

Securitization and Volatility of Financial Transactions
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Abstract

The originator passing on the risks or sharing risks in financial transactions is the general end result of asset based securitization (ABS). It can be shown that volatility increases in at least three contexts. (a) The originator does not share the risk and consequently expands into high risk activities to increase his business. This depends on how consideration is defined at the time of securitization. (b) In an expanding market the originator and/or the special purpose vehicle (SPV) may find the risk adjusted return on securitization higher even with increasingly risky transactions. He will then expand into activities that increase the volatility of transactions. (c) The investor, who buys the pass through certificates (PTCs) issued by the SPV, may find securitized transactions more attractive relative to conventional financial instruments either due to lower transaction costs, shorter time horizon over which they can be recovered, or higher risk adjusted return. Even this has the effect of increasing volatility of financial transactions. We explore these and related issues in a simple contracting framework.

1. Introduction

The relatively rapid growth of the economy over the past few years created a high demand for finances. Conventional sources of finance, say the stock market and the banking sector, have not expanded in tandem and/or some transactions cannot be negotiated by using such instruments. In particular, many new firms are not listed on any stock market. Similarly, some transactions, like futures trading in commodities, are not as yet fully amenable to negotiation through the stock market. One of the reasons for this is the fact that institutions like the NCDEX are relatively new and cover only a few of these transactions.

Novel methods of finance and a variety of financial instruments dealing with such financial transactions emerged. Structured finance, securitization in particular, belongs to this category. The securitization process can be illustrated by the following. Consider the loans extended in the context of sale of cars or commercial vehicles. The company, say Tata Motors, who offers the requisite finance to individual buyers, may initially borrow from the bank². But the recovery can be only over an extended time horizon. Their quest for increasing business in a buoyant market will be set back if they have to depend on the banks for more loans. Securitization of receivables clearly offers a more attractive alternative because it enables the originator to increase the pool of finances and expand sales of the firm. The other reason for securitization may be the costs involved in the recovery of loans. The originator may feel that the transaction costs are too high if he

¹ This work was done during my tenure as a guest faculty at the University of Hyderabad, Hyderabad. I am thankful to B.Kamaiah and N.K.Sharma who initiated me to these studies. However, the responsibility for the contents is my own.

² Why does the firm undertake this instead of allowing the buyer to take the loan from the bank? One obvious reason is the reduction in transaction costs. The second reason may be the difficulty in the buyer obtaining the loan without adequate collateral.

undertakes the activity. Someone else, that has an advantage in handling such financial transactions, may feel that he can handle it more efficiently and profit from it. It would be more efficient if the underlying assets are transferred to such agents. For all practical purposes this is the genesis of securitization in a variety of contexts³.

A typical securitized transaction has the following structure. A firm, called an originator, puts together a pool of its receivables for securitization. Over the last few years, for instance, Tata Motors chose thirty different tranches of receivables from the sale of cars and commercial vehicles for securitization. The firm sells them to a special purpose vehicle (SPV, usually a trust) for a consideration that is normally a fraction of the value of receivables. This also entails transfer of property rights of the underlying assets. That is, the transaction should be a true sale that removes the assets from the balance sheet of the originator. This alone gives the SPV the right to collect the receivables. In his turn, the SPV issues pass through certificates (PTCs) to investors⁴ to recover the money paid to the originator as consideration⁵. Basically the SPV shares and/or transfers the risk to such investors.

Securitization also comes with a price tag as in the case of all other financial instruments. The investors use their saving to participate in these transactions. Even the non-bank financial institutions belong to this category. They may invest in the PTCs issued by the SPV either because the recovery is over a shorter time interval or because they expect a higher risk adjusted rate of return. In any case the SPV has to spend some money to collect the receivables.

The originator may be willing and able to take a certain amount of risk if he collects the receivables on his own. If the PTC investors and the SPV are expected to share the risk, as is the case under securitization, there is always a possibility that the SPV and PTC holders will not agree to so much risk. Risk reduction may then be a precondition to achieve any sort of securitization. Received contract theory also suggests that different

³ Commercial mortgage based assets belong to the same category though their recovery would be over a longer duration. Process flow securitization of capital assets, whose recovery is contingent on production and sale based on such assets, is somewhat different.

⁴ The reader may argue that the SPV may pay the necessary consideration, collect the receivables and derive greater profits. Issuance of PTCs then needs justification. Note that if the SPV collects the receivables on his own his costs will increase and he will not remain risk neutral. A risk averse SPV and the originator may then agree to net value maximization in choosing the consideration, the value of the pool of receivables securitized, and the number of items in the securitized pool. This alternative is not pursued here because conventionally the SPV is expected to share risks by issuing PTCs.

⁵ The small saver has many investment opportunities in a growing economy. Why would he invest in PTCs of a trust or NBFC that is not well known? The basic reason will be that such trusts consolidate all similar small savings and invest more efficiently than any one small saver can. The logic is similar to channeling saving through a stock broker or a holding company.

agents specializing in their respective expertise will reduce such volatility. However, the practical reality is that the SPVs tend to be more willing to accept the risk because they are better organized in collecting such receivables. The investors in the PTCs may also find this a more attractive option due to lower transaction costs, higher risk adjusted rate of return, or shorter horizons over which they can recover their investment. A general impression is created that all such structured finance activities, including securitization, derivatives and options, create a great deal of speculative activity. This is expected to increase market volatility. It appears that an analytical approach, based on contract theory, to understand the tendency to increased volatility is warranted. The rest of this paper attempts to develop such an analytical framework while developing appropriate concepts of volatility.

The analytical framework is set in a modified version of the principal agent models. It will be shown that volatility increases in at least three contexts. (a) The originator does not share the risk and consequently expand into high risk activities to increase his business. This depends on how consideration is defined at the time of securitization. (b) In an expanding market the originator and/or the SPV may find the risk adjusted return higher even with increasingly risky transactions. (c) The investor, who buys the PTCs issued by the SPV, may find securitized transactions more attractive relative to more conventional financial instruments as noted earlier. The framework developed here is rich enough to allow an analysis of several other channels through which volatility may increase.

2. Basic Framework

Consider a transaction in which an originator is securitizing a pool of receivables. A basic feature of such a pool is that the amount that can be recovered will not be the same for every transaction in the pool⁶. For analytical purposes it can be postulated that the recovery will be

$$r + u ; E(u) = 0, V(u) = \sigma^2$$

where r = average recovery, and

u = a random variable⁷ with expected value 0 and variance σ^2 .

For the present assume that σ^2 is independent of r ⁸.

⁶ The SPV may take possession of the asset if the original buyer defaults. However, there will be costs in recovering the original loan amount. The treatment of this alternative, in models of the nature presented in this section, will be symmetric.

⁷ It is generally argued that securitization must represent a true sale so that the assets can be removed from the balance sheet of the originator. However, depending on the original contract, there may be legal hurdles in the SPV collecting the receivables. The following case reported by the rating agency, Fitch India, will illustrate this. They were rating three tranches of mortgage loans securitized by Citi Bank. The SPV, Royal Trust, needed the help of Citi Bank to recover the receivables. In other words, a true sale may not be enough to make securitization successful. This may also be an aspect of the randomness.

⁸ It may be argued that the randomness is not with respect to whether or not the receivables can be collected. Instead, the difficulty may be reflected in the transaction costs involved in the recovery of receivables. The framework of this section, even if such

If the originator collects the receivables on his own he incurs a direct cost and the cost of the business lost due to the unavailability of finances. This may be represented by $r^2/2\varepsilon$ where ε = his efficiency in managing the collection of receivables.

The gain to the originator will then be

$$g_0 = r + u - r^2/2\varepsilon$$

Assume that he is risk averse. Then, the value he associates with this transaction can be written as

$$v_0 = r - \lambda_0 \sigma^2 - r^2/2\varepsilon$$

where λ_0 = his degree of risk aversion

He can be expected to choose r to maximize v_0 . It results in⁹

$$r = \varepsilon$$

and the optimal value

$$v_0 = \varepsilon/2 - \lambda_0 \sigma^2$$

The alternative available to the originator is securitization. Consider the case where he claims a fixed fraction p of r as consideration. This is indeed the general practice¹⁰. The gain to the originator is¹¹

$$g_0 = pr + r^2/2\varepsilon$$

since post securitization he does not incur the cost of collection of the underlying receivables. This is entirely deterministic. Hence, its value to the originator is

$$v_0 = g_0$$

The SPV, in his turn, issues PTCs to collect pr . It is expected that the investor will provide this money through the purchase of PTCs. However, the SPV will eventually

a modification is incorporated, will yield identically the same results. The details will be left to the reader since the changes in the algebra are quite simple. A second aspect of this specification is also worth noting. The variance σ^2 will probably be lower if the securitized transaction is rated by an agency. However, this can be achieved only at a cost. The originator may deal in more risky assets and thereby increase the volatility of such financial transactions. This will not be pursued further in this study.

⁹ It may be argued that a risk averse firm will choose a lower r . This can be built into the model in one of two ways. First, σ^2 is an increasing function of r . Second, the costs of recovery depend not only on r but on the nature of receivables. That is, the costs of recovery may themselves depend on σ^2 . However, such extensions do not seem to offer any additional insights regarding the volatility of the underlying financial transactions.

¹⁰ One of the prevalent practices is to make it equal to the present discounted value of r after some adjustments for receivables outstanding beyond the stipulated time at which an installment must be paid.

¹¹ The gain to the originator is not merely the collection of the consideration based on the pool of receivables that are securitized. It also consists of the additional business that he can generate once the consideration is received. The following analysis does not take this aspect into account explicitly. However, it should be noted that securitization increases r and the propensity of the originator in offering more loans even if they tend to be more risky.

collect $r + u$ and pays a fraction $q(r + u)$ to the investors¹². Consequently, the gain to the investors is¹³

$$\begin{aligned} g_i &= q(r + u) - pr \\ &= (q - p)r + qu \end{aligned}$$

In general, the investors are risk averse. Hence, the value of the transaction to them is

$$v_i = (q - p)r - \lambda\sigma^2q^2$$

The investors are not sure about the rate of return that they can expect and/or repayment investment. They can be expected to choose q ceteris paribus. This choice results in

$$q = r/2\lambda\sigma^2$$

Note that q increases with r and decreases with an increase in λ and/or σ^2 .

The SPV receives an amount $(1 - q)(r + u)$. However, he must spend some money to collect the receivables. Denote this by

$$r^2/2\delta \text{ where } \delta = \text{his efficiency}$$

In general, the SPV does not gain anything unless $\delta > \epsilon$. His gain can be denoted by

$$g_s = (1 - q)(r + u) - r^2/2\delta$$

In general, the SPV is not taking any risk because he is not paying pr . Instead, he makes the investor pay for it. Hence, he is not very sensitive to the risk of losing that investment.

Further, the SPV will be dealing with many such transactions. Hence, he can balance the residual losses in one transaction against gains from another. It can therefore be surmised that he will be risk neutral. The value of g_s to the SPV may then be written as

$$V_s = (1 - q)r - r^2/2\delta$$

An efficient contract then requires that he maximize¹⁴

$$\begin{aligned} N &= v_i + v_s \\ &= (1 - p)r - r^2/2\delta - \lambda\sigma^2q^2 \end{aligned}$$

Two observations are in order. First, v_0 is not included in N since the originator, by claiming a fixed consideration, does not share the risk. Second, the SPV may only maximize v_s and eventually choose a Nash equilibrium contract. This can be shown to be less efficient (lower optimized N) compared to the present approach.

¹² The SPV may claim a fixed share $(1 - q)r$ and pass on the entire risk to the retail investor. It can be readily verified that such a contract is inefficient. The net variability will also be higher.

¹³ The originator, while considering the underwriting standards, may be prone to take more risk since he knows that he will securitize the pool of receivables and thereby pass on the risks to the SPV and/or the eventual investor. This will indeed provide him an opportunity to expand his business as well. Hence, it may be expected that the σ^2 post securitization will be larger. This, in itself, may be one source of greater volatility of securitized financial transactions.

¹⁴ Note that, for all practical purposes, the SPV is underwriting the issue of PTCs. For, he is required to pay pr to the originator whether or not he can attract investors to buy his PTCs. Hence, from a pragmatic viewpoint, he should place a value on that effort as well. Such a valuation will be equal to v_i . For, in a way, that is the opportunity value to the SPV if he has to accept the burden of underwriting that fails to attract investors. Hence, from the perspective of the SPV, the net value of the contract is the sum of v_s and v_i .

Surely, the SPV's first priority is not about how much he wishes to pay the investor. For, the SPV should first collect the receivables. Hence, it can be expected that he would be more worried about how much he can collect. The possibility that the SPV may not be in a position to collect all the receivables is at the apex of the likely default that the investor envisages. It would therefore be logical to expect the SPV to make the choice with respect to r , the quantum of receivables in the securitized pool¹⁵.

The SPV has to take the participation constraint of i , viz.,

$$q = r/2\lambda\sigma^2$$

into account while choosing r , i.e., the pool of receivables that he will buy. This choice results in

$$r = 2\delta(1 - p) \lambda\sigma^2 / (\delta + 2\lambda\sigma^2)$$

It may then be noted that the originator chooses p to maximize v_0 keeping the reactions of the SPV and the investors in perspective. This optimization results in¹⁶

$$p = (\varepsilon - 2\theta)/2(\varepsilon - \theta) < 1$$

where¹⁷

$$\theta = \delta\lambda\sigma^2 / (\delta + 2\lambda\sigma^2)$$

The optimized value of N becomes

$$N = \delta(1 - p)^2 \lambda\sigma^2 / (\delta + 2\lambda\sigma^2) > 0$$

It can also be verified that $q > p$ whenever $\delta > \varepsilon$. This is in consonance with the expectation in contract theory that the party taking more risk should receive a larger payment.

3. Volatility of Transactions

Observe that

$$V(g_i) = q^2\sigma^2, \text{ and}$$

$$V(g_s) = (1 - q)^2\sigma^2$$

where V is the variance.

Hence, the total variance of the financial transaction is

¹⁵ Note one finer point of analytical detail. Suppose we assign the choice of r to the investor and that of q to the SPV contrary to the argument in the text. It can be shown that such choices result in a lower net value N . That is, such a contractual choice would be inefficient. This reinforces the practical aspect of the assumptions made in the text.

¹⁶ The resulting value of p is not independent of δ . In practice, in repeated transactions the originator does not know the efficiency of the SPV. Hence, he would prefer a p independent of δ . It can be shown that this result will emerge if $v(u) = \sigma^2/\delta$. That is, a smart SPV can collect receivables more efficiently in this sense.

¹⁷ Observe that this inequality cannot be satisfied if $\varepsilon < \theta$. For, then, $p < 1$ if and only if $\varepsilon - 2\theta > 2(\varepsilon - \theta)$

This inequality cannot hold since $\varepsilon > 0$. It must also be noted that $\varepsilon > 2\theta$ if and only if $\lambda\sigma^2 < \delta\varepsilon/2(\delta - \varepsilon)$. That is, the analysis would hold only when $\lambda\sigma^2$ is sufficiently small. One reason for this is that $0 < \theta < \delta$ for $0 < \lambda\sigma^2 < \infty$. Given this inequality 2θ will exceed ε for sufficiently large values of $\lambda\sigma^2$. The second reason can be obtained from the definition of v_i . In particular, a ceteris paribus increase in $\lambda\sigma^2$ decreases the value of v_i . For high values of $\lambda\sigma^2$ the value of $v_i < 0$ and the investors will not accept the contract.

$$V = [q^2 + (1 - q)^2] \sigma^2 < \sigma^2$$

For, q is always less than 1. Hence, in general, securitization can be expected to reduce volatility.

It is therefore necessary to investigate alternative concepts of volatility of transactions. Several variations appear to be plausible. We will consider a few of them in this section.

Upto this point in the analysis σ^2 is taken to be exogenously given. It is necessary to investigate the changes in the behavior of the contracting parties as it varies.

To begin with note that

$$\partial V / \partial q = 2(2q - 1), \text{ and}$$

$$2q = \varepsilon \theta / \lambda \sigma^2 (\varepsilon - \theta) > 1 \text{ whenever } \delta > 2\varepsilon$$

Hence, it follows that¹⁸

$$\partial V / \partial q > 0$$

Similarly,

$$\partial q / \partial \lambda \sigma^2 > 0$$

$$\text{Hence, } \partial V / \partial \lambda \sigma^2 > 0$$

Consequently, any increase in $\lambda \sigma^2$ makes V larger. That is, there will be greater volatility of securitized transactions as $\lambda \sigma^2$ increases. It would therefore be natural to investigate the conditions under which the parties to the transaction prefer greater σ^2 .

Fundamentally, securitization allows the originator to increase the volume of transactions. Since

$$\partial V / \partial q > 0 \text{ and } \partial q / \partial r > 0$$

it can be concluded that

$$\partial V / \partial r > 0$$

That is, volatility increases with the volume of transactions. This provides the other reasoning leading to the greater volatility of financial transactions.

Note, however, that the originator may feel that securitization enables him to pass on the risks. This may embolden him to undertake more and/or bigger transactions even if they involve a larger σ^2 . As noted earlier, this would imply a greater volatility related to financial transactions.

It is also clear that

$$\begin{aligned} v_i &= (q - p) r - \lambda \sigma^2 q^2 \\ &= \lambda \sigma^2 q^2 - 2\lambda \sigma^2 qp \end{aligned}$$

¹⁸ The preceding footnote suggested that the analysis would be meaningful only if $\lambda \sigma^2$ is small. The inequality $\delta > 2\varepsilon$ indicates that the SPV should be significantly more efficient to create greater volatility. An efficient SPV, dealing with relatively low risk, can therefore be expected to prefer higher values of $\lambda \sigma^2$ and thereby create greater volatility in securitized transactions. However, very high values of $\lambda \sigma^2$ will not support such a choice. The volatility increases only within certain limits.

It can now be verified that

$$\partial p / \partial q = -\lambda \sigma^2 / \varepsilon < 0$$

$$\partial v_i / \partial q > 0$$

Since $\partial q / \partial \lambda \sigma^2 > 0$ it follows that

$$\partial v_i / \partial \lambda \sigma^2 > 0$$

In other words, the investors will stand to gain by increases in volatility. They will not resist the originator choosing more risky pools.

Another possibility is that the SPV would like to increase his business¹⁹. The originator may also be expected to find avenues of increasing v_0 . Recall that

$$r = \varepsilon \theta / (\varepsilon - \theta), \text{ and}$$

$$v_0 = \varepsilon \theta / 2(\varepsilon - \theta)$$

Further,

$$\partial \theta / \partial \lambda \sigma^2 = \delta^2 / (\delta + 2\lambda \sigma^2)^2 > 0$$

With this information in place it can be readily verified that

$$\partial r / \partial \lambda \sigma^2 > 0, \text{ and } \partial v_0 / \partial \lambda \sigma^2 > 0$$

Therefore, both the originator²⁰ and the SPV gain by accepting more risky pools of receivables for securitization²¹.

Consider the possibility that the SPV and the investors agree to a Nash equilibrium instead. It can be shown that in such a case the sharing fraction will be

$$q_n = \delta / (\delta + 2\lambda \sigma^2)$$

It can be readily verified that the volatility of transactions will increase if such a choice prevails.

Consider the rate of return to the SPV²². It can be written as

¹⁹ Should this be interpreted as increasing the value of v_s ? This may not be the best interpretation because he is risk neutral. Instead, he will seek out more business, represented by r , and expect to improve his position on an average. It can be actually shown that

$$\partial v_s / \partial \lambda \sigma^2 < 0 \text{ whenever } \delta > \varepsilon$$

That is, he may not gain in any one transaction. An increase in average gains will then depend on some transactions being less risky than the others. Alternatively, since the SPV is handling many such transactions he expects to increase his net return on all these transactions even if he gets a lower value on any one of them.

²⁰ Intuitively, the originator stands to gain by securitizing a larger pool as the risk increases. This result is therefore not surprising.

²¹ It can also be shown that

$$\partial V / \partial \delta > 0 \text{ whenever } \delta > \varepsilon$$

That is, a more efficient SPV will tend to expand transactions to a point where there is greater volatility in the securitized pool.

²² How can this be relevant for his choice instead of r or v_s ? Consider the portfolio choice of a SPV who decides to invest a total amount of T in financial instruments. He first seeks the highest risk adjusted rate of return. If it is possible to invest the entire T in that instrument his choice problem is solved. Suppose a smaller amount is all that is possible

$$\begin{aligned}
R_s &= v_s/r \\
&= (1 - q) - r/2\delta \\
&= 1 - [\theta\varepsilon/(\varepsilon - \theta)] [1/\delta + 1/\lambda\sigma^2]
\end{aligned}$$

It can be readily verified that

$$\partial R_s / \partial \lambda\sigma^2 = \theta\varepsilon R_s / (\varepsilon - \theta)\lambda^2\sigma^4 > 0$$

That is, the risk adjusted rate of return to the SPV increases with $\lambda\sigma^2$. Hence, he is prone to take on more risky pools for securitization. This interpretation is valid even if v_s is taken to be the criterion of choice of the SPV²³.

Similarly,

$$\begin{aligned}
R_i &= \text{rate of return to the investor} \\
&= v_i/pr \\
&= q/2p - 1
\end{aligned}$$

Following a procedure similar to the one above it can be shown that

$$\partial q / \partial \lambda\sigma^2 > 0 \text{ and } \partial p / \partial \lambda\sigma^2 < 0$$

Given the assumptions made so far. Hence, it can be inferred that

$$\partial R_i / \partial \lambda\sigma^2 > 0$$

That is, if $\lambda\sigma^2$ is small enough, R_i will increase with $\lambda\sigma^2$. It can therefore be argued that even the investors have reason to prefer pools with a high risk.

For all practical purposes it may be claimed that even with an increase in $\lambda\sigma^2$ the risk adjusted rate of return may be favorable. This is the other inducement for the parties to create a greater volatility in securitized transactions.

4. Size of the Pool²⁴

The analysis of the previous section assumed that the size of the pool of receivables securitized is given. However, it is intuitively obvious that volatility is likely to increase with the size of the pool given the risk associated with the recovery of any one asset in the pool. This will be formally demonstrated in this section.

because there are not many securitized transactions that yield that risk adjusted rate of return. He will then invest the maximum possible and turn to the next financial instrument that yields the second highest risk adjusted rate of return. This lexicographic ordering is the essential reason for the SPV preference for R_s .

²³ Consider the possibility that each transaction may be of smaller size as $\lambda\sigma^2$ increases. The product of the return times size may also be smaller for any one transaction undertaken by the SPV. But he may increase the number of such transactions that he will take up. This may help him increase his net return. The present model is not adequate to exhibit this possibility.

²⁴ Observe the following. Given the average value of any one item in the pool being securitized the total value of the transactions handled by the SPV may increase in one of two ways. First, there may be an increase in the number of items in the pool. Second, there may be an increase in the number of pools keeping the number of items in each pool constant. Hence, this section will consider increasing the number of items in a pool.

Consider the case where the pool has n transactions. Assume, as before, that each transaction results in receivables of value $(r + u)$. It should be expected that the costs, to the originator and the SPV, of collecting the receivables will now become $r^2n^2/2\varepsilon$ and $r^2n^2/2\delta$ respectively²⁵. The value of the transaction to the originator will then be

$$v_0 = npr + n^2r^2/2\varepsilon$$

Similarly, the value of his share to the investor becomes

$$v_i = n(q - p)r - \lambda n^2q^2\sigma^2$$

so that the optimal choice of q will now be

$$q = r/2n\lambda\sigma^2$$

Analogously, it can be verified that

$$v_s = n(1 - q)r - n^2r^2/2\delta$$

$$N = n(1 - p)r - n^2r^2/2\delta - r^2/2\lambda\sigma^2$$

and the efficient choice of r is

$$r = 2(1 - p)\theta$$

$$\text{where } \theta = \lambda\sigma^2\delta n / (\delta + 2n\lambda\sigma^2)$$

The corresponding optimal choice of p is

$$p = (\varepsilon - 2n\theta) / 2(\varepsilon - n\theta)$$

The following results can be readily verified.

(a) $\partial r / \partial n > 0$. That is, an increase in the size of the pool also induces the originator to increase the size of each transaction in the pool.

(b) $\partial p / \partial n < 0$. This implies that the originator will receive a smaller amount by way of consideration per transaction as the risk increases.

(c) $\partial v_0 / \partial n > 0$ whenever $\delta > \varepsilon$. The originator stands to gain by increasing the number of transactions in the pool being securitized.

It can be concluded that both the SPV and the originator will favor larger pools and increase the volatility of these financial transactions.

There may, however, be an optimal n beyond which the size of the pool will not increase.

Consider

$$N = n(1 - p)r - n^2r^2/2\delta - r^2/2\lambda\sigma^2$$

The optimal n will then be

$$n = (1 - p)\delta$$

The efficiency of the SPV and the consideration claimed by the originator place a limit on the number of transactions in the pool being securitized.

5. Conclusion

Throughout this study the total variance experienced by the SPV and the investors has been taken as the only guideline for determining the volatility of a securitized transaction. A few conditions for the emergence of volatility could then be traced. There may be other inferences lurking behind the scene. Further investigation is warranted.

²⁵ It may be argued that these costs will only be $nr^2/2\varepsilon$ and $nr^2/2\delta$. It can be verified that the essential qualitative results remain the same as those reported in this section.

The assumption that the SPV and the investors will choose an efficient contract needs to be looked into. It is possible that they tend to be selfish and end up using a Nash equilibrium. Errors of judgment of this nature may also contribute to greater volatility.

Another concept of volatility suggests itself. For, one of the advantages of securitization may be the increase in the net value beyond that achievable if the originator collects the receivables on his own. It would be worthwhile to develop results along these lines.

The framework of the principal agent model is a natural choice in such contracting situations. However, the possibility that some other method yields better insights cannot be ruled out. In particular, volatility may have a macro economic interpretation in the sense that the volatility in any one financial instrument may spread to others. Such issues would be worth exploring in greater detail.