.22	255.00	43.85	35.8
	AGE	8	40	14.65	7.09
Auction strategy	LnDP	11.57	17.18	14.25	0.91
	TOM	20	865	366	194
	LA	0.31	196.06	12.83	19.99
	BA	6.22	255	44.14	37
	AGE	8	40	14.49	7.12
Value enhancement strategies	LnDP	12.64	16.92	14.19	0.87
	TOM	76	712	312.91	165.24
	LA	0.38	53.25	9.14	10.01
	BA	7.00	161.86	42.55	30.05
	AGE	9	39	15.33	6.96

Note: see description of variable full name in Table 1

Descriptive statistics on the continuous variables

Source: Authors

Table 2

EMPIRICAL ANALYSIS

The empirical analysis results are shown in Table 3. For residual test, the P-P plots are close to a 45-degree slanting line, showing that the normality assumption is likely to be true. The F-value tested by the ordinary least squares regression model is 39.195. It indicates that at 1% significant level, the regression model's explanatory capability is acceptable. In regard to the goodness-of-fit and model validity, the adjusted coefficient R^2 is 0.580 showing that the model's goodness fitting is acceptable.

Variables	Coefficients	t-value	Significance P-value	Variance Inflation Factor(VIF)
Intercept	14.0825	13.1826	0.000	
Auction	-0.1524	-1.9161	0.056	0.039
TOM	0.0003	1.8091	0.071	1.149
LA	0.0080	3.8785	0.000	1.487
BA	0.0157	15.6385	0.000	1.301
BT	-0.2175	-3.025	0.003	1.272
AGE	-0.0083	-1.7185	0.087	1.177
INT	-13.5879	-0.4712	0.638	1.206
Sanmin	0.2432	3.0853	0.002	1.403
Lingya	0.1438	1.3991	0.163	1.263
Gushan	0.9552	3.7242	0.000	1.069
Cianji	0.2181	1.6276	0.104	1.198
Cianjhen	0.1672	1.5839	0.114	1.242
Sinsing	0.5526	3.2279	0.001	1.088
F-value	39.195	Adj-R ²	0.580	

Results of the disposal price as the dependent variable

Source: Authors

Table 3

The results show that the significant variables are auction, TOM, lot area, building area, building type and building age. The coefficient sign is as expected. However, interest rate is not found to be significant to disposal price. The reason is probably that the volatility of interest rate is very small in Taiwan because of government control. Contrary to the general expectation, the coefficient of "Building Age" is positive, although not being significant. The discrepancy is due to older buildings having redevelopment potential and thus selling at a higher price (Liang 2012).

The relevant properties in Sinsing District are zoned commercial use, Sanmin is a pleasant and stable residential district and Gushan District is located in a new development area with these three districts having significant coefficients.

As mentioned before, the impact of auction strategy and value enhancement strategy is quite different. Since the auction variable is found to be statistically significant at 10% level, the data was separated by disposal strategy into auction strategy and value enhancement strategy to test whether value enhancement strategies would enhance the disposal price. The empirical results are shown in Table 4.

The F-value tested by the 2SLS regression model for both strategies are 45.5368 and 12.0797. They indicate that at 1% significant level, the regression model's explanatory capability is acceptable. In regard to the goodness-of-fit and model validity, the adjusted coefficient R² is 0.565 and 0.577 showing that the model's goodness fitting is acceptable. Model 1 shows a negative coefficient for "BT", whilst a positive coefficient is found in Model 2. The difference is probably due to Kaohsiung residents preferring a house to an apartment. Therefore, while houses are more likely to be disposed by auction, apartments need to be sold via value enhancement strategies.

Variables	Auction Strategy			Value Enhancement Strategies		
	Coefficients	t-value	Significance P-value	Coefficients	t-value	Significance P-value
Intercept	13.3611	63.2113	0.0000	12.8275	31.4152	0.0000
TOM	0.0001	0.1553	0.8767	0.0019	1.9736	0.0527
LA	0.0100	5.0497	0.0000	0.0066	0.7105	0.4800
BA	0.0153	13.9439	0.0000	0.0211	6.8683	0.0000
AGE	-0.0036	-0.7125	0.4767	-0.0165	-1.4276	0.1583
Sanmin	0.1835	2.2350	0.0262	0.2956	1.6891	0.0961
Lingya	0.0648	0.5947	0.5525	0.1358	0.5705	0.5703
Gushan	0.7933	2.6811	0.0077	1.4077	2.0519	0.0443
Cianji	0.1842	1.3512	0.1777	-0.6760	-1.4149	0.1619
Cianjhen	0.2057	1.9900	0.0480	0.0446	0.2180	0.8280
Sinsing	0.3484	1.9092	0.0572	1.4139	3.0925	0.0029
F -value	45.5368			12.0797		
Adj-R ²	0.565			0.577		

Results of 2SLS under different disposal mechanisms

Source: Authors

Table 4

Disposal price should be lower when a court auction fails in the first instance, because in Taiwan repeat auctions are subject to a statutory requirement that the property must be offered for sale at a lower reserve price. However, Table 4 demonstrates that the impact of TOM on the price is not significant. Nevertheless, the conditions affecting an NPA auction are different from a general property auction where a longer duration results in a lower price.

As for value enhancement strategies, the empirical result shows that the TOM and disposal price are positively correlated at 1% significant level. This is consistent with the findings of Trippi (1977) and Anglin et al (2003). It is, however, different from the general real estate market in Taiwan, where, when the TOM increases, the price decreases (Lee and Chang 1996). A result similar to Lee and Chang (1996) was found for auction strategy only, with other different results due to the addition of the value enhancement strategy which is quite different from previous research. In order to dispose NPAs at a relatively high price when the TOM increases, AMCs must do something different from the sale of ordinary properties in the general market.

In other words, the characteristics of NPAs are not necessarily the same as those of ordinary real estate. AMCs in Taiwan are creditors only and do not possess ownership rights of the property concerned. In addition, the market is less open to the public and ordinary investors have limited information of NPAs. The participants are mainly other bidders (AMCs) for NPAs. This condition has an impact on the bidding and bargaining of NPAs. Furthermore, AMCs typically do not take the initiative to fix the sale prices for NPAs; therefore an inflated price that causes an increased TOM as described above does not usually occur with the disposal of NPAs.

In summary, the NPAs held by AMCs are initially only mortgage rights without guarantee of ownership, which is quite complicated. By extending the TOM, the assets market exposure may be increased. On the other hand, using legal procedures, it is possible to remove barriers, consolidate debt, reduce the complexity of the asset, promote its availability and thus enhance the value. That is consistent with the aforementioned empirical result, the longer the time on the market, the higher the sales price on NPAs.

CONCLUSION

This is the first study to examine the link between non-performing residential properties and TOM in Taiwan. The major difference from the disposal of ordinary property is that the condition of some NPA properties is below expectation requiring works to be done prior to disposal and it will prolong the TOM. It is found that accounting for the endogeneity of marketing time produces a negative and significant estimate of the price-TOM relationship. The increase in TOM provides an opportunity to execute value enhancement strategies and may help secure a higher disposal price.

The empirical results show that the professional strategy for enhancing sale value, excluding the stigma of NPAs, will be helpful in increasing the asset value and marketability. In contrast, the common strategies adopted for ordinary properties that are in bad condition include demolition and redevelopment or passively waiting for the property to be sold. These are not the options to be advocated. The Taiwanese experience reported in this paper shows that value increment can be achieved via the combination of longer TOM and value enhancement strategy. The finding may be helpful to resolve the NPL and NPA problems in countries due to the financial crisis.

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