



# **ECL Model Suite**

**Version 1.0, July 2020**

Based on: “Expected Credit Loss Modeling from a Top-Down Stress Testing Perspective”, by Gross, M., Laliotis, D., Leika, M., and P. Lukyantsau (2020), IMF Working Paper No. 20/111.

OVERVIEW

Module	Name
1	ECL CALCULATOR WITH "BETA-LINKING"
2	ECL CALCULATOR WITH "Z-TM-ANCHORING-IN-PDs"
3	ECL CALCULATOR WITH Z-SCORE
4	Z-SCORE CALCULATION
5	LGD MODELS
6	EXEMPLARY IFRS 9 DATA TEMPLATES

## **MODULE 1: ECL CALCULATOR WITH "BETA-LINKING"**

### **DESCRIPTION**

The module's purpose is to illustrate how the provision stock and flow calculations based on Incurred Loss (IL) à la IAS 39 and Expected Credit Loss (ECL) à la IFRS 9 and CECL can be conducted.

Transition matrices as of Year 0 (incl. PDs) and LGDs are assumed to be given. The "Beta-Linking" methodology is involved for projecting the transition matrices based on a PD scenario path.

Available in two versions: with annual and quarterly frequency.

### **RELEVANT SECTIONS IN THE PAPER**

Sections III. and IV.

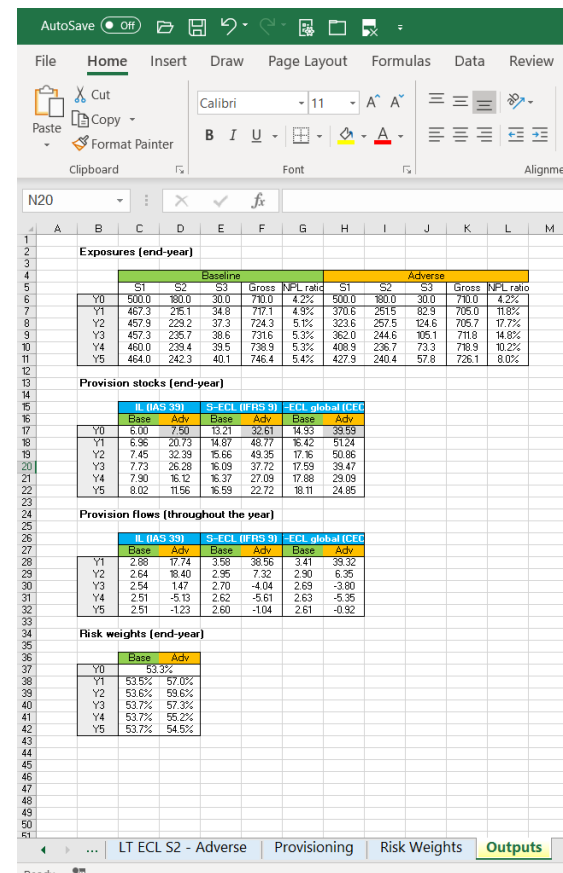
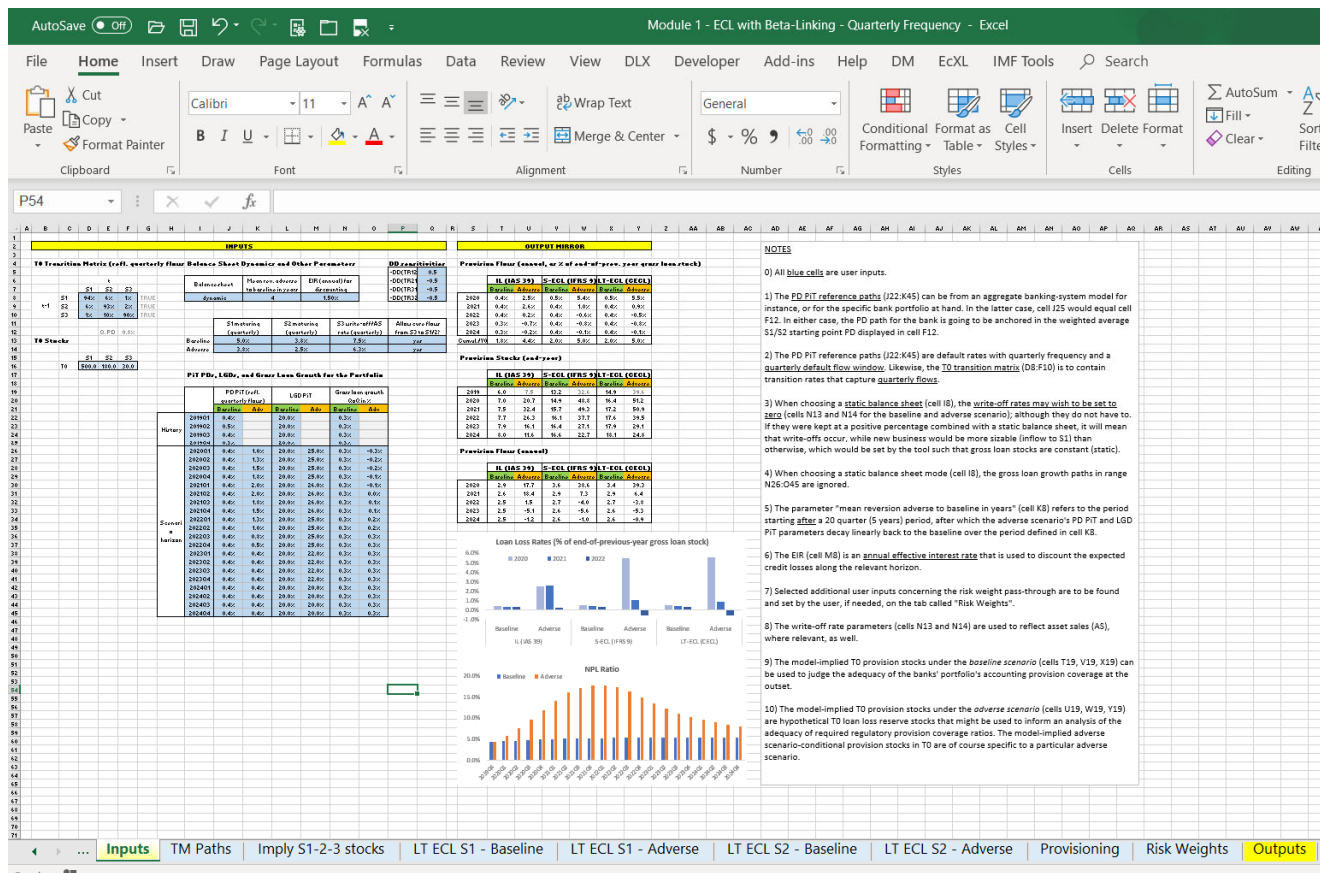
Section III.C. for an explanation of the "Beta-Linking" approach.

Section III.E. and Box 4 for LT ECL calculations as presented on the tabs called "LT ECL...".

Section III.F. and Box 5 for provision stock and flow calculations as located on the tab called "Provisioning".

Section III.G and Box 6 for link to risk weights; see tab called "Risk Weights".

## MODULE 1: ECL CALCULATOR WITH "BETA-LINKING"



## **MODULE 2: ECL CALCULATOR WITH "Z-TM-ANCHORING-IN-PDs"**

### **DESCRIPTION**

The module's purpose is to illustrate how the provision stock and flow calculations based on Incurred Loss (IL) à la IAS 39 and Expected Credit Loss (ECL) à la IFRS 9 and CECL can be conducted.

Historical transition matrices are assumed to be available. The "Z-TM-anchoring-in-PDs" methodology is involved for projecting the transition matrices based on a PD scenario path.

Available in two versions: with annual and quarterly frequency. The module involves a VBA script.

### **RELEVANT SECTIONS IN THE PAPER**

Sections III. and IV.

Section III.C. for an explanation of the "Z-TM-anchoring-in-PDs" approach.

Section III.E. and Box 4 for LT ECL calculations as presented on the tabs called "LT ECL...".

Section III.F. and Box 5 for provision stock and flow calculations as located on the tab called "Provisioning".

Section III.G and Box 6 for link to risk weights; see tab called "Risk Weights".

MODULE 2: ECL CALCULATOR WITH "Z-TM-ANCHORING-IN-PDs"

Excel interface showing the ECL Calculator with Z-TM-Anchoring-in-PDs. The spreadsheet includes sections for Historical Transition Matrix and Exposure Structure, Balance Sheet Dynamics and Other Parameters, PD PIT, LGD, and Gross Loss Rates for the Portfolio, and Provision Flows (end-year). It also features a chart for Loan Loss Rates (% of end-of-previous year gross loan stock) and a chart for NPL ratio.

Excel interface showing the ECL Calculator with Z-TM-Anchoring-in-PDs. The spreadsheet includes sections for Exposures (end-year), Provision stocks (end-year), Provision flows (throughout the year), and Risk weights (end-year). It also features a chart for Loan Loss Rates (% of end-of-previous year gross loan stock) and a chart for NPL ratio.

## **MODULE 3: ECL CALCULATOR WITH Z-SCORE**

### **DESCRIPTION**

The module's purpose is to illustrate how the provision stock and flow calculations based on Incurred Loss (IL) à la IAS 39 and Expected Credit Loss (ECL) à la IFRS 9 and CECL can be conducted.

The module requires scenario-conditional Z-score paths as input.

Available in two versions: with annual and quarterly frequency.

### **RELEVANT SECTIONS IN THE PAPER**

Sections III. and IV.

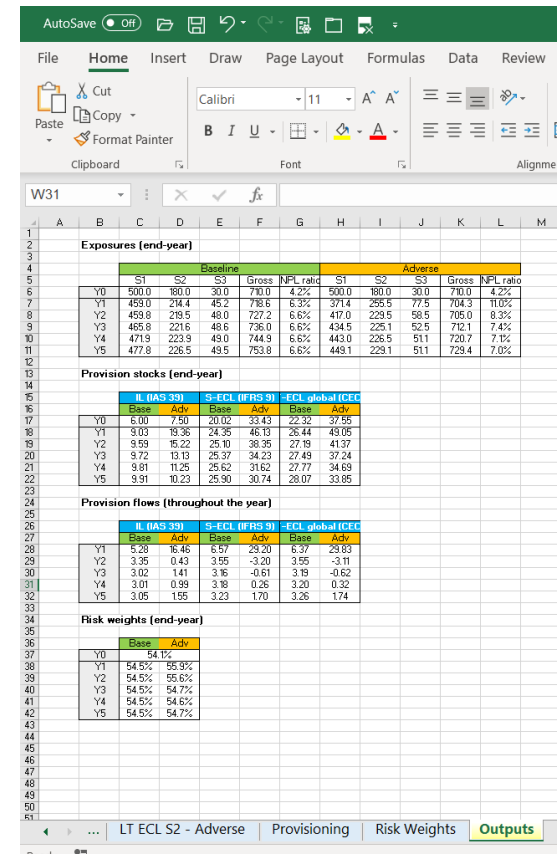
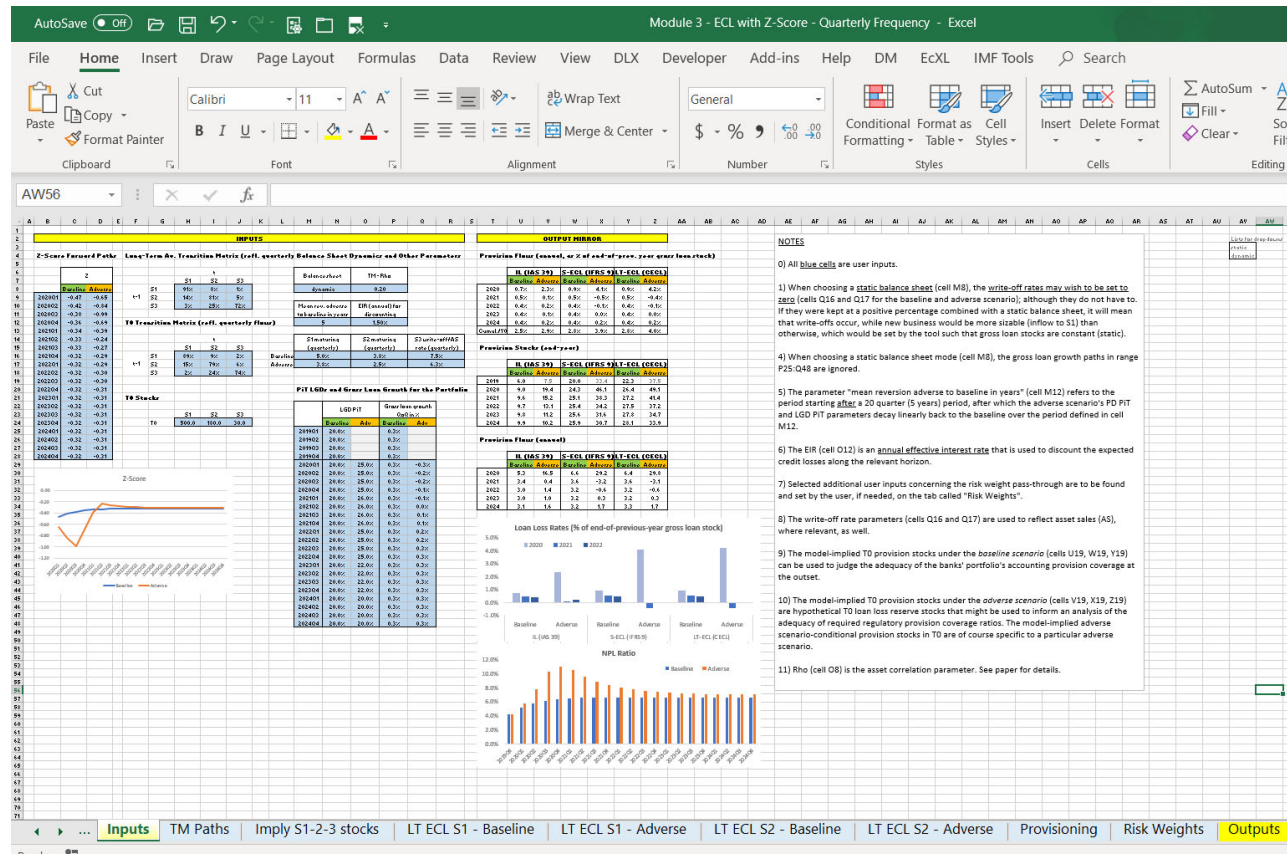
Sections III.A. and B for an explanation of the Z-score methodology.

Section III.E. and Box 4 for LT ECL calculations as presented on the tabs called "LT ECL...".

Section III.F. and Box 5 for provision stock and flow calculations as located on the tab called "Provisioning".

Section III.G and Box 6 for link to risk weights; see tab called "Risk Weights".

# MODULE 3: ECL CALCULATOR WITH Z-SCORE





## **MODULE 4: Z-SCORE CALCULATION**

### **DESCRIPTION**

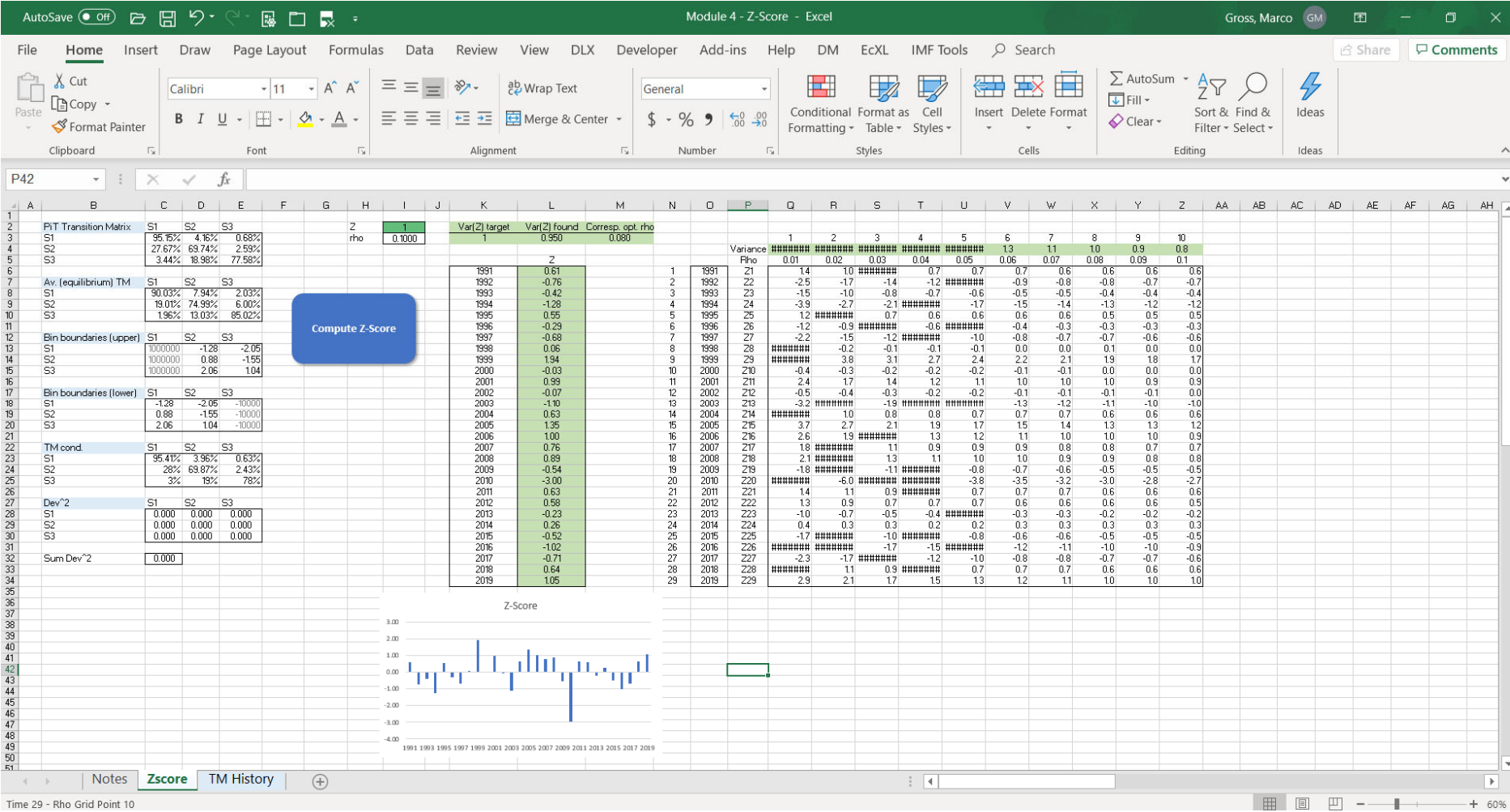
The purpose of this module is to illustrate how the Z-score can be computed from historical transition matrix data.

### **RELEVANT SECTIONS IN THE PAPER**

Sections III. and IV.

Sections III.A. and B for an explanation of the Z-score methodology.

MODULE 4: Z-SCORE CALCULATION



## **MODULE 5: LGD MODELS**

### **DESCRIPTION**

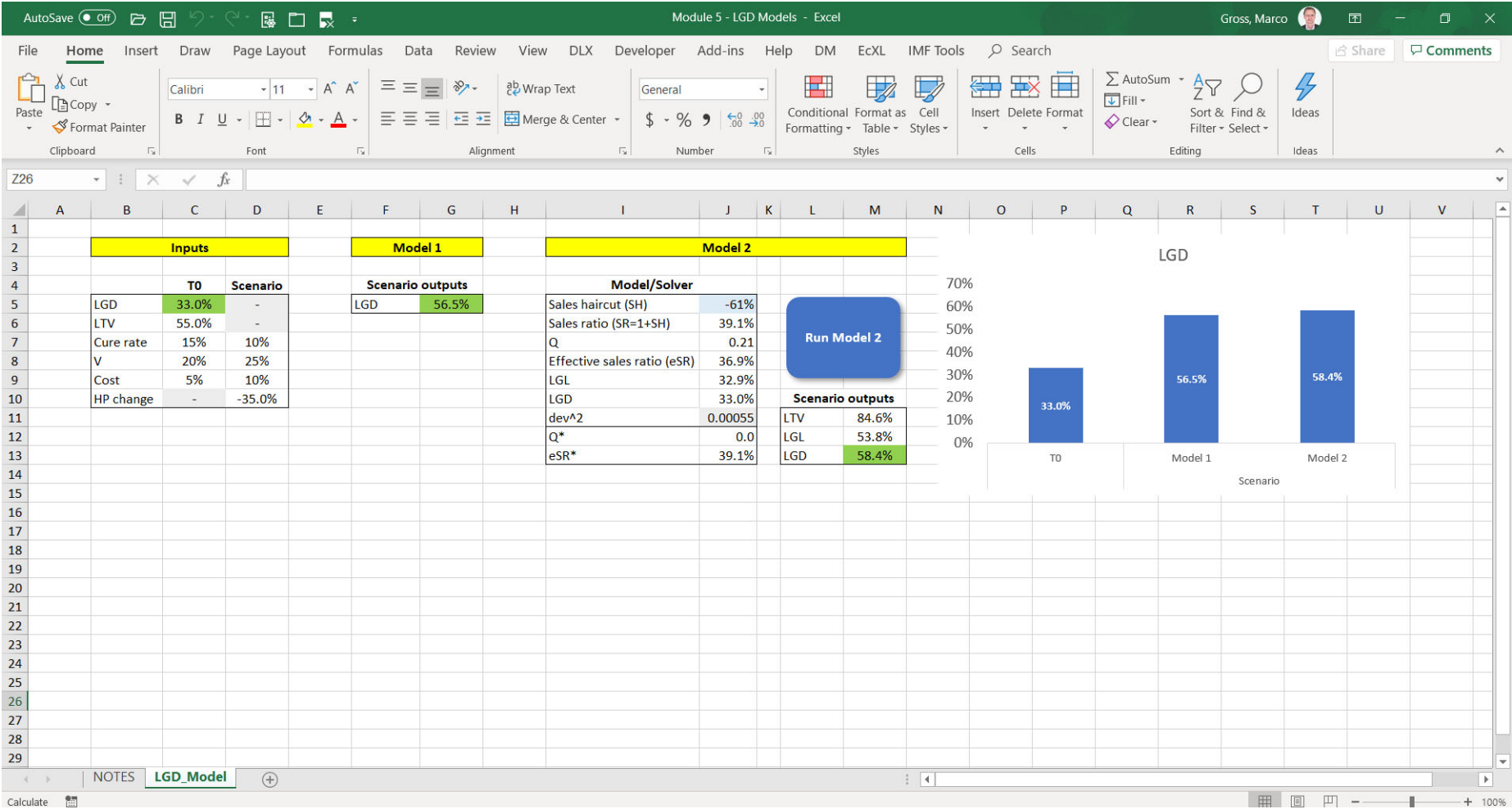
The purpose of this module is to illustrate the functioning of two LGD models for real estate-collateralized portfolios.

### **RELEVANT SECTIONS IN THE PAPER**

Sections III. and IV.

Section III.D. and Box 3 for an explanation of the LGD models.

MODULE 5: LGD MODELS



## **MODULE 6: EXEMPLARY IFRS 9 DATA TEMPLATES**

### **DESCRIPTION**

Exemplary IFRS 9 data templates. Including indicative IAS 39 vs. IFRS 9 accounting classification mapping.

### **RELEVANT SECTIONS IN THE PAPER**

Section V.

# MODULE 6: EXEMPLARY IFRS 9 DATA TEMPLATES

AutoSave

File Home Insert Draw Page Layout Formulas Data Review View DLX Developer Add-ins Help DM EXL IMF Tools Search

Cut Copy Paste Format Painter

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B I U

Font

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Number

General

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Conditional Formatting Format as Table Cell Styles

Insert Delete Format

Cells

AutoSum Fill Clear

Sort & Find & Filter Select

Ideas

A1

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NOTES

Hist. TMs + Stocks - Quarterly

Stocks

IAS 39 to IFRS 9 mapping

Ready

AutoSave 100% Module 6 - Exemplary IFRS 9 Data Templates - Excel

FileHomeInsertDrawPage LayoutFormulasDataReviewViewDLXDeveloperAdd-insHelpDMEXLIMF ToolsSearch

CutCopyFormat Painter

Clipboard

Calibri11

## NOTES

- All current numerical inputs to the tools are artificial data inputs.
- The (LT-)ECL calculations in Modules 1, 2, and 3 are conducted in a consistent manner in parallel based on IL (IAS 39), IFRS 9, and CECL principles; that is, the Stage 3 (NPL stock)-related provision stocks and flows are identical under all three approaches, and the LT-ECL provision stocks and flows related to Stage 2 stocks are consistent across the IFRS 9 and CECL approach.
- The parameter inputs in the quarterly and annual frequency versions of Modules 1, 2, and 3 are not currently numerically consistent, that is, they result in different loan loss provision flows over a common horizon in their quarterly and annual versions.
- Module 2 (ECL Calculator with "Z-TM-Anchoring-In-PDs"), Module 4 (Z-Score Calculation), and Module 5 (LGD Models) contain VBA macros that can be run by hitting the relevant buttons.