Appendix to: Breaking the Spell with Credit-Easing[☆]
Self-Confirming Credit Crises in Competitive Search Economies

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Appendix A. Appendix: Proof. of Proposition 4

First, let us investigate the set of REE as depending form α. For $\alpha < \underline{\alpha}(k)$ we have

$$\mu(R_r^*) = \pi^b(r; R_r^*, \omega)^{\frac{\gamma}{1-\gamma}} \pi^l(R_r^*; r) < \mu(\hat{R}_s) = \pi^b(s; \hat{R}_s, \omega)^{\frac{\gamma}{1-\gamma}} \pi^l(\hat{R}_s; s),$$

that is,

$$\gamma^{\frac{\gamma}{1-\gamma}}(1-\gamma)\max\left\{(\alpha y - \delta)^{\frac{\gamma}{1-\gamma}}, 0\right\} < \gamma^{\frac{\gamma}{1-\gamma}}(1-\gamma)(y-k-\delta)^{\frac{\gamma}{1-\gamma}},$$

which is true given $\bar{R} > 0$. We conclude that whenever $R_s^* = \hat{R}_s$ thenR_s^* is an REE.

For $\alpha > \bar{\alpha}(k)$, contracts that induce the safe adoption require an R lower than the cost of money δ, therefore R_r^* will be the unique REE for $\alpha > \bar{\alpha}(k)$.

For $\alpha \in (\underline{\alpha}(k), \bar{\alpha}(k))$ we have that $R_s^* = \bar{R}$. The relevant equation for $R_s^* = \bar{R}$ to be unique REE is

$$\mu(R_r^*) = \pi^b(r; R_r^*, \omega)^{\frac{\gamma}{1-\gamma}} \pi^l(R_r^*; r) < \mu(\bar{R}|\rho = k) = \pi^b(r; \bar{R}, \omega)^{\frac{\gamma}{1-\gamma}} \pi^l(\bar{R}; s),$$

that is,

$$\gamma^{\frac{\gamma}{1-\gamma}}(1-\gamma)\max\left\{(\alpha y - \delta)^{\frac{\gamma}{1-\gamma}}, 0\right\} < \left(\left(y - \frac{k}{1-\alpha} - \delta\right)\left(\frac{\alpha k}{1-\alpha}\right)^{\frac{\gamma}{1-\gamma}}\right).$$

On the one hand, $\mu(R_r^*)$ is always monotonically increasing in α. On the other hand, $\mu(\bar{R})$ is always

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monotonically decreasing in α, given that:

$$\frac{\partial\left(\left(y-\frac{k}{1-\alpha}-\delta\right)\left(\frac{\alpha k}{1-\alpha}\right)^{\frac{\gamma}{1-\gamma}}\right)}{\partial\alpha}=\frac{(1-\alpha)\gamma(y-k-\delta)-2k\alpha}{\alpha\left(1-\alpha\right)^{2}\left(1-\gamma\right)}\left(\frac{\alpha k}{1-\alpha}\right)^{\frac{\gamma}{1-\gamma}}<0,$$

holds for $\alpha\in(\underline{\alpha},\bar{\alpha})$.[1] Hence, we can conclude that

$$\left(y-\frac{k}{1-\alpha}-\delta\right)\left(\frac{\alpha k}{1-\alpha}\right)^{\frac{\gamma}{1-\gamma}}=\gamma^{\frac{\gamma}{1-\gamma}}(1-\gamma)\max\left\{(\alpha y-\delta)^{\frac{\gamma}{1-\gamma}},0\right\},$$

defines a threshold $\hat{\alpha}(k)$, such that for $\alpha<\hat{\alpha}(k)$ $R_s^*=\bar{R}$ is the unique REE, whereas for $\alpha>\hat{\alpha}(k)$, R_r^* is the unique REE. The hedge case $\alpha=\hat{\alpha}(k)$ is the only one where two REE exist. To conclude, note that

$$\frac{\partial\left(\left(y-\frac{k}{1-\alpha}-\delta\right)\left(\frac{\alpha k}{1-\alpha}\right)^{\frac{\gamma}{1-\gamma}}\right)}{\partial k}=\frac{(1-\alpha)\gamma(y-\delta)-k}{k\left(1-\alpha\right)\left(1-\gamma\right)}\left(\frac{\alpha k}{1-\alpha}\right)^{\frac{\gamma}{1-\gamma}}<0$$

holds for $\alpha\in(\underline{\alpha}(k),\bar{\alpha}(k))$.[2] This implies that $\hat{\alpha}(k)$ has to be decreasing in k.

Let us now discuss the condition for an SSCE that is not REE. Suppose lenders play R_r^* and that $\alpha<\hat{\alpha}(k)$. By definition of SSCE their expectations about $\rho^*(R_r^*,\omega)$ are correct at the equilibrium, which implies that lenders know α but can have misspecified beliefs about k. In particular, for a $E[k]$ sufficiently high, such that $\hat{\alpha}(E[k])$ is sufficiently low, we can have $\alpha>\hat{\alpha}(E[k])$ which implies that lenders wrongly believe that R_r^* is the unique REE (i.e. the global maxima when evaluated by β).

On the other hand, R_s^* cannot be SSCE without being REE. Suppose such an equilibrium exists, then it would arise as a corner solution posted at the frontier $\bar{R}$ because it turns out that interior solutions $\hat{R}_s$ are always REE (i.e. the global maxima when evaluated by ϕ). Nevertheless, by definition of an SSCE, agents would have correct beliefs for local deviations from the equilibrium that, at the frontier, are indeed sufficient to induce safe project adoption. Therefore at an SSCE posted along the frontier $\bar{R}$, agents would know the actual α. Hence lenders can correctly forecast $\rho(R,\omega)$ at any R, and so they cannot sustain a safe SSCE that is not an REE. A contradiction arises.

Appendix B. Appendix: mapping model and policy

Appendix B.1. Mapping the model into the market for newly-generated ABS

Here, we discuss the mapping between our model and the market for *newly-generated* ABS. It is important to remark at the outset that our theory fits the case of primary market for the *newly-generated* ABS, whereas it does not apply to secondary markets, as the one for legacy CMBS. We will come back to this important point later.

[1]Note that $\alpha k/(1-\alpha(k))$ is increasing in α and $k\underline{\alpha}/(1-\underline{\alpha})=\gamma(y-k-\delta)$.
[2]Note that $k/(1-\alpha)$ is increasing in α and $k/(1-\underline{\alpha}(k))=\gamma(y-\delta)+(1-\gamma)k$.

a) Payoffs, liquidation and risk retention. We can think of a borrower as a financial company that collects a pool of illiquid loans that matures in one period.[3] Loans can be of two types: safe and risky. One unit of safe loans always yields one unit of capital plus receivables for a total of $1 + y$; risky loans instead yield $1 + y$ with a probability α, and only 1 otherwise. Collecting safe loans, in contrast to risky loans, requires a per-unit cost of k, which accounts for screening or opportunity costs needed to secure receivables y.

To liquidate its pool of loans, the borrower issues an ABS, i.e. an obligation which is backed by one unit of the pool of loans. This obligation is sold at 1 and will yield $1 + R$ in one period. However, the liability of ABS issuers (who formally issues the asset via an ad-hoc created special purpose vehicle) is limited to the value of the underlying pool of credits, so the borrower will be able to repay R only in the case that receivables y mature. Notice that the borrower also bears the risk of failure, which is consistent with the practice of ABS issuers to retain part of the risk in the attempt to signal the absence of asymmetric information. Indeed, note that in our model there is no asymmetric information on equilibrium outcomes, but only on out-of-equilibrium behavior.

c) The role of public information. A buyer of the ABS, i.e. the lender, does not observe the actual quality of the underlying credit, as well as the particular pooling and tranching strategy adopted by the ABS issuer. This generates counter-part risk in the market. In particular, in these markets, investors' valuation relies almost exclusively on the historical performances, which are published quite regularly and classified according to precise rating rules. In this sense, market conditions - and hence the offered R for a given class of ABS - are predetermined at the moment of the ABS generation and there is no credible way of signalling the quality of the underlying asset. Importantly, this institutional arrangement forces issuers to closely maintain the same ABS structure over time, as investors are typically reluctant to buy ABS for which there are no sound historical records.

However, an ABS issuer observes the market conditions at which it can sell its ABS. Therefore, pricing in the *newly-generated* market may affect the way issuers pack ABS, which ultimately determines their riskiness. This is a specific feature of primary markets; by contrast in secondary markets the riskiness of an asset is independent of agents' trade. The key mechanism of our theory therefore does concern only the *newly-generated* ABS market and not legacy CMBS.

c) Search and matching. Finally, our competitive search setting captures the fact that competition in ABS markets is mainly driven by prices, but there is no agent on the market that can trade infinite amounts.[4] On the one hand, borrowers cannot generate whatever quantity of ABS is demanded, since available credit (especially of AAA quality) is limited; on the other hand, buying ABS requires costly intermediation in specialized financial institutions and exposures are normally bounded by the availability of funds and other micro-prudential concerns.

Appendix B.2. Mapping optimal policy into TALF design

In this subsection we want to discuss how some key features of TALF on *newly-generated* ABS map into our optimal policy.

[3]Whether payments occur in one or several periods does not make any difference as long as the schedule of payments is fixed at the beginning of the contract.

[4]The interpretation of competitive search models as models of price competition with quantity constraints was originally introduced by Peters (1984). We thank Philipp Kircher for this reference. Note also that by pushing entry cost to zero, the model approximates Bertrand competition.

a) A contingent subsidy to ABS investors. TALF offered non-recourse loans against highly rated ABS with a 15% haircut. The non-recourse nature of the loan gave the option to the ABS investor to eventually default on the loan putting the ABS collateral back into the hands of the Fed. Thus, TALF constitutes a subsidy to ABS investors contingent on losses on the ABS value, where losses are defined as the ABS losing more than 15% of its market value.[5].

b) Ramsey implementation TALF relied on the purchases of ABS by private investors. The policy intervention did not undermine the ability of the private sector to price the new securities. In this sense, with the TALF the Fed did not substitute itself for the market, as with other more intrusive types of policies (e.g. direct purchases of traditional quantitative easing).

c) The subsidy was independent of specific terms of trade. In particular, the program did not require a particular amount or a particular level of coupon rates, so in this sense it was independent of the single trading actions of investors and issuers. Thus, as in our model, the evaluation of the pros and cons of TALF could be done by investors on a per-unit base.

d) TALF required explicit fiscal backing. With TALF, the Fed committed itself to being a buyer of last resort in the event of a further abrupt collapse of the market, taking tail risk that at that time the market did not want to take (but leaving first-order losses to private investors!). TALF required an explicit backing by the Treasury to allow the Fed to take up this risk.[6] In our model, we made the policy a self-financed one, which is of course a tighter requirement for policy intervention.

Appendix C. Appendix: Empirics

Appendix C.1. Data on ABS in the Automotive Industry

[Table 1 about here.]

The data that we have collected provides information on Asset Backed Securities (ABS) in the US automotive sector. The data include information on: Cumulative Losses with respect to the original Pool Balance, Interest Rates, Principal Amounts in US dollars. The information is collected for 9 issuers in the automotive sector, namely: BMW Vehicle Lease Trust, CarMax Auto Owner Trust, Ford Credit Auto Owner Trust, Harley-Davidson Motorcycle Trust, Honda Auto Receivables Owner Trust, Hyundai Auto Receivables Trust, Nissan Lease Trust, Nissan Auto Receivables Owner Trust, World Omni Auto Receivables Trust.

Every year, each of these companies delivers a variable number of tranches. For instance, World Omni in 2008 extended loans in two tranches (2008-A, 2008-B), while the same company extended only one tranche in 2009 (2009-A). As far as our analysis is concerned, we collected all the free available online information on tranches issued from 2007 till 2012, a time span which includes the introduction of the Term Asset-Backed Securities Loan Facility (TALF). Table C.1 reports the tranches sorted by issuers for which we have found information. Each of these Trusts issued loans of a different "Class" (or Asset Backed Notes): A1, A2, A3, A4, B, C and D. Obviously, the

[5]To be precise, one could consider the rate of the Fed loan as an uncontingent component of the TALF subsidy. However such a rate was generally high, relative to the historical coupon rate of ABS. This feature was intended to induce a smooth exit from the program (for further details, see Ashcraft *et al.* (2012)).

[6] In the words of Ben Bernanke on 13 January 2009: "Unlike our other lending programs, this facility [TALF] combines Federal Reserve liquidity with capital provided by the Treasury, which allows it to accept some credit risk" "The Crisis and the Policy Response", the Stamp Lecture, London School of Economics.

Principal Amount of these loans differs by Class, and each Class is also characterized by a different degree of risk (interest rate). It goes from the more secure loan with the lowest interest rate (A1) progressively to the riskier categories (A2, A3 and so on). The Trust will pay interest and principal on the notes on the 15th day of each month (or the next business day).

All the issuing entities listed in **bold** in Table C.1 were eligible for the TALF program. The number of tranches that were eligible varies by issuer. The program started on 25 March 2009. The tranches covered by the TALF program that are included in the database are sufficiently representative of the whole sample of Asset Backed Securities covered by TALF in the US automotive sector; more precisely, the sum of the loan amounts mentioned above represents around 46.5% of all Auto-ABS covered by TALF (calculations are our own, reference "TERM ASSET-BACKED SECURITIES LOAN FACILITY DATA" from FED). The data have been collected one piece of information at a time from prospectuses publicly available online. The major source utilized is *https://www.bamsec.com/companies/6189/208* where the majority of observations are available. The other sources are the issuers' websites which sometimes contain the Trusts' prospectuses.

Appendix C.2. Construction of the variables for the Empirical analysis

Cumulative Losses with respect to the original Pool Balance, $mL_{i,T,t}$. The cumulative net losses for each issuing entity and for every tranche refer to the total pool, which includes all risk classes. Therefore, data on losses are not available at disaggregated class level. The losses are reported monthly and the time span of monthly losses varies depending on the date Trusts are issued and the number of payments expected.

Rate Spreads, $\Delta r_{i,T}$. Interest rates vary within tranches according to seniority. For some Asset Backed Notes the loans are issued as a combination of fixed and floating components of interest rates. For instance, in the case of Ford Credit Auto Owner Trust 2007-A the Class A2 is divided into the 'a' and 'b' components, where the 'a' component extends loans with a fixed interest rate of 5.42% and the 'b' component has the floating rate of one-month Libor + 0.01%. In those few cases we calculate the weighted average of class A2, where the weights are the principal amounts in US dollars for each component and the floating component is substituted by the corresponding FED one-month Libor at the time when the first payment was made (source: *http://www.fedprimerate.com/libor.htm*) plus 0.01.

As an example of computation of rate spreads we use World Omni Auto Receivables Trust 2009-A where for the Classes A1,A2,A3 and A4 the calculated interest rate differentials are 1,17%, 2.43%, 2.88% and 4.67%, respectively, while the corresponding principal amounts in US million dollars are 163, 192, 248 and 147, respectively. Table C.2 gives an example of the structure of the data and how the information on Principal Amounts and Interest Rates are presented for each tranche in all prospectuses. The resulting weighted average of rate spreads for each Trust is $((1.17\% * 163m.) + (2.43\% * 192m.) + (2.88\% * 248m.) + (4.67\% * 147m.))/(163m. + 192m. + 248m. + 147m.)$.

[Table 2 about here.]

Principal Amounts in US dollars, $V_{i,T}$. Principal Amounts vary within Trusts according to the Class being considered. In our empirical exercise, it stands for a control; it is included as the sum of the Amounts within each Trust of all Asset Backed Notes. In the previous example for World Omni Auto Receivables Trust 2009-A, it enters the model as $(163m. + 192m. + 248m. + 147m.) = 750m.$

Appendix C.3. Descriptive statistics

A first look at the rough data gives a sense of the specific impact of the TALF on the ABS Auto market in the context of the general macroeconomic outlook. We report figures and discussion below. Here it is worth noting that the evolution of our sample suggests that the introduction of the TALF had a positive impact on the Auto ABS market, which was asynchronous to the evolution of the general US macro outlook. Looking at rough data, the naked eye can easily distinguish between two periods: a pre-TALF period where ABS interest spreads increase, issuance falls and losses are high, and a post-TALF where interest spreads dramatically fall and stay low, issuance recovers and losses decrease.

Figure C.1 plots the sum of $V_{i,T}$ across companies at each point in time T. Note the collapse of issuance at the end of 2008 and the following recovery in 2009 during the TALF window. Contrast this with the course of the dotted green line, which denotes the total value (y-axis on the left) of minimal risk loan issued by US banks in the same period. The contrast highlights that the recovery in the ABS auto market during the TALF intervention coincides with the lowest pick of the safest segment of the credit market in the US economy.

[Figure 1 about here.]

[Figure 2 about here.]

[Figure 3 about here.]

Figure C.2 plots the average $\Delta r_{i,T}$ across companies weighted for their issuance at each point in time T. Note the sharp increase of interest rate differentials at the end of 2008 and the following decrease in 2009 during the TALF period. Contrast this with the evolution of the dashed green line, which denotes the interest rate differential on minimal risk loan issued by US banks in the same period. From the comparison we note that the decrease in rate spreads in the automotive market during the TALF intervention is in stark contrast with a permanent increase in rate spreads in the safest credit market in the US economy, which occurred at the beginning of 2009.

Figure C.3 shows, for three representative companies, the evolution of the average $mL_{i,T,t}$ across time t relative to different issuance dates T. Note that the TALF period coincides with a drastic drop in average losses for each company. After TALF, losses never again reached the pre-crisis level. The figure also plots, with a dashed green line, the evolution of credit losses reported by all US banks in the same period. One can observe that while losses diminished in the AAA-Auto market, US banks were experiencing a rapid increase in delinquencies.

In each picture, the contrast with macro benchmarks – such as the ones represented by dotted/dashed lines in each figure – suggests that TALF had a specific effect in the ABS market that was asynchronous to the business cycle.

Appendix C.4. Other robustness tests

[Table 3 about here.]

In Table C.3 we quantify how the presence of Not-Offered-Notes (NON) in issuances may affect the results. To do this, we recalculate interest spreads by excluding NON, which we denote by $\Delta\tilde{r}_{i,T}$; we maintain company, data, security-life fixed effects and volumes as in our "Amounts" specification, but in addition we include the volumes of NON as controls and check for their differential impact.

We get about the same result and we conclude that the presence of NON does not significantly alter our estimates.

In our "pre-talf$_{NON}$" we perform the same "pre-talf" exercise as in the main text taking into account the NON notes. In analogy to NON specification, we recalculate interest spreads excluding NON and we include the amounts of NON as controls. The results are very similar to our original "pre-talf" specification.

In our "post-talf$_{NON}$" we perform the same "post-talf" exercise as in the main text taking into account the NON notes. In analogy to NON specification, we recalculate interest spreads excluding NON and we include the amounts of NON as controls. The results are very similar to our original "pre-talf" specification.

In Tables C.4 and C.5 we re-estimate all our specifications on two larger samples: i) all the A-rated notes, including floating rates and ii) the whole dataset, including B, C, D notes. The results are slightly less significant but the main findings are confirmed. We conclude that the exclusion of notes with floating rates and non A-rated notes did not affect our main results.

[Table 4 about here.]

[Table 5 about here.]

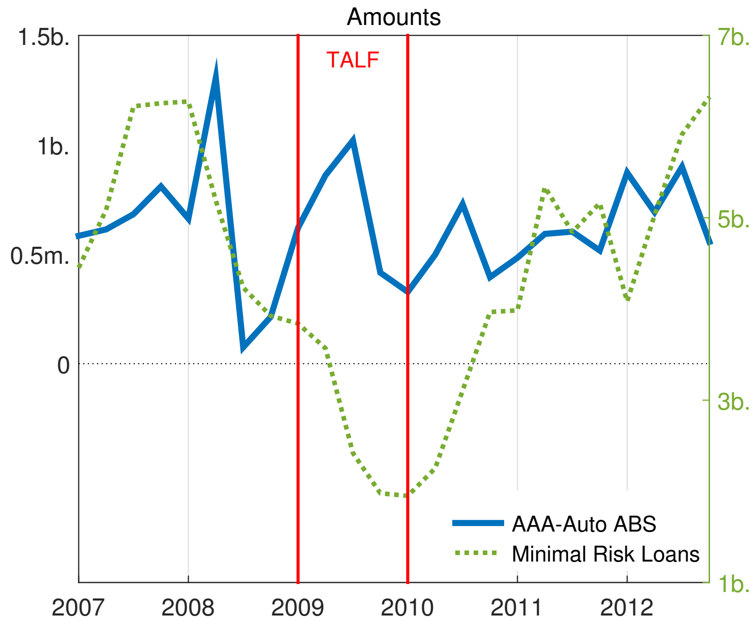

Figure C.1: Total quarterly principal amounts issued in our sample for different categories of riskiness; the dotted line denotes the total amount of minimal risk loans agreed during the same period by US banks (3-quarter rolling window; scale on the right axis; source: ST. Louis FRED dataset.

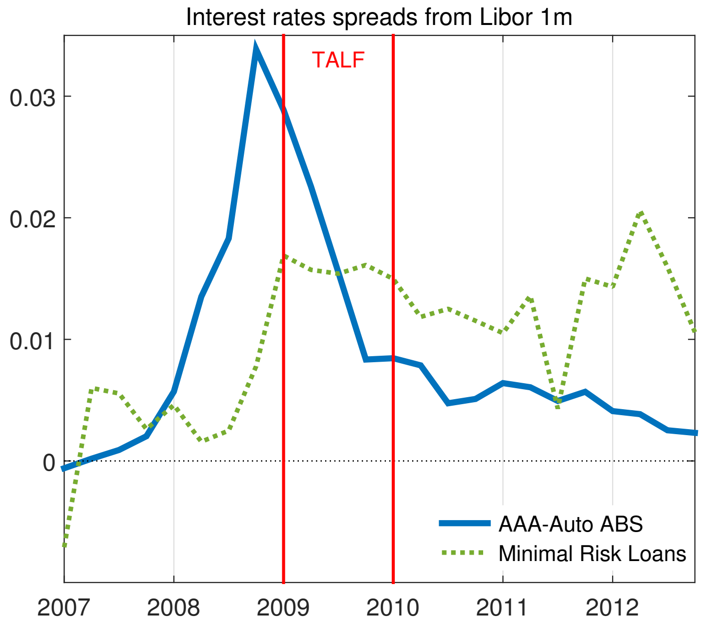

Figure C.2: Quarterly weighted average (each company is weighted by its relative issued amount) of interest rate differentials from one-month Libor for different categories of riskiness; the dotted line denotes the interest rate differential from the one-month Libor on minimal risk loans agreed during the same period by US banks; source: St. Louis FED dataset.

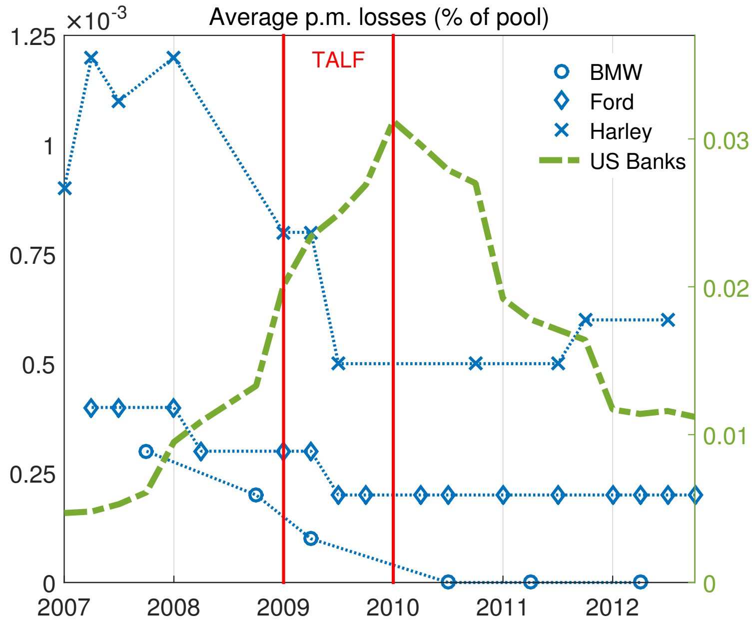

Figure C.3: Average monthly loss for each tranche in the sample plotted in its quarter of issuance; the dashed line denotes losses experienced by US banks in the same period (scale on the right axis).

	BMW	Carmax	Ford	Harley	Honda	Hyundai	Nissan Lease	Nissan Owner	World Omni
2007	2007-1	2007-1 2007-2 2007-3	2007-A 2007-B	2007-1 2007-2 2007-3	2007-1 2007-2 2007-3	2007-A	2007-A	2007-A 2007-B	2007-A 2007-B
2008		2008-1 2008-A 2008-2	2008-B 2008-B 2008-C	2008-1	2008-1 2008-2	2008-A	2008-A	2008-A 2008-B 2008-C	2008-A 2008-B
2009	**2009-1**	**2009-1** **2009-A** 2009-2	**2009-A** **2009-B** **2009-C** **2009-D** 2009-E	**2009-1** **2009-2** **2009-3** **2009-4**	**2009-1** **2009-2** **2009-3**	**2009-A**	**2009-A** **2009-B**	2009-1 **2009-A**	**2009-A**
2010	2010-1	2010-1 2010-2 2010-3	2010-A 2010-B	2010-1	2010-1 2010-2 2010-3	2010-A 2010-B	2010-A 2010-B	2010-A	2010-A
2011	2011-1	2011-1 2011-2 2011-3	2011-A 2011-B	2011-1 2011-2	2011-1 2011-2	2011-A 2011-B 2011-C	2011-A 2011-B	2011-A 2011-B	2011-A 2011-B
2012	2012-1	2012-1 2012-2 2012-3 2012-3	2012-A 2012-B 2012-C 2012-D	2012-1		2012-A 2012-B 2012-C	2012-A 2012-B	2012-A 2012-B	2012-A 2012-B

Table C.1: List of tranches for every issuing company (in **bold** the tranches that were eligible collateral under TALF).

Asset Backed Notes 2009-A	Class A1 Notes	Class A2 Notes	Class A3 Notes	Class A4 Notes
Principal Amount	$163m.$	$192m.$	$248m.$	$147m.$
Interest Rate	1.62%	2.88%	3.33%	5.12%
Payment Dates	Monthly	Monthly	Monthly	Monthly
Initial Payment Date	May 15,2009	May 15,2009	May 15,2009	May 15,2009
Final Scheduled Payment Date	April 15,2010	October 17,2011	May 15,2013	May 15,2014

Table C.2: World Omni Auto Receivables Trust 2009-A (04-2009; 1m. libor at 0.45)

Sample: A-fixed-rates notes, dep. var.: $mL_{i,T,t}$

	NON	pre-talf$_{NON}$	post-talf$_{NON}$
D_T	-0.414**		
	(0.166)		
$\Delta\tilde{r}_{i,T}$	-0.358***	-2.153**	1.532**
	(0.106)	(1.017)	(0.603)
$D_T\Delta\tilde{r}_{i,T}$	0.840**		
	(0.346)		
$V_{i,T}$	-0.001	-0.032***	-0.045
	(0.001)	(0.009)	(0.025)
$D_T V_{i,T}$	0.018**		
	(0.008)		
$\tilde{V}_{i,T}$	5.04×10^{-04}	5.24×10^{-04}	-2.28×10^{-04}
	(3.30×10^{-04})	(9.12×10^{-04})	(2.84×10^{-04})
$D_T\tilde{V}_{i,T}$	-4.73×10^{-04}		
	(4.08×10^{-04})		
R^2	0.6713	0.2408	0.4313
Obs.	4.845	535	557

Table C.3: Standard errors, which and reported in brackets, are clustered by issuing company. Estimates are multiplied by 100. Significance level: $*p \leqslant 0.1$,$^{**}\ p \leqslant 0.05$,$^{***}\ p \leqslant 0.01$.

Sample: A notes, dependent variable: $mL_{i,T,t}$

Variable	base	FEXs	Amounts	NON	pre-talf	pre-talf$_{NON}$	post-talf	post-talf$_{NON}$
D_T	-0.046***	-0.028**	-0.398***	-0.434**				
	(0.010)	(0.009)	(0.117)	(0.175)				
$\Delta r_{i,T}$	-0.953*	-0.417*	-0.382**		-2.095*		2.203***	
	(0.428)	(0.215)	(0.137)		(1.018)		(0.565)	
$D_T \Delta r_{i,T}$	2.026**	1.096**	1.006**					
	(0.751)	(0.448)	(0.385)					
$\Delta \tilde{r}_{i,T}$				-0.433***		-2.197*		1.532**
				(0.128)		(1.017)		(0.603)
$D_T \Delta \tilde{r}_{i,T}$				1.039**				
				(0.399)				
$V_{i,T}$			-0.002	-0.04	-0.042**	-0.047**	-0.042	-0.045
			(0.001)	(0.003)	(0.014)	(0.017)	(0.023)	(0.025)
$D_T V_{i,T}$			0.017**	0.019*				
			(0.005)	(0.008)				
$\tilde{V}_{i,T}$				6.42×10^{-04}		0.00001		-2.28×10^{-04}
				(3.75×10^{-04})		(0.00001)		(2.84×10^{-04})
$D_T \tilde{V}_{i,T}$				-4.42×10^{-04}				
				(5.07×10^{-04})				
R^2	0.1266	0.6626	0.6713	0.6730	0.3071	0.3117	0.3403	0.4313
Obs.	4.845	4.845	4.845	4.845	535	535	557	557

Table C.4: Standard errors, which and reported in brackets, are clustered by issuing company. Estimates are multiplied by 100. Significance level: $*p \leqslant 0.1, ** p \leqslant 0.05, *** p \leqslant 0.01$.

Sample: ABCD notes, dependent variable: $mL_{i,T,t}$

Variable	base	FEXs	Amounts	NON	pre-talf	pre-talf$_{NON}$	post-talf	post-talf$_{NON}$
D_T	-0.047*** (0.010)	-0.023** (0.008)	-0.404** (0.127)	-0.540*** (0.122				
$\Delta r_{i,T}$	-0.890* (0.401)	-0.376* (0.179)	-0.377** (0.123)		-2.095* (1.021)		1.807*** (0.454)	
$D_T \Delta r_{i,T}$	1.968** (0.714)	0.834** (0.335)	0.910** (0.362)					
$\Delta \tilde{r}_{i,T}$				-0.318** (0.099)		-2.281* (1.082)		0.834 (0.603)
$D_T \Delta \tilde{r}_{i,T}$				0.868* (0.381)				
$V_{i,T}$			-0.001 (0.001)	-0.007* (0.003)	-0.039** (0.013)	-0.042** (0.013)	-0.043 (0.026)	-0.051* (0.025)
$D_T V_{i,T}$			0.018** (0.006)	0.025*** (0.005)				
$Tot\tilde{V}_{i,T}$				2.16×10^{-04} (2.54×10^{-04})		0.001 (0.001)		1.12×10^{-04} (5.06×10^{-04})
$D_T V \tilde{A}_{i,T}$				$-9.84^{*} \times 10^{-04}$ (4.47×10^{-04})				
R^2	0.1249	0.6607	0.6694	0.6749	0.2894	0.2985	0.3172	0.4259
Obs.	4.845	4.845	4.845	4.845	535	535	557	557

Table C.5: Standard errors, which and reported in brackets, are clustered by issuing company. Estimates are multiplied by 100. Significance level: $^{*}p \leqslant 0.1,^{**}\, p \leqslant 0.05,^{***}\, p \leqslant 0.01$.