

Figure 7: R2 and FFT strength of different cycle lengths for CRB Spot Index (Metal).

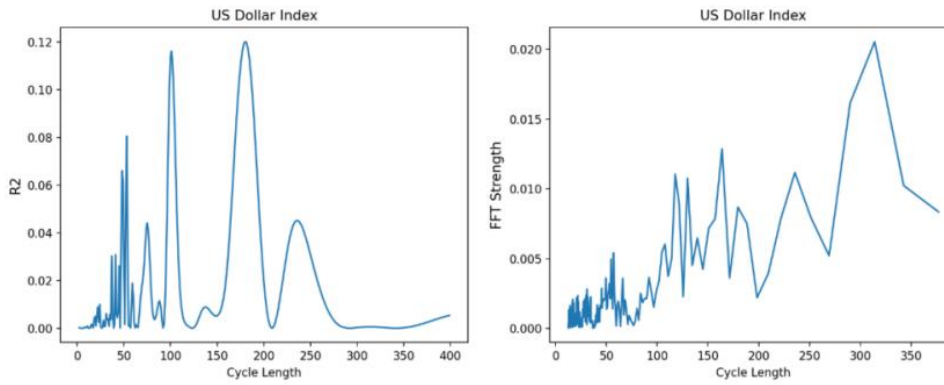


Figure 8: R2 and FFT strength of different cycle lengths for U.S. Dollar Index.

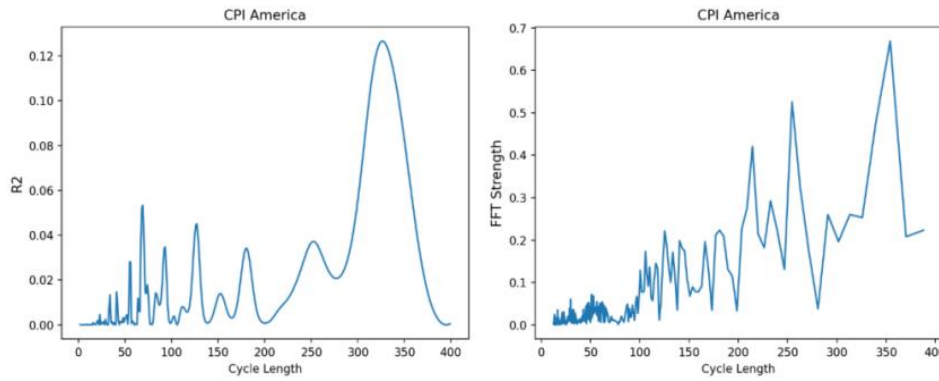


Figure 9: R2 and FFT strength of different cycle lengths for American CPI.

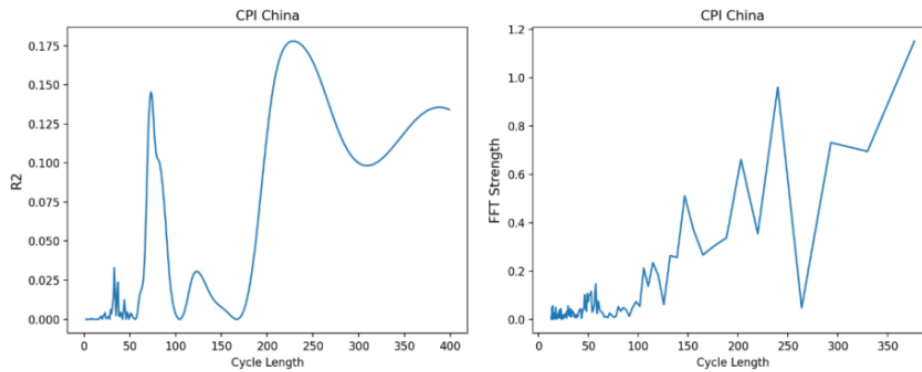


Figure 10: R2 and FFT strength of different cycle lengths for Chinese CPI.

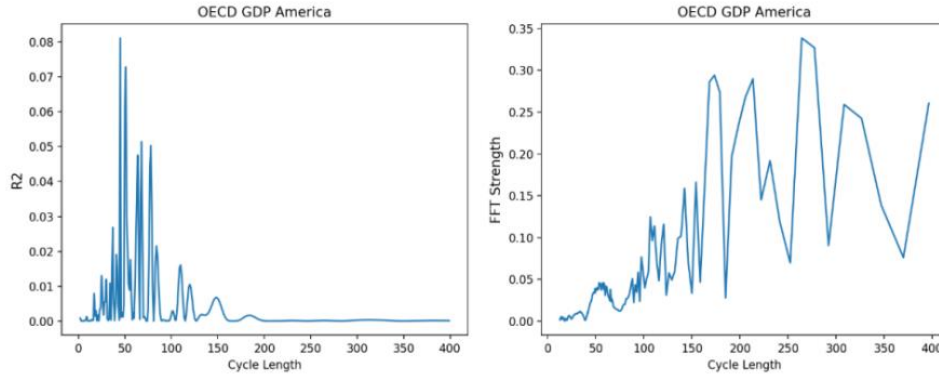


Figure 11: R2 and FFT strength of different cycle lengths for American GDP.

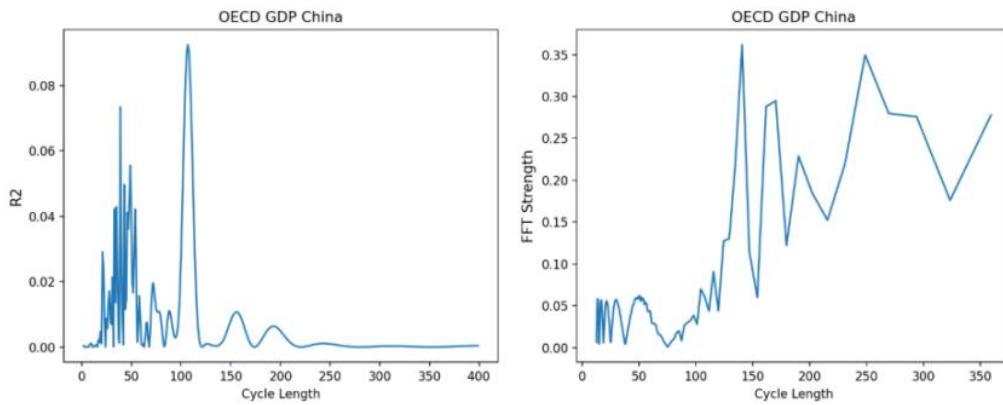


Figure 12: R2 and FFT strength of different cycle lengths for Chinese GDP.

Table 5: The local maximum for short, median and long cycles.

Index	Short	Median	Long	Index	Short	Median	Long
Australien S&P 200 Index	39	87	317	CRB Spot Index (Industrial Material)	45	92	399
CAC 40 Index	43	95	350	CRB Spot Index (Textile)	40	91	399
DAX Index	42	87	399	US Dollar Index	53	180	236
Hang Seng Index	41	83	224	CPI China	73	76	229
London FTSE 100 Index	74	76	399	CPI America	69	127	326
Mumbai Sensex30 Index	44	184	201	CPI France	61	111	244
S&P 500 Index	42	105	399	CPI Japan	66	200	215
SSE Composite Index	44	84	382	CPI England	66	195	201
Tokyo Nikkei 225 Index	41	105	201	CPI Germany	58	163	354
Us 10-year Treasury Yields	44	99	245	OECD GDP America	45	78	312
Chinese 10-year Treasury Yields	41	79	239	OECD GDP Japan	66	113	259
CRB Spot Index (Food)	45	190	399	OECD GDP China	39	107	201
CRB Spot Index (Fat And Oil)	56	114	399	OECD GDP England	68	104	280
CRB Spot Index (Livestock)	45	114	399	OECD GDP France	45	104	399
CRB Spot Index (Metal)	45	188	217	OECD GDP Germany	45	105	260
				Average	50.8	117.9	302.8

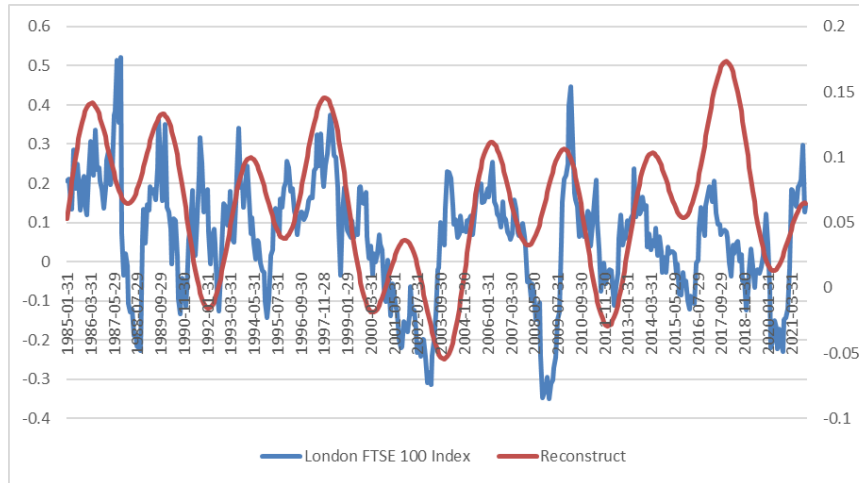


Figure 13: London FTSE 100 Index and its reconstructed series.

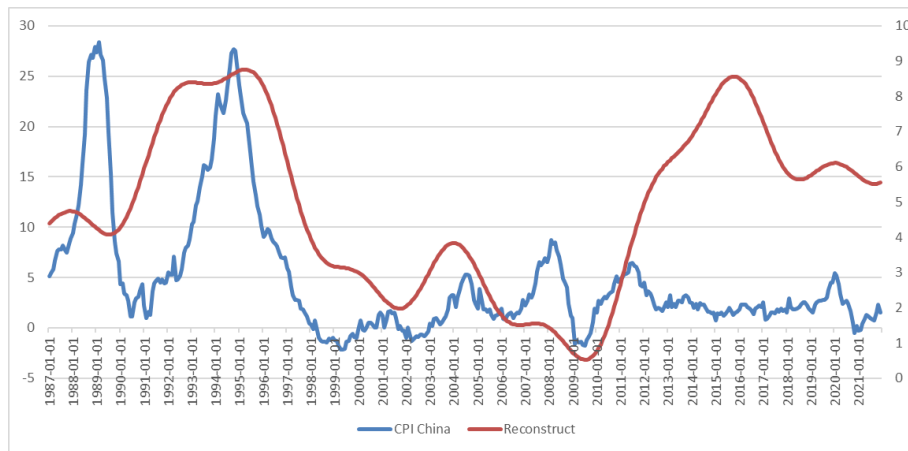


Figure 14: Chinese CPI and its reconstructed series.

5. CONCLUSIONS

In this article, we first select 18 representative indexes from several countries and across stock, bond, commodity and exchange market, as well as 12 macro indicators from 6 countries, to research the unified cycle of global financial market and economy. We conduct year-on-year transformation to remove the trend in the original series. We employ linear regression and Fourier transformation to investigate the strength of YOY series on different frequencies (or cycle lengths). We find that the local maximum of strength gathered in three intervals, which implies a short cycle about 48 months, a median cycle about 120 months and a long cycle around 300 months. We demonstrate that there is indeed a stable periodicity in the financial system and macro economy.

Our conclusions are consistent with the Kitchen cycle, Jugra cycle and Kuznets cycle proposed by classical economists. Among them, the shortest cycle is the economic cycle proposed by the British economist Kitchen, with an average length of about 40 months, known as "Kitchen cycle". The middle cycle for the French economist Jugra, a period of 9~10 years of economic cycle, the cycle is marked by national income, unemployment rate and most economic sectors of

production, profit and price fluctuations to be divided, known as the Jugra cycle. The long cycle is the economic cycle proposed by the American economist Kuznets based on the boom and decline of the construction industry, about 15 to 25 years, known as the "Kuznets cycle".

From the perspective of complex system, each variable in the financial and economic system has complex mutual influence, and they work as a whole which cannot be divided. Some interactions affect every corner of the system, while others are localized. Some interactions are long-lasting and stable, while others are short-lived. The cycles we want to find, in essence, should be system-level, continuous and stable factors. System level means that the impact should be felt throughout the system and be observed for most of the system's observed indicators. For example, if the inventory cycle were an economic cycle, we would have to observe similar cycle signals on a number of different macro variables. In this article, we validate the short, median and long cycle with comprehensive indexes and indicators, and we believe that they are systemically cyclical, namely, their year-over-year percentage change will repeat itself.

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