What's New At Empirical

- On **May 30th, 2012** @ noon (lunch provided) & 5:30PM, Empirical will be hosting an educational seminar on **assisted living** and **long term care**. Learn about the likelihood of needing long term care, its cost, what assisted living options are available to seniors and how to find the best option. Please contact your advisor to register for this event.
- To sign up for the Client View Portal or to receive *paperless* statements going forward, please email Simon Liu at techsupport@empiricalfs.com. For a visual overview of the Client View Portal, please go to **client.empiricalfs.com**.
- Follow us on Twitter and Facebook for the latest news, developments and research.
- Tune into Empirical Investing Radio every Thursday at 2PM PST on the VoiceAmerica business channel: *business.voiceamerica.com*

"Retirement is like a long vacation in Las Vegas. The goal is to enjoy it the fullest, but not so fully that you run out of money."

- **Jonathan Clements**

Retirement Income Planning with Empirical's Dynamic Income Distribution System™

In 2009, the Certified Financial Planner Board of Standards sponsored the National Consumer Survey on Personal Finance to establish baseline data on consumer personal finance and financial planning related attitudes and behaviors[1]. Respondents selected "*managing retirement income*" as one of the most important financial planning issues in their lives. In spite of this being a critical issue for so many people, the same study found that only 17% of respondents have a financial plan in place and update it regularly. Compound this with statistics from the Employee Benefit Research Institute[2] (EBRI) that state, as of March 2012, only 14% of Americans are confident in their ability to retire comfortably (a historically low rate); it is clear that retirement planning is a timely topic.

In this letter, we introduce an alternative method to evaluate retirement income and portfolio decisions throughout the entire retirement time horizon. We refer to this method as the ***Dynamic Income Distribution Approach™ (DIDA).*** In many cases, the conclusions reached when engaging in the DIDA approach may be similar to those reached under our traditional retirement planning method. However, this approach may increase your level of confidence in a retirement plan by looking at it in a different way. We start with a basic overview of the system, and use it to run a basic retirement income scenario. Please speak to your financial advisor if you are interested in running your retirement plan through the DIDA model.

DIDA Background and Approach

The Dynamic Income Distribution Approach is designed to

looking ahead

Roth Conversions & Asset Location During Retirement ♦

Capital Market Expectation ♦

clearly illustrate how a consolidated asset allocation can be broken down into separate investment time horizons. The goal is to provide clients with a clear understanding of how investment risks are matched with differing time frames and distribution needs. Each time period aligns according to investment strategies that minimize the potential to experience significant losses for that specific period.

In our traditional planning process, we determine an asset allocation based on the investor's specific retirement goals and then adjust (in total) over time to reflect the changing time horizon, risk tolerance and return needs of the client. The goal is to derive the desired retirement income, without the portfolio going to zero during the investor's lifetime. The financial planning software we typically use does a good job of accounting for stock and bond market volatility. The program statistically tests the portfolio success rate under 1,000 different market scenarios. Typically, success rates of 85% are targeted to determine if we are on track. However, the traditional approach is not without weaknesses.

First among these, it is difficult to distinguish performance between stocks and bonds. For example, let's assume an investor is using a 50% stock and 50% fixed income (bonds) portfolio and within the first year of retirement, the stock market declines 20%. Understandably, they may become very

[1] Certified Financial Planner Board of Standards, Inc. "2009 National Survey on Personal Finance." Survey. 2009.
[2] Helman, Ruth; Greenwald, Mathew; Copeland, Craig; VanDerhei, Jack. "The 2012 Retirement Confidence Survey." *Employee Benefit Research Institute Issue Brief.* March 2012. Print.

Income Tranche: *A specific period of time that is earmarked for current and future retirement income needs. In our example, we divide retirement income needs into ten year income tranches.*

Dynamic Asset Allocation: *Empirical's approach to adjusting asset allocation and investments within each retirement tranche as time progresses. It does **not** refer to making changes as a result of predicted market movements.*

Legacy Tranche: *The legacy tranche is designed to be a plan surplus bucket and the portion of the portfolio that will be passed on at death.*

nervous about their retirement income prospects. The investor may assume that the part of the portfolio subjected to the stock market decline is being used to fund current income needs. However, it is actually the stable bond component that is meant to fulfill current income needs while the stocks are meant to replenish the income bucket beyond the nearest ten year period. The *Dynamic Income Distribution Approach* overcomes this weakness by isolating each part of the portfolio (stocks and bonds) that is earmarked for the short and long-term needs. The other main advantage with DIDA is that we are better able to delineate portfolio risk for given time periods. For example, if we are not liquidating stocks to provide income one year from now, but ten years from now, we should not match a one year stock decline risk to a ten year time frame. Instead, in order to get a clear picture of the possible risks involved over a ten year time frame, we can examine the worst case historical stock returns for ten year periods and so on throughout the entire plan. This will help combat our natural tendency to become distracted and worried by very short-term stock market outcomes which are miss-matched to our long-term success.

DIDA also calculates funding required for each income time period, utilizing conservative forward-looking returns. Historical, worst case returns, are based on the real portfolio models being used for Empirical clients. This is important because frequently, plans that use risk and return data in the assumptions, that have very little connection to the real portfolios, are less reliable. There are many ways a plan can be customized, however for simplicity, this letter provides a straight forward introduction to an income tranche (or bucket) approach.

After the initial equity exposure has been chosen for a particular future income tranche, the equity exposure should gradually be reduced to match the shortening time frame (dynamic asset allocation). This approach protects an investor from holding a fixed portion of equities until a single point in time and then making a major asset allocation change on that single date. For example, imagine investors who held 100% stock in their 401k's as they neared retirement only to experience a significant market decline (think 2008) shortly before they adjusted their asset allocation to match their arrival at retirement.

It is possible to further subdivide the level of risk taken within equity and fixed income investments in accordance with the time frame. For example, the equity invested in a forty year tranche may be invested more aggressively than the equity residing in a twenty year tranche. Both tranches are holding stocks, however, the stock portfolios may have varying levels of target risk premium matched to each time frame.

To illustrate this system, we will start with a basic retirement scenario. In order to keep this letter to a reasonable length, several inputs have been purposely simplified.

Basic Retirement Plan Illustration Assumptions
- **Time Horizon:** 40 years (Age 60 to 100)
- **Portfolio Starting Value:** $1,000,000
- **Desired Income from Retirement Portfolio:** $30,000 per year adjusted for inflation
- **Inflation Rate:** 2.5% average for the first 10 years, 3% over the entire 40 year period.

Investment Risk Track
In this example, we are using a *Moderate Risk Track.* See **Figure 1** below for the different risk tracks that can be chosen for the income and legacy tranches. The difference among the three risk tracks is the amount of equity allocated to each income tranche and the legacy tranche at the beginning of the plan. With each passing year, the system gradually reduces the amount of equity so that each current ten year income tranche has zero exposure to equities. In essence, the investor will have no concern about the stock market affecting income for the nearest ten year period. Because the legacy tranche has an indefinite time horizon, it can be held at a specific

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Figure 1: **Investment Risk Track for Income and Legacy Tranches**

Investment Risk Tracks	Time Horizon For Equities (stocks) Starting Today				
	10 Years Income Tranche	20 Years Income Tranche	30 Years Income Tranche	40 Years Income Tranche	Legacy Tranche
Conservative	20%	60%	80%	80%	60%
Moderate	40%	80%	100%	100%	80%
Aggressive	60%	100%	100%	100%	100%

Figure 2: Percentile of Empirical's Targeted Premium™ 3 Equity (Stock) Return

Return Percentile	10 Years (Tranche 1)	20 Years (Tranche 2)	30 Years Tranche	40 Years Tranche
100%	23.68%	19.47%	17.03%	16.05%
50%	13.15%	13.90%	14.17%	13.83%
25%	10.58%	12.25%	12.96%	13.08%
10%	7.37%	9.68%	11.71%	11.27%
0%	-4.54%	4.35%	8.86%	9.94%

Used in planning

See Full Performance Disclosure

allocation over the entire time period, or adjusted annually toward a specific equity level.

Investment Return Assumptions

See **Figure 2** for a list of equity returns used over each time horizon at different historical frequencies.

- **Equity (Stocks):** returns are based on the EWM TP3[3] equity model linked back to 1927. The program allows the advisor and client to look at portfolio risk over varying investment time periods (i.e. a ten year investment time horizon relative to a twenty, thirty or forty year time period) and adjust the percentile of outcomes for each of those time periods. For example, if an investor wanted to take a neutral view of equity returns, the 50th percentile could be selected. In this case, half of the time, historical returns were higher, the other half, the returns were lower.

  If the investor wanted to plan using a more pessimistic view toward future returns or to stress test the plan, a lower percentile may be selected. For example, if the 10th percentile were selected, the returns shown for each unique investment time period would be better than only the worst 10% of historical experiences. In other words, 90% of the historical returns were actually better for each time period examined.

  The zero percentile represents the absolute worst return experience for the TP3 model for each time period.

  Rolling monthly returns data was used to create as many investment time return experiences as possible. The model returns have investment expenses deducted and are gross of advisory and trading costs.

- **Fixed income (Bonds):** In this example, we are using a 3% rate of return for the first ten years and 4% for the entire 40 year period. Fixed income returns are a forward looking estimate based on the current market, rather than a backward looking estimate of historical returns, and are intended to be reasonably conservative for illustration and planning purposes.

Illustrations of the Dynamic Income Distribution Approach

The sample retirement distribution plan will be tested applying three different equity return assumptions as follows:

- 50th Percentile (average historical returns)
- 10th Percentile (90% of the time returns were historically higher)
- 0 Percentile (represents the worst 10, 20, 30 and 40 year time period returns in history)

All other assumptions will be held constant across the three comparison plans. Since we are using the same inflation rates and fixed income returns for each scenario, we can start by looking at the income tranches which are the same, regardless of the equity returns chosen. **Appendix A** shows the required **future balance** for each income tranche at the time income is drawn. At this time, the allocation is 100% fixed income during the entire income phase. Later, we will see that each tranche systematically migrates toward the 100% fixed income target held throughout the distribution phase.
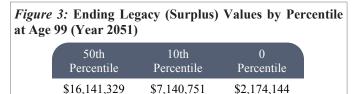
Income Tranche Overview

Now we can look at how the $1,000,000 current portfolio value should be divided among each future income tranche and the Surplus/Legacy tranche at the start of the plan. **Appendix B** shows how the amount deposited to each tranche changes (except tranche 1) based on the future equity returns chosen. There is no equity in tranche 1 (the first ten years of income), so the amount of required deposit today is the same across all percentiles. However, income tranches 2, 3, 4 and the Legacy tranche require differing initial deposits depending on the equity returns used. This is because the lower the projected equity return used, the larger the amount that is

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[3] See Empirical's Q4 2011 Newsletter on Targeted Premiums & Credit Enhanced Portfolios (www.empiricalfs.com)

needed to fund future income liability. The inverse applies to the initial deposit into the Surplus/Legacy tranche. The income tranches are defined as the priority so, as returns are lowered, the additional capital is pulled from the Surplus/Legacy tranche leaving less there.

Although highly unlikely, for this example, we assume that future returns materialize exactly as planned and the Surplus/Legacy tranche would never need to be touched. The asset allocation progressively gets more conservative (in this example it is adjusted from 80% equity to 40% over the entire period) and the initial capital deposited grows at the 40 year blended annualized rate of return. **Figure 3** illustrates the different ending values under different equity return percentiles at the end of year 99.

Figure 3: **Ending Legacy (Surplus) Values by Percentile at Age 99 (Year 2051)**

50th Percentile	10th Percentile	0 Percentile
$16,141,329	$7,140,751	$2,174,144

See Full Performance Disclosure.

Illustration of Dynamic Asset Allocation

In an abbreviated fashion, **Figure 4** demonstrates how the dynamic asset allocation process works throughout the retirement time horizon and across all investment tranches. The concept relates to how equity risk can be managed with time. The shorter the time frame, the greater the frequency and chance that losses may be realized. As seen in **Figure 2**, the zero percentile return (historical worst case) for a ten year

Figure 4: **Illustration of Dynamic Asset Allocation Throughout The Retirement Time Horizon**

Year	Age	Tranche 1 2012-2021 Fixed Income	Equity	Tranche 2 2022-2031 Fixed Income	Equity	Tranche 3 2032-2041 Fixed Income	Equity	Tranche 4 2042-2051 Fixed Income	Equity	Legacy Tranche 2012-2051 Fixed Income	Equity
2012	60	100%	0%	60%	40%	20%	80%	0%	100%	20%	80%
2014	62	100%	0%	68%	32%	28%	72%	7%	93%	22%	78%
2015	63	100%	0%	72%	28%	32%	68%	10%	90%	23%	77%
2017	65	100%	0%	80%	20%	40%	60%	17%	83%	25%	75%
2019	67	100%	0%	88%	12%	48%	52%	23%	77%	27%	73%
2021	69	100%	0%	96%	4%	56%	44%	30%	70%	29%	71%
2022	70			100%	0%	60%	40%	33%	67%	30%	70%
2025	73			100%	0%	72%	28%	43%	57%	33%	67%
2027	75			100%	0%	80%	20%	50%	50%	35%	65%
2029	77			100%	0%	88%	12%	57%	43%	37%	63%
2031	79			100%	0%	96%	4%	63%	37%	39%	61%
2032	80					100%	0%	67%	33%	41%	59%
2035	83					100%	0%	77%	23%	44%	56%
2037	85					100%	0%	83%	17%	46%	54%
2039	87					100%	0%	90%	10%	48%	52%
2041	89					100%	0%	97%	3%	50%	50%
2042	90							100%	0%	51%	49%
2045	93							100%	0%	54%	46%
2047	95							100%	0%	56%	44%
2049	97							100%	0%	58%	42%
2051	99							100%	0%	60%	40%

period generated a loss of -4.54% per year. However, even at the zero percentile; the twenty, thirty and forty year returns were positive (4.35%, 8.86% and 9.94%, respectively). Gradually tempering equity risk as the time frame to draw income shortens, and avoiding equity exposure during the income period, can lessen the likelihood of realizing substantial losses at a time when income is needed.

Conclusion

Short-term market returns are unpredictable and volatile. However, this fact does not preclude the need to address retirement income planning. In fact, it emphasizes the importance of having a sound long-term plan, which manages risk and utilizes capital markets to their greatest opportunity. The data is clear - many Americans lack confidence in their ability to retire comfortably, and yet they have not done the planning required to gain that confidence. This letter is meant to provide some talking points between you and an Empirical advisor. We realize that some of the concepts are complicated and there is a lot of data involved, so we encourage you to call us with questions. Whether you are currently in, at, or near retirement, we hope this letter sparks some new thoughts on how we may approach the planning process with you. We invite you to share this information with family, friends and others who are facing the retirement income dilemma.

Sincerely,

Kenneth R. Smith

Kenneth R. Smith, CFP®, MS
Principal | Chief Executive Officer

Ethan Broga

Ethan Broga, CFP®, MS
Principal

Performance Disclosure

The investment returns are hypothetical model returns, not actual returns, and should not be interpreted as an indication of such performance. The portfolios were designed well after the beginning date of the performance time period. The purpose is to estimate how Empirical's model portfolios would have performed historically based on the best available data. These portfolios were created with the benefit of hindsight, and do not take into account actual market conditions and available knowledge that would have impacted an investment advisor's decisions. There is no indication that the back-tested results could, or would have been achieved by Empirical had the program been activated during the years presented.

Past performance may not be indicative of future performance. (Calculating historical model returns is a method of estimating the risk of investing strategies. However, capital markets are constantly changing and poor performance in the past is not a worst case scenario.) The investment strategy that the back-tested results were based upon can be changed at any time in order to show better performance, was based on hindsight and can continue to be tested and adjusted until the desired results are achieved. Some of the funds in the Empirical model portfolios were not in existence 10 years ago. Prior to a fund's inception month, the performance of a similar fund or index adjusted by the fund's expense ratio is used. Similar funds were selected based on the historical return and risk characteristics. The estimated expense ratio is deducted monthly. Portfolios are assumed to be rebalanced annually. Model portfolios do not include an allocation to cash. All performance data includes dividends. The model performance can be adjusted to include Empirical's management fees. Client returns will be reduced by the advisory fees and other expenses it may incur in the management of its investment advisory account. A list of Empirical's fees is available on Empirical's form ADV Part 2. Taxes and trading costs are not included. When index performance is used, estimated mutual fund expenses are deducted from index performance each month. The estimate used is the expense ratio of the current fund in the Empirical portfolio. Since indexes do not represent actual portfolios, they do not include several important costs, such as trading costs within funds, market impact costs, bid/ask spreads and other factors, which negatively impact performance.

There is always the risk that an investor may lose money. Even a long-term investment approach cannot guarantee a profit. Economic, political, and issuer-specific events will cause the value of securities, and the portfolios that own them, to rise or fall. Because the value of your investment in a portfolio will fluctuate, there is a risk that you will lose money. The information provided herein should not be construed as a recommendation to purchase or sell any particular security or an assurance that any particular security held in a portfolio will remain in the portfolio or that a previously held security will not be repurchased. It should not be assumed that any of the security transactions or holdings discussed herein have been or will prove to be profitable or that future investment decisions will be profitable or will equal or exceed the investment performance of the securities discussed.

The model performance is provided net of Empirical's highest management fee of 1%. For example, the following table compares an account with a 1.00% management fee and an account with no management fee, each with an initial investment of $50,000, assuming an annual rate of return of 12% (for illustrative purposes only):

	Starting Value	After 1 Year	After 3 Years	After 5 Years
No Fee	$50,000	$56,000	$70,246	$88,117
1% Fee *	$50,000	$55,440	$68,160	$83,798

*Annual management fee of 1.00% of assets

Appendix A: Required Future Balance of Each Income Tranche (At the time income is drawn)

TRANCHE 1 2012-2021

Required Balance on Jan 2012: $284,981   Average Yield To Maturity: 3%

Income Age	Inflation Adjusted Income	Year End Account Balance	Equity Allocation	Fixed Income Allocation
60	$30,000	$263,531	0%	100%
61	$30,750	$240,687	0%	100%
62	$31,519	$216,388	0%	100%
63	$32,307	$190,573	0%	100%
64	$33,114	$163,176	0%	100%
65	$33,942	$134,129	0%	100%
66	$34,791	$103,362	0%	100%
67	$35,661	$70,803	0%	100%
68	$36,552	$36,375	0%	100%
69	$37,466	$0	0%	100%

TRANCHE 2 2022-2031

Required Balance on Jan 2022: $355,406   Average Yield To Maturity: 4%

Income Age	Inflation Adjusted Income	Year End Account Balance	Equity Allocation	Fixed Income Allocation
70	$38,590	$331,032	0%	100%
71	$39,748	$304,526	0%	100%
72	$40,940	$275,767	0%	100%
73	$42,168	$244,630	0%	100%
74	$43,433	$210,981	0%	100%
75	$44,736	$174,685	0%	100%
76	$46,078	$135,594	0%	100%
77	$47,461	$93,557	0%	100%
78	$48,884	$48,414	0%	100%
79	$50,351	$0	0%	100%

TRANCHE 3 2032-2041

Required Balance on Jan 2032: $477,636   Average Yield To Maturity: 4%

Income Age	Inflation Adjusted Income	Year End Account Balance	Equity Allocation	Fixed Income Allocation
80	$51,862	$444,880	0%	100%
81	$53,417	$409,257	0%	100%
82	$55,020	$370,608	0%	100%
83	$56,671	$328,762	0%	100%
84	$58,371	$283,541	0%	100%
85	$60,122	$234,761	0%	100%
86	$61,925	$182,226	0%	100%
87	$63,783	$125,732	0%	100%
88	$65,697	$65,065	0%	100%
89	$67,668	$0	0%	100%

TRANCHE 4 2042-2051

Required Balance on Jan 2042: $641,903   Average Yield To Maturity: 4%

Income Age	Inflation Adjusted Income	Year End Account Balance	Equity Allocation	Fixed Income Allocation
90	$69,698	$597,881	0%	100%
91	$71,789	$550,008	0%	100%
92	$73,942	$498,066	0%	100%
93	$76,160	$441,828	0%	100%
94	$78,445	$381,056	0%	100%
95	$80,799	$315,500	0%	100%
96	$83,223	$244,897	0%	100%
97	$85,719	$168,974	0%	100%
98	$88,291	$87,442	0%	100%
99	$90,940	$0	0%	100%

See Full Performance Disclosure

Appendix B: Effects of Percentile Equity Return Using a Moderate Risk Track On Income Tranches

Income Tranche Ages Through Year End	Beginning Equity Allocation	Ending Equity Allocation	Total Time Horizon For Income Tranche	Inflation	Fixed Income Return	Time Period Exposed to Equities	*50th* Percentile Equity Return	Tranche Blended Annualized Return	Required Initial Deposit	% of Assets Allocated to Tranche
60-79	0%	0%	10 years	2.50%	3%	No Equity	N/A	3.00%	$284,981	28.50%
70-79	40%	0%	20 years	3%	4%	10 Years	13.15%	6.01%	$198,312	19.83%
80-89	80%	0%	30 Years	3%	4%	20 Years	13.90%	8.16%	$99,970	10.00%
90-99	100%	0%	40 Years	3%	4%	30 Years	14.17%	9.25%	$45,607	4.56%
Legacy Tranche	80%	40%	40 Years	3%	4%	40 Years	13.83%	9.90%	$371,129	37.11%
Total Equity:	**53%**							**Total Portfolio:**	**$1,000,000**	**100%**

Income Tranche Ages Through Year End	Beginning Equity Allocation	Ending Equity Allocation	Total Time Horizon For Income Tranche	Inflation	Fixed Income Return	Time Period Exposed to Equities	*10th* Percentile Equity Return	Tranche Blended Annualized Return	Required Initial Deposit	% of Assets Allocated to Tranche
60-79	0%	0%	10 years	2.50%	3%	No Equity		3.00%	$284,981	28.50%
70-79	40%	0%	20 years	3%	4%	10 Years	7.37%	4.74%	$223,643	22.36%
80-89	80%	0%	30 Years	3%	4%	20 Years	9.68%	6.38%	$138,757	13.88%
90-99	100%	0%	40 Years	3%	4%	30 Years	11.71%	7.98%	$64,528	6.45%
Legacy Tranche	80%	40%	40 Years	3%	4%	40 Years	11.27%	8.36%	$288,091	28.81%
Total Equity:	**52%**							**Total Portfolio:**	**$1,000,000**	**100%**

Income Tranche Ages Through Year End	Beginning Equity Allocation	Ending Equity Allocation	Total Time Horizon For Income Tranche	Inflation	Fixed Income Return	Time Period Exposed to Equities	*0* Percentile Equity Return	Tranche Blended Annualized Return	Required Initial Deposit	% of Assets Allocated to Tranche
60-79	0%	0%	10 years	2.50%	3%	No Equity		3.00%	$284,981	28.50%
70-79	40%	0%	20 years	3%	4%	10 Years	-4.54%	2.12%	$288,220	28.82%
80-89	80%	0%	30 Years	3%	4%	20 Years	4.35%	4.15%	$211,932	21.19%
90-99	100%	0%	40 Years	3%	4%	30 Years	8.86%	6.51%	$97,024	9.70%
Legacy Tranche	80%	40%	40 Years	3%	4%	40 Years	9.94%	7.56%	$117,843	11.78%
Total Equity:	**50%**							**Total Portfolio:**	**$1,000,000**	**100%**

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