

## Project 2 – Finance Data Comparison

Welcome to my second project on financial and monetary aggregates.

### INTRODUCTION

Understanding financial data is pivotal to conceptualise economic outcomes. This project processes and visualises financial data to develop an understanding of growing monetary and fiscal sectors. An analysis was performed using data from the Reserve Bank of Australia. Data reviewed included a composite dataset of monetary, financial and credit growth statistics from 2003 to 2019 by trimming and forward or backward filling missing data. Visualisations were generated in Power Bi, to show the summarised results of the data.

### DATA CLEANING/PROCESSING

Sourced data included 3 datasets, financial growth, monetary statistics and credit aggregates from the RBA. Data included records from the 1960s to 2024, with a total size of 585x25, 585x28 and 791x15. Initial cleaning included generating an ID column and dropping empty columns. An example is shown below of a raw dataset for monetary aggregates:

	A	B	C	D	E	
1	<b>D3 MONETARY AGGREGATES</b>					
2	Title	Currency	Transaction Deposits with ADIs	M1	Certificates of deposit issued by ADIs	M
3	Description	Currency – For series breaks see Series Breaks	Transaction Deposits with ADIs - For series breaks see Series Breaks	M1 – For series breaks see Series Breaks	Certificates of deposit issued by banks – For series breaks see Series Breaks	M
4	Frequency	Monthly	Monthly	Monthly	Monthly	M
5	Type	Original	Original	Original	Original	C
6	Units	\$ billion	\$ billion	\$ billion	\$ billion	\$
7						
8						
9	Source	RBA	RBA	RBA	RBA	F
10	Publication date	31/07/2024	31/07/2024	31/07/2024	31/07/2024	
11	Series ID	DMACN	DMATD	DMAM1N	DMAODCD	C
12	31/07/1959	0.8				
13	31/08/1959	0.8				
14	30/09/1959	0.8				
15	31/10/1959	0.8				
16	31/11/1959	0.8				

Cleaning data composed of stripping data, then implementing forward or backward filling. By inspection, data was trimmed to 2003 to 2019 data to ensure for analysis a maximal amount of proper data was used. It was performed by generating tables with a constricted range of IDs, from 2003 to 2019. Overall, this procedure removed a majority of poor quality data, but restricted the range of data for visualisations.

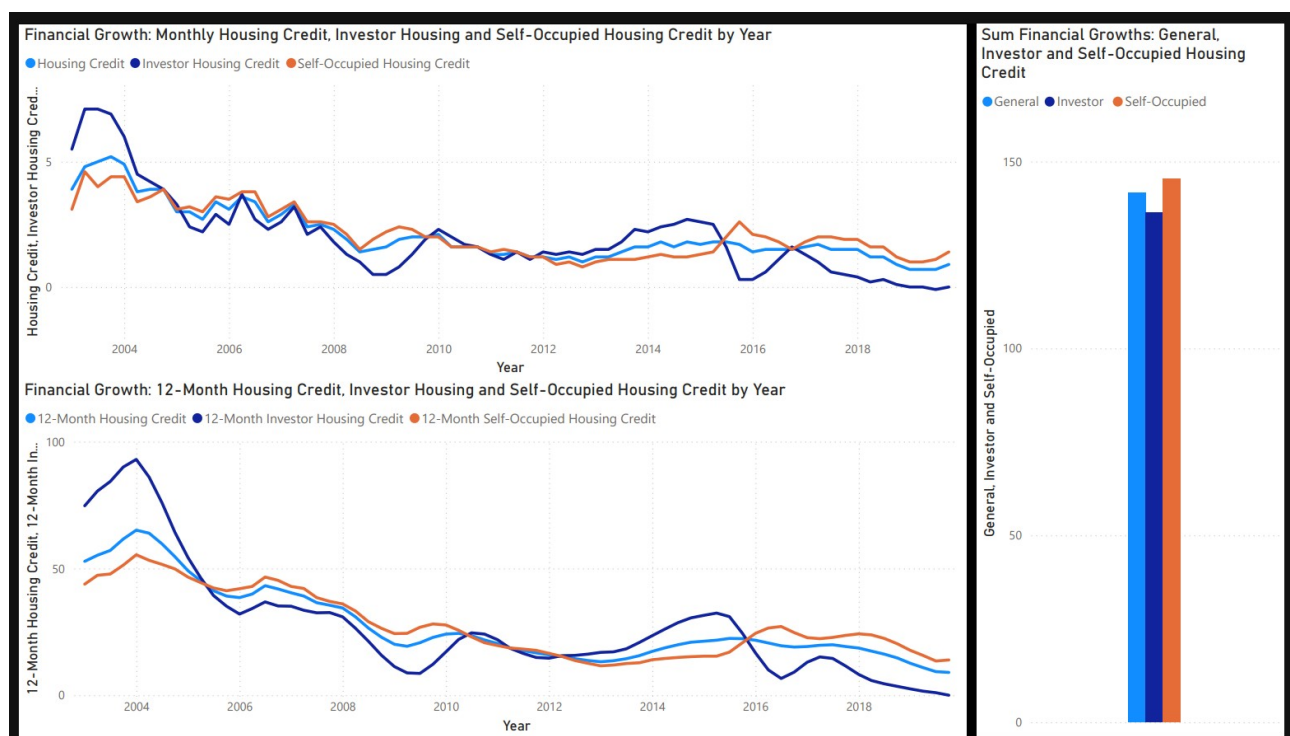
Secondly, filling data was performed. Implementation splitting each dataset into two temporary tables, then applying a forward or backward fill procedure depending on ID. Initial ID columns were kept for clarity in analysis, and forward-filling included using the coalesce function to generate forward-filled data, then substituted it into the original table. Backward filling was implemented by inverting table order, then applying the forward-filling procedure. Overall, these procedures were laborious but cleaned up the remaining data. An exempt of backward filling-code is shown below, where the data is split into a temp table, rearranged, then generates and replaces the filled data:

Query	Query History
38	-- #####
39	-- Generating Backfill temp table procedure
40	CREATE TABLE temp_table_low_one AS(
41	SELECT *
42	FROM public.financial_aggregates_refactor
43	-- FROM public.credit_aggregates_refactor
44	-- FROM public.monetary_aggregates_refactor
45	WHERE datetime_id <103
46	ORDER BY "datetime_id"
47	);
48	SELECT * FROM public.temp_table_low_one;
49	
50	--Flipped Low Data:
51	DROP TABLE IF EXISTS "temp_table_low" CASCADE;

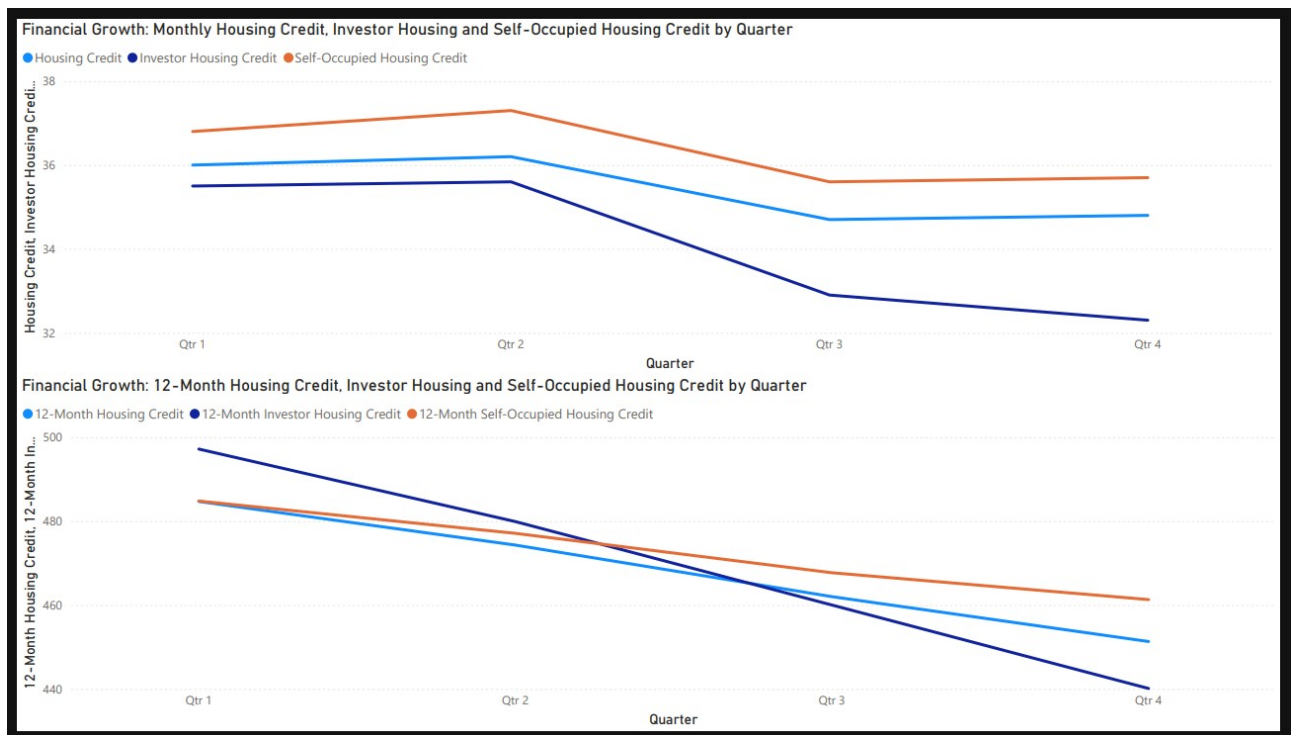
## DATA ANALYSIS VISUALISATIONS

Visualisations performed in Power BI led to interesting visualisations. General data presentation included showing relevant metrics in query analysis: Housing financial metrics, Monetary and Business Industry aggregates. Each were visualised in multiple relevant time-series dashboards with a brief analysis below.

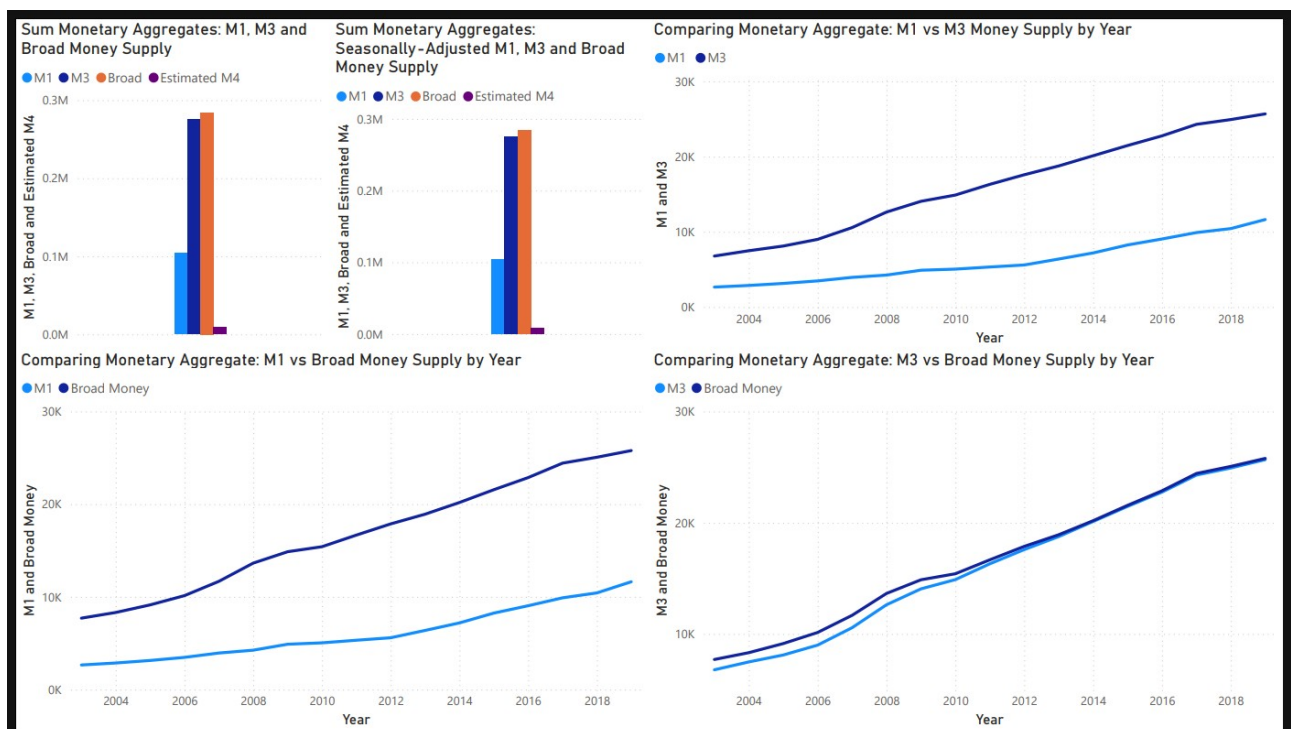
First, Housing aggregates found self-occupied housing credit was consistently higher than personal housing credit, indicating large economic wealth within the housing sector. Additionally, investor housing credit was the largest significant dip during the financial crisis (2008-2010) and seemed to dip around 2016, which could be from reduced international investment. However, overall financial grows for housing credits remained similar across all areas, shown below:



Additionally, process mining to quarterly data is shown below:

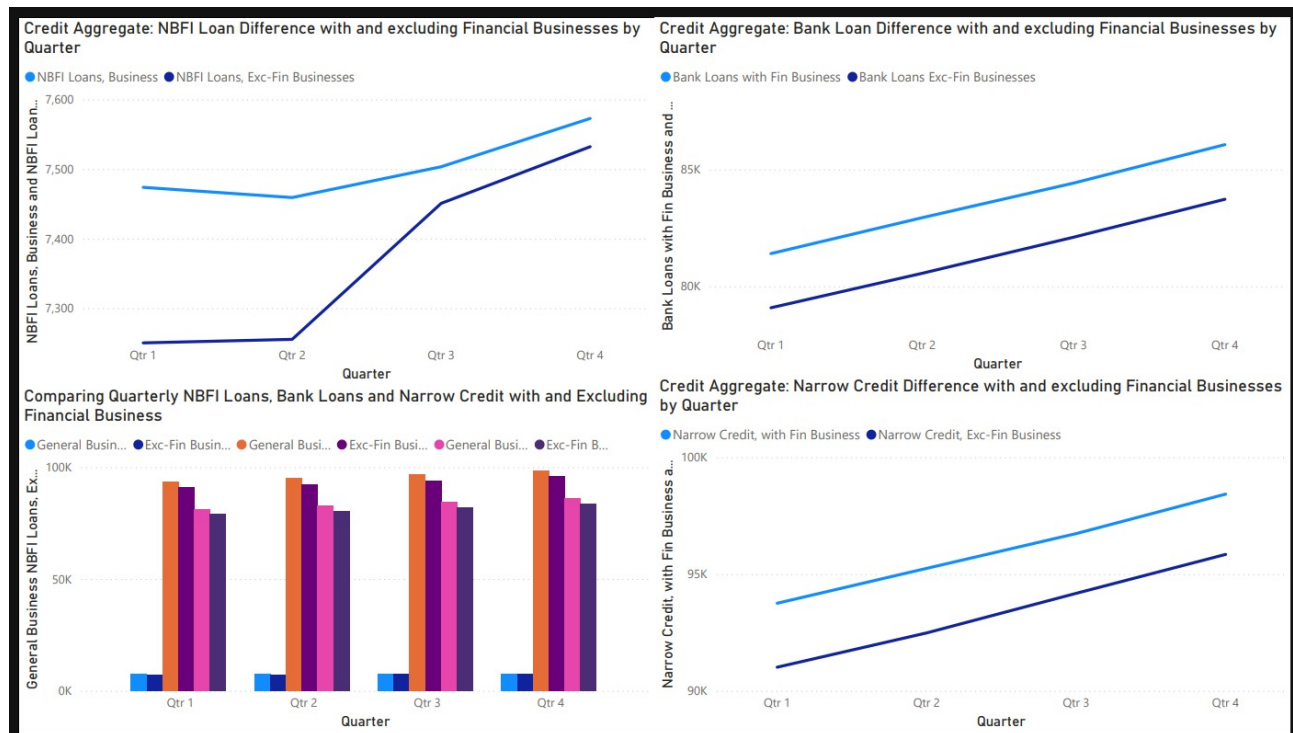


Secondly, Monetary aggregates found consistent growth in 2003 and 2019, indicative of inflation over time. However, Broad money was often smaller than M3 money, indicating that either there was a negative M4 or M2 money supply or substitution rounding error. Below shows an exempt of the sum money supply growths and money supply comparisons:



Finally, Business credit aggregates remained consistent in growth for narrow credit and bank loan allocations, with levels increasing throughout each fiscal quarter. However, quarterly financial business NBFBI loans are generally lower for Non-Financial businesses until the 3<sup>rd</sup> fiscal quarter,

when the difference largely equalises. Additionally, NBFI loans without financial businesses exceeded loans with from forward-filling results. Overall financial growths show healthy growth until the 2008 financial crisis, where most metrics stagnate. General non-financial firms performed the best, far better than other sectors. This can be seen below with the financial growth aggregate and yearly credit aggregate dashboards:



## CONCLUSION

In summary, it was found the global financial crisis significantly affected financial growth during the crisis and housing credit funds for several years after 2008. Additionally, money supply metrics recorded consistent growth, as well as seasonally-adjusted metrics generally consistently reduced overall credit results. Results were acquired by SQL dataset cleaning with time-series data filling and stripping blank data. Overall, discovering these outcomes are essential to understand the condition of the Australian economy for a majority of business and economic sectors.

Thank you for reading this project, and I hope you'll also view my other projects.

## Citations:

RBA. (2024, September 24) "Statistics". Reserve Bank of Australia.  
<https://www.rba.gov.au/statistics/>