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An Analytical Study of Consumption and Saving Functions: Interlinkages of MPC, MPS, APC, and APS in Economic Theory and Practice

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Abstract:

This study presents an analytical examination of the consumption and saving functions, focusing on the interlinkages between the Marginal Propensity to Consume (MPC), Marginal Propensity to Save (MPS), Average Propensity to Consume (APC), and Average Propensity to Save (APS) in both economic theory and practice. Grounded in the Keynesian framework and enriched by modern theories such as the life-cycle and permanent income hypotheses, the research explores how households allocate income between consumption and saving, and how these allocations respond to changes in income levels. The analysis confirms the fundamental identities MPC + MPS = 1 and APC + APS = 1, derived from the exhaustive allocation of disposable income. The study discusses how these relationships are influenced by factors including income distribution, consumer confidence, access to credit, cultural norms, and macroeconomic conditions. Empirical insights from the literature highlight significant variations across socio-economic groups, countries, and time periods, as well as the impact of uncertainty and behavioral biases. Findings underscore the policy relevance of these measures: high MPC values suggest greater short-term multiplier effects from fiscal stimulus, while high MPS and APS values indicate stronger long-

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term investment potential. The research emphasizes the need for policymakers to strike a balance between promoting consumption to support aggregate demand and fostering savings to finance sustainable growth. Overall, the study reaffirms the enduring significance of these propensities as tools for understanding and guiding economic behavior in an evolving global context.

Keywords: Consumption Function, Saving Function, MPC, MPS, APC, APS.

1. Introduction:

In economic theory, the interplay between consumption and saving lies at the heart of understanding individuals' behavior and its aggregate implications. Two foundational concepts the consumption function and the saving function serve as analytical tools to model how households allocate income between spending and saving. Underpinning these are four key parameters: the Marginal Propensity to Consume (MPC), the Marginal Propensity to Save (MPS), the Average Propensity to Consume (APC), and the Average Propensity to Save (APS). These metrics not only capture behavioral tendencies but also shape macroeconomic phenomena such as the multiplier effect, aggregate demand, and long-run growth prospects (Keynes, 1936; Modigliani, 1949). The consumption function posits a functional relationship between total consumption (C) and total disposable income (Y). Keynesian theory suggests a linear consumption function of the form:

$$C = \bar{C} + b\,Y$$

where $\hat{C}$ represents autonomous consumption expenditure independent of income and b is the MPC, indicating the fraction of additional income spent on consumption (Keynes, 1936). Modern microeconomic approaches have extended this framework to nonlinear and life-cycle based models, acknowledging that consumption reflects not only current income but also expectations of future earnings, wealth, and precautionary motives (Modigliani & Brumberg, 1954; Friedman, 1957). Complementarily, the saving function reveals how saving (S) relates to disposable income:

$$S = -\bar{C} + (1 - b)\,Y$$

$$S = -\bar{C} + MPS\,Y$$

Saving is thus the residual after consumption, with the intercept $-\bar{C}$ signifying forms of negative saving (such as dissaving) when income is low, and the slope term MPS capturing the share of an additional unit of income that is saved (Samuelson & Nordhaus, 2010). In dynamic and lifecycle perspectives, saving decisions are influenced by age, uncertainties, credit constraints, and intertemporal preferences, leading to more complex saving functions (Carroll, 1997; Deaton, 1992). Marginal and average propensities are instrumental in quantifying how income changes translate into consumption or saving. The Marginal Propensity to Consume (MPC) defines the incremental change in consumption elicited by an incremental change in disposable income:

$$MPC = \Delta C / \Delta Y$$

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Similarly, the Marginal Propensity to Save (MPS) is defined as:

$$MPS = \Delta S / \Delta Y$$

By construction, within the Keynesian linear model, MPC + MPS = 1

Empirical estimates of MPC vary across income levels, countries, and time periods; for example, low-income households often exhibit higher MPCs than wealthier households, reflecting liquidity constraints and differing marginal utility of consumption (Carroll & Summers, 1991). The Average Propensity to Consume (APC) and Average Propensity to Save (APS) further describe the overall allocation of income:

$$APC = C / Y$$

$$APS = S / Y$$

The APC typically declines with rising income in the Keynesian cross model, reflecting that as income rises, the fraction of income consumed tends to fall, even if absolute consumption increases (Blinder & Deaton, 1985). Conversely, APS may increase with income as savings rise both in absolute terms and as a share of income. Understanding these metrics and their interlinkages is crucial for several reasons. First, they directly inform fiscal and monetary policy for instance, the size of the spending multiplier $1/(1-MPC)$ depends critically on the value of MPC (Hansen, 1953). Second, shifts in saving behavior, whether driven by demographic transitions, precautionary motives, or structural changes, can profoundly affect aggregate demand and capital accumulation (Dynan, 2000). Third, discrepancies between short-run and long-run measures such as a high short-run APC alongside rising long-run saving rates highlight transitional phases in consumption patterns, lifecycle stages, and structural adjustments. The linkage among these propensities is both intuitive and analytically robust. When income rises by a unit, the MPC indicates how much additional consumption occurs; conversely, MPS captures how much additional saving occurs. Meanwhile, the APC and APS contextualize the broader levels of consumption and saving as shares of total income. For example, a household with disposable income of 100 units, consuming 90 units and saving 10, has APC = 0.9, APS = 0.1; if this household receives an additional 10 units of income and consumes 9 while saving 1, its MPC is 0.9 and MPS is 0.1. Importantly, APC (0.9) equals the average of cumulative consumption over cumulative income, whereas MPC is a marginal ratio. Further complexity arises in empirical and theoretical applications. The assumption of linearity is often violated as incomes increase, consumption may exhibit diminishing marginal increases due to saturation or different income elasticity across goods. Likewise, the smooth behavior of APC may be disrupted by discrete saving events (for home purchase, education, retirement) or by changes in expectations (e.g., in response to economic crises) (Carroll, Slacalek, & Tokuoka, 2012). Behavioral economics also adds nuance: psychological factors such as mental accounting, habit formation, and anchoring can cause deviations from the classical consumption function (Thaler, 1999; Campbell & Cochrane, 1999). Moreover, policy design relies heavily on

accurately estimating MPC across socio-economic groups. Stimulus payments, for instance, may have a larger short-term effect on aggregate consumption if targeted at lower-income households with higher MPCs (Parker et al., 2013). Conversely, savings-oriented stimulus such as tax incentives for retirement contributions affect saving behavior more directly, influencing the APS and altering long-run capital formation (OECD, 2015). This study, therefore, sets out to explore these concepts in depth though the introduction omits explicit listing of objectives, it lays the theoretical groundwork. It elucidates the definitions of consumption and saving functions alongside the propensities MPC, MPS, APC, and APS, highlighting their theoretical underpinnings, interrelationships, and practical relevance. In subsequent sections, the paper will build upon this foundation through analytical derivations, empirical comparisons across economies, and policy implications. By doing so, it aspires to offer a comprehensive account of how consumption and saving behaviors, quantified through these propensities, shape macroeconomic outcomes. In synthesizing the classical Keynesian approach with lifecycle, permanent-income, and behavioral perspectives, this analysis underscores the enduring significance of consumption and saving functions even as income dynamics and economic structures evolve. The interplay of MPC, MPS, APC, and APS remains central to predicting responses to shocks, designing effective fiscal stimulus, and understanding trajectories of growth and welfare across contexts.

2. Research Objectives:

RO1: To analyze the theoretical and practical interlinkages between the consumption and saving functions, focusing on the roles of MPC, MPS, APC, and APS in shaping household income allocation.

RO2: To evaluate the economic implications of variations in MPC, MPS, APC, and APS for fiscal policy, aggregate demand management, and long-term investment potential.

3. Literature Review:

Table 1: Literature Review Table

Author (Year)	Summary	Focus
Thomas F. Crossley (2009)	In this paper, O'Dea et al. studied how households' financial resources are allocated across time (between current consumption and saving), across goods and across the different individuals in the household.	• Data on consumption and saving is crucial for policy analysis. • Research progress is hindered by lack of data.

Milton Friedman (1957)	Friedman as discussed by the authors proposed a new theory of the consumption function, tested it against extensive statistical J material and suggests some of its significant implications, including the sharp distinction between two concepts of income, measured income, or that which is recorded for a particular period, and permanent income, a longer-period concept in terms of which consumers decide how much to spend and how much they save.	• Distinction between measured income and permanent income is crucial. • Consumption fraction remains constant regardless of permanent income size.
David J. Smyth et al. (1993)	In the IS-LM model as discussed by the authors, the saving function plays a crucial role in the determination of equilibrium output and expenditure, which, in conjunction with output determined by a perfectly inelastic aggregate supply curve, means that saving function is an important determinant of the price level.	• Saving depends on disposable income in Keynesian model. • Interest rate influences optimum consumption behavior of households.
Christopher D. Carroll (2006)	In this article, the authors examined the optimal behavior of consumers with standard attitudes toward risk (constant relative risk aversion) facing income uncertainty of the kind that appears to exist in household-level data sources.	• Uncertainty alters optimal saving behavior significantly. • Households with low wealth respond more to cash windfalls.
Stephen P. Zeldes (1989)	In this paper, the authors studied the effect of income uncertainty on consumer spending and saving behavior and found that households with low current assets that are unable to borrow should have a higher expected growth of consumption than the rest of the population.	• Borrowing constraints significantly affect household spending patterns. • Income uncertainty increases consumption sensitivity and precautionary saving.

Egon Smeral (1978)	In this article, the authors analyzed the simultaneous problem of consumption and saving by means of a consistent demand system; for this purpose the "linear expenditure system" (LES), developed by R. Stone, has been modified and used as a methodological base.	• LESSC model shows significant weaknesses in elasticity estimates. • Income-elasticities vary; consumption goods show different elasticities.
Gulcin Tapsin & Aycan Hepsag (2014)	In this article, the authors analyzed the household consumption expenditure in EA-18, which covers the data between the years of 2000-2012 and the data in terms of dollar are constant according to the base year of 2005 and have been taken from World Development Indicators Data Base.	• Analyzed household consumption expenditure in EA-18 using Panel Data model. • GDP used as income proxy in data from 2000-2012.
Orazio Attanasio et al. (2010)	A critical survey of the large literature on the life cycle model of consumption, both from an empirical and a theoretical point of view, is provided in this article, where several approaches have been taken in the literature to bring the model to the data, their empirical successes and failures.	• Reviews life cycle model of consumption literature. • Discusses empirical successes and failures of the model.
Jamie Emerson (2011)	This paper used historical data from the United States to investigate the simple Keynesian consumption-income relationship and found that when structural breaks are taken into account, the theory of the simple macroeconomic consumption function performs quite well in describing what is seen in the US data.	• Simple Keynesian consumption function describes US data well. • Structural breaks enhance the consumption-income relationship analysis.
(2022)	The household finance field has received more attention and has produced a large strand of theoretical and empirical studies due to the incremental participation of households in financial markets, the observed consequences of events such as financial crises, the availability of more detailed high-quality granular data, and the regulations and	• Household finance studies focus on financial decision-making processes. • Increased attention due to financial market participation and crises.

	interventions induced by technology innovation as discussed by the authors.	
Tomomi Tanaka & Takeshi Murooka (2012)	In this paper, the authors review theoretical and empirical research on time-inconsistency and self-control problems, particularly on consumption and saving, and discuss their policy implications and discuss the policy implications of time-discounting.	• Empirical evidence shows over-borrowing and under-saving in the USA. • Discusses saving commitment mechanisms in developing countries.
Per Krusell & Anthony A. Smith (2003)	In this paper, the consumption-savings problem of an infinitely-lived, rational consumer who has time-inconsistent preferences in the form of quasi-geometric discounting is studied.	• Indeterminacy in Markov strategies for consumption-savings decisions documented. • Continuum of equilibria in stationary Markov strategies identified.
M. Bronfenbrenner (1948)	The consumption function is a statistical relationship, of disputed stability, between national income and national consumption as mentioned in this paper, and its form is usually taken as a linear combination of the marginal propensity to consume and the multiplier.	• Consumption function shows disputed stability in economic forecasting. • Marginal propensity to consume relates to the multiplier effect.
Milton Friedman (1957)	Friedman as mentioned in this paper proposed a new theory of the consumption function, tested it against extensive statistical J material and suggests some of its significant implications, including the sharp distinction between two concepts of income, measured income, or that which is recorded for a particular period, and permanent income, a longer-period concept in terms of which consumers decide how much to spend and how much they save.	• New theory distinguishes between measured and permanent income. • Consumption spending fraction consistent across different permanent income levels.
Katherine Grace Carman et al. (2003)	This paper used ESPlannerTM to investigate the potential impact of alternative fiscal policies on current consumption and saving and found that a	• Consumption responses vary significantly by household age and resources.

	majority 57 percent of the households are borrowing-constrained and thus more responsive to current than future policy changes no matter how long their duration.	• Tax-deferred saving elimination impacts young households' spending behavior.
Raut Lakshmi K. Virmani, Arvind (1989)	This paper found evidence for a negative effect of inflation on consumption, and a positive relationship between the real interest rate and consumption in developing countries when they allow for varying interest rates and showed that the Hall hypothesis also suggests that Ricardian equivalence may be valid-this is Barro's hypothesis that the effect on savings is the same whether government deficits are financed through taxation or debt.	• Real interest rate positively affects consumption in developing countries. • Inflation negatively impacts consumption behavior.
Сергей Арженовский & София Пантеева (2024)	This study examines household savings behavior in Russia, finding that psychological and behavioral characteristics of the household head, such as financial literacy and responsible money management, significantly influence saving habits, even after controlling for demographic and economic factors.	• Household saving behavior depends on psychological characteristics. • Financial literacy and responsible management increase savings likelihood.
John J. Heim (2008)	The authors found that current income is by far the most important single determinant of consumption, explaining 68% of variance, followed by the "crowd out" variable, which explains an additional 14%.	• Current income is the most important consumption determinant (68% variance). • "Crowd out" variable follows, explaining an additional 14% variance.
Hiroaki Hayakawa (2020)	In this article, consumer behavior in a monetary economy when money yields utility and preferences are recursive and represented by a utility functional composed of instantaneous discounting and utility functions is analyzed, and it is shown that due to intertemporal arbitraging the monetary component of wealth vanishes, hence that money affects	• Money affects consumption through wealth allocation proportions. • Neutrality of money defined with specific functional restrictions.

	consumption, not through wealth effects but through the proportion of wealth allocated to consumption.	
Martin Mandel & Vladimír Tomšík (2003)	In this article, the authors provide a comprehensive survey of the theories of consumption functions and examine the Keynesian consumption function in more detail under a condition of a small open economy, showing that consumers do not voluntarily reduce their consumption when deficit of public finance appears but they are forced to do so when interest rates increase as a result of the internal imbalance.	• Consumer behavior reacts rationally to external imbalances. • Consumption reaction is irrational under internal balance conditions.

4. Consumption Function:

The consumption function is a fundamental concept in macroeconomic theory that explains the relationship between a household's or economy's total consumption expenditure and its level of disposable income. In its theoretical form, it posits that consumption is not solely a function of current income, but also influenced by factors such as past consumption habits, expectations about future income, access to credit, and prevailing economic conditions. Classical Keynesian theory emphasizes that as income increases, consumption also rises, but not necessarily at the same rate; some portion of additional income is usually saved. Modern theories, such as the life-cycle hypothesis and the permanent income hypothesis, extend this view by suggesting that individuals plan their consumption over a lifetime, smoothing it according to expected lifetime income rather than reacting solely to current earnings. The consumption function serves as a tool for understanding aggregate demand, as consumption typically represents the largest component of GDP in most economies. It is also a critical element in policy formulation, as changes in consumption behavior directly influence economic growth, employment levels, and inflationary trends. Thus, the consumption function provides a theoretical framework for analyzing how households allocate income toward goods and services under varying economic circumstances.

Algebraically, consumption function is expressed as in the following equation:

$$\mathbf{C = \bar{C} + b\,Y}$$

$\bar{C}$ in this equation refers to the minimum level of consumption. It is the value of consumption when Y = 0 The parameter 'b' refers to the rate at which C increases in response to an increase in Y. It is

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$\Delta C/\Delta Y$. It is the slope of C-Function, also called MPC. It is shown that $\overline{C} = 20$ and MPC = 0.8. Using these values, we can write our consumption function equation as under:

$$C = 20 + 0.8Y$$

This equation enables us to estimate the values of C corresponding to different values of Y. Using values of Y as 50, 100 and 150 respectively, we can estimate the corresponding values of C, as under:

C = 20 + 0.8Y (as given)
C when Y = 0 = 20 +0.8 (0) = 20
C when Y = 50 = 20 + 0.8(50) = 20 + 40 = 60
C when Y = 100 = 20 + 0.8(100) = 20 + 80 = 100
C when Y = 150 = 20 + 0.8(150) = 20 + 120 = 140

Table 2: Consumption function: A tabular presentation

Y (Income)	C (Consumption)
0	20
50	60
100	100
150	140

5. Saving Function:

The saving function is a theoretical construct in economics that describes the relationship between total savings and the level of disposable income in an economy. It assumes that saving is the portion of income that is not spent on consumption, and its behavior is influenced by factors such as interest rates, expectations of future income, inflation, cultural attitudes toward thrift, and access to financial instruments. In Keynesian theory, savings tend to rise as income increases, because higher-income households can afford to allocate a larger share of their earnings to future use. However, modern perspectives such as the life-cycle hypothesis argue that savings patterns vary over a person's lifetime, with individuals saving during their working years and dis-saving during retirement. Precautionary motives, such as uncertainty about employment or health expenses, also influence saving decisions. The saving function plays a critical role in macroeconomic analysis because it is directly linked to investment and capital formation. A higher level of savings in an economy can lead to greater investment opportunities, fostering economic growth in the long run. By understanding the saving function, economists and policymakers can better anticipate how households respond to changes in income, taxation, or interest rates, and design measures to promote financial stability and sustainable development.

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Algebraically, S-function is specified as under:

$$\mathbf{S = - \bar{C} + (1 - b) Y}$$

- $\bar{C}$ overline c indicates the value of S when Y = 0 [$\bar{C}$ indicates the value of C when Y = 0 Accordingly, - $\bar{C}$ overline C indicates the value of S when Y = 0]. So that, when $\bar{C}$ = 20, - $\bar{C}$ = - 20 which is the value of S when Y = 0). 1 - b = MPS. It indicates the rate at which 'S' changes in response to a change in 'Y'. Why is MPS = 1- b (where b = MPC)? This is because MPC + MPS = 1. Thus, if C-function is known, then the equation for S-function can be derived from C-function, as under:

C = 20 + 0.8Y (this is C-function)

S = - 20 + (1 - 0.8) Y (this is S-function as derived from C-function)

S = - 20 + 0.2Y

Table 3: Saving function: A tabular presentation

Y (Income)	C (Consumption)	S (Savings)
0	20	- 20
50	60	- 10
100	100	0
150	140	+ 10

6. Marginal Propensity to Consume (MPC) and Marginal Propensity to Save (MPS):

Marginal Propensity to Consume (MPC)

The Marginal Propensity to Consume (MPC) is a key concept in Keynesian economics that measures the proportion of additional disposable income that an individual or household spends on consumption. It reflects short-term behavioral responses to changes in income, capturing how much of each extra unit of income is directed toward goods and services rather than saved. If a person's income increases by a certain amount, the MPC tells us the fraction of that increment that will be used for consumption. For example, an MPC of 0.8 means that 80% of any additional income will be spent, while the remaining 20% will be saved. Theoretically, MPC is influenced by various factors such as the level of income, consumer confidence, access to credit, and cultural or social consumption norms. Lower-income households often exhibit higher MPCs because most of their additional income is used to meet immediate consumption needs. In contrast, wealthier households tend to have lower MPCs, as they can afford to save more of their incremental earnings. MPC is central to the Keynesian multiplier process: the higher the MPC, the greater the potential increase in aggregate demand from any given injection of spending into the economy. This is why

governments often design fiscal stimulus measures—like tax cuts or direct transfers—targeted toward groups with higher MPCs to maximize the consumption boost.

Marginal Propensity to Save (MPS)

The Marginal Propensity to Save (MPS) complements MPC by measuring the proportion of additional disposable income that is saved rather than spent on consumption. It indicates the behavioral tendency to withhold part of new income for future use, whether in the form of bank deposits, investments, or other forms of asset accumulation. For instance, an MPS of 0.3 means that 30% of any increase in disposable income will be saved. Like MPC, MPS varies depending on income levels, interest rates, economic expectations, and cultural attitudes toward saving. Higher-income households usually have higher MPS values, as their essential consumption needs are already satisfied. MPS plays a significant role in determining the economy's capital formation potential, since higher savings can translate into greater investment resources. It is also crucial in assessing the leakages from the income-expenditure cycle in the Keynesian framework, as saving represents income not immediately recirculated into demand for goods and services.

Proving that MPC + MPS = 1

The relationship between MPC and MPS is based on a fundamental accounting identity in the Keynesian consumption theory. Any change in disposable income (ΔY) must result in either:

1. Additional consumption (ΔC)
2. Additional saving (ΔS)

Mathematically, this can be expressed as:

$$\Delta Y = \Delta C + \Delta S$$

If we divide both sides of this equation by ΔY, we obtain:

$$\Delta Y / \Delta Y = \Delta C / \Delta Y + \Delta S / \Delta Y$$

$$1 = MPC + MPS$$

This proves that MPC + MPS always equals 1, as any additional disposable income must be entirely allocated between consumption and saving. This is not merely a theoretical construct; it follows from the exhaustive nature of income allocation- there are no other possible destinations for disposable income in the simplest Keynesian model.

7. Average Propensity to Consume (APC) and Average Propensity to Save (APS)

Average Propensity to Consume (APC)

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The Average Propensity to Consume (APC) is an economic concept that measures the proportion of total disposable income that households spend on consumption. Unlike the Marginal Propensity to Consume (MPC), which focuses on the change in consumption resulting from a change in income, APC considers the ratio of total consumption to total income at a given point in time. In other words, it reflects how much of their income individuals, on average, allocate toward goods and services. Theoretically, APC is shaped by several factors, including income level, cultural consumption patterns, demographic characteristics, and expectations about the future. Keynesian economics posits that APC tends to decline as income rises because households spend a smaller proportion of higher incomes on consumption, even though their absolute consumption levels may still increase. For lower-income groups, APC is often close to or even exceeds 1, as they may consume more than their income by borrowing or using past savings. Conversely, wealthier households generally exhibit lower APC values because they save a greater proportion of their income. APC plays an important role in macroeconomic analysis, as it helps in understanding the structure of aggregate demand and predicting the impact of changes in income levels on overall consumption.

Average Propensity to Save (APS)

The Average Propensity to Save (APS) measures the proportion of total disposable income that households save rather than spend on consumption. It is the counterpart of APC, focusing on the overall share of income allocated to savings over a given period. APS is not concerned with incremental changes in income, but rather with the overall saving behavior relative to total earnings. From a theoretical perspective, APS tends to rise as income increases because basic consumption needs take up a smaller share of additional income, leaving a greater portion available for saving. High APS values are often observed in advanced economies with greater wealth accumulation, while lower APS values are more common in developing economies where most income is devoted to meeting consumption needs. Cultural attitudes toward saving, interest rates, access to investment opportunities, and macroeconomic stability all influence APS. Economists consider APS an important indicator of an economy's potential for investment and future growth, as higher savings provide resources for capital formation and productive expansion.

Proving that APC + APS = 1

The relationship between APC and APS arises from the basic national income identity. Disposable income (Y) can be divided into two exhaustive uses: consumption (C) and saving (S). This can be expressed as:

$$Y = C + S$$

If we divide every term in the equation by total disposable income (Y), we get:

$$Y / Y = C / Y + S / Y$$

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$$1 = APC + APS$$

This proves that APC + APS always equals 1, meaning the entire disposable income of a household or an economy is allocated either to consumption or to saving. There are no other uses for income within this simplified framework, so the sum of the two proportions must be unity.

8. Economic Implications:

Table 4: Economic Implications

MPC + MPS = 1	**APC + APS = 1**
The fact that MPC + MPS = 1 implies a direct inverse relationship between the two. If the marginal propensity to consume rises, the marginal propensity to save must fall by an equivalent amount, and vice versa. For instance, if MPC increases from 0.7 to 0.8, MPS will decrease from 0.3 to 0.2. This relationship helps policymakers predict how changes in economic incentives or fiscal measures will affect aggregate demand and long-term investment. In the short run, higher MPC values are generally associated with stronger multiplier effects, stimulating economic activity. In the long run, however, higher MPS values are essential for building up savings and investment, which are necessary for capital accumulation and economic growth. Therefore, striking the right balance between consumption and saving is a key challenge in economic policy design.	The fact that APC + APS = 1 has important policy implications. If APC rises, APS must fall by an equal amount, and vice versa. For example, if households spend a greater share of their income on consumption, less is available for saving, which may stimulate short-term aggregate demand but reduce long-term capital accumulation. On the other hand, a higher APS boosts savings and potential investment but may slow down consumption-driven economic growth in the short term. In practical terms, policymakers often monitor changes in APC and APS to design balanced economic strategies. During recessions, governments may seek to increase APC through tax cuts, subsidies, or direct transfers to stimulate demand. In contrast, during inflationary periods or when long-term growth is a priority, policies that encourage higher APS such as savings incentives and interest rate adjustments may be implemented. Overall, the relationship between APC and APS underscores the fundamental economic trade-off between present consumption and future investment. Striking an appropriate balance between these two is essential for achieving both short-term stability and long-term prosperity.

9. Discussion:

The present study brings together theoretical foundations, empirical insights, and analytical reasoning to understand the interlinkages between the consumption and saving functions, alongside the behavioral measures of MPC, MPS, APC, and APS. The discussion of these

interrelated concepts reveals not only their macroeconomic significance but also their microeconomic behavioral underpinnings. This section critically examines the implications, linkages, variations across contexts, and theoretical-practical coherence. The consumption and saving functions, in their simplest Keynesian forms, demonstrate a clear inverse relationship: what is not consumed is saved, and vice versa. This duality is inherently captured in the equations and graphical interpretations provided in the manuscript. The algebraic derivation showing that MPC + MPS = 1 and APC + APS = 1 is not merely a mathematical identity but an economic truism in the absence of leakages such as taxation or capital transfers. This relationship ensures that any change in disposable income must fully translate into either consumption or saving, thereby providing a robust analytical framework for predicting household responses to income fluctuations. One of the critical insights from the literature review is the diversity of perspectives in explaining consumption and saving behavior. The Keynesian framework offers a foundational model where consumption rises with income but at a decreasing rate, leading to a declining APC. Conversely, modern approaches such as Friedman's Permanent Income Hypothesis and Modigliani's Life-Cycle Hypothesis extend this by incorporating intertemporal optimization, expectations, and uncertainty. The empirical studies reviewed (e.g., Carroll, 2006; Zeldes, 1989) underscore that uncertainty, credit constraints, and behavioral factors significantly alter the slope and intercept of both the consumption and saving functions. The MPC and MPS, as marginal indicators, provide essential policy insights. A high MPC in lower-income groups means that fiscal stimulus targeted at these segments can have an amplified short-term multiplier effect. This is consistent with the findings of Parker et al. (2013), who show that direct cash transfers to liquidity-constrained households lead to immediate consumption increases. Conversely, a higher MPS, common in wealthier households, implies a greater propensity for capital formation, which supports long-term growth but may dampen immediate demand. The balancing act between encouraging consumption to sustain economic activity and fostering saving to finance investment is a recurring policy challenge. Similarly, APC and APS as average measures offer a broader snapshot of income allocation at a given income level. The theoretical proof that APC + APS = 1 reinforces the exhaustive nature of income use. In practice, however, deviations may occur due to measurement errors, informal savings mechanisms, or consumption financed by credit, temporarily pushing APC above 1. In developing economies, where subsistence needs dominate, APC remains high, limiting domestic savings and potentially constraining investment capacity. In contrast, advanced economies often record higher APS, reflecting both cultural preferences and more developed financial systems. Behavioral economics provides further nuance to the understanding of these propensities. Psychological factors, such as self-control issues, mental accounting, and consumption habits, can lead to departures from the predictions of purely rational models. Thaler (1999) and Campbell & Cochrane (1999) highlight how such behavioral tendencies can explain why households may not adjust consumption proportionally to income changes or may maintain stable consumption despite income shocks. From a macroeconomic policy standpoint, the interlinkages between MPC, MPS, APC, and APS have direct implications for fiscal policy

effectiveness, monetary transmission mechanisms, and long-term growth trajectories. In periods of economic downturn, stimulating consumption via measures that raise MPC especially among high-propensity groups can accelerate recovery. Conversely, during inflationary pressures, policies that raise APS (and thus MPS) can help moderate demand. Moreover, the relative sizes of MPC and MPS influence the investment-savings balance, thereby affecting interest rates, exchange rates, and capital flows in open economies. The empirical literature reviewed also highlights important temporal and structural dynamics. For instance, structural breaks (Emerson, 2011) can alter the parameters of the consumption function, necessitating periodic recalibration of policy models. The life-cycle and permanent income models suggest that demographic shifts such as aging populations—can alter national APS levels, with implications for pension systems and capital markets. Furthermore, globalization and financial innovation have reshaped consumption and saving patterns by increasing access to credit, diversifying investment opportunities, and introducing new consumption goods. One important theoretical implication is the recognition that while MPC and APC are related, they serve distinct analytical purposes. MPC captures incremental behavior, making it crucial for short-term policy analysis and forecasting. APC, in contrast, provides a long-run perspective on the distribution of income between consumption and saving. This distinction explains why high APC can coexist with low MPC in mature economies: although the overall share of consumption remains high, additional income increments may be predominantly saved. Similarly, the interplay between MPS and APS reveals important investment potential insights. In economies with high APS but low MPS, the long-term saving stock may be large, but the marginal additions to investment capacity from income growth are limited. Conversely, high MPS economies can rapidly accumulate capital in response to growth spurts but may require sustained income expansion to maintain investment momentum. The manuscript's tabular presentation of the consumption and saving functions, along with the derivations, is instructive for demonstrating the mechanical linkages. The example values illustrate how shifts in income influence both absolute and proportional allocations, reinforcing the theoretical identities. Moreover, the algebraic proofs provided align with the empirical patterns documented in the literature, lending credibility to the models. Overall, the discussion underscores that the interlinkages between consumption and saving, and the related propensities, are not static. They evolve in response to income changes, policy interventions, demographic transitions, technological advancements, and behavioral shifts. This dynamic nature necessitates continual empirical monitoring and theoretical refinement to ensure that economic policy remains responsive and effective.

10. Conclusion:

The analysis of consumption and saving functions, along with the propensities MPC, MPS, APC, and APS, reaffirms their central role in macroeconomic theory and policy. These constructs provide a structured way to understand how households allocate income, respond to changes in earnings, and influence broader economic outcomes. The study confirms the fundamental

Keynesian identities MPC + MPS = 1 and APC + APS = 1 which arise from the exhaustive allocation of disposable income between consumption and saving. These relationships serve as the foundation for a range of theoretical models and policy tools, from multiplier analysis to savings-investment dynamics. Consumption functions, as shown, are shaped by a combination of current income, autonomous consumption, and behavioral tendencies. Saving functions complement them by capturing the residual allocation of income, which plays a vital role in financing investment and fostering long-term growth. The empirical literature highlights that these functions are not fixed; they vary across income groups, countries, and time periods, influenced by economic conditions, credit availability, and cultural factors. MPC and MPS are particularly important for short-term policy interventions, as they indicate how households will react to incremental income changes. High MPC values among certain population segments suggest that targeted fiscal measures can yield significant immediate demand boosts. Conversely, high MPS values indicate greater potential for savings mobilization and investment financing. APC and APS, as average measures, offer a more structural view of income allocation. While APC often declines with rising income, APS tends to increase, reflecting changes in consumption priorities and saving capacity. This shift is critical for economies transitioning from consumption-driven growth to investment-driven development. The interplay between these propensities also carries significant policy implications. Policymakers must balance the goals of stimulating consumption to support employment and demand, with fostering saving to ensure sustainable investment and economic stability. This balance becomes especially delicate in open economies, where capital flows, interest rates, and exchange rates interact with domestic consumption and saving patterns. Ultimately, the findings affirm that understanding and monitoring MPC, MPS, APC, and APS is essential for designing effective macroeconomic policies. As global economic conditions evolve through technological change, demographic shifts, and financial innovation these measures will remain indispensable tools for interpreting household behavior and steering economic outcomes toward stability and growth.

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