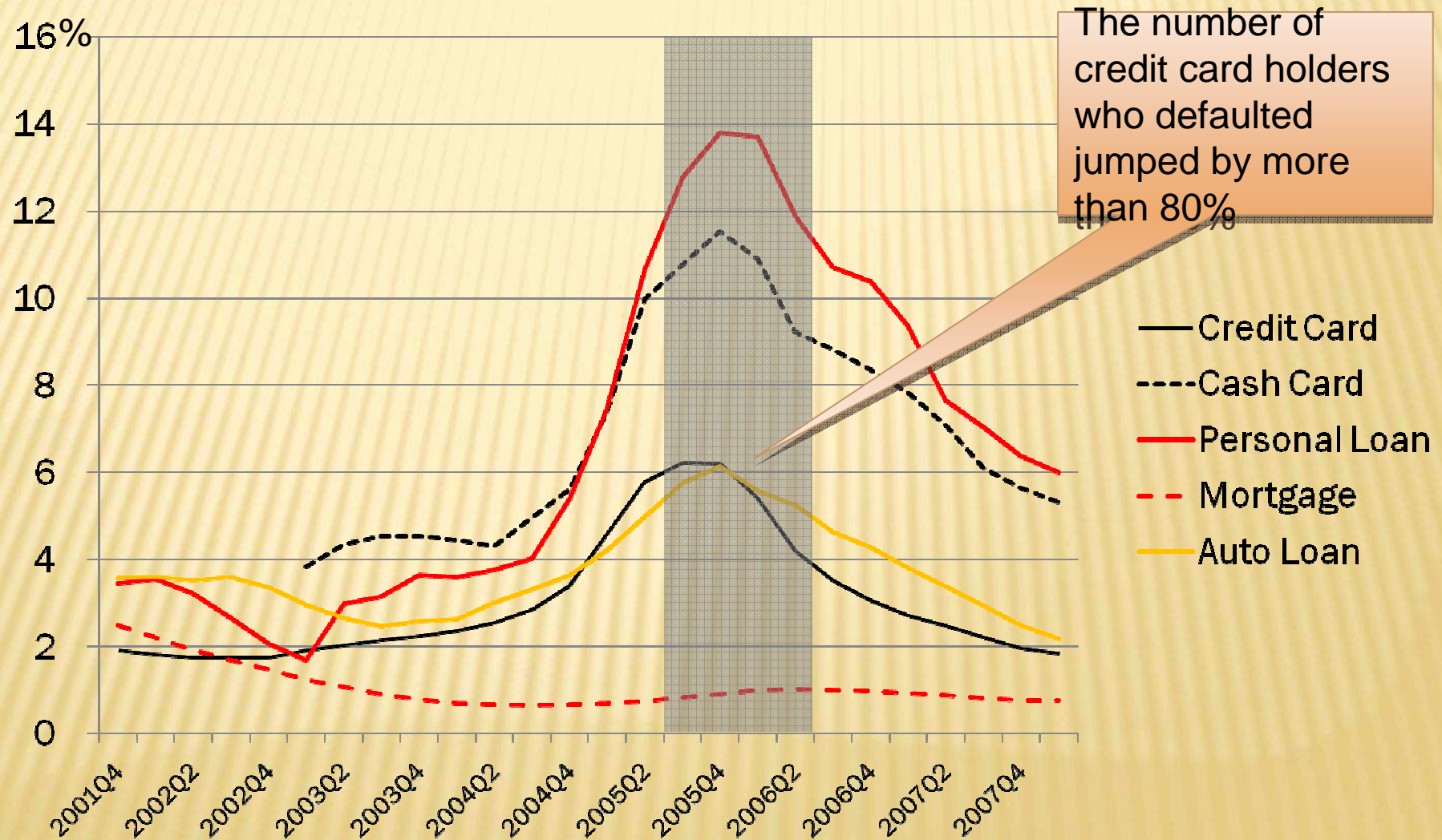

**The Moral Hazard Problem
of the Consumer Debt Negotiation Mechanism
During the Credit Card Crisis in Taiwan**

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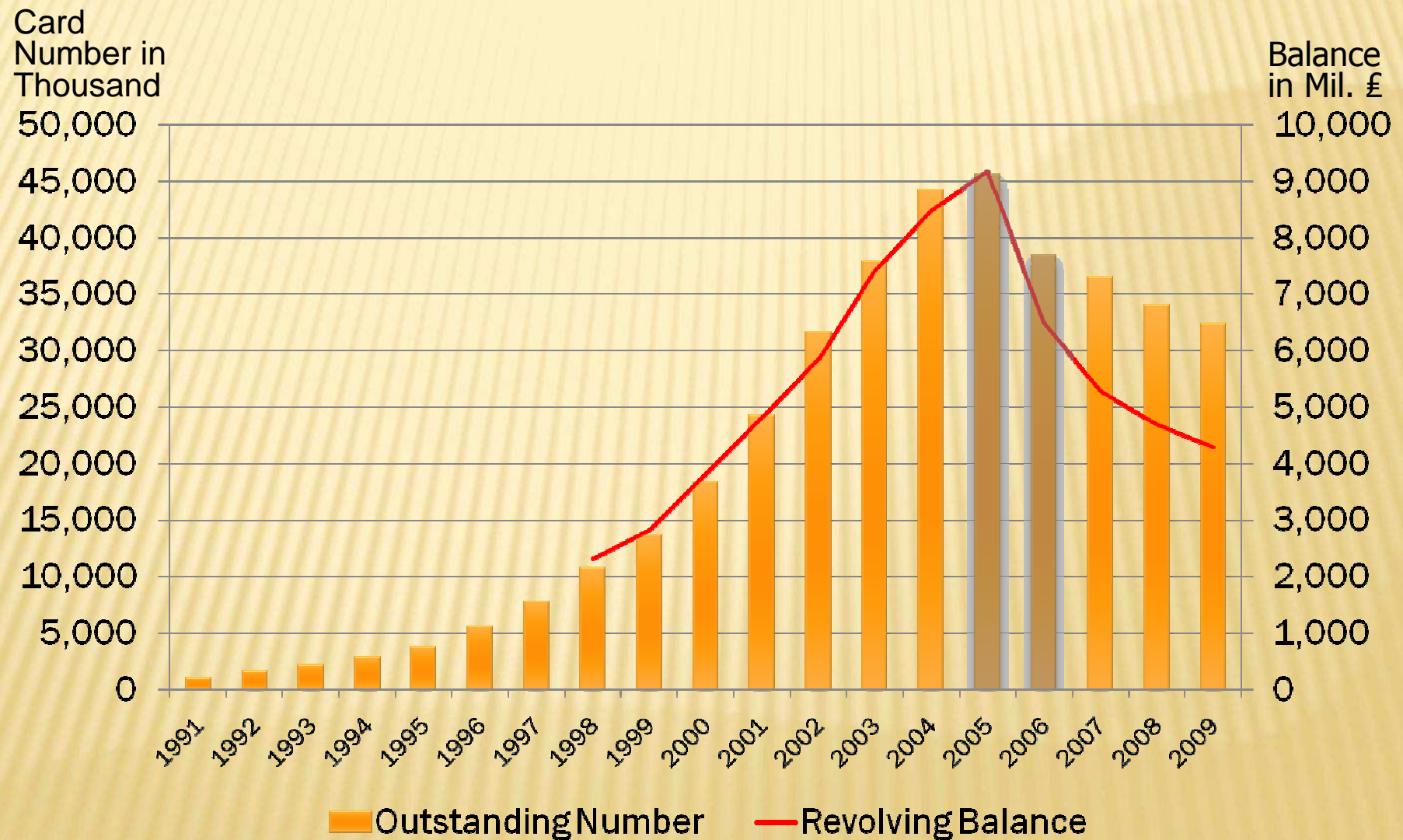
A Severe Credit Card Crisis in Taiwan



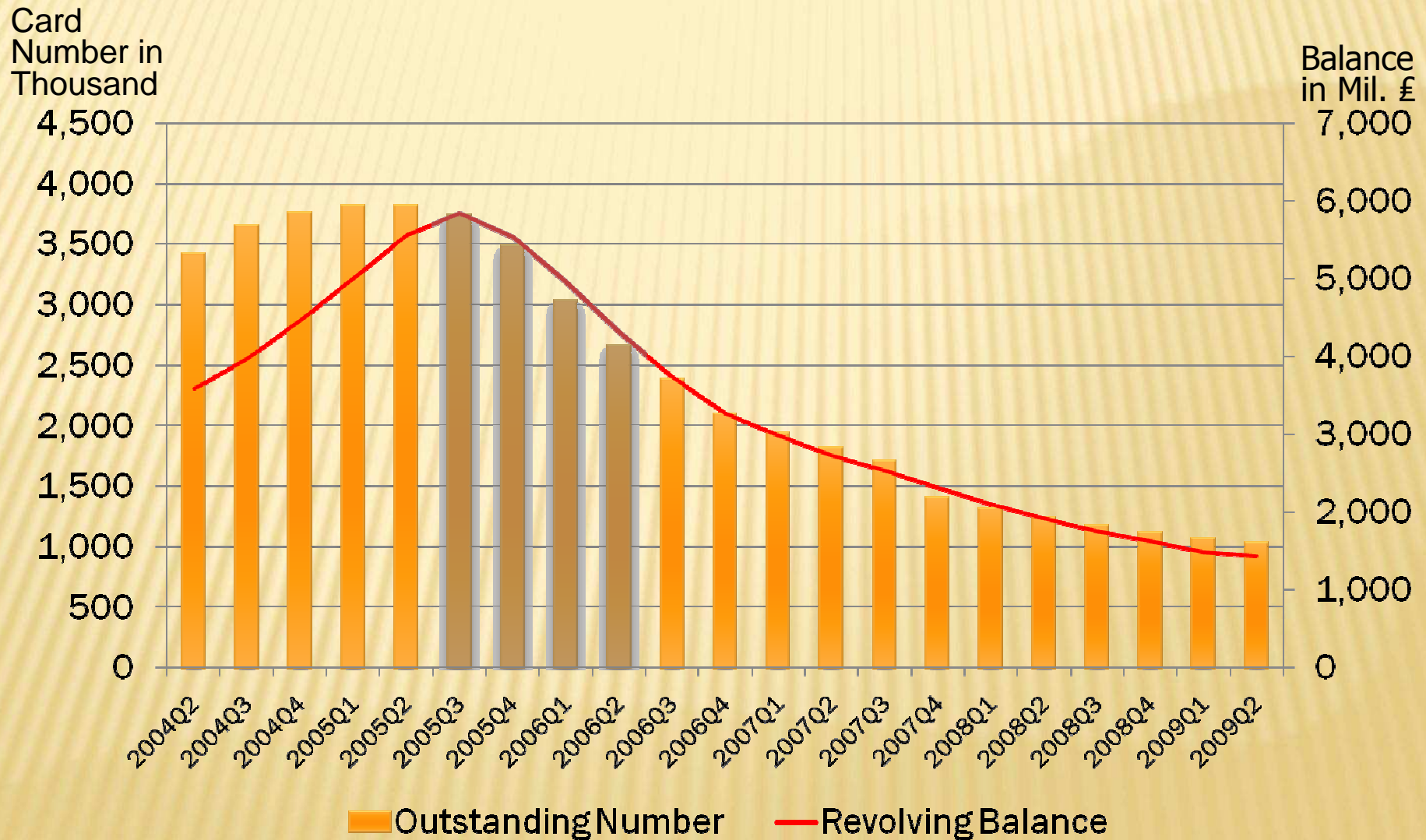
Taiwan's Macroeconomic Condition Is Not Bad



Taiwan's Credit Card Market



Taiwan's Cash Card Market



The Consumer Debt Negotiation Mechanism (CDNM)

Scope

- Introduced by the Bankers Association in Taiwan
- Only covers non-collateral consumer loan incurred before Dec. 15, 2005

Qualifications

- Debt must be greater than £5,555 (NT\$300,000)
- Settled annual repayment must be at least 15% of the total debt

Benefits

- Lower interest rate, longer payment period
- Possible exoneration of delinquency penalty
- Temporary suspension of collection process
- On stop service

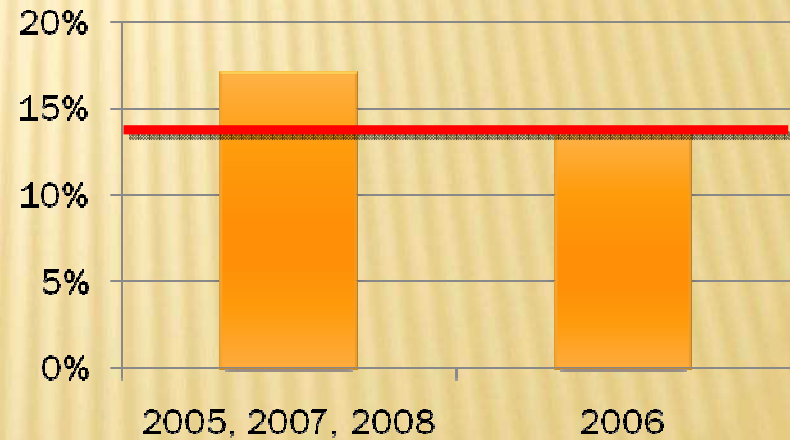
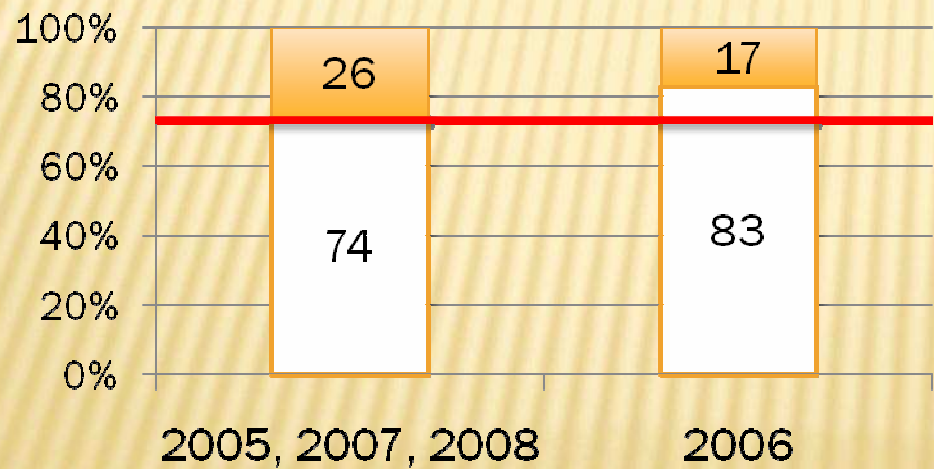
Among Those Who Default Both Credit Card and Mortgage

Defaulting credit card
= Losing willingness to pay



Defaulting mortgage
= Losing ability to pay

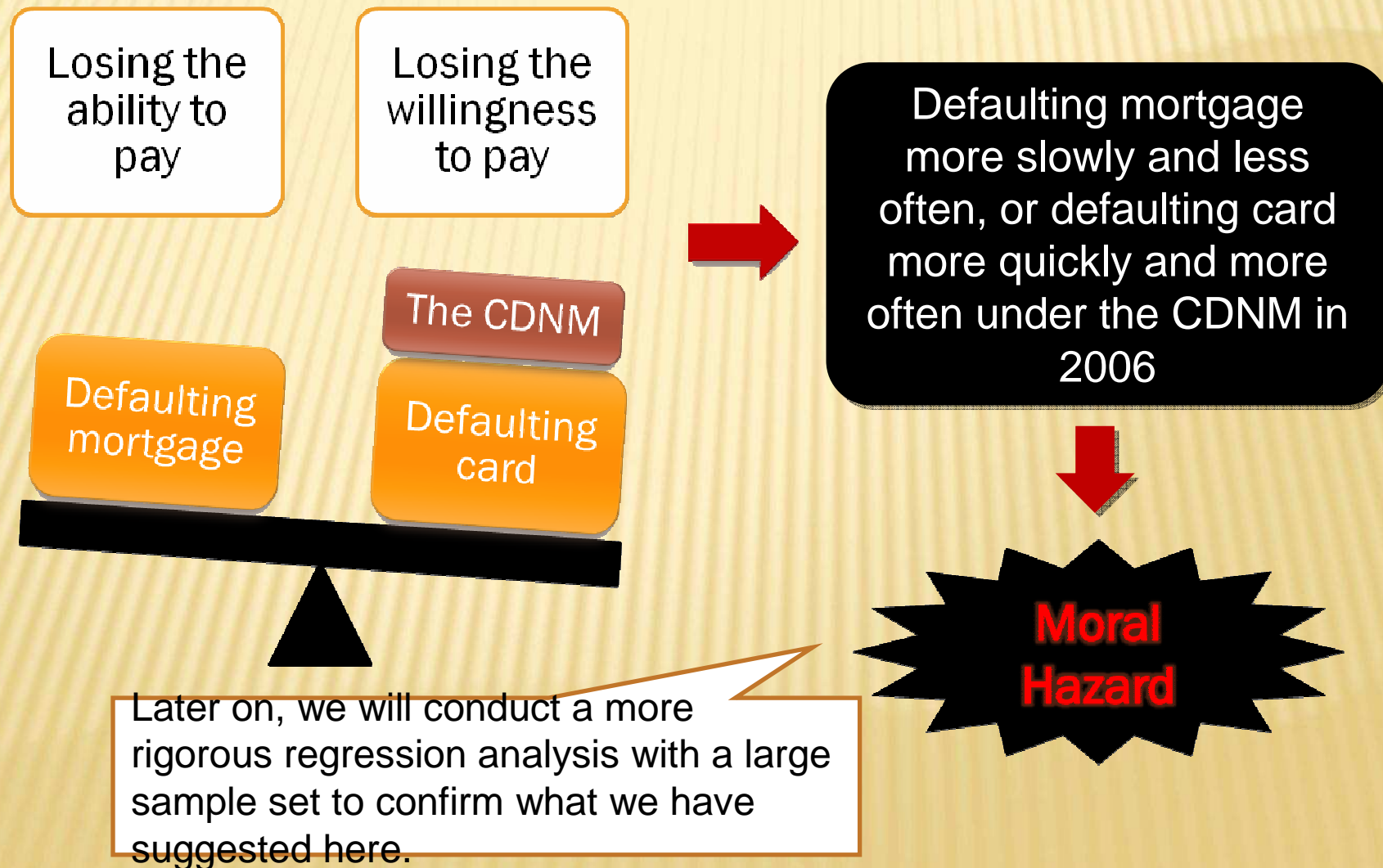
Most people lose their willingness to pay the debt way before they lose their ability to pay, but under the CDNM in 2006 ...



Defaulting card first
 Defaulting mortgage first

The mortgage default rate among defaulted credit card holders

The Moral Hazard Problem of the CDNM



The Basic Assumption of Our Analysis



We are not looking at the card default rate, which increased substantially in 2006 due to the credit card crisis.



Instead, what we are trying to do is examine the “time spread” between the mortgage default (ability to pay) and the card default (willingness to pay), which we believe can mostly be attributed to the CDNM.

The Empirical Analysis

We conduct an empirical analysis for the time spread of the credit default and mortgage default to find out whether the CDNМ encourages earlier credit card default. The dependent variable is the following dummy variable:

$$y = \begin{cases} 1, & \text{if card default is earlier than mortgage default,} \\ 0, & \text{otherwise.} \end{cases}$$

Our sample consists of all of those in Taiwan who default on both the credit card and mortgage over one year period beginning at the first days of 2005, 2006, 2007, as well as 2008. The sample size is 15,188 across four years, of which 77.5% were with $y = 1$. The most important explanatory variable is the dummy for the CDNМ, which is defined to be 1 if the CDNМ is implemented or, equivalently, if the observation dated between 2006/2 and 2007/1. The explanatory variables also include the amount of revolving balance, the revolving use ratio, the mortgage balance, the age, the gender, as well as an interaction term between the CDNМ dummy and the revolving use ratio. Many more explanatory variables have been considered but only statistically significant ones are discussed. The most important estimation result is that no matter how we incorporate various combinations of the explanatory variables, the CDNМ dummy is always strongly significant as we expect.

The Estimation Result of the Logit Regression Model

Parameter	Est.	s.e.	Est.	s.e.	Est.	s.e.	Est.	s.e.
CDNM Dummy	0.536	0.041	0.474	0.041	0.463	0.042	0.300	0.085
Revolving Balance	- -	- -	0.936	0.055	0.950	0.055	- -	- -
Revolving Use	- -	- -	- -	- -	- -	- -	0.284	0.082
Mortgage Balance	- -	- -	- -	- -	-0.039	0.005	-0.032	0.005
CDNM Dummy X Revolving Use	- -	- -	- -	- -	- -	- -	0.395	0.139
Age	- -	- -	- -	- -	- -	- -	-0.005	0.002
Gender	- -	- -	- -	- -	- -	- -	0.000 [#]	0.041
The Intercept	1.024	0.024	0.710	0.030	0.841	0.034	1.184	0.108

[#] Statistically insignificant ones.

Additional Estimation Result of the Logit Regression Model

We also consider another logit model in which the dependent variable is

$$y = \begin{cases} 1, & \text{if a card holder defaults on mortgage,} \\ 0, & \text{otherwise.} \end{cases}$$

Our sample consists of those in Taiwan who default on credit card over one year period beginning at the first days of 2005, 2006, 2007, as well as 2008. The sample size is 96,725 across four years, of which 15.23% were with $y = 1$.

Parameter	Est.	s.e.	Est.	s.e.	Est.	s.e.	Est.	s.e.
CDNM Dummy	-0.270	0.018	-0.248	0.018	-0.261	0.020	-0.354	0.040
Revolving Balance	- -	- -	-0.157	0.019	- -	- -	- -	- -
Revolving Use	- -	- -	- -	- -	- -	- -	0.681	0.041
Mortgage Balance	- -	- -	- -	- -	0.088	0.003	0.091	0.003
CDNM Dummy X Revolving Use	- -	- -	- -	- -	- -	- -	0.131	0.065
The Intercept	-1.592	0.012	-1.532	0.014	-1.848	0.016	-2.206	0.027