February, 2016

Real Asset 2.0

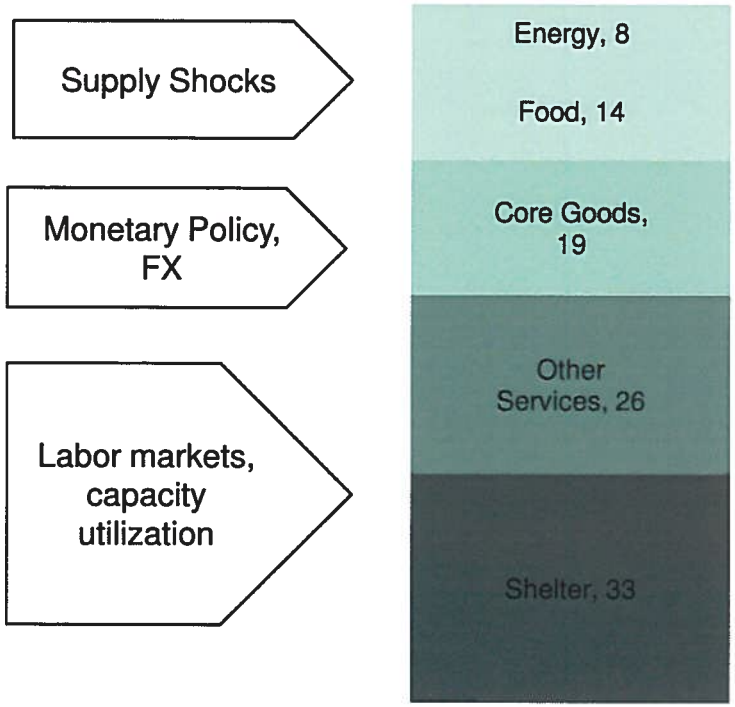
Summary

Agenda Item	Description
Background	Long term trends in consumption / sources of potential inflation and implications for product design - Commodities becoming a smaller share of consumption basket - Services becoming a larger share of consumption basket - Cost of inflation protection in environments with below average / weak inflation is high with current design
Evaluation of Options	Evaluate ways to maintain inflation sensitivity while diversifying away from commodities and reduce cost in weak inflation environments - Equities with pricing power provide a good hedge in periods of above average growth, below average inflation - Forward CPI Swaps are a good way for both diversifying inflation beta sources and also to plug the inflation sensitivity gap from design changes
Strategic Design	Designed to optimally trade off risk adjusted return with inflation sensitivity, reduce concentration of risk sources and improve relative performance vs equities in non inflationary environments. - Absolute volatility is the same; SR is materially higher and inflation beta is marginally lower - Reduces underperformance vs equities, particularly in above average growth, below average inflation environments - Reduces risk concentration from commodity assets 70% to 50%; 30% sourced from REITs, 20% pricing power and ~5% from CPI swaps
Implementation	Clearly articulate and size appropriately the sources of value add in the portfolio - Can potentially improve allocation to 'alpha' from security selection by exploring better ways of sourcing beta for risk management and DAA
Next Steps	Project management for redesign, launch and communication

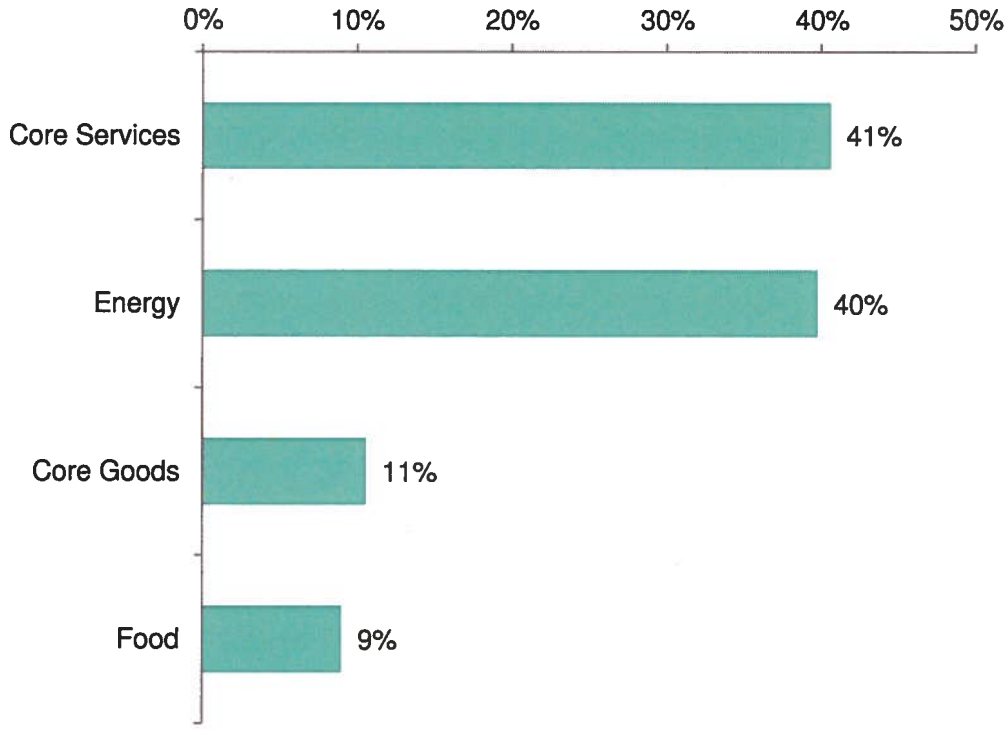
Background

US CPI – A Closer Look

Component Weights of the CPI-U



Contribution to Inflation Volatility

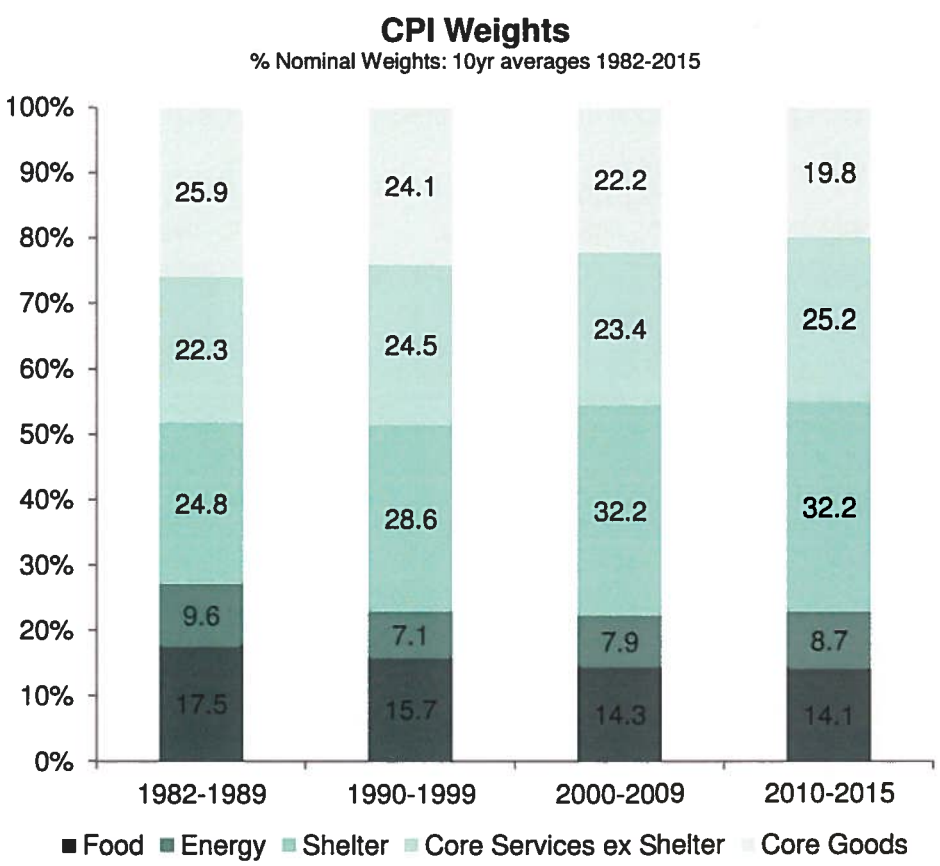


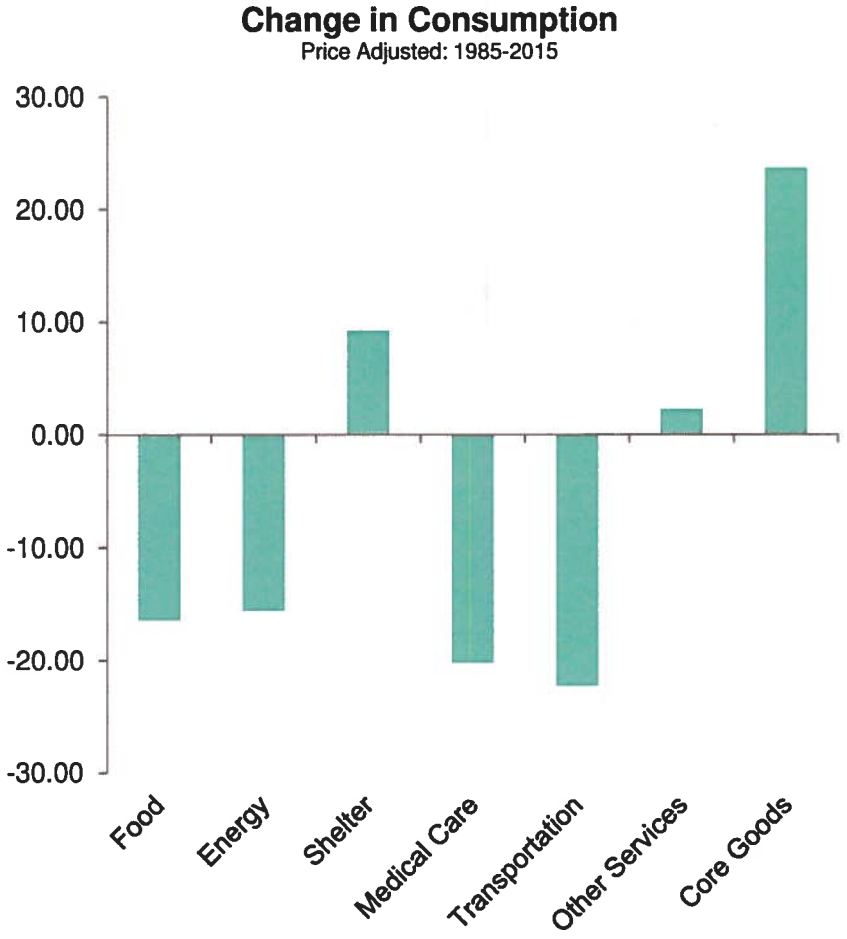
Components of inflation can have significantly different drivers

- Inflation 1: Supply shock
- Inflation 2: Sticky wages, capacity utilization – late cyclical
- Inflation 3: Currency/credit creation - wars
- Inflation 4: Policy mistakes

Source: BLS, Bloomberg, AB Calculations

Consumption Basket Evolution (CPI) - US



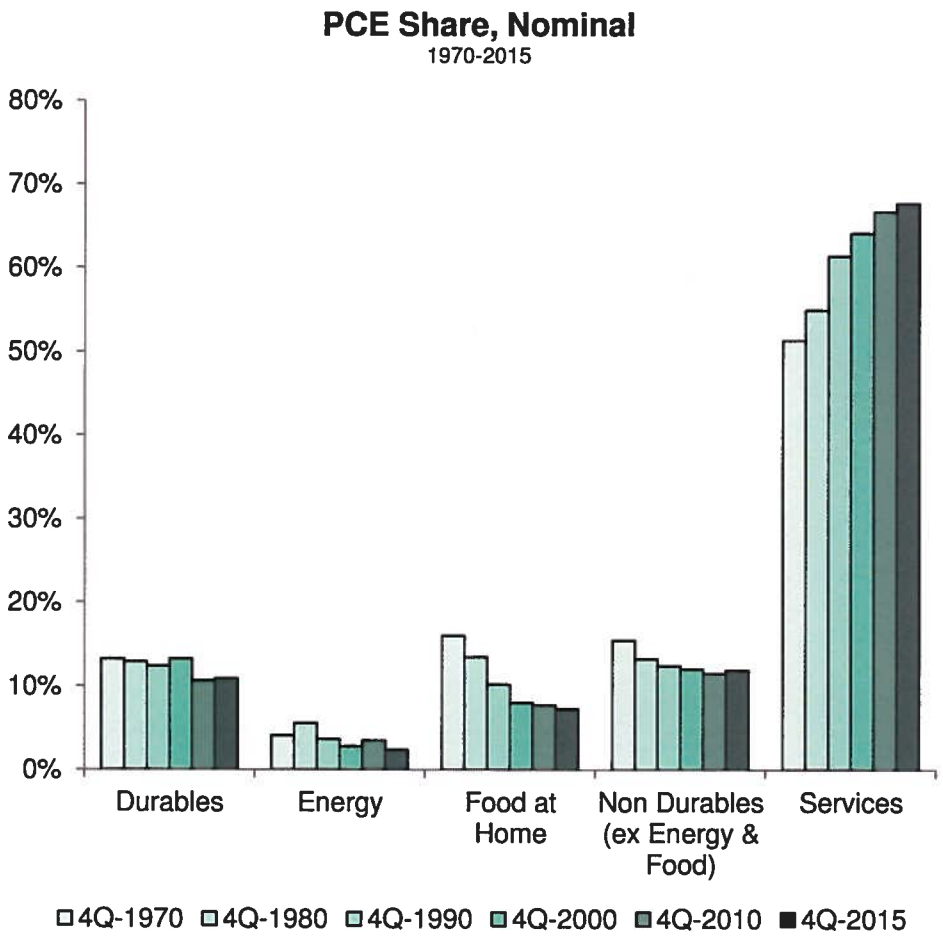


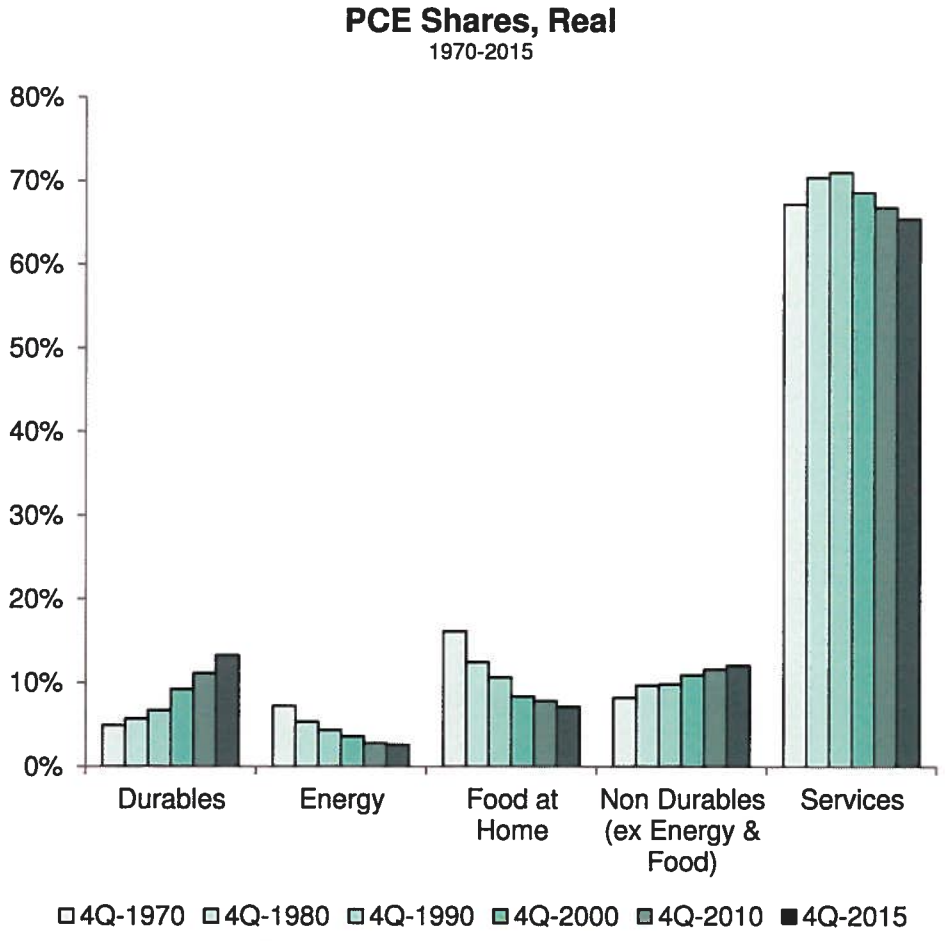
+ Commodities becoming smaller share of consumption basket
+ Services becoming larger share of consumption basket

Source: BLS, AB Calculations

Personal Consumption Expenditure Price Index

Consumption Basket Evolution (PCE) - US



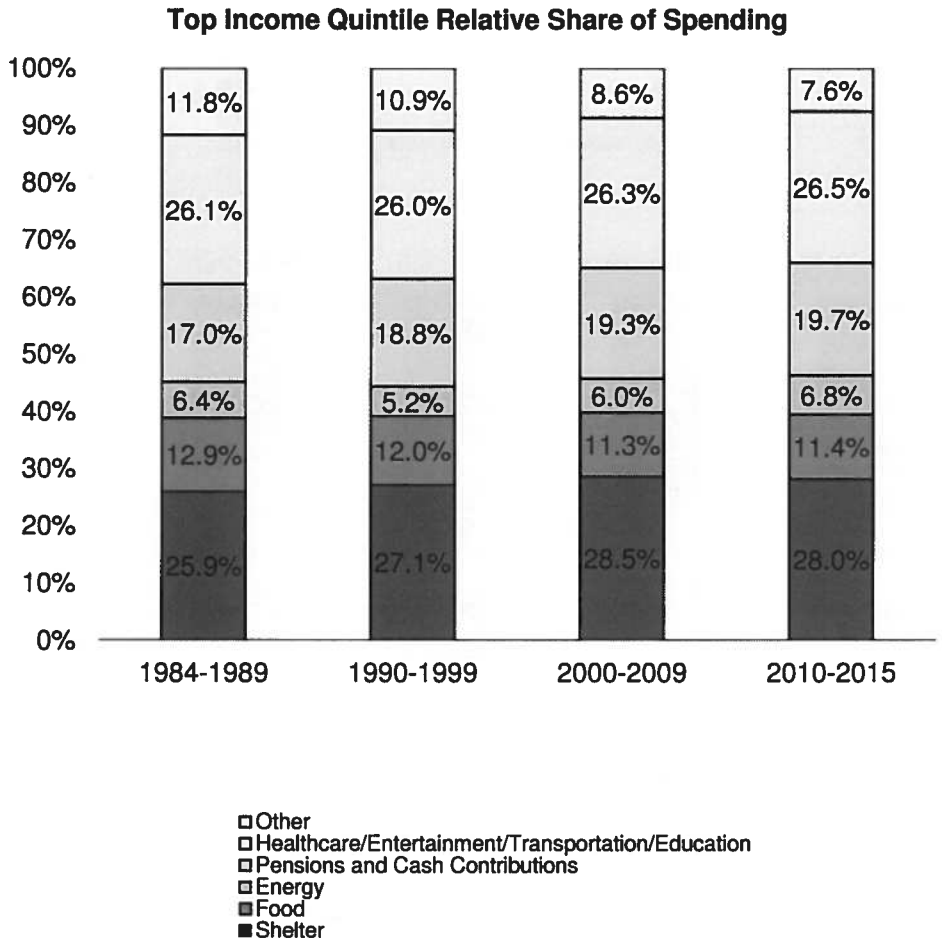


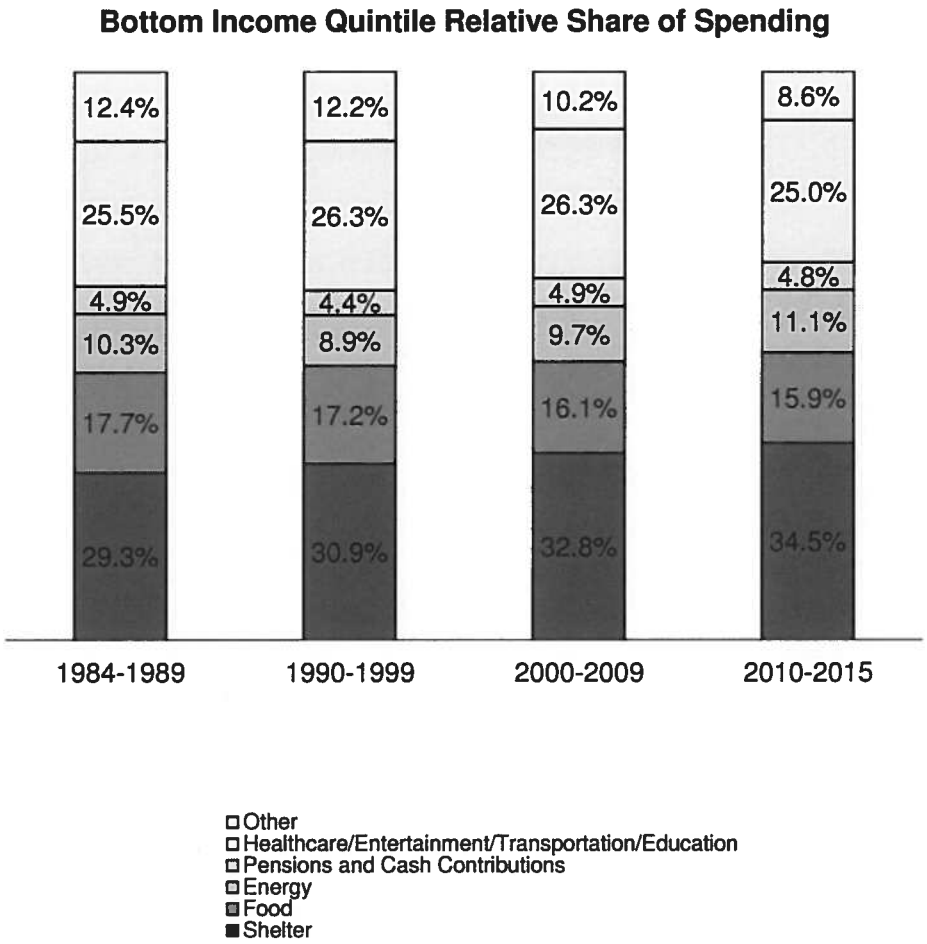
+ Commodities becoming smaller share of consumption basket
+ Services becoming a larger share of consumption basket

Source: BLS, AB Calculations

Top and Bottom Quintile Relative Share of Spending (Nominal)

Average by Decade



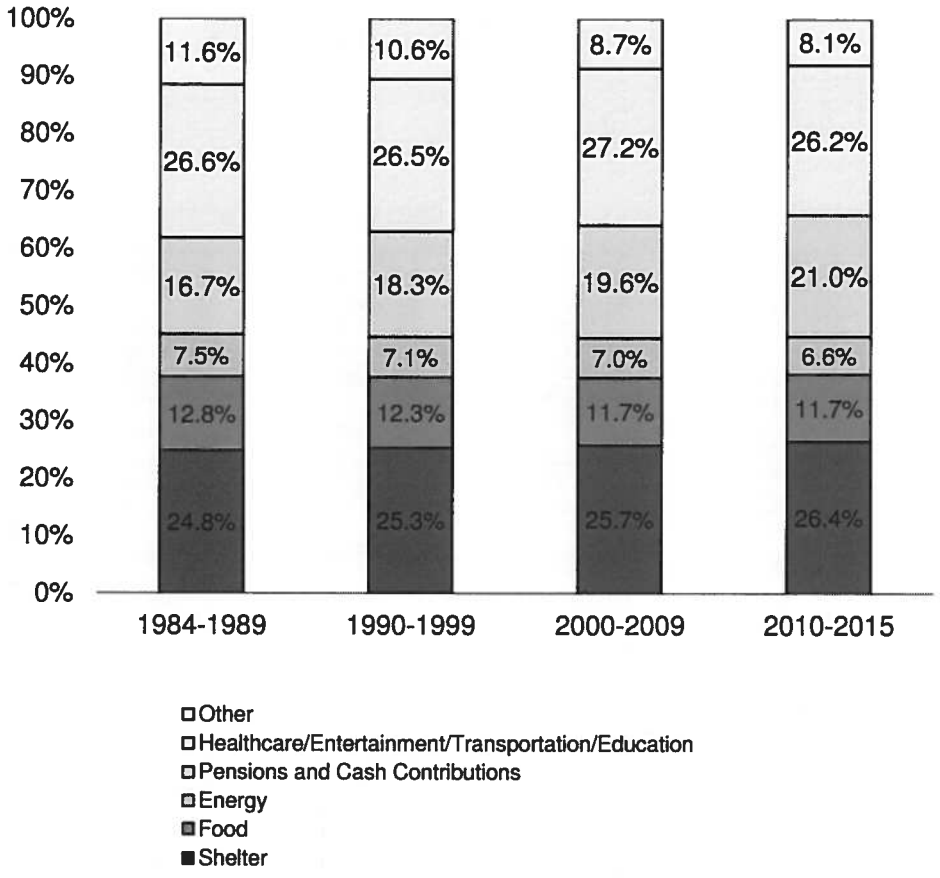


+ Top and bottom income quintile spending patterns most different for commodities and Pensions/Cash Contributions

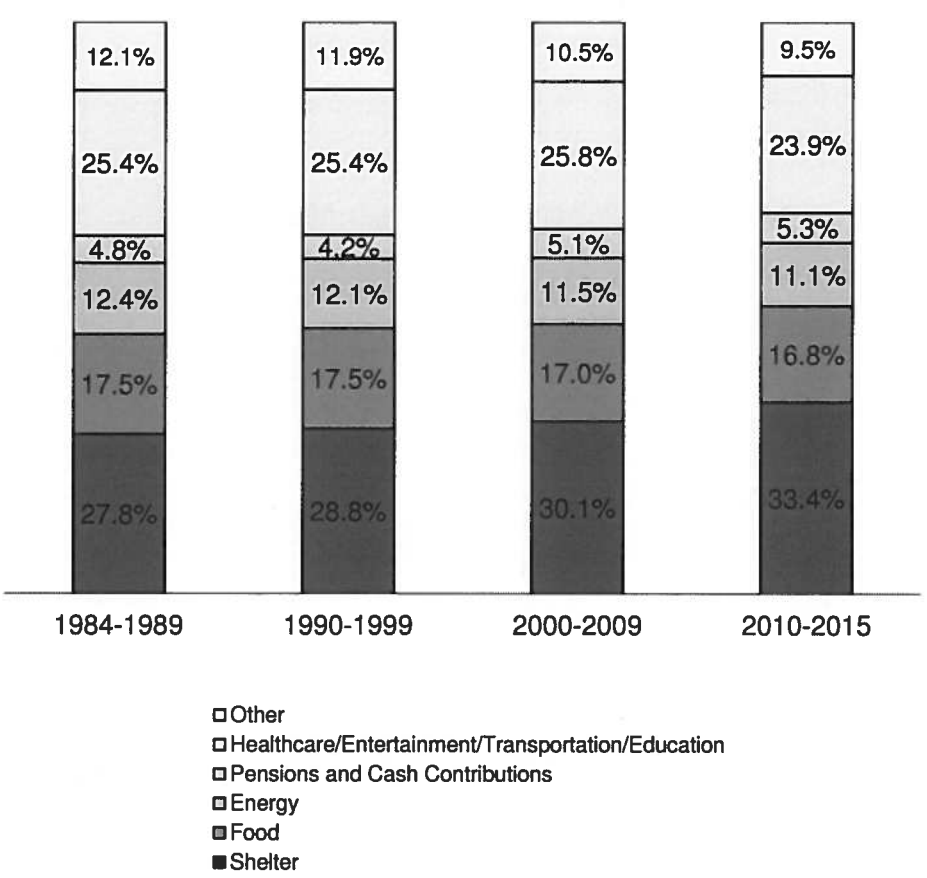
Top and Bottom Quintile Relative Share of Spending (Real)

Average by Decade

Top Income Quintile Relative Share of Spending



Bottom Income Quintile Relative Share of Spending



Real Share of Spending is built by taking the CPI Inflation Indices for the appropriate categories. Once we have an annual inflation rate for all the categories we then grow the base expenditure (1984 level) by (1 + Nominal Growth Rate) / (1 + Inflation Rate). Where data is unavailable we use CPI Core Inflation Rate

Evaluation of Options

Pricing Power

Definition

Firms that are able to raise prices in excess of increases in input costs without losing market share (or) Ability to maintain /grow margins while raising prices. On the flipside, these firms can maintain prices/market share as input costs fall.

Pricing power sources

a) Network effects: eBay, Linkedin
b) Intangible Assets (Patents, Brands etc): Coke, Novartis
c) Cost Advantage: Express Scripts. Walmart
d) Switching Costs: Oracle, IBM, Microsoft
e) Efficiencies of Scale: Newspapers, Pipelines etc

Screening Criteria

a) Strong gross margin growth is an indicator of ability to grow revenue faster than COGS
b) Stability in Gross Margin level over business cycle is also indicative of pricing power
c) Earnings revisions might be forward looking indicator of whether pricing power is likely to be sustained

Filter Definition

Universe: US Top 1500
Conditions a, b are either or and c is necessary

a) 3 year Gross Margin Growth (backward looking):
    a) Rank in the cross section by geometric GM growth
b) Gross margin stability (backward looking):
    a) Arithmetic mean of last 7 years gross margin level / by gross margin volatility
c) Positive Earnings revisions: Expectation for sustainability of advantage

Pricing Power – Systematic Screen Results

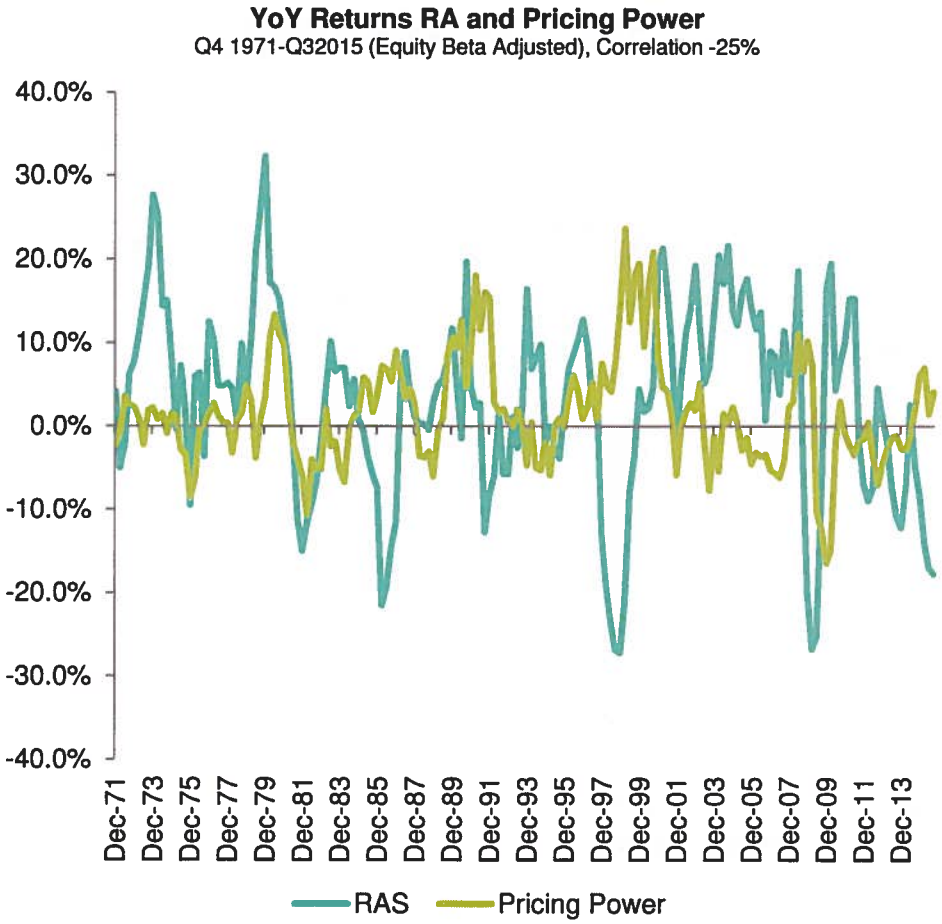
	195312+			1978 03+		
	Pricing Power	Equities	Relative	Pricing Power	Equities	Relative
Avg Return	13.4%	11.8%	1.6%	14.9%	12.6%	2.3%
Vol	18.1%	16.3%	6.5%	18.2%	16.3%	7.1%
SR	0.74	0.73	0.24	0.81	0.77	0.33
Skew	-0.32	-0.62	0.19	-0.06	-0.60	0.20
Kurt	0.87	0.94	1.02	0.73	0.67	1.19
Intercept	0.28%		0.28%	0.48%		0.48%
Intercept T Stat	1.3		1.3	0.9		0.9
Beta	1.04		0.04	1.03		0.03
Beta T Stat	41		1	29		1
RSQ	87%		1%	85%		1%
Equity Corr	0.93	1.00	0.09	0.92	1.00	0.07
Energy Equity Corr	0.63	0.71	-0.04	0.56	0.66	-0.08
Corr of relative energy and relative pricing power		-0.17			-0.18	
Max DrawDown (Quarter)	-26%	-25%	-11%	-20%	-22%	-11%

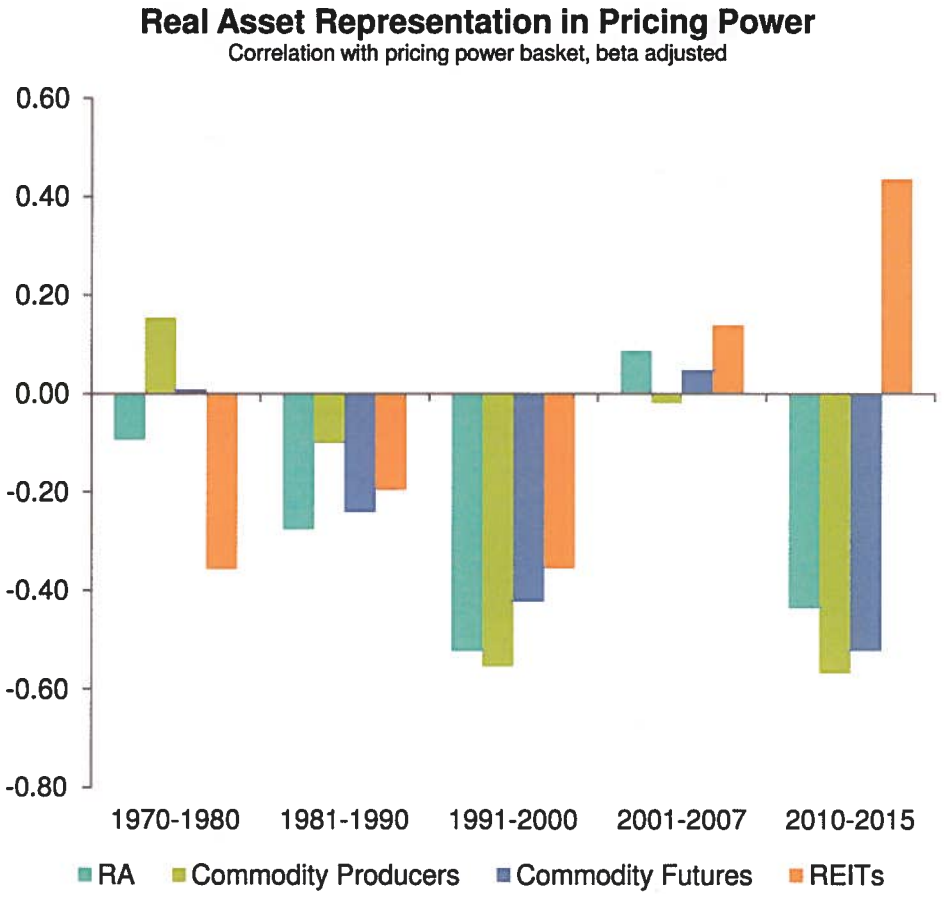
Sector Correlation with Pricing Power Basket (Equity Beta Adjusted)

	Energy	Materials	Industrials	ConsumerDiscretionary	ConsumerStaples	HealthCare	Financials	InformationTechnology	TelecommunicationServices	Utilities	Comm stocks
1970-1980	0.21	-0.13	0.09	-0.48	-0.02	0.30	-0.04	0.07	-0.14	-0.22	0.17
1981-1990	-0.06	-0.05	-0.13	-0.23	0.22	0.35	-0.18	-0.22	-0.08	0.03	0.08
1991-2000	-0.47	-0.32	-0.20	0.14	0.32	0.12	0.00	-0.03	-0.11	-0.11	-0.12
2001-2007	-0.08	-0.15	0.10	-0.25	0.55	0.58	0.18	-0.40	-0.42	-0.20	-0.20
2010-2015	-0.63	-0.46	-0.17	0.20	0.51	0.11	-0.02	0.38	-0.06	0.45	-0.46

+ Commodity producers had pricing power leadership in the 70s

Real Assets and Pricing Power – A Comparison





Strategic Design

Proposed Strategic Design

Current

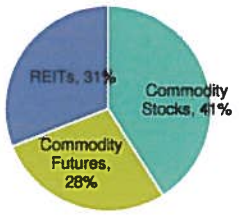
Commodity Stocks	Commodity Futures	REITs
33.3	33.3	33.3

Notional Weights

Risk Profile

Long Term Volatility ~ 14%

% Risk Contribution



Characteristics

Metric	Value
Average Return	5.5%
Volatility	14%
SR	0.39
Equity Beta	0.54
Inflation Beta	2.04
Max Quarterly DD	-29%

Proposed

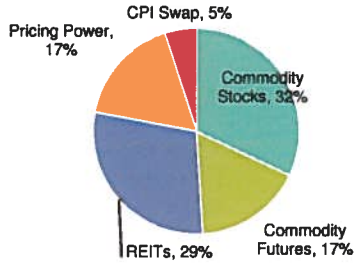
Commodity Stocks	Commodity Futures	REITs	Pricing Power	CPI Swaps
25	25	30	20	30

Notional Weights

Risk Profile

Long Term Volatility ~ 14%

% Risk Contribution

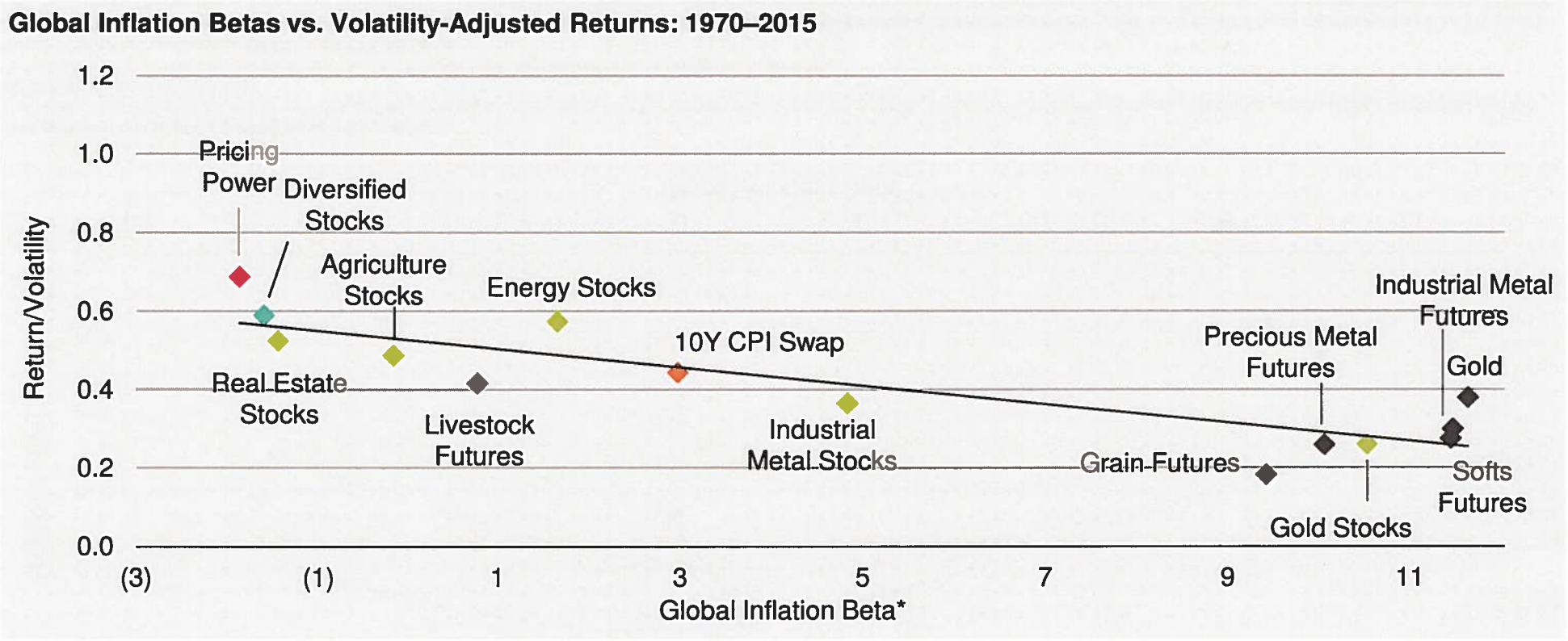


Characteristics

Metric	Value
Average Return	6.1%
Volatility	13.9%
SR	0.44
Equity Beta	0.61
Inflation Beta	1.94
Max Quarterly DD	-29%

- \+ Trade off risk adjusted return for inflation sensitivity
- \+ Focus on
  - \+ Sizing and sourcing of risk (Volatility & Inflation Sensitivity) in construction
  - \+ Focus on macro environment behavior

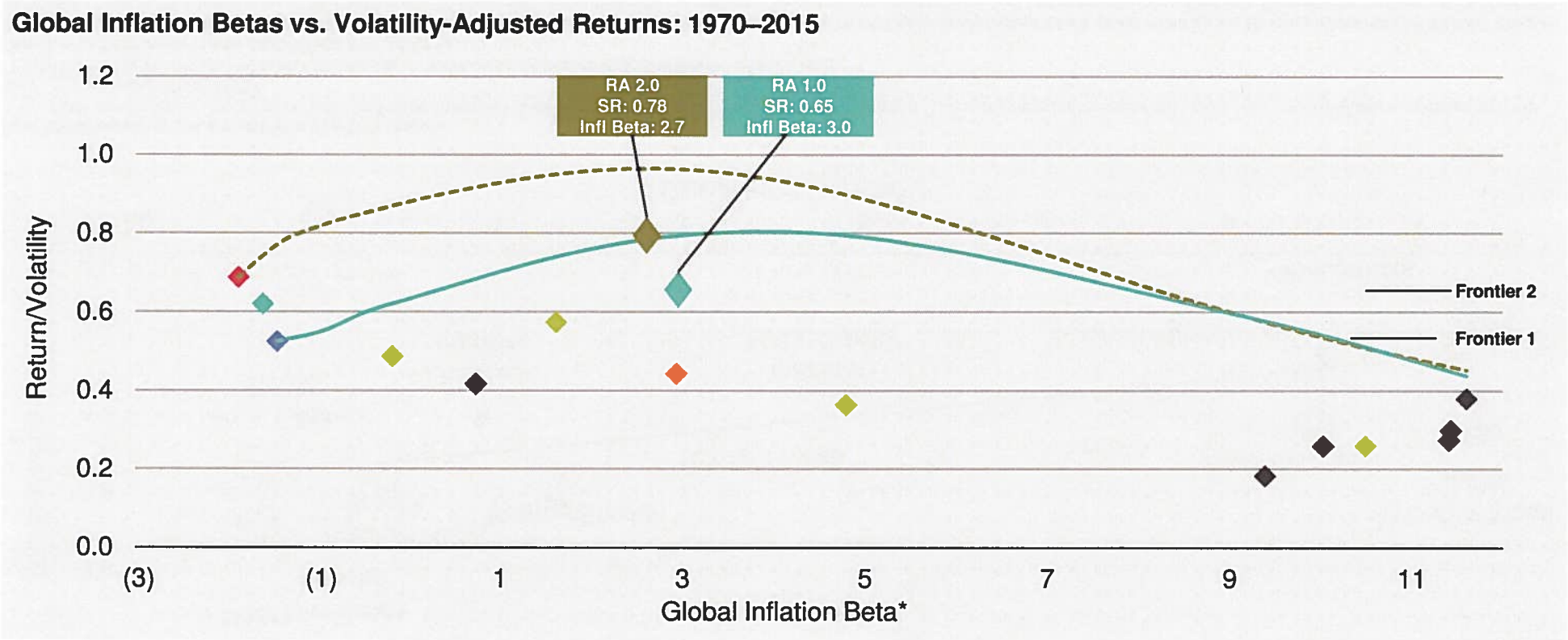
Risk-Adjusted Return vs Inflation Beta: There Is No Magic Bullet



Past performance is not a guarantee of future results.
An investor cannot invest directly in an index and its performance does not reflect the performance of any AB portfolio. The unmanaged index does not reflect fees and expenses associated with the active management of a portfolio.
*Total-return beta to one-year inflation rate change in multivariate regression including lagged inflation rate.
Global Inflation is measured by OECD Total CPI, All Items.
Diversified Stocks represented by MSCI World Index. Remaining stock data sourced from the Kenneth R. French Data Library except where noted. Real Estate Stocks represented by NAREIT Equity REIT Index from 1972–1989 and by FTSE EPRA/NAREIT Developed Index thereafter. Agriculture Stocks represented by S&P 500 Agriculture Stocks after 1993. Gold Stocks represented by S&P 500 Gold Stocks after 1989. Industrial Metals Stocks represented by HSBC Global Mining Index after 1988. Energy Stocks represented by HSBC Global Energy Index after 1988. Commodity futures data are sourced from AB series and the MJK Commodity Futures Database (on a US consumption-weighted basis) prior to availability of S&P GSCI sector data: S&P GSCI Grains (since 1970), Livestock (1970), Precious Metals (1974), Industrial Metals (1978), Softs (1996). Gold represented by Bloomberg spot price.
Source: Bloomberg, FTSE, HSBC, Kenneth R. French, MJK Associates, OECD, S&P, The London Times, The New York Times, The Wall Street Journal and AB

Risk-Adjusted Return vs Inflation Beta: RA 1.0 vs RA 2.0

Diversified Portfolios May Provide a Better Solution



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Macro Environment Analysis: RA 1.0

GDP Growth Breakpoint:	2.8%	2.8%
Inflation Breakpoint:	3.3%	3.3%

Real Assets

1970+

US Data

Equities		Real GDP Growth	
		Below	Above
Inflation	Below	6.1%	13.2%
	Above	-1.8%	9.6%

RA		Real GDP Growth	
		Below	Above
Inflation	Below	-0.2%	7.0%
	Above	4.9%	8.1%

Bonds		Real GDP Growth	
		Below	Above
Inflation	Below	5.6%	3.4%
	Above	1.2%	0.4%

RA vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-6.3%	-6.2%
	Above	6.7%	-1.5%

60/40		Real GDP Growth	
		Below	Above
Inflation	Below	5.9%	9.3%
	Above	-0.6%	6.0%

RA vs 60/40		Real GDP Growth	
		Below	Above
Inflation	Below	-6.1%	-2.3%
	Above	5.5%	2.2%

- Outperform equities materially when growth below average and inflation above average
- Similar to equities during above average growth and inflation
- Costs nearly 6% a year in relative returns in other environments

Macro Environment Analysis: RA 2.0

GDP Growth Breakpoint:	2.8%	2.8%	25% cmd prod,25% Cmd Fut,30% REIT,20% PP
Inflation Breakpoint:	3.3%	3.3%	30% 10yr swap
1970+			
US Data			

Equities		Real GDP Growth	
		Below	Above
Inflation	Below	6.1%	13.2%
	Above	-1.8%	9.6%

RA+Pricing Power +Swap vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	1.5%	9.2%
	Above	4.8%	9.0%

Bonds		Real GDP Growth	
		Below	Above
Inflation	Below	5.6%	3.4%
	Above	1.2%	0.4%

RA+Pricing Power +Swap vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-4.6%	-4.0%
	Above	6.6%	-0.7%

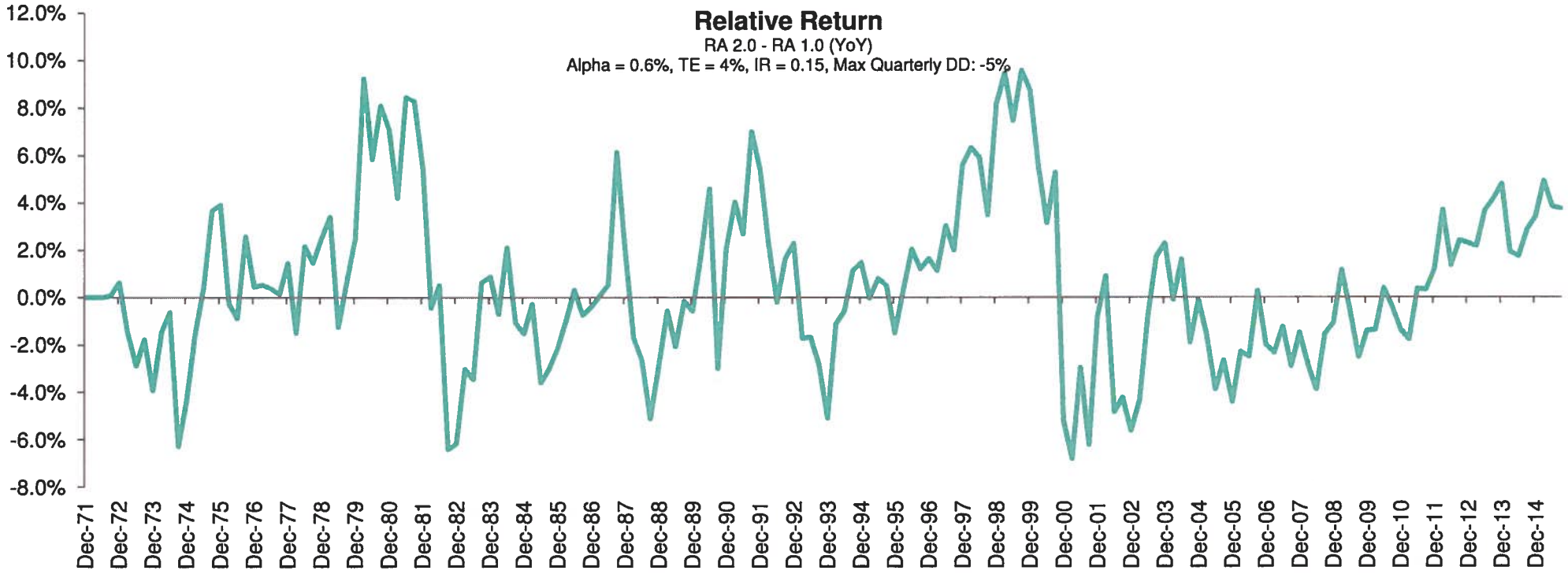
60/40		Real GDP Growth	
		Below	Above
Inflation	Below	5.9%	9.3%
	Above	-0.6%	6.0%

RA+Pricing Power +Swap vs 60/40		Real GDP Growth	
		Below	Above
Inflation	Below	-4.4%	-0.1%
	Above	5.4%	3.0%

- Outperform equities when growth below average and inflation above average
- Similar to equities during above average growth and inflation
- Actual implementation will be with forward swaps (Lower risk)
- Costs 4% in other environments

Real Asset 2.0 vs Real Asset 1.0

New RA - RA	197112+	198912+	200912+
Alpha	0.6%	0.7%	2.2%
TE	4.0%	3.9%	2.1%
IR	0.15	0.19	1.02
Max Quarterly DD	-5.6%	-5.4%	-1.3%



Source: BLS, Bloomberg

Implementation

Sources of Value Add

Delivering Investment Performance

All Market Real Return

Key Outcome:	Deliver meaningful outperformance vs equities during periods of rising inflation Provide diversification to traditional equity allocation
How We Add Value	Strategic Allocation designed to deliver: a) Exposure to potential sources of inflation (supply shocks,capacity utilization,FX/credit creation, monetary policy) b) Optimal trade off between inflation protection, reliability of inflation hedge and cost of inflation protection c) Dynamic Risk Management (Beta Management, FX) Tactical Allocation Security Selection

Key Risk / Return Objectives

	Return	Risk	IR/SR	
Simple Benchmark	**6.0%**	**14.0%**	**0.43**	**SR**
SAA	6.0%	14.0%	0.43	SR
DAA+Risk Management	0.4%	2.0%	0.20	IR
Security Selection Alpha	1.0%	1.4%	0.71	IR

Expected Performance Across Market Environments

When it Performs Well vs equities	Below average growth, above average inflation (Both stocks and bonds underperform) Performance on par with equities when above average growth and inflation
When it Performs Poorly vs equities	Below average inflation Particularly, above average growth, below average inflation
How We Differ from Key Competitors	Thoughtful strategic design (tradeoffs, macro environment) Use of dynamic management with integrated quant and fundamental expertise

Detailed Attribution of Portfolio Value-Add vs Benchmark

	Return	Risk	IR
SAA	**0.0%**	**0.0%**	
DAA	**0.4%**	**2.0%**	**0.20**
Security Selection Alpha	**1.0%**	**1.4%**	**0.71**
Cmd Producers	1.25%	2.5%	0.50
REITs	1.25%	2.5%	0.50
Global Thematic Growth	2.5%	5.0%	0.50
Cmd Futures	0.50%	1.0%	0.50
TIPS	0.25%	1.0%	0.25
Total Premium	**1.4%**	**3.0%**	0.46

Active Passive Split

Nominal Weights (%)

	Current		
	Bottom up	Top Down	Total
Commodity Producers	20%	13.3%	33.3%
REITs	20%	13.3%	33.3%
Commodities	33.33%	33.3%	33.3%
Collateral	33.33%	0.0%	33.3%
Pricing Power			
5Y5Y Swap			

	Proposed		
	Bottom Top	Top Down	Total
Commodity Producers	20%	5%	25%
REITs	25%	5%	30%
Commodities	25%	25%	25%
Collateral	25%	0%	25%
Pricing Power	10%	10%	20%
5Y5Y Swap	0%	75%	75%

TE Contribution (bps)

	Current		
	Bottom up	Top Down	Total
Commodity Producers	20		
REITs	20	170	230
Commodities	10		
Collateral	10		
Pricing Power			
Share of TE Contribution	26%	74%	100%

	Proposed		
	Bottom Top	Top Down	Total
Commodity Producers	35		
REITs	42		
Commodities	15	92	230
Collateral	21		
Pricing Power	25		
Share of TE Contribution	60%	40%	100%

+ Increasing reliance on security selection vs DAA
+ Explore beta exposure on TRS vs Equity Basket / ETF

Proposed Investment Process

Risk Based View

- Risk only portfolio optimization
- Forecasted volatility to be +/- 1% forecasted global equity
- Tries to stay close to strategic Volatility contribution

Nature of Volatility override

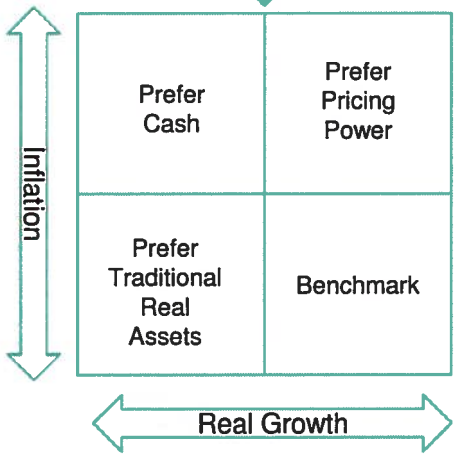
- Is volatility likely to be persistent / transient?
- Do we expect to get paid for the risk
- Use / ignore model output based on this

Macro Environment override

- Tactical shifts based on current macro environment

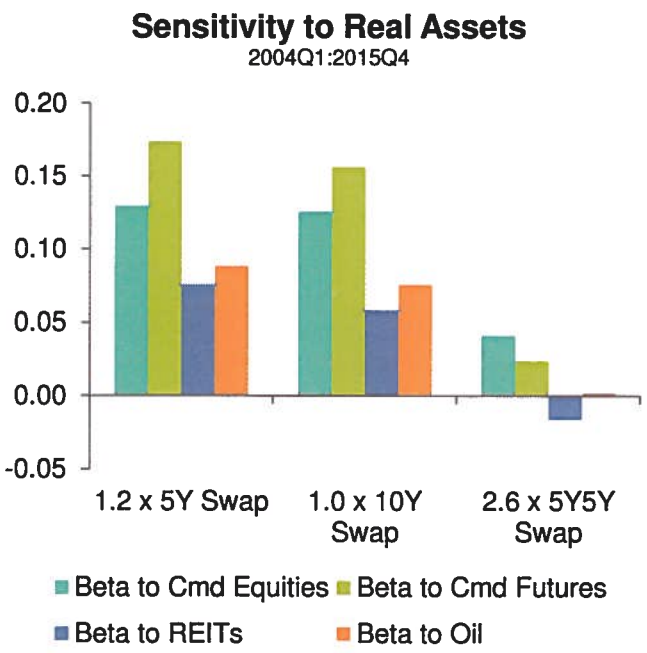
Expected Return override

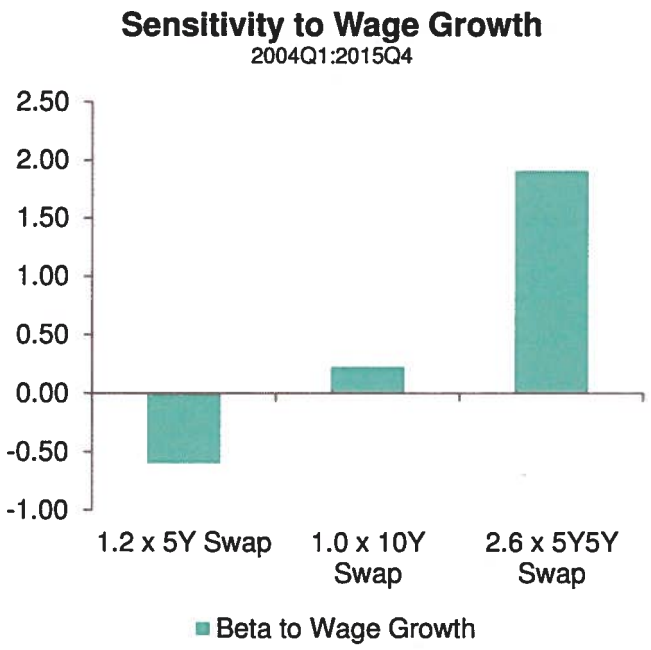
- Source of price pressures
- Sector Selection bets
- High conviction beta timing bets

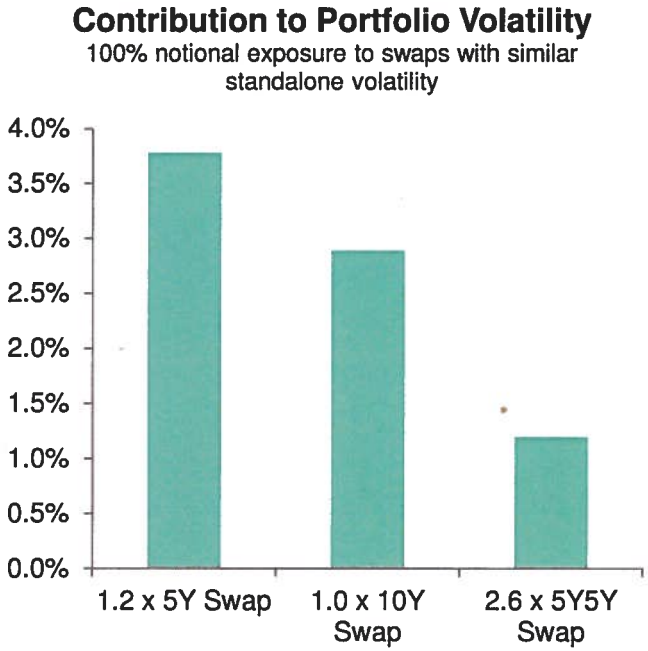


+ 'Risk First' approach
+ Clear framework for macro environment aware tactical allocations
+ Ad hoc/ alpha bets additive to this

Inflation Swap 10Y vs 5Y5Y







- Low correlation to existing assets lowers portfolio risk contribution for similar standalone volatility
  - 2.5 x levered 5y5y swap adds 1.2% to absolute risk vs 3% for 10y swap for 100% nominal position
  - Challenge: Large nominal exposure needed to make risk contribution meaningful (currently notional capped at 80% by risk compliance)
- No material difference in basis (spread between swaps and cash market) across the tenors

Next Steps

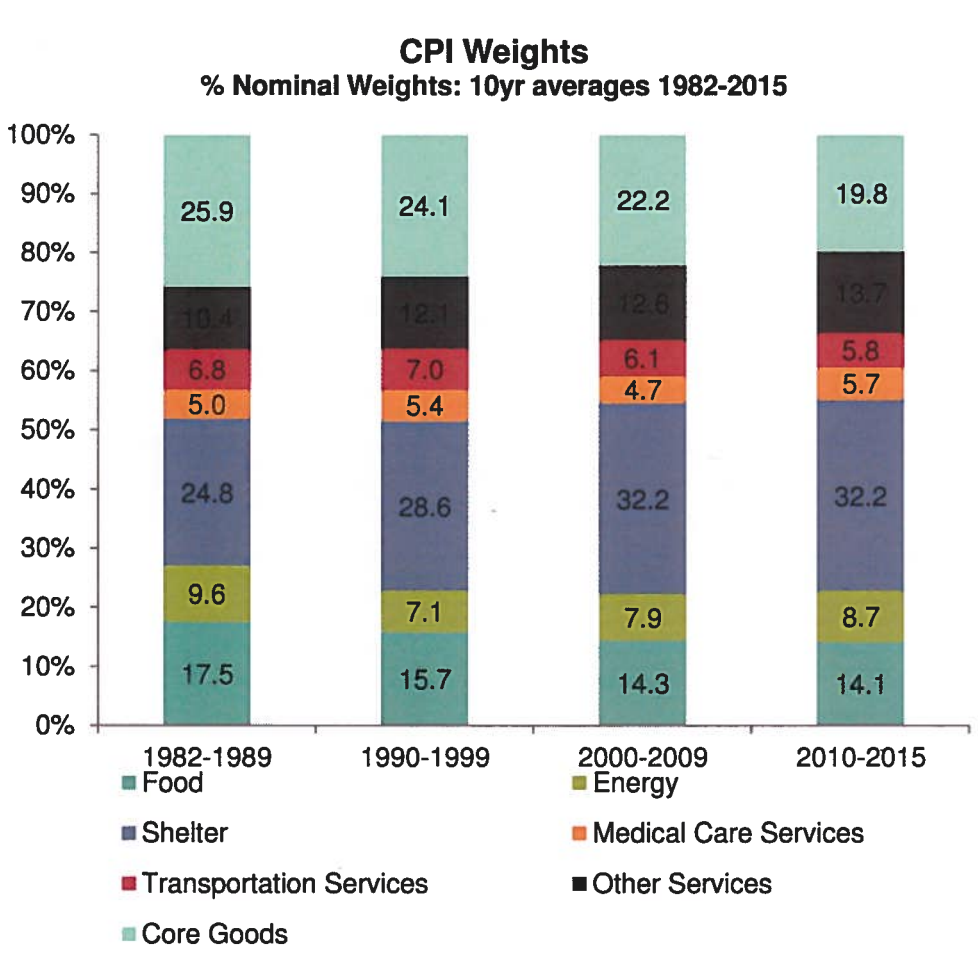
+ **Implementation**

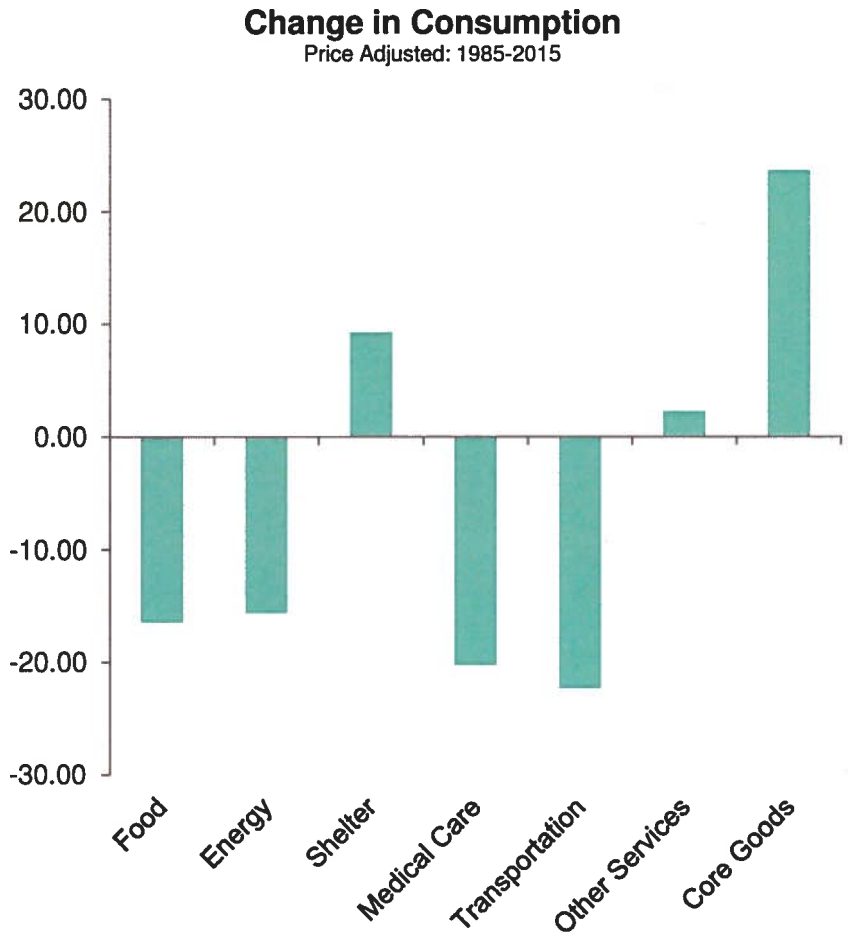
+ **Launch**

+ **Communication**

Appendix

Consumption Basket Evolution (CPI) - US

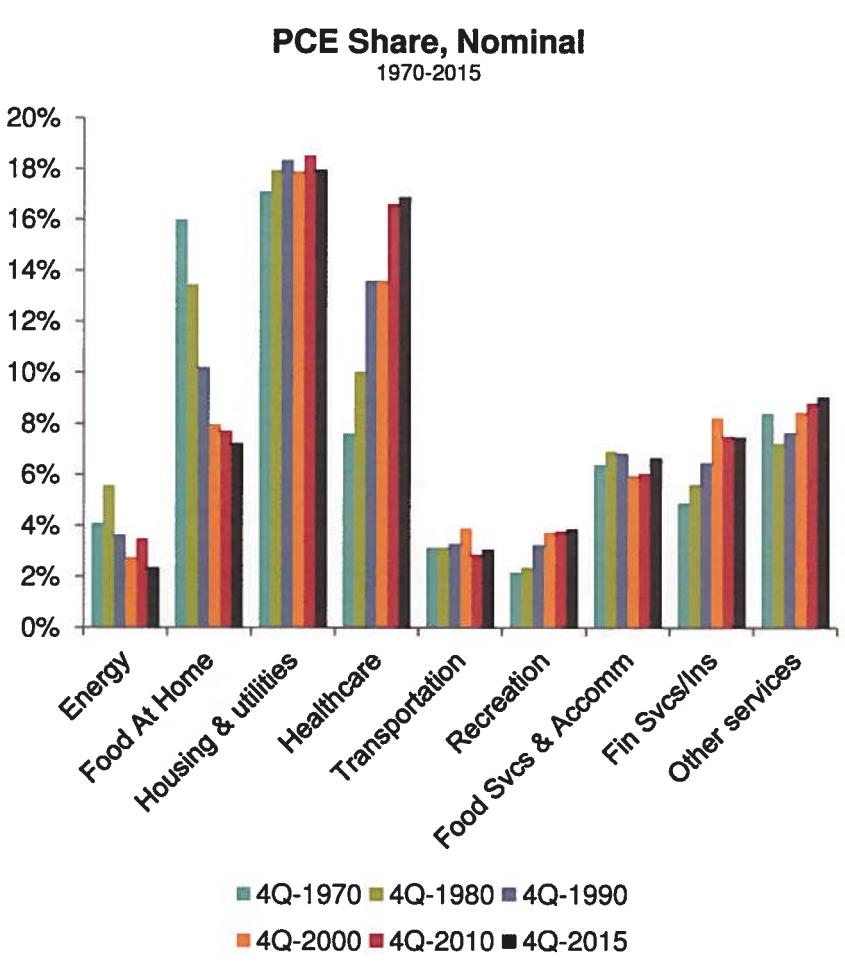


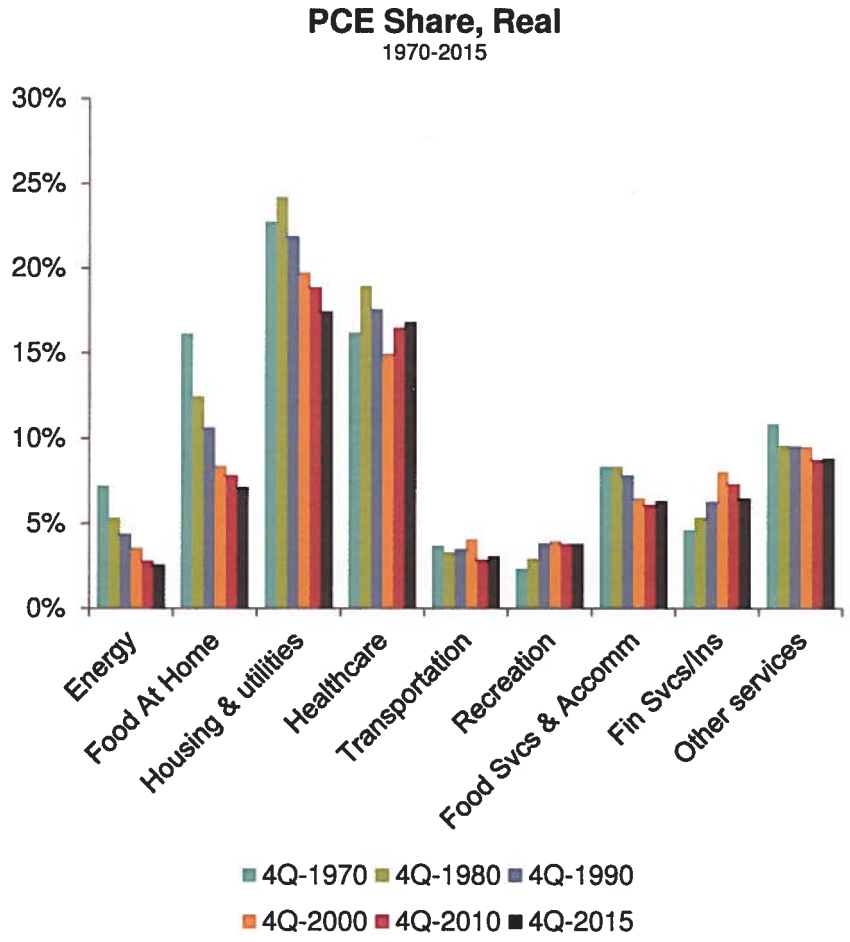


- Commodities becoming smaller share of consumption basket
- Services becoming larger share of consumption basket

Source: BLS, AB Calculations

Consumption Basket Evolution (PCE) - US



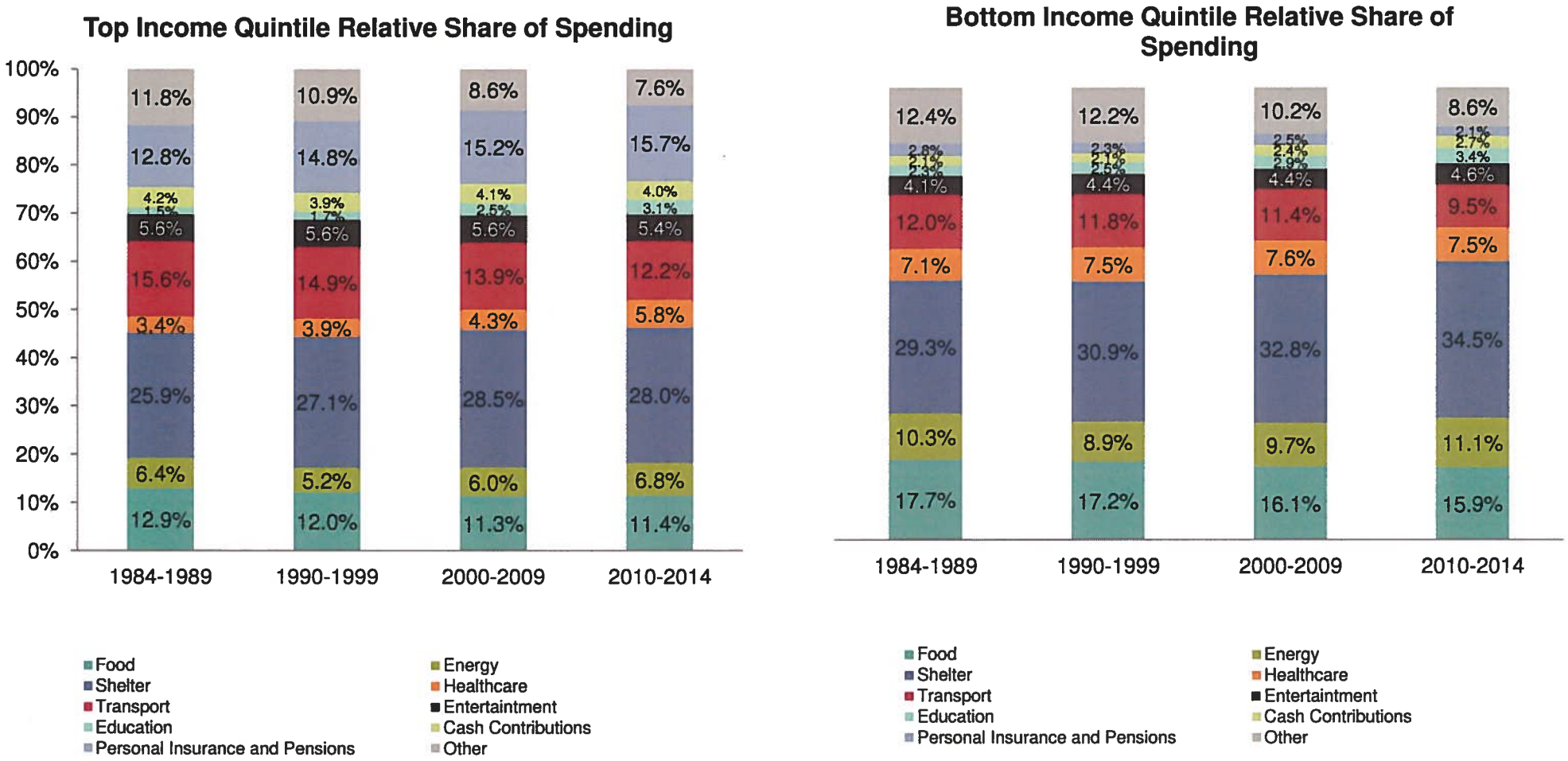


+ Commodities becoming smaller share of consumption basket
+ Services becoming a larger share of consumption basket

Source: BLS, Ab Calculations

Top and Bottom Quintile Relative Share of Spending (Nominal)

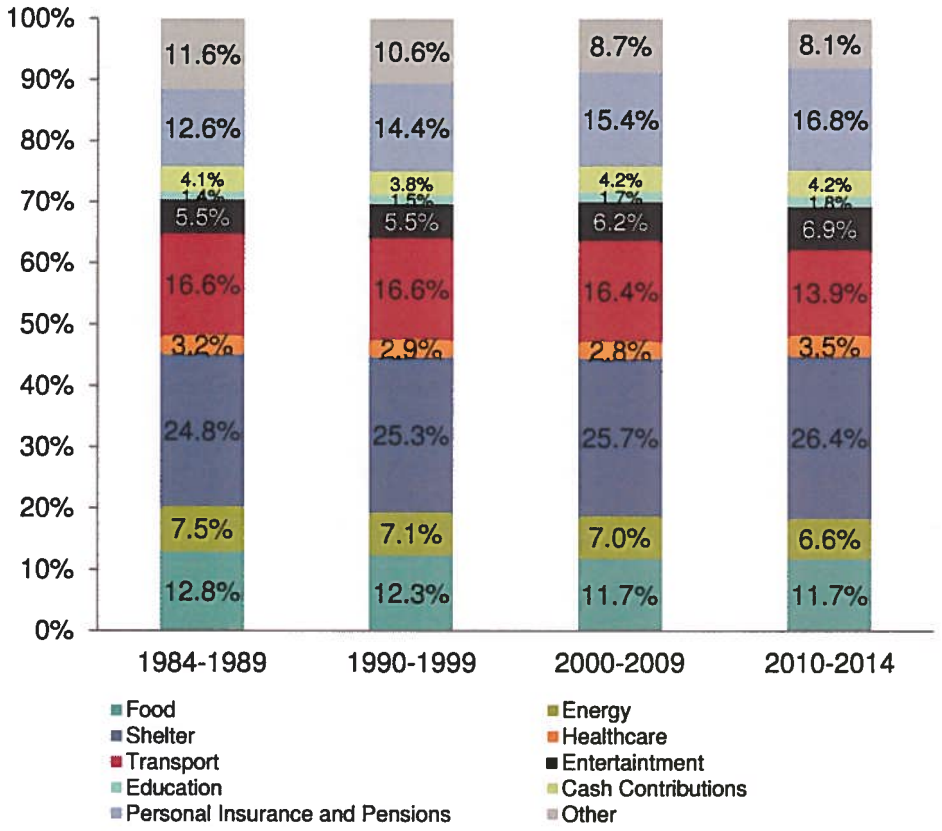
Average by Decade



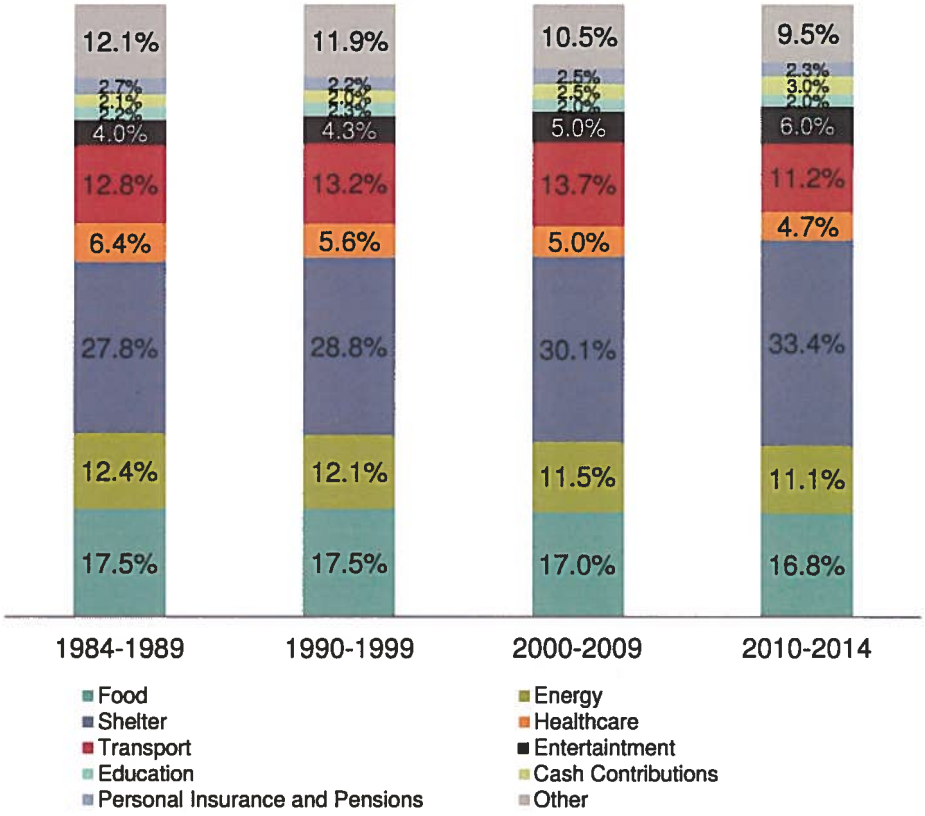
Top and Bottom Quintile Relative Share of Spending (Real)

Average by Decade

Top Quintile Relative Share of Spending



Bottom Income Quintile Relative Share of Spending



Real Share of Spending is built by taking the CPI Inflation Indices for the appropriate categories. Once we have an annual inflation rate for all the categories we then grow the base expenditure (1984 level) by (1 + Nominal Growth Rate) / (1 + Inflation Rate). Where data is unavailable we use CPI Core Inflation Rate

Summary

Table 1. U.S. core inflation equation from VAR model

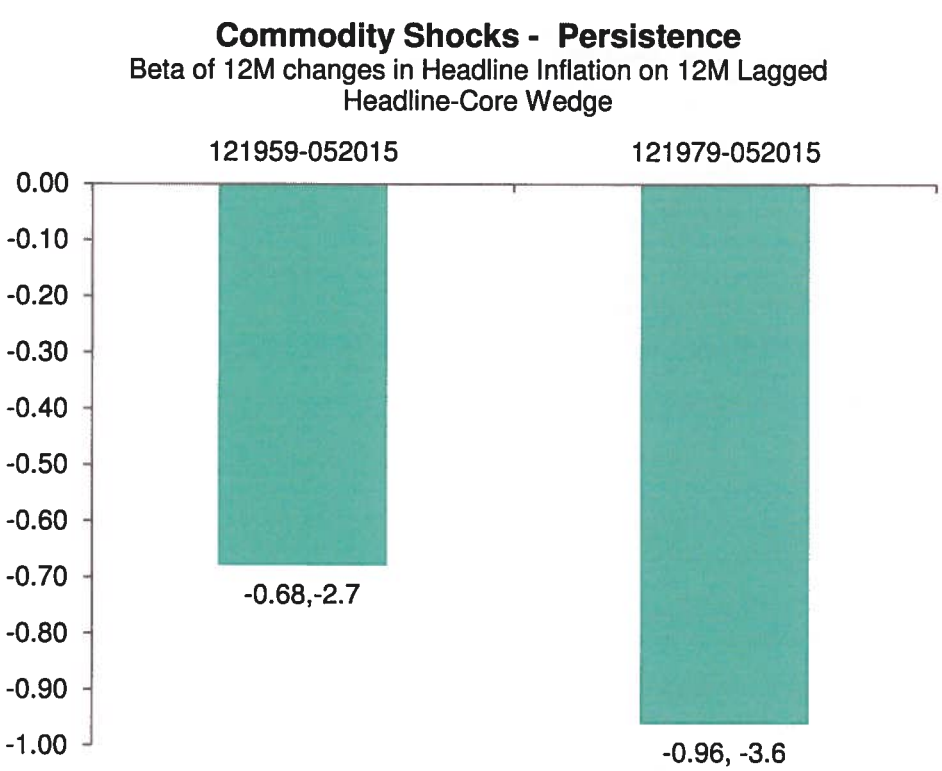
Standard errors in parentheses below variable coefficients

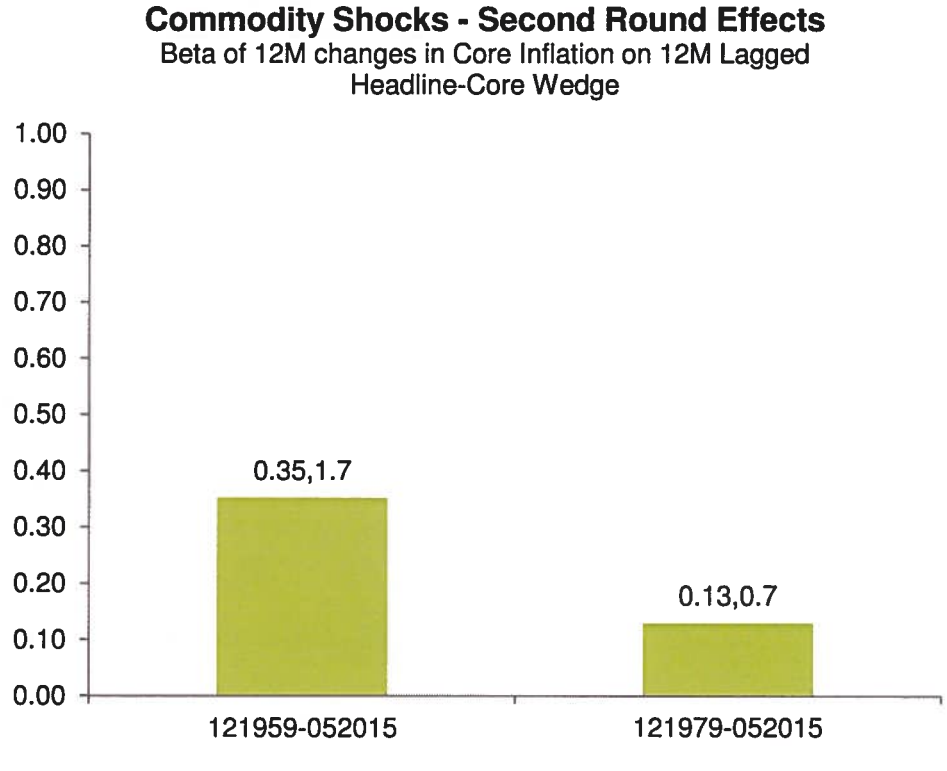
Variable	1959Q2–1979Q2 sample period	1983Q2–2006Q4 sample period
Lagged core inflation	0.645*	0.327*
	(0.10)	*(0.09)*
Inflation expectations	0.257*	0.738*
	(0.13)	*(0.11)*
Real business cycle factor	0.048	0.028
	(0.03)	*(0.02)*
Commodity-price inflation	0.040*	(0.009)
	(0.01)	*(0.01)*
Change in value of U.S. dollar	(1.031)*	(0.106)
	(0.28)	*(0.10)*
Constant	0.397	(0.160)
	(0.25)	*(0.20)*
Adjusted R-squared	0.86	0.80
Standard error of equation	1.11	0.53
F-statistic	101.0	76.8
Log likelihood	(120.6)	(71.2)
Mean of dependent variable	4.38	3.23
Standard deviation of dependent variable	3.00	1.19
Number of observations	81	95

Notes: Coefficients marked with an asterisk * are statistically different from zero at the 10% significance level. Standard errors are placed in parentheses below variable coefficients.

Source: Vanguard Investment Counseling & Research.

How do commodity shocks percolate into inflation?



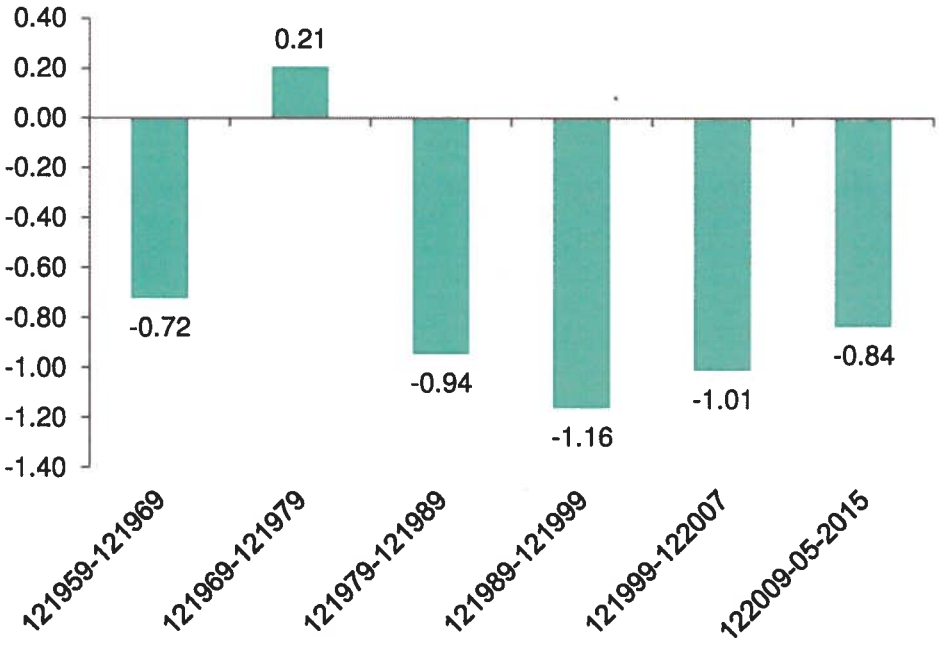


- Simple model: If headline reverts to core post commodity shocks, commodity effects are transitory
  - If not, either supply shocks are persistent or they lead to second round effects
- No compelling evidence of either; or at least declining pass through into inflation
- Why?
  - Better Anchored Inflation Expectations?
  - Access to cheaper hedging?
  - Integrated supply chains?

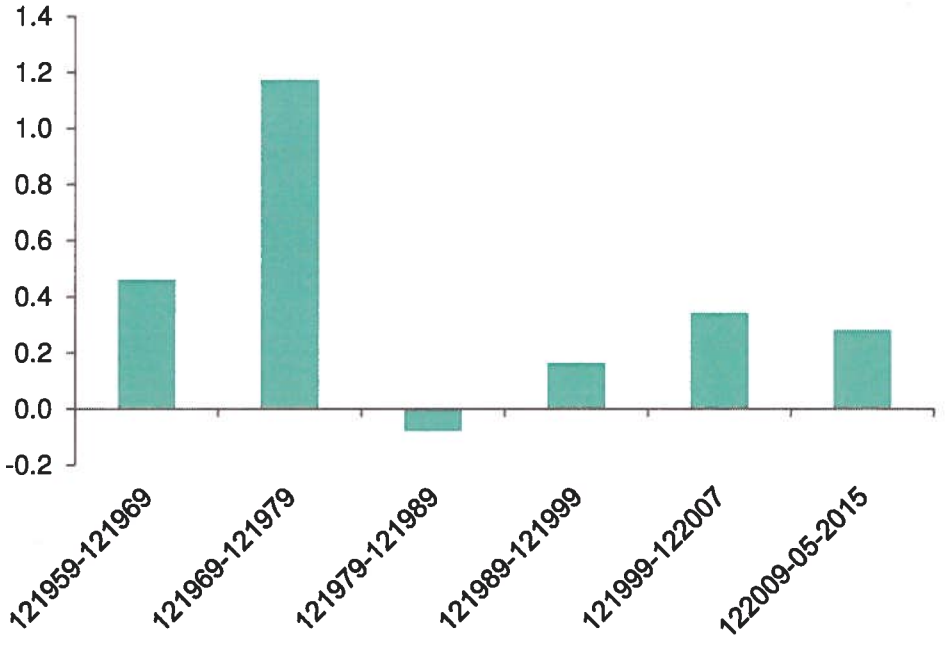
Source: BLS, Bloomberg

Commodity Impacts on Inflation

Commodity Shocks - Persistence
Beta of 12M changes in Headline Inflation on 12M Lagged Headline-Core Wedge



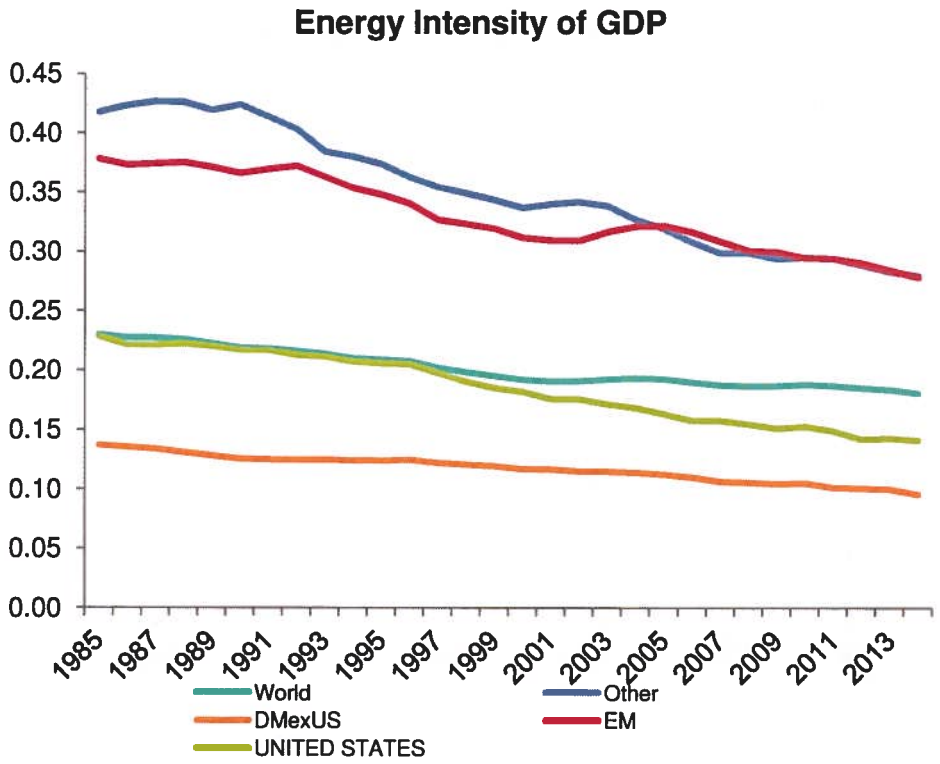
Commodity Shocks - Second Round Effects
12M Changes in Core Inflation on 12M Lagged Wedge between Core and Headline

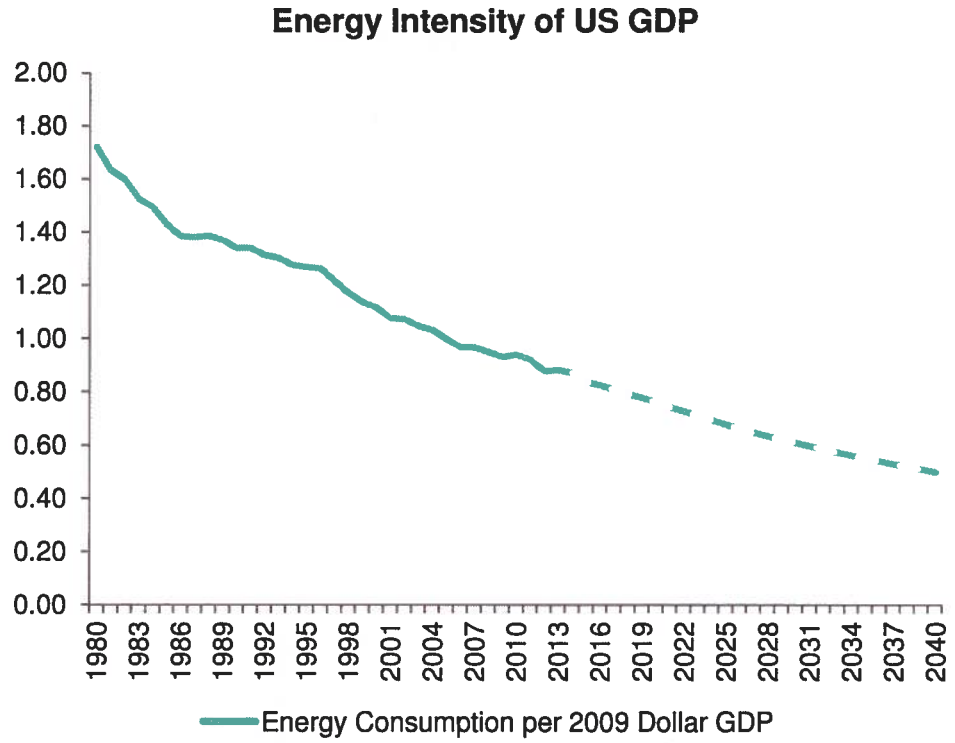


- Simple model: If headline reverts to core post commodity shocks, commodity effects are transitory
  - If not, either supply shocks are persistent or they lead to second round effects
- The second round effects of both energy and food prices have declined over time
- Why?
  - Better Anchored Inflation Expectations?
  - Access to cheaper hedging?
  - Integrated supply chains?

Source: BLS, Bloomberg

Proximate Drivers (Energy) – Will the trend persist?





Source: History: U.S. Energy Information Administration, *Monthly Energy Review*, November 2014, DOE/EIA-0035(2014/11). Projections: AEO2015 National Energy Modeling System, run REF2015. D021915A.

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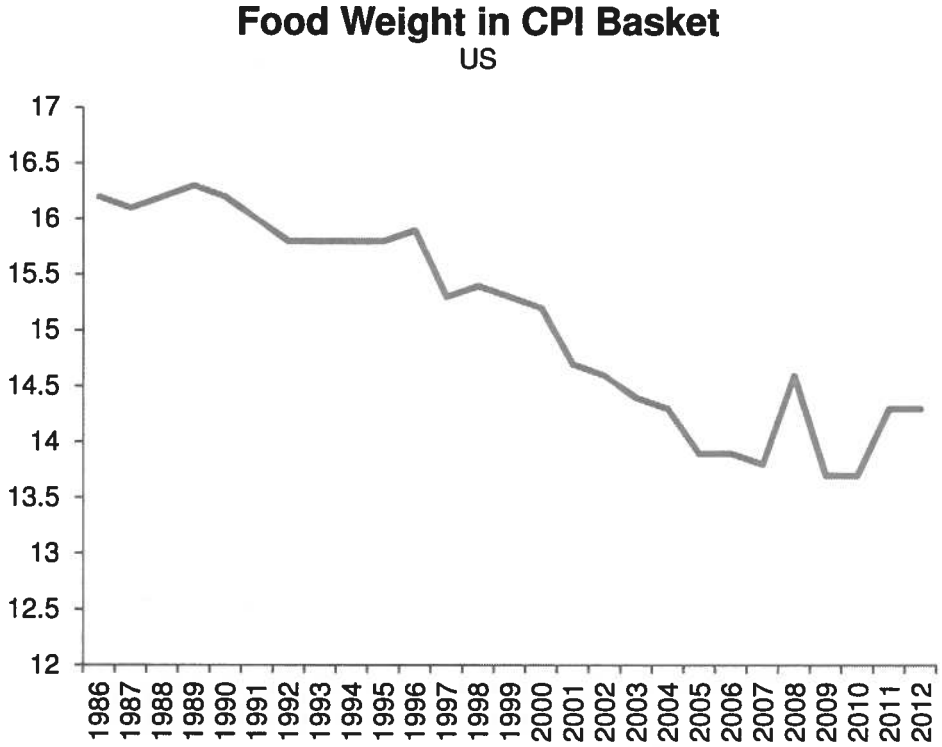
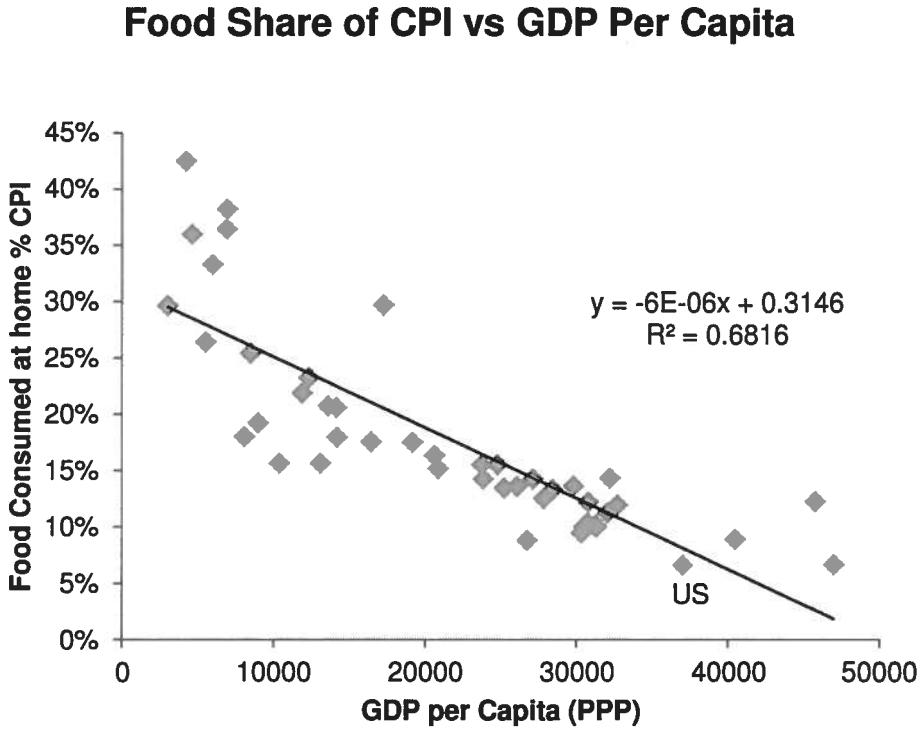
Source: EIA AEO 2015, WorldBank, Enerdata

Proximate Drivers (Food) – Will the trend persist?





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Source: BLS, USDA, WEO Database

Pricing Power

Definition: Firms that are able to raise prices in excess of increases in input costs without losing market share (or) Ability to maintain /grow margins while raising prices. On the flipside, these firms can maintain prices/market share as input costs fall.

A firm might have the following sources of pricing power:

a) Network effects: eBay, Linkedin
b) Intangible Assets (Patents, Brands etc): Coke, Novartis
c) Cost Advantage: Express Scripts. Walmart
d) Switching Costs: Oracle, IBM, Microsoft
e) Efficiencies of Scale: Newspapers, Pipelines etc

Usually accessed in a fundamental / bottom up selection process.

Systematic filter:

1. Strong Gross margin growth is an indicator of pricing power as revenues grow faster than COGS (Or)
2. Stability in Gross Margin is also indicative of pricing power

Filter Definition:

Universe: US Top 1500

Conditions a, b are either or and c is necessary

a) 3 year Gross Margin Growth (backward looking):
    a) Rank in the cross section by geometric GM growth (or)

b) Gross margin stability (backward looking):
    a) Arithmetic mean of last 7 years gross margin level / by gross margin volatility

c) Positive Earnings revisions: Expectation for sustainability of advantage

Pricing Power Equities – Macro Environment Performance

GDP Growth Breakpoint:		2.8%	2.8%
Inflation Breakpoint:		3.3%	3.3%
1970+			
US Data			

Equities With Pricing Power

Equities		Real GDP Growth	
		Below	Above
Inflation	Below	6.1%	13.2%
	Above	-1.8%	9.6%

Pricing Power Equities		Real GDP Growth	
		Below	Above
Inflation	Below	5.5%	18.4%
	Above	0.9%	9.9%

Bonds		Real GDP Growth	
		Below	Above
Inflation	Below	5.6%	3.4%
	Above	1.2%	0.4%

Pricing Power vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-1.3%	5.0%
	Above	4.1%	-0.2%

60/40		Real GDP Growth	
		Below	Above
Inflation	Below	5.9%	9.3%
	Above	-0.6%	6.0%

Pricing Power vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-0.4%	9.1%
	Above	1.5%	3.9%

- Outperform equities when growth below average and inflation above average
  - Complementary to Real Asset behavior
- Outperforms equities marginally during below average growth, above average inflation
  - Drag on Real Asset performance

Source: BLS, Bloomberg

Macro Environment Analysis: Real Assets + Pricing Power Equities

GDP Growth Breakpoint:		2.8%	2.8%
Inflation Breakpoint:		3.3%	3.3%
1970+			
US Data			

Equities		Real GDP Growth	
		Below	Above
Inflation	Below	6.1%	13.2%
	Above	-1.8%	9.6%

RA + Pricing Power		Real GDP Growth	
		Below	Above
Inflation	Below	2.5%	9.3%
	Above	3.7%	8.7%

25% cmd prod,25% Cmd Fut,30% REIT,20% PP

Bonds		Real GDP Growth	
		Below	Above
Inflation	Below	5.6%	3.4%
	Above	1.2%	0.4%

RA+Pricing Power vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-3.5%	-3.8%
	Above	5.5%	-1.0%

60/40		Real GDP Growth	
		Below	Above
Inflation	Below	5.9%	9.3%
	Above	-0.6%	6.0%

RA+Pricing Power vs 60/40		Real GDP Growth	
		Below	Above
Inflation	Below	-3.3%	0.1%
	Above	4.3%	2.7%

- Outperform equities when growth below average and inflation above average
  - Weaker than pure Real Asset, but still material
- Similar to equities during above average growth and inflation
- Costs around 3% a year in relative returns in other environments

Source: BLS, Bloomberg

Real Assets (Modified) – Macro Environment Performance

GDP Growth Breakpoint:		2.8%	2.8%
Inflation Breakpoint:		3.3%	3.3%
1970+			
US Data			

Equities		Real GDP Growth	
		Below	Above
Inflation	Below	6.1%	13.2%
	Above	-1.8%	9.6%

Bonds		Real GDP Growth	
		Below	Above
Inflation	Below	5.6%	3.4%
	Above	1.2%	0.4%

60/40		Real GDP Growth	
		Below	Above
Inflation	Below	5.9%	9.3%
	Above	-0.6%	6.0%

Real Assets - Modified

RA Modified		Real GDP Growth	
		Below	Above
Inflation	Below	0.1%	7.1%
	Above	4.4%	8.4%

RA Modified vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-5.9%	-6.1%
	Above	6.2%	-1.3%

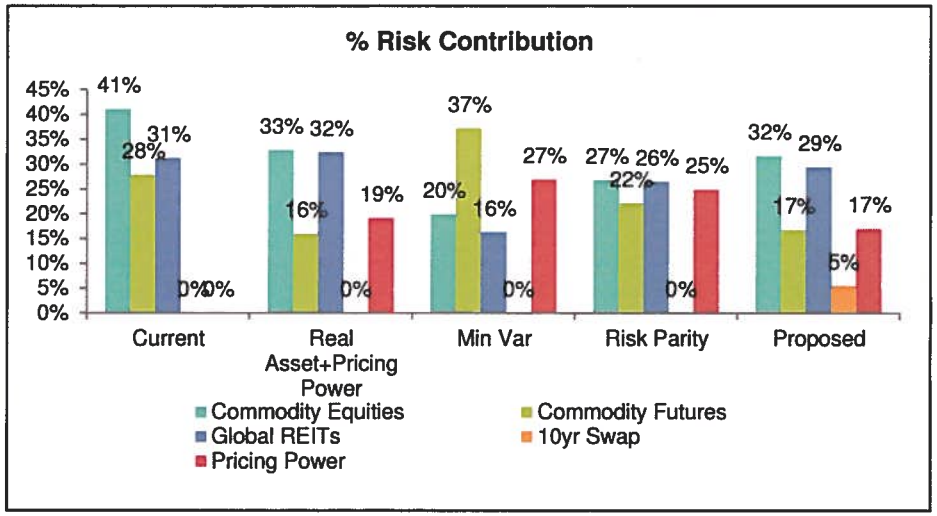
RA Modified vs Equities		Real GDP Growth	
		Below	Above
Inflation	Below	-5.7%	-2.2%
	Above	5.0%	2.4%

- Modification is reducing commodity assets to 50% and REITs the other 50%
- No discernible improvement

Source: BLS, Bloomberg

Real Assets: Strategic Design Risk Construction

Weights	Current	Real Asset+Pricing Power	Min Var (Constrained)	Risk Parity	Proposed
Cmd Equities	33.3%	25%	15%	20%	25%
Cmd Futures	33.3%	25%	39%	30%	25%
Glb REITs	33.3%	30%	17%	25%	30%
10yr Swap	0%	0%	0%	0%	30%
Pricing Power	0%	20%	28%	25%	20%



Excess Returns	Current	RA+Pricing Power	Min Var	Risk Parity	Proposed
Average Return	5.5%	6.1%	6.1%	6.2%	6.1%
Volatility	14.0%	13.4%	12.4%	12.9%	13.9%
SR	0.39	0.46	0.49	0.48	0.44
Max Quarterly DD	-29%	-26%	-25%	-26%	-29%
Equity Corr	0.65	0.80	0.71	0.78	0.75
Equity alpha	0.70%	0.73%	0.88%	0.80%	0.76%
Equity Beta	0.54	0.63	0.52	0.60	0.61
Corr to RAS	1.00	0.96	0.95	0.96	0.96
Corr to Cmd Equity	0.88	0.90	0.84	0.88	0.89
Corr to Cmd Futures	0.62	0.45	0.63	0.50	0.49
Corr to RE	0.72	0.79	0.65	0.75	0.75
Infl change correl	0.27	0.17	0.26	0.19	0.25
Infla beta	2.06	1.22	1.75	1.35	1.94
Infla beta t stat	1.74	1.07	1.69	1.23	1.63

197112+ (Equity Beta Adj)	Current	RA+Pricing Power	Min Var	Risk Parity	Proposed
Alpha	2.8%	2.9%	3.5%	3.2%	3.0%
TE	10.7%	8.1%	8.8%	8.1%	9.2%
IR	0.26	0.36	0.40	0.39	0.33
Max Quarterly DD	-17%	-12%	-14%	-13%	-15%
Equity Corr	0.00	0.00	0.00	0.00	0.00
Equity alpha	0.70%	0.73%	0.88%	0.80%	0.76%
Equity Beta	0.00	0.00	0.00	0.00	0.00
Corr to RAS	0.76	0.74	0.70	0.73	0.71
Corr to Cmd Equity	0.55	0.55	0.48	0.52	0.55
Corr to Cmd Futures	0.82	0.76	0.89	0.82	0.75
Corr to RE	0.31	0.33	0.17	0.27	0.29
Infl change correl	0.48	0.46	0.53	0.49	0.51
Infla beta	2.92	2.18	2.59	2.27	2.97
Infla beta t stat	3.58	3.42	4.10	3.73	4.05

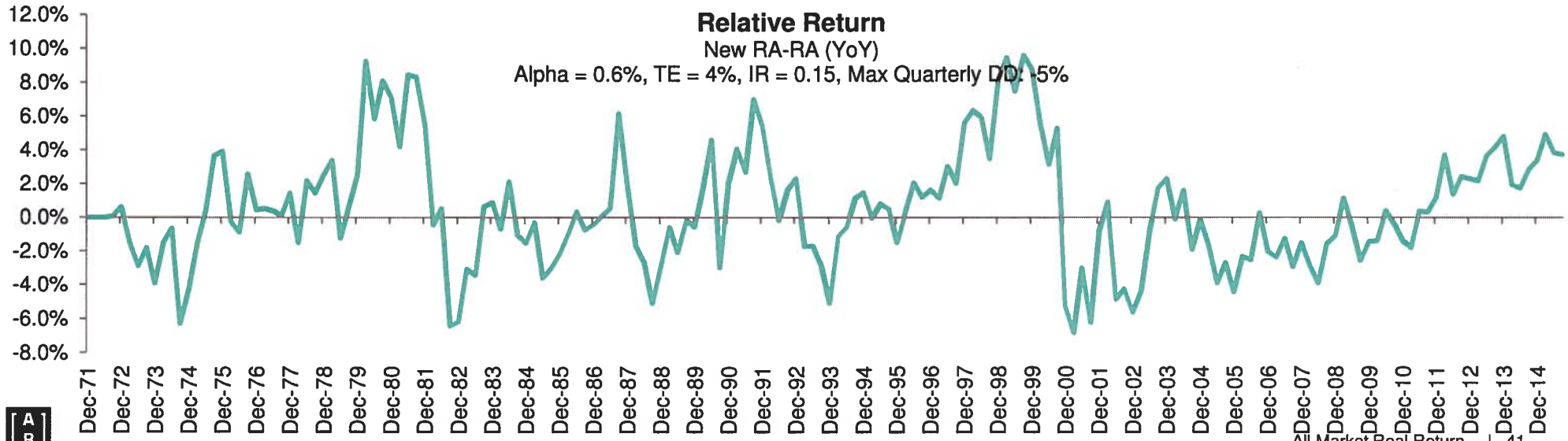
+ Commodity risk contribution from 70% to 50%; REIT contribution maintained at 30%; Pricing power ~20%

Real Asset 2.0 vs Real Asset 1.0

1971+	RA 1.0	RA 2.0
Average	5.5%	6.1%
Volatility	14.0%	13.9%
SR	0.39	0.44
Max Quarterly DD	-29%	-29%
Equity Corr	0.65	0.75
Equity alpha	0.70%	0.76%
Equity Beta	0.54	0.61
Corr to RAS	1.00	0.96
Corr to Cmd Equity	0.88	0.89
Corr to Cmd Futures	0.62	0.49
Corr to RE	0.72	0.75
Infl change correl	0.26	0.25
Infla beta	2.04	1.93
Infla beta t stat	1.74	1.63

197112+ (Equi	RA 1.0	RA 2.0
Alpha	2.8%	3.0%
TE	10.7%	9.2%
IR	0.26	0.33
Max Quarterl	-17%	-15%
Equity Corr	0.00	0.00
Equity alpha	0.70%	0.76%
Equity Beta	0.00	0.00
Corr to RAS	0.76	0.71
Corr to Cmd E	0.55	0.55
Corr to Cmd F	0.82	0.75
Corr to RE	0.31	0.29
Infl change cc	0.48	0.51
Infla beta	2.92	2.97
Infla beta t st	3.58	4.05

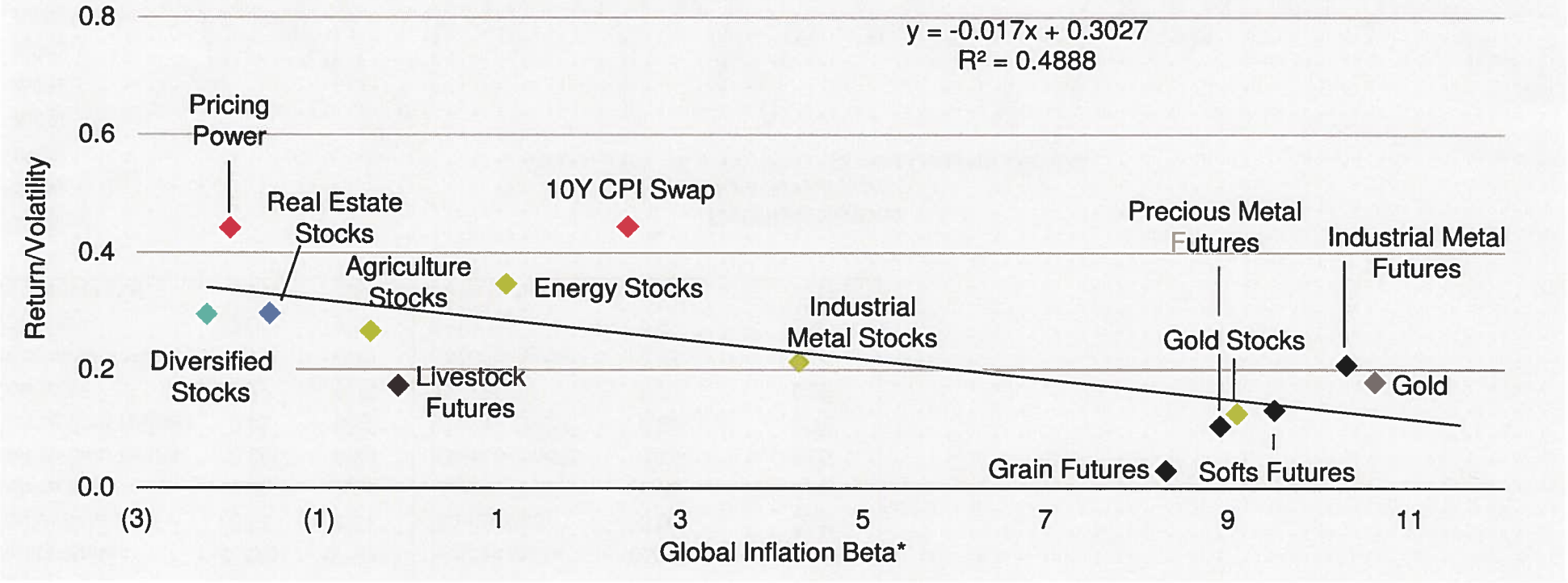
New RA - RA	197112+	198912+	200912+
Alpha	0.6%	0.7%	2.2%
TE	4.0%	3.9%	2.1%
IR	0.15	0.19	1.02
Max Quarterly DD	-5.6%	-5.4%	-1.3%



Source: BLS, Bloomberg

Risk-Adjusted Excess Return: There Is No Magic Bullet

Global Inflation Betas vs. Volatility-Adjusted Returns: 1970–2015

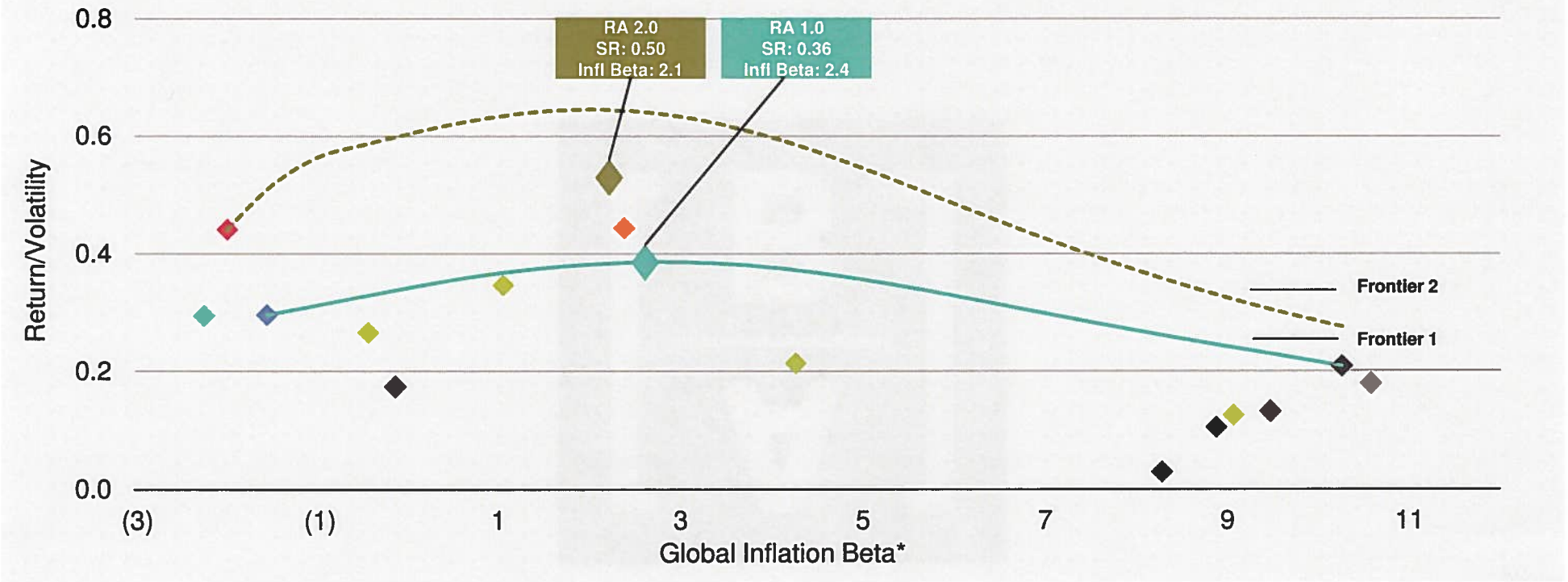


Past performance is not a guarantee of future results.
An investor cannot invest directly in an index and its performance does not reflect the performance of any AB portfolio. The unmanaged index does not reflect fees and expenses associated with the active management of a portfolio.
*Total-return beta to one-year inflation rate change in multivariate regression including lagged inflation rate.
Global Inflation is measured by OECD Total CPI, All Items.
Diversified Stocks represented by MSCI World Index. Remaining stock data sourced from the Kenneth R. French Data Library except where noted. Real Estate Stocks represented by NAREIT Equity REIT Index from 1972–1989 and by FTSE EPRA/NAREIT Developed Index thereafter. Agriculture Stocks represented by S&P 500 Agriculture Stocks after 1993. Gold Stocks represented by S&P 500 Gold Stocks after 1989. Industrial Metals Stocks represented by HSBC Global Mining Index after 1988. Energy Stocks represented by HSBC Global Energy Index after 1988. Commodity futures data are sourced from AB series and the MJK Commodity Futures Database (on a US consumption-weighted basis) prior to availability of S&P GSCI sector data: S&P GSCI Grains (since 1970), Livestock (1970), Precious Metals (1974), Industrial Metals (1978), Softs (1996). Gold represented by Bloomberg spot price.
Source: Bloomberg, FTSE, HSBC, Kenneth R. French, MJK Associates, OECD, S&P, The London Times, The New York Times, The Wall Street Journal and AB

Real Risk-Adjusted Return: RA 1.0 vs RA 2.0

Diversified Portfolios May Provide a Better Solution

Global Inflation Betas vs. Volatility-Adjusted Returns: 1970–2015



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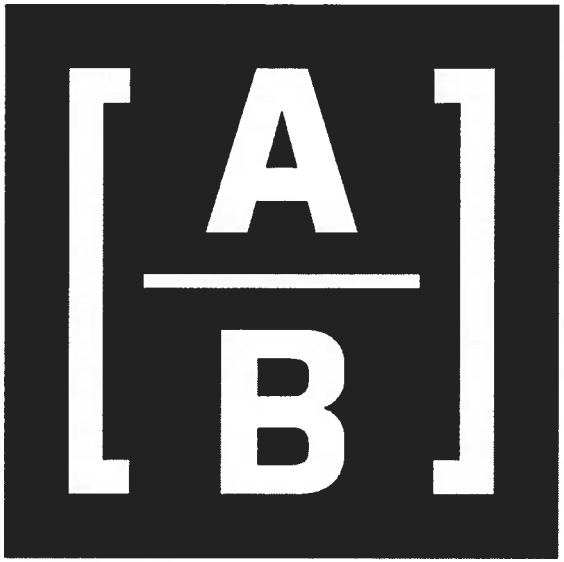

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