

# FINCAD<sup>®</sup> Analytics Suite 2010 Release Notes



**FINCAD<sup>®</sup>**

# **FINCAD<sup>®</sup> Analytics Suite 2010 Release Notes**

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## 1. Introduction

The primary purpose of the release notes is to provide information on *changes* that have been made to FINCAD Analytics Suite 2010 (October 2009), 2010.1 (April 2010), and 2010.2 (June 2010) for Excel and Developers compared to FINCAD Analytics Suite 2009 (2009.2.1.752). The release notes also describe new features added in FINCAD Analytics Suite 2010.2.

Also included within the document are known issues with workarounds, specific changes that affect FINCAD Analytics Suite for Excel, and a section on issues affecting only FINCAD Analytics Suite for Developers.

## 2. What's New

This section lists What is New in FINCAD Analytics Suite 2010.2, provides a brief description of the new feature and benefits to our customers. It is assumed that the relevant documentation is added or updated.

### 2.1. Analytics

The analytics section is alphabetically listed by the new function name.

Function	Description	Benefit
Auto-callable Notes	Part of the Equity link notes family, these investment products have an anticipated redemption, if the underlying or basket components performs positively in a predefined timeframe. In that case the note is early reimbursed and a high coupon is paid.	Enhanced coverage of equity linked notes in order for options traders to perform valuation and risk management on these types of trades.
CVA for FX Forwards	CVA is the difference between the risk-free portfolio value and the true portfolio value that takes into account the possibility of a counterparty's default. In other words, CVA is the market value of counterparty credit risk.	The basic premise of Fair Value Accounting is that you should report at the price you could sell at in the market. The price you could sell at is partially based on the probability that both counterparties will be around to settle at maturity. As such the regulations require that reported values include CVA.  Customers can comply with Fair Value Accounting Regulations.
Reverse Convertible Notes	Part of the Equity linked notes family, these yield-enhancing products link to the performance of a stock or basket of stocks that bear a high fixed coupon rate in return for the potential risk of losing the invested capital.	Enhanced coverage of equity linked notes in order for options traders to perform valuation and risk management on these types of trades.

## 2.2. Workbooks

The analytics section is alphabetically listed by the new function name.

Workbook Name	Description	Benefit
Autocallable Notes	New workbook to calculate Fair Value, Option Value, and Risk Statistics for Autocallables.	Easier for customers to price Autocallables, with free-style sampling points.
CVA fixed / Floating using Swaption approach to Vanilla Interest Rate swap	Calculate CVA for a fixed-floating swap using the swaption approach used by Bloomberg Finance LP <sup>1</sup> .	Advantage over the existing CVA function (and workbook) is that you do not need to calibrate an interest-rate model.
CVA on non-Amortizing Swap Portfolio	Updated non-Amortizing Swap workbook with CVA enhancements to handle spread curve in addition to single spread.	Flexibility added to the Amortizing Swap workbook. Used mainly by Small Banks and Corporates.
Reverse Convertible Notes	New workbook to calculate Fair Value, Option Value, and Risk Statistics for Reverse Convertible Notes.	Makes it easier for customers to price Reverse Convertible Notes linked to up to 25 underlying assets, with free-style sampling points.

<sup>1</sup> Bloomberg is a trademark of Bloomberg Finance LP. FINCAD is not associated in any way with Bloomberg Finance LP.

## 3. Changes

This section lists Changes to functions, documentation, usability, workbooks, as well as changes to FINCAD Analytics Suite for Developers.

### 3.1. Analytics

The analytics section includes issues that were found in functions that existed prior to the release of Analytics Suite 2010. Unless otherwise specified, the update to the function does not require users to make any changes to their application or spreadsheet. The value may change when a recalculation is done. The changes listed here affects both FINCAD Analytics Suite for Excel and FINCAD Analytics Suite for Developers.

#### 3.1.1. Fixed Income

##### 2010 Release

Function	Change
aaBond_SA_index	South African bonds use a very specific rounding convention which is done correctly in aaBond_SA functions. However this rounding convention was not followed in the inflation functions, aaBond_SA_index. The convention is to calculate the unrounded dirty price and accrued interest, and use these to get the unrounded clean price. Clean price and accrued interest are then both rounded to 5 decimal places and the rounded values are added to get the rounded dirty price. The South African inflation functions were rounding the raw dirty price, leading to slight differences in the 5th decimal place.
aaConvertible*	Due to some issues with how discrete dividends were used in the model, some minor changes have been made to the implementation. Also, the method used to calculate the sensitivity to discrete dividends has been updated due to these issues. These changes will have a relatively small impact on the values returned in most cases.
aaConvertible2_dgen	The values at the lower boundary of the finite difference grid were not adjusted properly for discrete dividends, resulting in negative conversion option values in some cases. This is fixed.
aaConvertible3	In certain cases, the function would return an option value when all option related features had been removed from the convertible bond. The code has been updated to return a value of zero when no option exists.
aaConvertible3_dgen	The end-of-month rule was used inconsistently in the date generation within these functions, causing the function to fail when the date of last coupon was an end-of-month date. The date generation within the functions is now consistent and will use the end-of-month rule when generating dates, i.e. if the date of last coupon is an end-of-month date, the on-cycle date of first coupon must also be the end of the month.
aaDFCurve_AddFwdSpreads	The function has inconsistent behavior with different scale factors when the DF curve has increasing discount factors. The problem is that the input discount factor curve being used results in a large negative forward rate. Internally, the function calculates all the forward rates, applies the spread/scale factor, and then calls aaConvertR_DF to convert back to discount factors. The problem arises because aaConvertR_DF does not allow for rates smaller than -1. This restriction is not necessary and, therefore, has been removed.

## 2010.1 Release

Function	Change
aaBond_Index_cf	This function was failing in Excel VBA - with sample inputs. The sample has been updated for Excel VBA.
aaBond3_dgen_cf	This function generated an incorrect cash flow in the last period when the dates are forward-generated because an internal function retrieved the maturity date when the last coupon date was needed. This function is fixed and retrieves the correct date.
aaBond3_dgen_y	The function aaBond3_dgen_y can fail when an internal fixed initial value of the Newton-Raphson method is inappropriate if the price-yield function is very convex. This issue is fixed by trying different initial values.
aaCallbond_dgen*	In the aaCallbond_dgen* functions, the unadjusted effective date and terminating date of the coupon periods were used in the option pricing tree. This caused a small error in the OAS because the coupon dates were adjusted. Now this issue is fixed by replacing these dates with adjusted dates.
aaCE_FIPort_dgen_tbl aaCE_SwapPort_dgen_tbl	Credit Exposure functions should discount expected exposure on the tree. The functions aaCE_FIPort_dgen_tbl and aaCE_SwapPort_dgen_tbl both output expected exposure, with the option of outputting this as a discounted value. Previously, the discounting was done by taking the expected exposure value and discounting it using the input discount factor curve. This has been changed such that the discounting is now done on the trinomial interest rate tree. This will also affect the values from the function aaCE_FIPort_dgen_CVA as the calculation of CVA is based on the discounted expected exposure.
aaConvertible3_p	This function returns positive (negative) call option value for the holder (issuer). Theoretically the function should return a positive call option value for the holder of the convertible bond, but aaConvertible3_p did not. This bug was almost fixed by setting more reasonable call logic on the PDE solver. There is still a very small amount of positive value. This may be considered as numerical noise.
aaDFCurve_AddTenorBasisSpreads	The output dates were only including dates from basis swaps where the maturity date of the swap was strictly less than the date of the last point in the input base discount factor curve. This has been fixed so the dates are included for all basis swaps for which the adjusted maturity date is less than or equal to the date of the last point in the input base discount factor curve.
aaFIPort_dgen_CVA	Enhanced aaFIPort_dgen_CVA to allow for a table of CDS spreads to be given. aaFIPort_dgen_CVA can now optionally take a table of CDS spreads from which the default probability curve will be bootstrapped for the calculation of CVA. The table can be a 2, 3, or 4-column table, where column 1 is the maturity, column 2 is the date, optional column 3 is the upfront fee, and optional column 4 can be used to specify a recovery rate in row 1. If column 4 is omitted, the recovery rate is assumed to be 40%. The single cell input is still valid and is a constant credit spread that applies over the life of the portfolio.

## 2010.2 Release

Function	Change
aaDFCurve_AddXCBasisSpreads*	Code change: The "linear basis spread" bootstrapping method in aaDFCurve_AddXCBasisSpreads* has been corrected to always use linear interpolation. Previously, it incorrectly used the input "interpolation method for discount factor curve" supplied.

## 3.1.2. Interest Rate

### 2010 Release

Function	Change
aaCE_SwapPort_dgen	Did not calculate correct discount factor values because each node had a bug regarding the discounting of cash flows. This has been fixed and will result in relatively small changes in values.
aaPRDC_fs_p aaTarnPRDC_fs_p	The output numbers in the "expected duration" column of aaTarnPRDC_fs_p and aaPRDC_fs_p have changed due to a bug fix on the accrual factor switch which is used to calculate the exercise time in the PRDC functions.
aaSwaption_Normal	In Analytics Suite 2009, for the normal process, the vega is defined as the fair value changes with respect to a 1% change of the local volatility, that is equivalent to the value of the input volatility times the input underlying asset price (i.e. forward swap rate for this case) . This behavior is inconsistent within FINCAD products. The definition of vega is now defined as the fair value changes with respect to a 1% change of the input volatility, and no scaling is necessary.  You may see a change in the vega. This is expected. The change results from the fix.

### 2010.1 Release

Function	Change
aaSwap_crv_avg	Failed when a particular point was included in the swap rates. In the case that swap maturity dates are too far away from each other, the function failed because an internal function could not handle a huge number. The internal function is now adjusted to handle this case as well.
aaSwapCurve	When given futures contracts in aaSwapCurve or aaSwapCurve_base, the maturity date was being moved to be the third Wednesday of the maturity month. This has been fixed so that the maturity date is used given.

### 2010.2 Release

Function	Change
aaCallRangeAccNote_dgen_p	Code change: This function now operates on column "coupon rate outside range" in the "callable range accrual rate table", whereas it previously assumed it was zero even if this optional column was filled.
aaCE_FXfwd_CVA	In some cases, if the spreads given are too jumpy, the default probability curve bootstrapped from the spread curve would be not increasing. This causes the function to fail.
aaFRN2_fs	Code change: The restriction that reset rates (in table_314) must be positive has been removed.
aaRevConv aaRevConv_fs aaRevConv_full_risk aaRevConv_fs_full_risk	Development enhancement: Added these functions to calculate prices and risks for Reverse Convertible notes.
aaSwaption2_BL_fs	Documentation change: Added validation for rate_payment table – fixed leg and float leg tables. Input tables will warn against non-numeric values.
aCE_FIPort_dgen_CVA	Specification change: In this function, the input spread curves were mislabeled and misleading. Counterparty A has been changed to self, and Counterparty B has been changed to counterparty.

### 3.1.3. Credit

#### 2010 Release

Function	Change
aaCDS_Single	<ul style="list-style-type: none"> <li>Columns that were described as optional were not. The function was updated to behave correctly in cases where optional columns were not provided.</li> <li>The act/360 accrual method was hard coded leading to discrepancies when pricing using spreads and trying to do a roundtrip test. The hard coded input has been updated to take whatever the user has inputted for the accrual method.</li> </ul>

Function	Change
aaCredit_TR_p_sp2	<ul style="list-style-type: none"> <li>In the case where the reset date equals the maturity date, the bond function internally used within this function failed. This issue was fixed by replacing the internal bond function and setting the bond value to zero in this case.</li> <li>Also, a calculation overflow problem was encountered by a root finding algorithm because it miscalculated the principal amount. This was fixed by recalculating the principal amount before calling the root finding routine.</li> <li>Note 196 was updated to provide more details to explain the use of a risky discount factor curve and its associated restrictions. The risky bond should not have more value than a risk-free bond. When the coupon is small then the risk-free bond has a small value. If this value is less than the value of risky bond, the function #VALUE. So when the coupon is increased to a level such that the value of the risk-free bond is more than the value of the risky bond, the function returns a good value.</li> </ul>

### 2010.1 Release

Function	Change
aaCDS_ISDA_p	Changed the sign of sensitivity stats (BPV, Theta, DV01 and Rho of recovery) according to our math documents.
aaCredit_L_FRN	The accrual method for a coupon of function aaCredit_L_FRN only allowed the first 10 settings of switch 331. This restriction is now removed to allow all the settings from switch 331.

### 2010.2 Release

Function	Change
aaCDS_ISDA	Documentation change: This function overflows when the default probability is very high. The note 885 is changed to require the input default probability curve table to have at least two rows.
aaCDS_ISDA*	For very large CDS spreads, valid survival probabilities do not exist and consequently a CDS cannot be priced. The function aaCDS_ISDA_p and related functions now correctly fail when the CDS spreads become too large.
aaCDS_ISDA_Default_curve	<ul style="list-style-type: none"> <li>Code change: The function does not fail anymore when dates are generated on IMM dates (cycle date convention input equal to move to the 20<sup>th</sup>).</li> <li>Code change: The market convention of the protection leg was updated to match that of the coupon leg where required.</li> </ul>
aaCredit_DfltProb_DSSprd3	The function now allows the user to input negative upfront payments.
CDS ISDA Converter	Code change: Fixed to achieve a round trip property of the ISDA converter function. An upfront fee is converted to a spread which should be convertible to the original upfront fee.

### 3.1.4. Options

#### 2010 Release

Function	Change
aaBIN_curve_dcf aaBIN_curve_dcf_iv aaBERM_curve_dcf aaBERM_curve_dcf_iv	The following functions aaBIN_curve_dcf and aaBIN_curve_dcf_iv have been replaced by aaBIN_dcf. The following functions aaBERM_curve_dcf and aaBERM_curve_dcf_iv have been replaced by aaBERMdcf. The original functions are now not supported if issues are found.
aaBSG_delta_smile_iv	The function was not connected to a math reference. It is now connected to Black-Scholes math reference.

#### 2010.1 Release

Function	Change
aaBarrier_in_part	Calculation of vega is improved that helps to damp large errors in some specific ranges as noticed in the past.
aaBERM	Exercise dates in aaBERM paste example were outside of option term. Updated dates in table_66 to be valid exercise dates.
aaWorst_of_two	Output statistics are now labeled correctly.

#### 2010.2 Release

Function	Change
aaAuto aaAuto_fs aaAuto_full_risk aaAuto_fs_full_risk	Development enhancement: Added these functions to calculate prices and risks for Autocallable notes
aaBL_iv	Code change: The function will no longer return an incorrect error code when root finding fails due to inappropriate input price.
aaBondfwd aaFXfwd aaBF_repo aaBFwd BFwd2 aaFXfwd_repo_d aaFXfwd_repo_f	Code change: Modified restrictions to allow for negative repo rate.
aaBondFwd aaBondFwd_df aaBondFwd_fs aaBondFwd_fs_df	Specification change: The functions now accept a negative repo rate as long as it is greater than -10%:

Function	Change
aaFX_BSG	Clarification: To convert an option value from one currency to another, an FX spot rate should be used. When the asset type is a forward, the function used an FX forward rate for the convention. The fix is to calculate the FX spot rate from the FX forward rate first, then use the calculated FX spot rate to do the conversion.
aaRainbow_min	The function is able to value an option with a tenor less than one day (not including theta risk).

### 3.1.5. Utilities

#### 2010 Release

Function	Change
aaTableMergeSort	The function aaTableMergeSort was replaced with aaTableMergeSortDelete. This function has all of the features of aaTableMergeSort plus it can also delete duplicate entries if the user chooses. FINCAD no longer supports issues found in aaTableMergeSort.

#### 2010.2 Release

Function	Change
aaPVCF_p	Code change: This function has been modified so it does not fail when rate basis 7 or 8 are chosen.

## 3.2. Documentation Changes

The section lists changes to documents affecting FINCAD Analytics Suite 2010 for Excel and Developers.

#### 2010 Release

Document Name	Change
How to Distribute Finished Applications (howtodistribute.htm)	At the time a new C++ interface was added to the product, the document on how to distribute FINCAD C++ DLLS was not updated. This has subsequently been added to the documentation as part of the overall update to the Analytics Suite for Developers documentation.
Trigger Swap Math Reference	The spreadsheet example showed a #VALUE when opened due to a bad date input. The example was updated.

### 3.3. Usability Changes

The following list of issues / changes are specific to FINCAD Analytics Suite 2010 for Excel and Developers.

#### 2010 Release

Feature	Change
About Box	The About Box within the Analytics Suite product has been updated to warn users when the remaining term to expiry is less than 30 days. This was extended from an original 14 days to provide more time.

#### 2010.1 Release

Feature	Change
One license unlocks all	This feature provides a way to unlock functionality in different future versions of our product by using the same license. These special licenses are term only. A customer could buy this special term license and use it for the entire duration of the license to unlock version 2010.1+, 2011, 2012, etc. NOTE: This feature works only for product versions greater or equal to 2010.1.

### 3.4. Workbooks

The following list of issues / changes are only specific to FINCAD Analytics Suite 2010 for Excel.

#### 2010 Release

Workbook Name	Change
Amortizing Swap	<ul style="list-style-type: none"> <li>In the workbook, the function used to price the swap has been replaced with aaSwap_dgen_p.</li> <li>The title has been changed to Amortizing Swap (allows for percentage-of LIBOR swaps)</li> </ul>
Bloomberg Finance LP <sup>2</sup> data changes: Averaging Swap Curve Bond Curve & Swap Curve Bond Curve Cheapest-to-Deliver Bond Analyzer Swap Curve (four curves) Swap Curve (two curves) Swap Curve (with spot rate shocks) Swap Curve MXN_USD Swap Curve	<ul style="list-style-type: none"> <li>Due to changes to Bloomberg Finance LP codes, the workbooks were not downloading real time data correctly for the bond curve.</li> <li>Within the Bloomberg Finance LP workbooks, the futures data was not downloading correctly when we were in non-cyclical months. A cycle month is March, June, September or December.</li> </ul>

<sup>2</sup> Bloomberg is a trademark of Bloomberg Finance LP. FINCAD is not associated in any way with Bloomberg Finance LP.

Workbook Name	Change
CMS Spread Swap	In the workbook, the par swap rate calculation was incorrect when the swap/swaption type switch was set to 2 or 3. This was due to the wrong formula being used in cell J15 on the Funding Leg tab is incorrect. This formula has been updated.
Credit Default Index Swap Option	The Credit Default Index Swap Option had bad dates which led to a #VALUE when it was opened. The dates have been updated.
Cross Currency Swap	Incorrect calculation of “accrued days” in the cash flow tab. The “accrued days” column output has been removed from the cashflow table.
Curve Workbooks	In FINCAD Analytics Suite 2010, a new swap curve was introduced. FINCAD has updated the templates with the latest curve building functions. Where appropriate, workbooks have the ability to take into account tenor adjustments.
Key Rate Risk – remove spot rate bumps and update to aaSwap_crv3	The spot rate bumps example was removed and updated to aaSwap_crv3. The reason is that users will want to look at the raw rate bumps rather than spot rate bumps.
Muni Swap Amortizing Basis	An issue was found where BMA leg incorrectly used bma_curve was being used for. The functions have been updated to discount using the appropriate curve (discount curve vs. the municipal curve).
Swap Curve workbook (and curve sheet in other workbooks)	Swap Curve workbook (and curve sheet in other workbooks) – generation of futures dates gives non-integer dates. These non-integer dates ended up in the resulting discount factor curve, and caused the spot rates outputted to be incorrect. To fix this issue, the INT() function was placed around the futures effective dates in the swap curve templates to eliminate non integer dates in the resulting discount factor curve.
Swaption (Bermudan – BK or HW)	There were some spelling mistakes in the comments. This has been corrected. There is no impact on calculation.
Vanilla Interest Rate Swap Portfolio	<ul style="list-style-type: none"> <li>The workbook had input fields for scale factor for forward rates when they were not used by the underlying function. Those fields have been removed.</li> </ul>
Variance Swap and Variance Options workbooks	The realized variance calculation in the variance swap and variance options workbooks was incorrect. The update includes making the realized variance match the calculation in the math reference.

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Workbook Name	Change
Volatility Cube	Added: This workbook constructs the swaption volatility cube, i.e. the implied volatility surface as a function of any strike, option expiry and underlying swap length. The inputs are ATM swaption volatility matrix and cap market data. The volatility cube is constructed by employing the SABR model and is also consistent with input market data. Swaptions (European – SABR Model) (using Swaption & Cap data) This workbook calculates the fair value and risk statistics for a European swaption using the SABR model given swaption and cap market data.
CDS	Documentation Change: CDS on Bespoke tranche calculator. On “base correlation mapping”, replaced the term “benchmark” with ‘index” for consistency throughout the workbook.”
Commodity or Equity Swap (Amortizing)	Added: There was not a workbook that handled amortizing commodity swaps. This workbook calculates the fair value of a commodity or equity swap given a current spot price and future prices. It now allows for amortization.
Automatic Calibration	Added the ability to choose points when using automatic swaptions selection Workbooks -> Calibration -> Calibration-Auto Workbooks -> Bloomberg Finance LP Data Specific -> Calibration–Auto
Vanilla Interest Rate Swap Portfolio	<ul style="list-style-type: none"> <li>• The Credit Exposure failed to calculate due to the incorrect trade index. The workbook was updated to include new credit exposure functions. The new functions are able to handle swaps with two reset rates correctly.</li> <li>• Added the ability to define and use preset swap conventions.</li> </ul>
Dual IRFX Range Accrual Note	Documentation Change: This workbook calculates the fair value and expected cash flows of an IR-FX dual range accrual note using Monte Carlo simulation.
Trigger Swap	Added: Calculate the fair value of a periodic or permanent trigger swap.
Asian Option	Added: New workbook for v2010.1
Treasury Lock	The workbook no longer #VALUE! With default data. Data in “reference rate fixings”, “turn pressure table” and “additional output dates” on the <b>Curve</b> worksheet are removed because they contain dates before the value date.
Amortizing swap with CVA	Replaced manual CVA calculation with aaCE_FIPort_dgen_CVA. CE and CVA calculation are combined into one spreadsheet.
Variance and Volatility	The “Variance and Volatility Swap (Heston Model)” workbook added the ability to price a capped or floored variance swap. It is now renamed to “Variance and Volatility Swap (Capped or Floored) (Heston Model)”

Workbook Name	Change
Amortizing Swap	The price outputs were mislabeled. Switched the 'market price' and 'clean price' outputs. The outputs are now in correct order.
CDS (Single Asset) Portfolio – ISDA Model	Added. This workbook calculates the fair value and various risk statistics for a portfolio of single asset CDS. Risk exposures to market data inputs and premium cash flows are also calculated.
Convertible Bond (Amortizing) Portfolio	Added: Calculates fair value for a portfolio of convertibles. Conv ratio may vary; conv price may be capped, soft call, rate (or curve) for equity, rate (or curve) for the bond, callable/puttable, varying call/put price. Can have varying notional, coupon, principal repayment. Allows for amortization.
Zero Coupon Swap	Shortened maturity date so that the workbook will not #VALUE with default data. – Fixed formulas in L8, L11, O8, P15:Q16, P20:Q21 on “swap calculator” tab and M13:M14 on “cashflows” tab in dealing with notionals.

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Workbook Name	Change
Autocallable Note Workbook	Added: This new workbook calculates the fair value and risk statistics for an Autocallable Note using Monte Carlo simulation. It allows free-style sampling points.
Reverse Convertible Note Workbook	Added: This new workbook calculates the fair value and risk statistics for a Reverse Convertible Note using Monte Carlo simulation. It allows free-style sampling points.
Vanilla Interest Rate Swap	Added the ability to calculate credit value adjustment using the swaption approach.
Vanilla Interest Rate Swap Portfolio	Added the ability to calculate credit value adjustment using the swaption approach.

## 4. Known Issues with Workarounds

The following section lists issues that were found specifically in the Analytics Suite 2010 release. Where appropriate, a workaround is provided.

### 2010 Release

Issue	Workaround
<b>Analytics</b>	
aaBond3_dgen	The aaBond3_dgen_cf generates incorrect cash flow in the last period when the dates are forward-generated. When using date generation method 2, the last coupon payment becomes day-count based even though cash flow type is 1. The workaround is to do backwards date generation.
aaCDS_index_basis_adj	aaCDS_index_basis_adj Java sample results differ In Analytics Suite for Developers vs the Analytics Suite for Excel paste example due to different inputs in the samples. This will result in different values between the two products. Changing the sample input for parameter 14, index portfolio recovery rates, so that both products use the same values, will result in the function returning the same results.
aaCDS_ISDA_full_risk	In the function, note 887 is incorrect. The output should be in the format 1) is for survival probability or CDS spread which is consistent, 2) is for discount factor curve and 3) is for recovery rate. However, it outputs in the format: 1) survival probability or CDS spread curve, 2) recovery rate curve, and 3) discount factor curve.
aaCDSRateSwap	In the aaCDSRateSwap function, the function will #VALUE when the default curve is not long enough to cover the length of the deal. To ensure that it returns a good value, make sure that the default curve extends past the instrument maturities of the underlying CDS rate.
aaHimalaya	The value for the repo spread cannot be less than -0.5.
<b>Workbooks and Math References</b>	
CDS (ISDA) Math Reference	CDS (ISDA) Workbook math reference does not point to the correct document. To access the correct math reference, open the Analytics Finder and search for ISDA. Selecting any of the resulting functions will open the math reference.
Cap or Floor (CMS Spread)	The Math Reference button does not open the document. To access the document, open the Analytics Finder, and search for aaCallCMSSprdNote_LMM_LV_fs. Selecting the function will open the appropriate math reference.

Issue	Workaround
FX Forward Portfolio (FMD) Workbook	When first opened and calculated, the workbook results in a run-time error. To resolve this issue, open the workbook, change the base currency to something other than USD, then press Calculate All. This should resolve the issue. Change the currency back to the currency that you want to use.
<b>Non-Analytics</b>	
Add to Sample App Run Sample	<p>In Analytics Suite for Developers, when using Microsoft Vista SP2 or Windows 7, there is an issue when using “Add to Sample App” or “Run Sample” after installation. This does not work. The workaround to resolve this issue is:</p> <ol style="list-style-type: none"> <li>1. Right click this folder, select <b>Properties</b>;</li> <li>2. Go to the <b>Security</b> tab, select <b>Users</b> under <b>Group or user names</b>, click on <b>Edit</b>;</li> <li>3. Select <b>Users</b>, under <b>Permissions for Users</b>, select <b>Full control</b> under <b>Allow</b>;</li> <li>4. Click on <b>Apply</b>.</li> </ol>
FINCAD Analytics Suite 2010 for Excel installed on Windows Vista with MSI auto-deployment is causing error	When FINCAD Analytics Suite 2010 for Excel is installed on Windows Vista 32/64 bit using .the msi auto-deployment, a number of error messages are generated which the user will have to close each time before FINCAD is loaded. This behavior does not happen when installing using .the msi installer manually. The workaround is to disable the UAC, and run the auto-deployment, or install manually on the client machine.
FINCAD Library	FINCAD Analytics Suite and F3 products share common libraries. The common libraries will update to the latest version when installing the various products. This is intentional to ensure both products can co-exist and be used.
Installer	If you have both Analytics Suite 2009.0 and Analytics Suite 2010.0 installed, and uninstall 2009.0, 2010 will stop working. This is due to a bug in the 2009.0 installer, which was fixed in 2009.1. If you are using 2009.1 and 2010.0, there is no issue. The workaround in the first case is to re-install 2010.0.
ISDA Open Source CDS Model (cds.xll)	In Analytics Suite 2010, FINCAD has introduced an implementation of the CDS ISDA model. Because of this, the open source plug-in is not shipped with the product anymore. However, you can download and install the open source code to compare the FINCAD implementation.
Licensing	A purchased license cannot be deactivated while a trial license is still active. The workaround is to wait until the trial expires before attempting a deactivation of the perpetual license.
Licensing	When both Analytics Suite for Excel and Analytics Suite for Developers are installed on a Vista operating system, the deactivation code cannot be retrieved with the User Account Control (UAC) feature activated. To retrieve the deactivation code, the UAC must first be turned off. Once you have retrieved the deactivation code, UAC can be reactivated.

Issue	Workaround
Using Analytics Suite 2009 after installing Analytics Suite 2010	If you install Analytics Suite 2010, and then revert back to Analytics Suite 2009, there are cases where you will get error messages when using 2009. The functionality will continue to work even though these error messages appear. The easiest way to resolve this issue is to uninstall Analytics Suite 2009 and reinstall.
<b><i>FINCAD Analytics Suite 2010 for Developers</i></b>	
aaCDS_index_basis_adj java sample results differ from FINCAD Analytics Suite for Excel paste example	The sample generated for FINCAD Analytics Suite for Developers does not match the sample generated for FINCAD Analytics Suite for Excel. This will result in different values between the two products. Changing the sample input for parameter 14, index portfolio recovery rates, so that both products use the same values will result in the function returning the same results.
aaInterp_FillGrid	Problem in C# interface – generated example will not run. The output array was incorrectly specified as a one dimensional array in the C# interface. It is now correctly specified as a two dimensional array.
aaVaR_lin_rp failing to compile in java	This was fixed by updating the generated code.
AIX 5.3 System Requirements	On the AIX 5.3 platform, FINCAD Analytics Suite 2010 for Developers requires technology level, maintenance level, and service level of the system to be at least 5300-09.
Developer Reference Documentation	Within Analytics Suite for Developers, the documentation tool used to provide information has been updated. The user can now search documents easier to find the necessary information.
Incorrect output array sizing	When rows = 0, the call to GetObjectArrayElement can fail which leads to sizing the output array incorrectly. The Java sample code has been modified to handle null arrays.
Readme.txt in for AIX platform was not updated	On the first note about the gcc version, it reads “gcc version other than 4.3.3”. It should state “4.3.4”.
Suite 2010 for Developers for AIX: Help Document has incomplete name	The Help Document name should read “Using FINCAD Analytics Suite for Developers.htm”. Actual name is cropped: “Using FINCAD Analytics Suit” Name has exceeded the AIX version GNU Tar maximum length.
Suite 2010 for Developers Linux: FINCAD_with_CPP.htm contains references to components that are only available in Windows Developer version	The correct information can be found in hlp/WebHelp/FINCAD Analytics Suite for Developers Help References.htm.

Issue	Workaround
<p>Suite for Developers should redistribute the Microsoft C and C++ Runtimes 64 bit version.</p>	<p>Analytics Suite for Developers requires the use of Microsoft C and C++ Runtimes 64 bit versions. If a machine that you want to use our libraries on does not have the necessary files, you can get them directly from Microsoft:</p> <ul style="list-style-type: none"> <li>64bit: <a href="http://www.microsoft.com/downloads/details.aspx?familyid=EB4E-BE2D-33C0-4A47-9DD4-B9A6D7BD44DA">http://www.microsoft.com/downloads/details.aspx?familyid=EB4E-BE2D-33C0-4A47-9DD4-B9A6D7BD44DA</a></li> <li>32bit: no download required, as it is built with VS7.1, which does not do a Side by Side (SxS) install, only a standard DLL install, so the specific files (MSVCP71.dll and MSVCR71.dll) need to be redistributed. FINCAD installs these when our application is installed.</li> </ul>
<p>Sun Solaris x86 install: unique host ID</p>	<p>FINCAD Analytics Suite 2010 for Developers Solaris x86 requires the use of a unique host id for each installation to ensure accurate identification.</p>

### 2010.1 Release

Issue	Workaround
<p><b>Analytics</b></p>	
<p>Analytics Suite function random number generator – Sobol or Mersenne-Twister</p>	<p>FINCAD has implemented a new algorithm to generate the quasi-random Sobol sequence of numbers. The old algorithm could generate numbers in at most 40 dimensions, but the new algorithm can generate numbers in up to 5715 dimensions. This impacts functions which use Quasi Monte Carlo simulation: such methods can now be used to price derivatives which have more than 40 (but less than 5715) fixing dates.</p>
<p><b>Workbooks and Math References</b></p>	
<p>Treasury Lock Workbook</p>	<p>The workbook returns a #VALUE when opened. The reason is that the data used in the inputs does not correspond well to the common curve used to price the instrument. Once the user has updated with their deal inputs, the workbook will output a correct value.</p>
<p><b>Non-Analytics</b></p>	
<p>Co-existence</p>	<p>If you want to have both FINCAD Analytics Suite for Excel and FINCAD Analytics Suite for Developers 2010 installed, it is required that both be of the same minor version as well.</p>
<p>Files are missing when installing to a non-default folder</p>	<p>This is an issue introduced by upgrading our installation project file from IS2008 to IS2010 format. The fix applies to any supported platforms.</p>

Issue	Workaround
Installer	<p>Removed the following 4 files from the installer:</p> <ul style="list-style-type: none"> <li>• fcPocoFoundation-32-vc71-1_2_9.dll</li> <li>• fcPocoNet-32-vc71-1_2_9.dll</li> <li>• fcPocoUtil-32-vc71-1_2_9.dll</li> <li>• fcPocoXML-32-vc71-1_2_9.dll</li> </ul> <p>They are no longer required by FINCAD Analytics Suite products.</p>
Installer	<p>Windows Server 2003 R2 Standard x64 Edition SP2: XL and Developer installers are not installing the required version .NET 2.0 Framework. For Windows XP 64 and Server 2003 64, please ensure that the .NET framework 2.0 is installed before installing Analytics Suite.</p>
MSI Installer needs to include EULA	<p>ACCEPTSLA must be set to "Yes" through the command line if the silent mode is used to install the product with the MSI installer. The MSI installer cannot be used directly for auto deployment purpose. A user can add a transform on top of the MSI installer to force the ACCEPTSLA property to be set to "Yes" to continue the auto deployment by applying the group policy.</p>
MSI installer: Cannot install on Server2008 or Windows7	<p>Installer Change: Server2008 or Windows7 are officially supported in V2010.1.</p>
MST file	<p>To apply a group policy on the MSI installer to perform auto deployment, the customer needs to accept the EULA. To accomplish this, a transform is required to remove the restriction of requiring the ACCEPTSLA property to be set to "Yes" through the command line. If creating a transform is a problem for the customer, FINCAD can ship this transform to the customer upon request and after the customer has agreed to the license agreement.</p>
Uninstallation based on an upgrade scenario: Cannot manually delete the FINCAD folder	<p>This happens when upgrading from V2009.0.x to V2009.1 or V2009.2. The reason is the update from V2009.0 to V2009.1 or V2009.2 is actually done by a custom script. To avoid this issue it's better to uninstall V2009.0 before install V2009.1 or V2009.2. This is not an issue for V2010. Since any build of V2010 installs the MSI file to the common files/fincad folder. The IS installer requires this file for upgrade or repair a corrupt installation. There's no more custom upgrade script for V2010 upgrade. All V2010 upgrades are managed by InstallShield.</p>
<p><b><i>FINCAD Analytics Suite 2010 for Developers</i></b></p>	
aaGridToList: The output type was defined as a 1-dimensional array: maxOutputRank="1", while the output is a 2-d array: ParameterOutput rank="2"	<p>Fixed output rank, function can be used in .NET APIs.</p>

Issue	Workaround
aaHolidays – standard error 64bit C Sample	The static data is not installed to the Program Files\FINCAD\Common Files\ directory on a 64 bit system. This results in holiday list data being unavailable. To resolve this, copy the static data folder from Program Files (x86)\FINCAD\Common Files\ directory into the Program Files\FINCAD\Common Files\ directory.
An implementation issue causes initialization failure in FINCAD Analytics Suite for Developers 2010 under XP 2002 sp3	An ATL/COM application linked with the FINCAD library fails to load when executed on Windows XP 2002 SP3. Resolution: Use a lazy initialization of the FINCAD library in order to simplify the process of loading and reduce the number of functions executed in DllMain. Some functions invoked in DllMain were called without a proper initialization of the system libraries.
Documentation needed for calling Framework-based Toolkit functions from IIS (ASP .NET)	Updated documentation to describe how to invoke a FINCAD function in a multi-threaded environment.
Linux unprotected build: Instruction file INSTALL requires users to do unnecessary steps related to RLM licensing.	The manual installation steps 5-7 are not required for unprotected versions. Please skip steps 5 – 7 if you are using the unprotected Analytics Suite 2010.1 for Developers for Linux.
Protected Developer will hang pasting Excel VBA	User Account Control (UAC) needs to be turned off.
Running C++ sample code using Visual Studio 2005 does not work	If you are rebuilding the C++ interface to work with a compiler other than Visual Studio 2003, please ensure that your own product defines the macro: REBUILDING_CPP_WRAPPER
Samples	Updated sample set for each language with demonstration of using all major FINCAD data structures. Function samples demo the use of single values, vectors, and table types. – Added utility macros that help create, initialize, and assign data in C.

Issue	Workaround
<p>Sun Solaris Sparc: documentation needs to specify that lib32 and lib64 are in the library path</p>	<ol style="list-style-type: none"> <li>1. On the Sun Solaris SPARC platform, the FINCAD library has new dependencies on GCC libraries: - libgcc_s.so.1 – libstdc++.so.6 These libraries are shipped with the product <ul style="list-style-type: none"> <li>○ for 32 bit version under     &lt;install_dir&gt;/fincad/lib/lib32</li> <li>○ for 64 bit version     &lt;install_dir&gt;/fincad/lib/lib64</li> </ul> <p>These GCC shared libraries should be in the path when application is loading FINCAD library. This means that the environment variable LD_LIBRARY_PATH should also include &lt;install_dir&gt;/fincad/lib/lib32 or &lt;install_dir&gt;/fincad/lib/lib64 directory.</p> </li> <li>2. On the Sun Solaris SPARC platform, <ul style="list-style-type: none"> <li>○ for 32 bit version of the FINCAD library, please execute the following command: <pre>export LD_LIBRARY_PATH=&lt;install_dir&gt;/fincad/lib:&lt;install_dir&gt;/fincad/lib/lib32</pre> </li> <li>○ or for the 64 bit version of the FINCAD library: <pre>export LD_LIBRARY_PATH=&lt;install_dir&gt;/fincad/lib:&lt;install_dir&gt;/fincad/lib/lib64</pre> </li> </ul> </li> </ol>
<p>Uninstallation: The second last dialog stays for 1.5 minutes after the progress reaches 100%</p>	<p>FINCAD does not provide a separate 64 bit Windows installer anymore. Instead, there is a unified Windows installer to install both 32 bit and 64 bit files on any Windows platform supported.</p>
<p>Win 7: Adding C# samples adds them to "VirtualStore" but tries to build and run from the default installation directory</p>	<p>When adding function samples to the sample applications on Windows Vista or Windows 7, the sample applications may fail to update correctly. To work around this, run the FINCAD Analytics Suite for Developers Finder as Administrator.</p>

## 2010.2 Release

Issue	Workaround
<b>Workbooks and Math References</b>	
PRDC Math Reference	<p>The function reference of the correlation vector input in the PRDC functions (i.e. aaPRDC_fs_cf, aaPRDC_fs_p, aaTarnPRDC_fs_cf and aaTarnPRDC_fs_p) was not consistent with the Math Reference. The function reference for the correlation vector input (table_2301) was corrected to the following:</p> <ol style="list-style-type: none"> <li>1. correlation between domestic interest rate process and foreign interest rate process</li> <li>2. correlation between FX and domestic interest rate process</li> <li>3. correlation between FX and foreign interest rate process</li> </ol>
<b>Non-Analytics</b>	
Installer	<p>Specification change: MSI Installer did not recognize that MS Office 2007 was installed so the FINCAD ribbon was not shown in Excel 2007. New shortcut names for different Excel versions installed on the target machine:</p> <ul style="list-style-type: none"> <li>• Start\Programs\FINCAD\Analytics Suite 2010: <ul style="list-style-type: none"> <li>○ Analytics Suite 2010 for Excel–Excel 2003</li> <li>○ Analytics Suite 2010 for Excel 2007–Excel 2007</li> <li>○ Analytics Suite 2010 for Excel 2010–Excel 2010</li> </ul> </li> <li>• Desktop: <ul style="list-style-type: none"> <li>○ FINCAD Analytics Suite 2010 for Excel–Excel 2003</li> <li>○ FINCAD Analytics Suite 2010 for Excel 2007–Excel 2007</li> <li>○ FINCAD Analytics Suite 2010 for Excel 2010–Excel 2010</li> </ul> </li> </ul>
Installer	<p>FINCAD Analytics Suite for Excel 2010.2 supports Excel 2010. However, if Excel 2010 was installed after the installation of FINCAD Analytics Suite for Excel 2010.2, FINCAD Analytics Suite for Excel 2010.2 may need to be re-installed to ensure FINCAD Analytics Suite for Excel works properly in Excel 2010.</p>
Installer	<p>If FINCAD Analytics Suite for Excel was installed before Office 2010 was installed, a re-install of FINCAD Analytics Suite for Excel might be necessary to make FINCAD Analytics Suite for Excel work properly after the installation of Office 2010 if a user sees an error when launching FINCAD Analytics Suite for Excel after installing Office 2010.</p>
Licensing	<p>When using the msi installer and doing an auto-deployment, the UAC must be turned off. Please contact FINCAD for assistance.</p>
Licensing	<p>Previously, the concurrent license string was not being handled correctly. The LMUI and FLA are now able to handle this case so the concurrent license string is being handled correctly.</p>

Issue	Workaround
Licensing	On Windows 7, the software must be installed to the default location. If the default location is changed, the software will not run.
Licensing	The command line license tool (FCCLM) will sometimes not detect clock tampering, instead returning a general -1 error. The Windows UI tool is not affected by this bug.
Office 2010 - Workbook: Calculating the whole workbook after calculating each worksheet crashes Excel	For workbooks that are not in the FINCAD Market Data” section, saving the workbook as “Macro Enabled Workbook (xlsm)” or “Macro Enabled Template (xltm)”, workbooks will work properly (without recalculate all worksheets) after saving and re-open. For workbooks that are in the “FINCAD Market Data” section, saving the files in the new format will not work. In both cases, when opening a workbook in Office 2010, do a “calculate all” or “disable multi-thread in Excel.”
<b>FINCAD Analytics Suite 2010 for Developers</b>	
Installer: All Dynamic Linked Libraries in redist\32 and redist\64 are installed to common files folder	<p>Added all the DLLs in the redist folder to the COMMON FILES\FINCAD folder.</p> <ul style="list-style-type: none"> <li>• List of files copied: <ul style="list-style-type: none"> <li>○ fcold.dll</li> <li>○ fcvbold.dll</li> <li>○ fincad_Suite_32_2010.dll</li> <li>○ fincad_Suite_COM_32_2010.dll</li> <li>○ fincad_Suite_CPP_32_2010.dll</li> <li>○ fincad_Suite_CPP_32_2010D.dll</li> <li>○ fincad_Suite_dotNET_32_2010.dll</li> <li>○ fincad_Suite_Java_32_2010.dll</li> <li>○ fincad_Suite_VB_32_2010.dll</li> <li>○ fincad_Suite_VBA_32_2010.dll</li> </ul> </li> <li>• 64 bit files: <ul style="list-style-type: none"> <li>○ FINCAD_SUITE_64_2010.dll</li> <li>○ FINCAD_Suite_CPP_64_2010.dll</li> <li>○ FINCAD_Suite_dotNET_64_2010.dll</li> <li>○ FINCAD_Suite_Java_64_2010.dll</li> </ul> </li> </ul>
Installer: Program Files\Common Files\FINCAD is removed from the path when FINCAD Analytics Suite for Excel is uninstalled	If v2010.2 and v2009.0 are both installed, and v2009.0 is then uninstalled, v2010.2 may stop working correctly. To resolve this issue, re-install v2010.2 or manually update the PATH environment to include the Program Files\Common Files\FINCAD folder.

Issue	Workaround
Licensing for non-default directory in non-Windows instructions	<p>When installing a to a non-default location, the environment variable RLM_LICENSE must be set to point to the new location of the license directory. Use the following command in the bash shell:</p> <pre>export RLM_LICENSE=&lt;license_directory&gt;</pre> <p>where &lt;license_directory&gt; is the directory where the license files are stored (default location for license file is /opt/fincad/core/lic directory). The license location directory is specified in fcclm.config configuration file by variable license-target". "</p>
VBA Interface compile error for aaDFCurve_AddXCbasisSpreads2_*	The Excel VBA interface is missing the definitions for the new aaDFCurve_AddXCbasisSpreads2 functions. These definitions can be provided to clients upon request.
VBA Interface compile error for aaDFCurve_AddXCbasisSpreads2_*	The Excel VBA interface is missing the definitions for the new aaDFCurve_AddXCbasisSpreads2 functions. These definitions can be provided to clients upon request.
VBA Sample Apps can cause Excel to crash	When adding VBA samples to the application, Excel will prompt the user if they wish to reload the sample. If the user clicks Yes, Excel may hang or crash.
Visual Studio plugin does not work properly with UAC enabled.	To avoid this issue, please run Visual Studio as administrator, or disable user account control.