Understanding the Small Business Risk Insight (SBRI) Origination Scores

This document is intended to address the following questions:

- What are the SBRI Origination Scores?

- What is new about the SBRI Origination Scores?

- What do the SBRI Origination Scores predict?

- How are the SBRI Origination Scores calculated?

- What is the availability of the SBRI Origination Scores?

- What are the deliverables with the SBRI Origination Scores?

- How do I get access to the SBRI Origination Score?

- How can I use the SBRI Origination Scores?

I. WHAT IS SMALL BUSINESS RISK INSIGHT?

Small Business Risk Insight (SBRI) is Dun & Bradstreet's financial industry shared data repository of small business payment performance information on loans, lines, credit cards and leases. At the end of 2008, the SBRI database contained payment history and current standing on over 39 million accounts representing 9.5 million unique businesses. This data provides participating financial institutions with revealing, account level and highly predictive lending performance data about their existing and prospective small business customers. SBRI leverages Dun & Bradstreet's DUNSRight™ Quality Process to ensure that each small business decision can be more accurate and precise.

SBRI data delivers a more complete view of a customer. By enabling access to financial services performance data such as the number of leases, loans, lines and cards, SBRI offers a previously hidden part of the complete financial picture.

Access to the SBRI database, attributes, and scores is limited to SBRI participants: Financial services customers who contribute financial payment data. However, with permission from the SBRI participants, SBRI access has also opened up to Non-Financial Services customers who contribute open-account payment data to Dun & Bradstreet's Trade Tape program.

A growing list of leading institutions has turned to Dun & Bradstreet to leverage the benefits of data sharing by participating in SBRI. SBRI began by offering participating institutions a means to share and access a new, independent and highly predictive source of lending performance data about small business customers.

SBRI participants have minimal data requirements in order to generate a score on a credit application or given set of accounts. They must supply basic business information about the small business; including business name, and address, and the Dun & Bradstreet D-U-N-S® Number, if available. A SBRI Origination Score will be generated for all D-U-N-S Numbered businesses, not just for those that match in the SBRI database. However, if there is no archived information or supporting input data, then no score can be generated. This can occur during a retro-score analysis, when the D-U-N-S Number did not exist as of the archive period.

II. WHAT ARE THE SBRI ORIGINATION SCORES?

The SBRI Origination Scores are a set of three scores specifically designed to predict future business delinquency on loans, credit cards and leases. The purpose of these scores is to help financial services institutions improve their loan, lease and business credit card origination strategies and performance. The scores are based on the powerful financial performance data contained in Dun & Bradstreet's Small Business Risk Insight (SBRI) database, combined with other highly predictive data through our DUNSRight™ Process. The SBRI Origination Scores offer an unprecedented predictive measure of delinquency on small business credit applicants.

To develop the SBRI Scores, Dun & Bradstreet's Global Decision Sciences staff created a suite of predictive models that leverage the rich source of lending performance data found in the SBRI database as well as the power of the Dun & Bradstreet Data Cloud. SBRI data delivers a more complete view of a customer. By enabling access to financial services performance data such as the number of leases, loans, lines and cards, SBRI offers a previously hidden part of the complete financial picture.

 The SBRI Origination Scores offer:

- More precise decisioning across the customer lifecycle: origination and account management

- Greater visibility into how your customers represent themselves and are leveraged with other lenders so you can have a true picture of their total risk and opportunity

- Easier and faster assessment of the payment performance of your applicants and customers across multiple lenders and financial types

- Deeper insight into how your customers are likely to pay in the coming months so you can proactively manage your offers, collections and cash flow

Also available with the SBRI Origination Scores are more than 125 SBRI data attributes, which can add discrimination in your own custom built scorecards.

III. WHAT IS NEW ABOUT THE SBRI ORIGINATION SCORES?

Overall, the new SBRI Origination models generated greater than 20% predictive lift over previous models with:

- Build for the first time using an 18-month performance period to capture more bads

- Built using a more serious level of delinquency when identifying bads in the development dataset – those that reached a level of 4-cycles delinquent or greater, which in turn produced more discriminant models

- Enhanced segmentations with 18 models in the suite, compared to 10 on the previous model

IV. WHAT DO THE SBRI ORIGINATION SCORES PREDICT?

The SBRI Origination Scores are a suite of predictive models that offer a quantifiable assessment of delinquency risk associated with a small business credit application or account, predicting severe delinquency including charge-offs. Specifically, Dun & Bradstreet created a separate SBRI score for a loan, lease or business credit card account. The SBRI Score provides insight into as to how a small business is likely to repay its specific lending instrument to financial institutions.

Because small businesses tend to treat their trade credit differently from their accounts granted by a financial institution, these scores were developed specifically to be used by financial institutions. However, non-financial services customers can use SBRI scores, in conjunction with CCS scores, to have a more complete view of their customers' payment behavior.

The SBRI Score combines the powerful financial performance data in our Small Business Risk Insight database with Dun & Bradstreet's market-leading commercial data (trade payments, public records, etc) through DUNSRight™.

V. HOW ARE THE SBRI ORIGINATION SCORE CALCULATED?

The team of statistical analysts and modelers that developed the SBRI suite of models, leveraged their expertise in small business predictive modeling, using proprietary methodologies. The SBRI models are designed and have been validated according to the following parameters:

- A large and robust sample of small businesses from the SBRI data repository.

- Sample accounts in the SBRI database that opened between September 2005 and September 2006. The performance of these accounts over the following eighteen months provided a performance window used by Dun & Bradstreet for the model development process.

- Bad observations, or "Bads" are defined as a small business with the ensuing account that went three cycles past due or worse, including charge-offs, during the performance window.

- Good observations, or "Goods" are defined as any small business with the ensuing account that was not more than twice one cycle past due.

Model development involves selecting data available at the time of observation that will indicate how the account is expected to perform over a certain period of time. For the SBRI model development, two snapshots of credit history were used from two different points in time from a sample of the small businesses in the SBRI data repository.

The first data snapshot (called the observation snapshot) simulates the time of origination and scoring, and is used to generate the predictive variables and segmentation schemes.

The second data snapshot (called the performance snapshot) is used to determine the payment performance of the account during the performance window. For the SBRI Origination Scores development, the observation snapshot captured accounts in the SBRI database that opened between September 2005 and September 2006, while the performance snapshot tracked each account's performance over the following eighteen months.

From the observation snapshot data, Dun & Bradstreet reviewed over 100 predictive variables from the SBRI database to use as potential segmentation and model variables. Predictive variables from the Data Cloud were also generated. The final suite of SBRI models uses more than 50 predictive variables from the SBRI and the Dun & Bradstreet commercial databases.

This set of variables includes:

SBRI Data Predictive Variables:

- Months since most recent delinquency

- Net fraction revolving burden (revolving debt burden)

- Number of satisfactory accounts

- Number of accounts 1 cycle or worse delinquent

- Months since oldest date opened

Dun & Bradstreet **Commercial Data Predictive Variables:**

- Time as current owner

- Number of liens, suits and/or judgments

- Percent satisfactory payment experiences

The SBRI Origination Scores calculated on a small business are generated from one of eighteen models contained in the SBRI Scoring Model Suite. Having a suite of models allows for better separation of 'goods' and 'bads' by focusing on unique populations. For the SBRI Score development, over 20 different segmentation schemes were explored. The final segmentation scheme used for the SBRI Origination Scores examines the type of information available about the small business applicant. The model with the most predictive value is automatically selected for a given credit application or account depending upon the available data as follows:

- Available information about the small business in the SBRI and/or Commercial database(s) (i.e. Presence of SBRI data)

- The number of trade lines available in the SBRI database(i.e. Thick vs Thin)

- Prior delinquencies in the trade line detail (i.e. Clean vs Dirty)

VI. WHAT IS THE AVAILABILITY OF THE SBRI ORIGINATION SCORES?

SBRI participants have minimal data requirements in order to generate a score on a credit application or given set of accounts. They must supply basic business information about the small business; including business name, and address, and D-U-N-S Number, if available. A SBRI Origination Score will be generated for all D-U-N-S Numbered businesses, not just for those that match in the SBRI database, with one exception – businesses with a "High Risk" flag will receive an SBRI Score = 0. However, if there is no archived information or supporting input data, then no score can be generated. This can occur during a retro-score analysis, when the D-U-N-S Number did not exist as of the archive period.

VII. WHAT ARE THE DELIVERABLES WITH THE SBRI ORIGINATION SCORE?

The SBRI Origination Scores are available in DNBi Risk Management as well as through Dun & Bradstreet data packets available in Dunslink and Toolkit. Dun & Bradstreet data packets also contain traditional D&B data elements, plus more than 100 SBRI Attributes. These additional variables and/or attributes can be selected and combined into a custom packet for most automated scoring applications.

Once the optimal model has been selected from the suite of models based on available information about the small business, the SBRI Origination Score is generated and delivered to you with additional indicators:

- The numeric identifier for the model that was used to generate the SBRI Score.

- Three Score reason codes are generated and returned. The reason codes help you understand why the small business did not score the maximum points allowed by the selected model. Each reason code is generated based on the independent model variable which scored furthest from the maximum points for that given variable. The reason codes are delivered in order from the greatest to the least score difference. For example, the first reason code will show you the variable that fell furthest from the mark.

- Also generated with the SBRI Origination Score is a Score Flag. The flag identifies if the D-U-N-S Number is marked as Bankrupt, Out of Business, High Risk, Self Inquired, or normal.

- Over 125 attributes from traditional D&B data or SBRI characteristics can also be returned.

VIII. HOW DO I GET ACCESS TO THE SBRI ORIGINATION SCORES?

SBRI participants can easily access the SBRI Origination Scores through one of the many delivery channels Dun & Bradstreet offers. The SBRI Origination Scores are

available in the DNBi Risk Management application. They can also be integrated into your origination decisioning process by accessing D&B data packet (either delimited or XML packets) through your automated decisioning application if you use DUNSLink, eRAM, or Data Integration Toolkit. Additionally, Dun & Bradstreet's third party integration partners can access the SBRI score through their standard interface. Please contact a D&B Relationship Manager for more information on incorporating the SBRI Score in your decisioning environment.

IX. HOW CAN I USE THE SBRI ORIGINATION SCORES?

The SBRI Origination Score is a transactional score that is targeted for use within your origination strategies, as well as limited use within portfolio monitoring. Therefore, it facilitates more efficient and complete decisioning across the customer lifecycle. The SBRI Origination Score offers a competitive advantage because more robust and accurate decisions can be made by combining the SBRI Score with consumer credit bureau scores on the principal owners of a business.

Now more informed decisions can be made when a more complete or "360 degree view" of the small business customer is achieved. With these proven analytics, you can evaluate the broadest range of data with this combination of resources – commercial data, financial services data, trade credit data, public records, and consumer data on the business owners.

Incorporating the SBRI Origination Score in your origination process allows you to approve the most profitable applicants with the most appropriate terms. The SBRI Score incorporates predictive data not previously available to existing origination processes thereby adding invaluable insight into the process. Combining this invaluable insight with other predictive techniques strengthens your origination and account management strategy. Implementing sophisticated decision rule overlays that include the SBRI Score will provide additional depth to your decisioning capabilities and incorporating the SBRI Score into your account management strategy will allow you to optimize your portfolio's profitability.

The charts below illustrates how the SBRI Origination Score development population is distributed as a function of score and the probability of repayment in each score range.

SBRI Score Odds Chart & Population Distribution For Development Sample

SBRI Score Development Sample (0.6MM accounts) Scaled Good/Bad Odds 4 or more cycles Performance Definition - Cards			
SCORE RANGE	INTERVAL %	CUMULATIVE %	GOOD/BAD ODDS
Below 740	0.0%	0.01%	0.4
740-759	0.1%	0.07%	0.7
760-779	0.3%	0.37%	1.3
780-799	1.4%	1.78%	2.8
800-819	5.9%	7.69%	5.9
820-839	26.4%	34.14%	12.5
840-859	28.0%	62.17%	22.8
860-879	19.1%	81.24%	43.6
880-899	12.2%	93.41%	75.0
Above 900	6.6%	100.0%	108.5

SBRI Score Development Sample (0.56MM accounts) Scaled Good/Bad Odds 4 or more cycles Performance Definition - Lease			
SCORE RANGE	INTERVAL %	CUMULATIVE %	GOOD/BAD ODDS
Below 740	0.0%	0.00%	0.2
740-759	0.0%	0.02%	1.1
760-779	0.1%	0.16%	1.5
780-799	0.8%	1.00%	2.9
800-819	3.4%	4.39%	6.0
820-839	10.5%	14.92%	12.2
840-859	18.3%	33.26%	22.6
860-879	20.9%	54.15%	43.1
880-899	21.4%	75.54%	89.6
Above 900	24.5%	100.00%	210.1

SBRI Score Development Sample (.3MM accounts) Scaled Good/Bad Odds 4 or more cycles Performance Definition - Loan			
SCORE RANGE	INTERVAL %	CUMULATIVE %	GOOD/BAD ODDS
Below 740	0.0%	0.00%	0.0
740-759	0.0%	0.03%	1.1
760-779	0.2%	0.25%	1.9
780-799	1.0%	1.23%	3.4
800-819	3.7%	4.97%	6.6
820-839	11.7%	16.62%	12.9
840-859	20.1%	36.70%	23.9
860-879	23.9%	60.60%	46.2
880-899	21.2%	81.75%	88.6
Above 900	18.3%	100.00%	209.2

The SBRI Origination Scores enhances portfolio profitability when used effectively throughout the customer lifecycle. You will:

- Book higher quality loans while maintaining or even increasing booking volumes

- Reduce the costs associated with full-scale application and annual risk reviews

- More accurately establish and manage credit terms

- Increase customer satisfaction with faster, more consistent decisions

- Manage monitoring resources with prioritized actions for delinquent accounts

- Illustrate regulatory compliance with timely, consistent and objective review decisions

Appendix A
SBRI Origination Scores Reason Codes & Score Flags

S1 Insufficient trade account information

S2 Insufficient revolving trade account information

S3 Insufficient installment trade account information

SA Amount owed on revolving accounts

SB Number of inquiries last 6 months

SC Proportion of revolving account balances to revolving limits

SD Proportion of Installment balances to Installment

SE Delinquent past or present credit obligation(s)

SF Length of time trade lines have been established

SG Recency of delinquencies

SK Number of accounts past due in relation to total

SL Amount past due on accounts

SM Amount owed on revolving and installment account

SN Amount owed on installment accounts

SO Total revolving credit lines and installment accts

SP Proportion of amount past due on accounts

SQ Number of revolving accounts

SR Number of revolving accounts closed satisfactorily

SS Number of lease accounts closed satisfactorily

ST Recency of Accounts written off

SU Proportion of Lease Accounts written off

SV Total revolving credit lines

SW Proportion of Loan balances Loan amounts

T3 Proportion of past due balances to total balance

T4 Presence of Public Record items

T5 Number of accounts opened in the past 12 months

T6 Proportion of negative payment experiences

T7 Proportion of satisfactory payment experiences

T8 Dollar amount of suits, liens and judgments

T9 Number of UCC filings

TA Industry classification

TD Number of judgments

TE Number of liens

TF Number of negative payment experiences

TG Proportion of payment experiences rated less than satisfactory

TH Number of satisfactory payment experiences

TI Number of suits

TK Length of time in business under present management

TL Length of time in business

TM Presence of Business or Management History

TN Fair or Unbalanced financial condition

TO Sales Volume

TP Number of employees relative to trade lines

TQ Amount past due

TR Amount of negative payments

TS Amount of satisfactory payments

TT Amount of total payments

TU Dollar amount of liens and judgments

TV Proportion of current balances to amounts

TW Number of slow payment experiences

TX Number of payment experiences with net terms

TY Number of payment references

TZ Proportion of slow payment experiences to total

W1 Insufficient payment information

W2 Legal structure

W3 Number of inquiries last 12 months

W4 Amount of slow payments

W5 Amount of payments not rated as satisfactory

W6 Invalid telephone number

W7 Presence of financial statement

W8 Amount of cash payments

W9 Presence of UCC filings

SBRI Score Flags

The following are a set of pre-process rules based on values of the following variables, and are included as an additional output attribute to the SBRI Origination Scores:

0. Default Value = Provided when other SBRI Score Flags are not applicable

1. Out of Business = if D-U-N-S is OB, create SBRI Score value for all three scores and set flag indicator to 1.

2. Open Bankruptcy = if D-U-N-S has a matched open bankruptcy, create SBRI Score value for all three scores and set flag indicator to 2.

3. Self Request DSR = if D-U-N-S is a Self Request Duns Support without investigation, create SBRI Score value and set flag indicator to 3.

4. High Risk = if D-U-N-S is High Risk, set SBRI Score value = 0 and set flag indicator to 4.

If D-U-N-S is on Case Stop Distribution, do not create a SBRI Online Score. No other exclusion rules apply

FLAG	DESCRIPTION	SCORE GENERATED?
1	Out of business	YES
2	Open bankruptcy	YES
3	Self Requested D-U-N-S	YES
4	High Risk	ZERO
5	On STOP Distirbution due to investigation	NULL
6	Data is too old (last updated prior to 1982)	YES
7	Undeliverable address	YES
8	Brand record	YES
9	No data available	NULL
10	Business deterioration within the past 90 days	YES

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