

# Bank of England Stress Test Methodology

## 1 Background

The 2° Investing Initiative (2°ii) is supporting the Bank of England with its 2019 stress test for insurance companies by making available its online PACTA scenario analysis tool in combination with an Excel-based tool that allows users to generate stress test results.

The Excel tool uses financial portfolios' exposure to climate-relevant sectors to calculate the impact of climate stress on the value of portfolios. Exposure values can be generated using the online PACTA tool and fed directly into the Excel tool.

This document outlines the methodology underlying the Excel-based stress testing tool as well as the online PACTA tool.

## 2 Climate scenarios and risk

The Excel-based stress testing tool applies shock parameters to financial portfolios based on three different climate scenarios and two types of climate risk.

### 2.1 Climate scenarios

The Bank of England defines three exploratory climate scenarios for its general insurance stress test. The table below gives an overview of each. For more information on the assumptions underlying each scenario, see page 28 of the Bank of England's [General Insurance Stress Test Documentation](#).

Name	Key assumptions	Temperature rise	Year of impact
Scenario A	Sudden disorderly transition (Minsky moment) that follows from rapid global action and policies	Below 2° C by 2100	2022
Scenario B	Long-term orderly transition that is broadly in line with the Paris Agreement	Well below 2°C by 2100	2050
Scenario C	No transition and a continuation of current policy trends	Exceeding 4°C by 2100	2100

### 2.2 Climate risks

To understand how each scenario may impact the value of financial portfolios, two types of climate risk are considered: physical risks and transition risks. Physical risks are defined as risks that arise from weather-related events, such as storms, floods, subsidence and freeze. Transition risks are defined as risks that arise from the transition to a carbon-neutral economy.

## 3 Calculating changes in portfolio value

The Excel-based stress testing tool calculates changes in the value of listed equity and corporate bond portfolios based on two elements: (A) the scenario-defined changes in the value of holdings in each sector, also called shock parameters, and (B) the portfolio's exposure to holdings in each sector. For each sector, the change in portfolio value is equal to the product of the shock parameter for that sector and the portfolio's exposure to that sector.

### 3.1 Shock parameters

The Bank of England estimates shock parameters for holdings in different climate-relevant sectors and subsectors for two types of climate risk. The table below provides an overview of these shocks as they are applied in the Excel-based stress testing tool. For an overview of the sources and assumptions underlying the shock parameters, see pages 34-36 of the Bank of England's [General Insurance Stress Test Documentation](#).

When applying the shock parameters to a portfolio using the Excel tool, the following assumptions are made:

- The shocks listed in the table below apply to listed equity only; to derive the shocks for corporate bonds, a flat multiplier of 15% is applied to the equity shocks.
- The shocks are discounted to values as of 31 December 2018.
- Where the scenarios contain both transition and physical risks, shocks are applied consecutively. That is, the shocks associated with physical risks are applied second, after accounting for the impacts of transition risks.

Sector	Subsector	Transition risks			Physical risks		
		Scen. A	Scen. B	Scen. C	Scen. A	Scen. B	Scen. C
Fuel Extraction	Coal	-45%	-40%	-	-	-5%	-20%
	Oil	-42%	-38%	-	-	-5%	-20%
	Gas	-25%	-15%	-	-	-5%	-20%
Power	Coal	-65%	-55%	-	-	-5%	-20%
	Oil	-35%	-30%	-	-	-5%	-20%
	Gas	-20%	-15%	-	-	-5%	-20%
	Low Carbon	+10%	+20%	-	-	-5%	-20%
Automotive	Non Electric	-30%	-10%	-	-	-5%	-10%
	Electric	+15%	+50%	-	-	-5%	-10%
Shipping	-	-15%	-10%	-	-	-5%	-10%
Aviation	-	-21%	-18%	-	-	-5%	-10%
Materials	Fossil fuel based	-35%	-25%	-	-5%	-10%	-20%
	Other	-15%	-10%	-	-5%	-10%	-20%
Agriculture	-	-65%	-50%	-	-5%	-10%	-20%
Food Logistics	-	-15%	-10%	-	-	-5%	-10%
Real Estate	-	-10%	-	-	-	-15%	-30%
Water	-	-	-	-	-5%	-10%	-20%
Other sectors	-	-	-	-	-	-2%	-5%

### 3.2 Portfolio exposure

Portfolio exposure values can be calculated using a variety of methods and data providers. However, this section focuses specifically on the methodology underlying the 2° Investing Initiative's online PACTA tool, which has been adapted for the purposes of the Bank of England stress test.

The online tool calculates the exposure of users' portfolios to each sector and subsector defined in the stress test. The exposure values are equal to the weight by market value of the portfolio holdings classified in each sector and subsector.

### 3.2.1 Listed equity and corporate bonds

After users upload their portfolio to the online PACTA tool, it is split into listed equity and corporate bond portfolios based on asset type classification data from Bloomberg. From there, portfolio exposure values are calculated separately for equity and corporate bonds.

Note that the online PACTA tool covers listed equity and corporate bonds and does not provide portfolio exposure values associated with other financial instruments, such as sovereign or municipal bonds.

### 3.2.2 Sector classification

The portfolio's holdings are broken down into sectors based on Bloomberg Industry Classification Systems (BICS) revenue data obtained from Bloomberg. A full mapping of BICS sectors to the sectors defined in the Bank of England stress test can be found in the Annex.

To determine the exposure of portfolio holdings to each sector, revenue data is linked via ISIN to the ISINs in the user's portfolio. The sector classification of each holding is determined by the BICS revenue breakdown in the dataset, and the exposure to each sector is calculated by taking the weight by market value of the holding that is classified in each sector. Where the classification of a specific holding is not provided, the parent company classification is used. Where no revenue breakdown is available, 100% of the holding is allocated to the BICS sector assigned by Bloomberg.

### 3.2.3 Subsector classification

For holdings classified in the materials sector, BICS revenue data is used to further classify holdings into one of two subsectors.

For holdings classified in the fuel extraction, power or automotive sectors, asset level activity data is used to determine each holding's exposure to corresponding subsectors. Activity data is drawn from two sources, GlobalData and WardsAuto, which provide asset level production and capacity data by technology. The data is linked to holdings in portfolios via financial data from Bloomberg. Then, the subsector exposure is calculated based on the weight of production in corresponding technologies in the company's asset base. The table below provides an overview of the asset level data sources as well as the subsector-technology mapping used in this process.

Sector	Subsector	Technology	Source	Effective date
Fuel Extraction	Coal	Coal	GlobalData	2018Q4
	Oil	Oil		
	Gas	Gas		
Power	Coal	Coal	GlobalData	2018Q4
	Oil	Oil		
	Gas	Gas		
	Low Carbon	Nuclear		
Hydro				
Renewables				
Automotive	Non Electric	ICE	WardsAuto	2018Q4
		Hybrid		
	Electric	Electric		

If no asset level data is available for companies classified in the fuel extraction, power or automotive sectors, BICS revenue data is used to assign holdings or portions of holdings to subsectors. In cases where the BICS sector classification is not granular enough to define exposure to a subsector, industrial averages are used to split holdings across subsectors. The relevant industrial averages are summarized in the table below.

Sector	Subsector	Exposure	Source
Fuel Extraction	Gas	28.5%	WEO 2018 Fossil fuel production for 2019
	Oil	41.0%	
	Coal	30.5%	
Power	Gas	18%	WEO 2018 Power generation values for 2019
	Oil	3%	
	Coal	29%	
	Low Carbon	50%	
Automotive	Electric	0.75%	Estimated production from the ETP 2017 by subtracting stock values from sales values; Non Electric includes fuel cell and hybrid vehicles
	Non Electric	99.25%	

## 4 Annex: Sector mapping

The following table contains a full mapping of BICS sectors to the sectors and subsectors defined in the Bank of England stress test. Note that the list of BICS sectors is a combination of current and former equity and debt classifications, as well as ICB subsector breakdowns.

BICS Sector	BoE Sector	BoE Subsector
Advertising & Marketing	Other	-
Advertising Sales	Other	-
Aerospace & Defense	Other	-
Aerospace/Defense	Other	-
Aerospace/Defense-Equip	Other	-
Agency CMBS	Other	-
Agency Collat IO	Other	-
Agency Collat Other	Other	-
Agency Collat PAC	Other	-
Agency Collat PAC IO	Other	-
Agency Collat PAC PO	Other	-
Agency Collat PAC Support	Other	-
Agency Collat PAC Z	Other	-
Agency Collat PO	Other	-
Agency Collat Residual	Other	-
Agency Collat Sequential	Other	-
Agency Collat Structured	Other	-
Agency Collat Support	Other	-
Agency Collat Support IO	Other	-
Agency Collat Support PO	Other	-
Agency Collat Support Z	Other	-
Agency Collat TAC	Other	-
Agency Collat Z	Other	-
Aggressive Growth	Other	-
Agricultural Chemicals	Other	-
Airlines	Aviation	-
Airport Develop/Maint	Aviation	-
Apparel & Textile Products	Other	-
Applications Software	Other	-
Asian Pacific Ex Japan	Other	-
Asset Backed Securities	Other	-
Ast Alloc/Islamic	Other	-
Audio/Video Products	Other	-
Auto Floor Plan Other	Automotive	-
Auto Floor Plan Sequent	Automotive	-
Auto Parts Manufacturing	Automotive	-
Auto/Trk Prts&Equip-Orig	Automotive	-
Auto-Cars/Light Trucks	Automotive	-
Automobile ABS Other	Automotive	-
Automobile Sequential	Automotive	-
Automobiles Manufacturing	Automotive	-
B2B/E-Commerce	Other	-
Balanced	Other	-
Banks	Other	-
Beverages-Non-alcoholic	Food Logistics	-
Beverages-Wine/Spirits	Food Logistics	-
Biotechnology	Other	-
Bldg Prod-Cement/Aggreg	Real Estate	-
Bldg Prod-Doors&Windows	Real Estate	-
Bldg Prod-Wood	Real Estate	-
Bldg&Construct Prod-Misc	Real Estate	-

Bldg-Residential/Commer	Real Estate	-
Blue Chip	Other	-
Boat Loan Other	Other	-
Broadcast Serv/Program	Other	-
Building&Construct-Misc	Real Estate	-
Building-Heavy Construct	Real Estate	-
Building-Maint&Service	Real Estate	-
Cable & Satellite	Other	-
Cable/Satellite TV	Other	-
Casino Hotels	Other	-
Casino Services	Other	-
Casinos & Gaming	Other	-
Cellular Telecom	Other	-
Central Bank	Other	-
Chemicals	Materials	Other
Chemicals-Diversified	Materials	Other
Chemicals-Specialty	Materials	Other
Closed-end Funds	Other	-
CMBS Other	Real Estate	-
CMBS Subordinated	Real Estate	-
Coal	Fuel Extraction	Coal
Coal Operations	Fuel Extraction	Coal
Coatings/Paint	Other	-
Commer Banks Non-US	Other	-
Commer Banks-Central US	Other	-
Commer Banks-Eastern US	Other	-
Commer Banks-Southern US	Other	-
Commercial Finance	Other	-
Commercial Serv-Finance	Other	-
Commercial Services	Other	-
Commodity	Other	-
Communications Equipment	Other	-
Communications Software	Other	-
Computer Services	Other	-
Computer Software	Other	-
Computers-Memory Devices	Other	-
Construction Materials Manufacturing	Real Estate	-
Consumer Finance	Other	-
Consumer Products	Other	-
Consumer Services	Other	-
Containers & Packaging	Other	-
Containers-Paper/Plastic	Other	-
Contrarian	Other	-
Convertible	Other	-
Corp/Pref-High Yield	Other	-
Corp/Pref-Inv Grade	Other	-
Corporate/Preferred	Other	-
Cosmetics&Toiletries	Other	-
Country Fund-Australia	Other	-
Country Fund-Austria	Other	-
Country Fund-Belgium	Other	-
Country Fund-Brazil	Other	-
Country Fund-Canada	Other	-
Country Fund-China	Other	-
Country Fund-Denmark	Other	-
Country Fund-France	Other	-
Country Fund-Germany	Other	-
Country Fund-India	Other	-

Country Fund-Indonesia	Other	-
Country Fund-Italy	Other	-
Country Fund-Japan	Other	-
Country Fund-Korea	Other	-
Country Fund-Malaysia	Other	-
Country Fund-Mexico	Other	-
Country Fund-Netherlands	Other	-
Country Fund-Philippines	Other	-
Country Fund-Russia	Other	-
Country Fund-Singapore	Other	-
Country Fund-Spain	Other	-
Country Fund-Sweden	Other	-
Country Fund-Switzerland	Other	-
Country Fund-Thailand	Other	-
Country Fund-U.K.	Other	-
Country Fund-U.S.	Other	-
Credit Card Bullet	Other	-
Credit Card Other	Other	-
Currency	Other	-
Data Processing/Mgmt	Other	-
Debt/Islamic	Other	-
Department Stores	Other	-
Derivative-Asset Alloc	Other	-
Design, Manufacturing & Distribution	Other	-
Diagnostic Kits	Other	-
Direct Marketing	Other	-
Disposable Medical Prod	Other	-
Distribution/Wholesale	Other	-
Distributors - Consumer Discretionary	Other	-
Divers Oper/Commer Serv	Other	-
Diversified Banking Inst	Other	-
Diversified Banks	Other	-
Diversified Finan Serv	Other	-
Diversified Manufact Op	Other	-
Diversified Operations	Other	-
Eastern European	Other	-
E-Commerce/Products	Other	-
E-Commerce/Services	Other	-
Educational Services	Other	-
Educational Software	Other	-
Electrical Equipment Manufacturing	Power	-
Electric-Distribution	Power	-
Electric-Generation	Power	-
Electric-Integrated	Power	-
Electric-Transmission	Power	-
Electronic Compo-Misc	Other	-
Electronic Compo-Semicon	Other	-
Electronic Measur Instr	Other	-
E-Marketing/Info	Other	-
Emerg Mkt Debt	Other	-
Emerg Mkt Eqty	Other	-
Emerging Market-Debt	Other	-
Emerging Market-Equity	Other	-
Emerging Mkt-Asset Alloc	Other	-
Energy-Alternate Sources	Power	Low Carbon
Engineering/R&D Services	Other	-
Entertainment Content	Other	-
Entertainment Resources	Other	-

Entertainment Software	Other	-
Environmentally Friendly	Other	-
Eq Directional Long Bias	Other	-
Eq Directional Long/Shor	Other	-
Eq Fdmntl Mkt Neut	Other	-
Eq Statistical Arb	Other	-
Equity/Islamic	Other	-
Event Driven-Distressed	Other	-
Event Driven-Merger Arbi	Other	-
Exploration & Production	Fuel Extraction	-
Export/Import Bank	Other	-
FGLMC Single Family 15yr	Real Estate	-
FGLMC Single Family 20yr	Real Estate	-
FGLMC Single Family 30yr	Real Estate	-
FHLMC ARM	Real Estate	-
FHLMC FHAVA	Real Estate	-
FHLMC Single Family 30yr	Real Estate	-
FI Directional-Asset Bac	Other	-
FI Directional-Fixed Inc	Other	-
FI Rel Val-Capital Struc	Other	-
FI Rel Val-Convertible A	Other	-
FI Rel Val-Fixed Income	Other	-
Fiduciary Banks	Other	-
Finance-Commercial	Other	-
Finance-Consumer Loans	Other	-
Finance-Credit Card	Other	-
Finance-Invest Bnkr/Brkr	Other	-
Finance-Investment Fund	Other	-
Finance-Leasing Compan	Other	-
Finance-Mtge Loan/Banker	Other	-
Finance-Other Services	Other	-
Financial Services	Other	-
Flexible Portfolio	Other	-
FNMA Other	Real Estate	-
FNMA Single Family 15yr	Real Estate	-
FNMA Single Family 20yr	Real Estate	-
FNMA Single Family 30yr	Real Estate	-
Food & Beverage	Food Logistics	-
Food-Dairy Products	Food Logistics	-
Food-Misc/Diversified	Food Logistics	-
Food-Wholesale/Distrib	Food Logistics	-
Forest & Paper Products Manufacturing	Agriculture	-
Funds & Trusts	Other	-
Gaming & Entertainment	Other	-
Gas-Distribution	Fuel Extraction	Gas
Geo Focus-Debt	Other	-
Geo Focused-Asset Alloc	Other	-
Geo Focus-Equity	Other	-
Global Asset Allocation	Other	-
Global Debt	Other	-
Global Equity	Other	-
Global Macro	Other	-
GNMA Graduated Payment	Real Estate	-
GNMA Project Loan	Real Estate	-
GNMA Single Family 15yr	Real Estate	-
GNMA Single Family 30yr	Real Estate	-
GNMA2 ARM	Real Estate	-
GNMA2 Mobile Home	Real Estate	-



GNMA2 Other	Real Estate	-
GNMA2 Single Family 15yr	Real Estate	-
GNMA2 Single Family 30yr	Real Estate	-
Gold Mining	Other	-
Government Agencies	Other	-
Government Development Banks	Other	-
Government/Agency	Other	-
Government/Agency-LT	Other	-
Government/Corporate	Other	-
Govt/Agency-Inter Term	Other	-
Govt/Agency-Inter/LT	Other	-
Govt/Agency-Short Term	Other	-
Govt/Agency-ST/Inter	Other	-
Govt/Agency-Target Term	Other	-
Govt/Corp High Yield	Other	-
Govt/Corp Intermediate	Other	-
Govt/Corp Long Term	Other	-
Govt/Corp Short Term	Other	-
Growth	Other	-
Growth & Income	Other	-
Growth & Income-Mid Cap	Other	-
Growth&Income-Large Cap	Other	-
Growth&Income-Small Cap	Other	-
Growth-Large Cap	Other	-
Growth-Mid Cap	Other	-
Growth-Small Cap	Other	-
Hardware	Other	-
Hazardous Waste Disposal	Other	-
Health & Biotechnology	Other	-
Health Care Facilities & Services	Other	-
Home & Office Products Manufacturing	Other	-
Home Equity Other	Other	-
Home Equity Sequential	Other	-
Home Furnishings	Other	-
Home Improvement	Other	-
Homebuilders	Real Estate	-
Hotels&Motels	Other	-
Import/Export	Other	-
Inactive/Unknown	Other	-
Income Equity	Other	-
Independ Power Producer	Other	-
Index Fund	Other	-
Index Fund-Debt	Other	-
Index Fund-Large Cap	Other	-
Index Fund-Mid Cap	Other	-
Index Fund-Small Cap	Other	-
Indian Subcontinent	Other	-
Industrial Other	Other	-
Integrated Oils	Fuel Extraction	Oil
International Debt	Other	-
International Equity	Other	-
Internet & Telecom	Other	-
Internet Connectiv Svcs	Other	-
Internet Content-Entmnt	Other	-
Internet Content-Info/Ne	Other	-
Internet Media	Other	-
Internet Telephony	Other	-
Intl Asset Allocation	Other	-

Invest Mgmt/Advis Serv	Other	-
Investment Companies	Other	-
Leisure Industry	Other	-
Leisure Products Manufacturing	Other	-
Life Insurance	Other	-
Life/Health Insurance	Other	-
Mach Tools&Rel Products	Other	-
Machinery Manufacturing	Other	-
Machinery-Farm	Other	-
Machinery-Pumps	Other	-
Managed Care	Other	-
Manufact Hous ABS Other	Other	-
Manufact Hous Sequential	Other	-
Manufactured Goods	Other	-
Market Neutral-Equity	Other	-
Mass Merchants	Agriculture	-
Medical Equipment & Devices Manufacturing	Other	-
Medical Information Sys	Other	-
Medical Instruments	Other	-
Medical Labs&Testing Srv	Other	-
Medical Products	Other	-
Medical-Biomedical/Gene	Other	-
Medical-Drugs	Other	-
Medical-Generic Drugs	Other	-
Medical-HMO	Other	-
Medical-Hospitals	Other	-
Medical-Whsle Drug Dist	Other	-
Metal-Aluminum	Materials	Fossil Fuel Based
Metals & Mining	Materials	Fossil Fuel Based
Mgd Futures	Other	-
Miscellaneous Manufactur	Other	-
Money Center Banks	Other	-
Mortgage Banks	Other	-
Multi-line Insurance	Other	-
Multimedia	Other	-
Multi-Strat/Style	Other	-
Muni-California	Other	-
Municipal	Other	-
Municipal-City	Other	-
Municipal-County	Other	-
Municipal-Education	Other	-
Municipal-Local Auth	Other	-
Muni-New York	Other	-
Mutual Insurance	Other	-
Networking Products	Other	-
No Mapping Available	Other	-
Non-Ferrous Metals	Other	-
Non-hazardous Waste Disp	Other	-
Office Automation&Equip	Other	-
Oil & Gas Services & Equipment	Fuel Extraction	-
Oil Comp-Explor&Prodtn	Fuel Extraction	Oil
Oil Comp-Integrated	Fuel Extraction	Oil
Oil Field Mach&Equip	Fuel Extraction	Oil
Oil Refining&Marketing	Fuel Extraction	Oil
Oil&Gas Drilling	Fuel Extraction	-
Oil-Field Services	Fuel Extraction	Oil
Other ABS	Other	-
Other Mortgage Secur	Real Estate	-

Paper&Related Products	Agriculture	-
Patient Monitoring Equip	Other	-
Pharmaceuticals	Other	-
Pipeline	Fuel Extraction	-
Pipelines	Fuel Extraction	-
Power Generation	Power	-
Precious Metals	Materials	Fossil Fuel Based
Printing-Commercial	Other	-
Private Equity	Other	-
Property & Casualty Insurance	Other	-
Property Trust	Other	-
Property/Casualty Ins	Other	-
Public Thoroughfares	Other	-
Publishing & Broadcasting	Other	-
Radio	Other	-
Railroad	Other	-
Real Estate	Real Estate	-
Real Estate Mgmt/Servic	Real Estate	-
Real Estate Oper/Develop	Real Estate	-
Refining & Marketing	Fuel Extraction	-
Region Fnd-Asian Pacific	Other	-
Region Fund-African	Other	-
Region Fund-ASEAN	Other	-
Region Fund-EU	Other	-
Region Fund-Euro	Other	-
Region Fund-Europe Ex UK	Other	-
Region Fund-European	Other	-
Region Fund-G8 Countries	Other	-
Region Fund-Iberian	Other	-
Region Fund-Latin Amer	Other	-
Region Fund-Middle East	Other	-
Region Fund-NAFTA	Other	-
Region Fund-Nordic	Other	-
Region Fund-North Amer	Other	-
Region Fund-Oceania	Other	-
Region Fund-OECD	Other	-
Region Fund-Tiger	Other	-
Regional Agencies	Other	-
Regional Authority	Other	-
Regional Banks-Non US	Other	-
REITS-Apartments	Real Estate	-
REITS-Diversified	Real Estate	-
REITS-Hotels	Real Estate	-
REITS-Mortgage	Real Estate	-
REITS-Office Property	Real Estate	-
REITS-Regional Malls	Real Estate	-
REITS-Shopping Centers	Real Estate	-
REITS-Single Tenant	Real Estate	-
REITS-Storage	Real Estate	-
REITS-Warehouse/Industr	Real Estate	-
Religiously Responsible	Other	-
Renewable Energy	Power	Low Carbon
Restaurants	Food Logistics	-
Retail - Consumer Discretionary	Other	-
Retail - Consumer Staples	Other	-
Retail-Apparel/Shoe	Other	-
Retail-Automobile	Other	-
Retail-Building Products	Real Estate	-

Retail-Jewelry	Other	-
Retail-Pubs	Other	-
Retail-Regnl Dept Store	Other	-
Retail-Restaurants	Other	-
Rubber-Tires	Other	-
S&L/Thrifs-Central US	Other	-
S&L/Thrifs-Eastern US	Other	-
S&L/Thrifs-Western US	Other	-
Satellite Telecom	Other	-
Schools	Other	-
Sector Fund-Asset Alloc	Other	-
Sector Fund-Debt	Other	-
Sector Fund-Energy	Other	-
Sector Fund-Real Estate	Other	-
Sector Fund-Technology	Other	-
Sector Fund-Utility	Other	-
Semicon Compo-Intg Circu	Other	-
Semiconductor Equipment	Other	-
Semiconductors	Other	-
Socially Responsible	Other	-
Software & Services	Other	-
Sovereign	Other	-
Sovereign Agency	Other	-
Sovereigns	Other	-
Special Purpose Banks	Other	-
Special Purpose Entity	Other	-
Specified Purpose Acquis	Other	-
Steel-Producers	Materials	Fossil Fuel Based
Steel-Specialty	Materials	Fossil Fuel Based
Supermarkets & Pharmacies	Food Logistics	-
Super-Regional Banks-US	Other	-
Supranational Bank	Other	-
Supranationals	Other	-
Taxable First Tier-MMkt	Other	-
Taxable Global-MMkt	Other	-
Taxable Govt/Agency-MMkt	Other	-
Taxable Treas 100%-MMkt	Other	-
Taxable Treas/Repo-MMkt	Other	-
Telecom Services	Other	-
Telephone-Integrated	Other	-
Television	Other	-
Textile-Products	Other	-
Theaters	Other	-
Tobacco	Other	-
Transportation & Logistics	Other	-
Transport-Marine	Shipping	-
Transport-Rail	Other	-
Transport-Services	Other	-
Travel & Lodging	Other	-
UMBS Single Family 30yr	Real Estate	-
Unclassified	Other	-
Undefined Equity	Other	-
US Municipals	Other	-
Utilities	Power	-
Value	Other	-
Value-Large Cap	Other	-
Value-Mid Cap	Other	-
Value-Small Cap	Other	-

Various Assets	Other	-
Venture Capital	Other	-
Waste & Environment Services & Equipment	Other	-
Water	Water	-
Web Portals/ISP	Other	-
Winding Up Agencies	Other	-
Winding-up Agency	Other	-
Wireless Equipment	Other	-
Wireless Telecommunications Services	Other	-
Wireline Telecommunications Services	Other	-
WL Collat CMO IO	Real Estate	-
WL Collat CMO Mezzanine	Real Estate	-
WL Collat CMO Other	Real Estate	-
WL Collat CMO PO	Real Estate	-
WL Collat CMO Sequential	Real Estate	-
WL Collat CMO Subordinat	Real Estate	-
WL Collat CMO TAC	Real Estate	-
WL Collat PAC	Other	-
WL Collat PAC IO	Other	-
WL Collat PAC Support	Other	-
WL Collat PAC Z	Other	-
WL Collat Support	Other	-
WL Collat Support PO	Other	-
WL Collat Support Z	Other	-