

Life away from home

We're finishing up our 2014 Outlook and will send it out on January 1st. The theme of the outlook will be the gap between soaring financial markets, more modest earnings growth and even more modest economic growth. The good news is that leading indicators now suggest the latter will improve in 2014.

On the year that was: in our 2013 Outlook, we projected that equity market returns would exceed what economic conditions alone would imply, particularly in the US. That's more or less what happened (and to an even greater degree than I thought). We also sent some special issues that may be of interest in case you missed them (links included): our annual review of [private equity](#), [our annual energy note with Vaclav Smil](#), [a deep dive on Detroit and municipals](#) (including the recent Bankruptcy Court decision), [a detailed look at retirement dynamics for affluent individuals](#) and a [revised look at the housing crisis based on some new data from Fannie and Freddie](#).

In the meantime here's the last Eye on the Market for the year. As usual, this last issue is not about markets or investments. **If you prefer standard fare only, skip this and proceed to January.** Below, there's a note to my son who leaves for college in a few months. Some themes and discussion points may be of interest to those in a similar demographic.

To all of our clients, have a healthy and happy holiday season.

Michael Cembalest
J.P. Morgan Asset Management

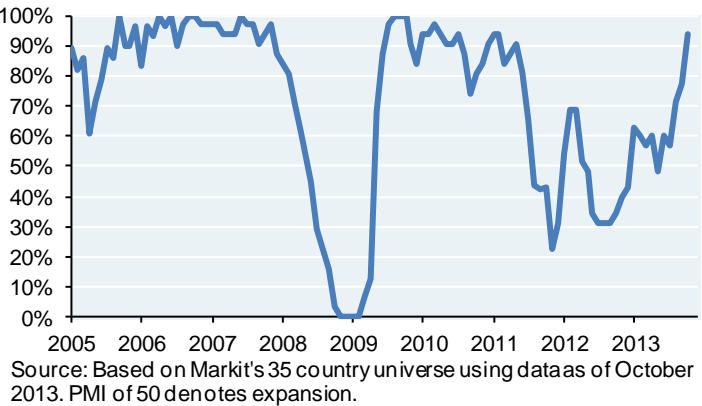
Congratulations on getting to this point. Here are some thoughts about the next stage of your life that are best illustrated with some simple charts and data.

[1] De Omnibus Dubitandum

That's Latin for "be suspicious of everything." For a variety of reasons, your college professors are likely to overwhelmingly skew to one political party, and to a degree that is vastly different from the balance in the world you will graduate into four years from now (see table). Regardless of your political leanings, this will be something to think about. It will be up to you to do your own critical reasoning, to avoid coming to decisions simply based on the crowd, and to think about any ideological rigidities that may result from the status quo.

As for your introductory course professors, it might not matter if they are on a tenure track or not. A recent study from Northwestern University¹ measured whether tenure or non-tenure line professors contribute more to student learning, after controlling for student-specific differences. "Lasting student learning" was measured by grades in subsequent classes in the same subject. Here's what they found: non-tenure track faculty encouraged students to take more classes in a given subject than tenure line professors, and also led students to achieve higher grades in subsequent coursework.

Rising number of countries in expansion mode
% of PMI leading indicator universe > 50, or 6-month change ≥ 4



Democrat to Republican professor ratio at US universities

Department	Cardiff / Klein (11 California universities)	CSPC study (32 elite colleges / universities)	Five study aggregate*
Anthropology	10.5 to 1	-	∞
Economics	2.8 to 1	4.3 to 1	1.6 to 1
English	13.3 to 1	18.6 to 1	19.3 to 1
History	10.9 to 1	20.7 to 1	75.0 to 1
Philosophy	5.0 to 1	8.9 to 1	24.0 to 1
Political science	6.5 to 1	7.9 to 1	7.9 to 1
Sociology	44.0 to 1	30.4 to 1	∞

Source: "By the Numbers: The Ideological Profile of Professors", Klein (George Mason) and Stern (Stockholm), 2005. *Dartmouth College, Duke University, Ithaca College, UNLV, Capital University. ∞ = infinity.

¹ "Are Tenure Track Professors Better Teachers?", NBER Working Paper 19406, Figlio, Schapiro and Soter, September 2013.

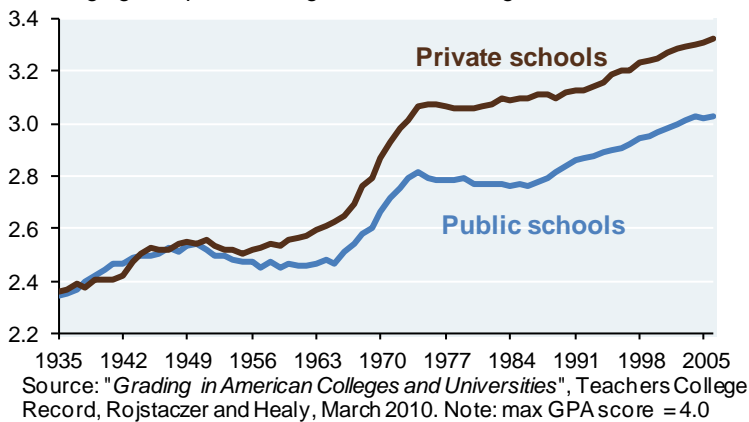
Life away from home

[2] You should get better grades than I did

In Garrison Keillor's Lake Wobegon, "the women are strong, the men are good-looking and all the children are above average". Regarding US private and public universities, Keillor got the last part right. As shown below, the mean grade point average at US private and public schools has been increasing at a steady pace since 1970. Soon, colleges will have to "turn the dial up to 11" or else everyone will have the maximum GPA. As per the study from which the data is sourced, the 1960's jump took place when the purpose of a GPA changed from being a motivator for students to being a measure used for external evaluation. GPA increases since 1970 are seen as a by-product of student evaluations of teachers (i.e., tough-grading teachers get bad evaluations, and eventually become extinct). Humanities courses have seen the highest grade inflation. Lower grades in science and engineering apparently discourage some students from pursuing them; do not let that affect you.

Welcome to Lake Wobegon

Average grade point average at 160 US colleges and universities



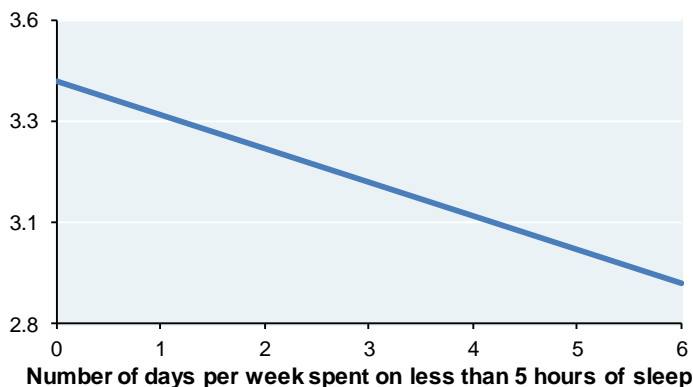
If it seems like people put too much importance on GPA, I would agree. What you learn is more important than what grades you get. However, you should also be aware of the realities of the job market. In the National Association of Colleges and Employers' *Job Outlook 2013 Survey*, GPA importance hit an all-time high: 78% of employers screen candidates based on grade point averages.

[3] Try and get enough sleep

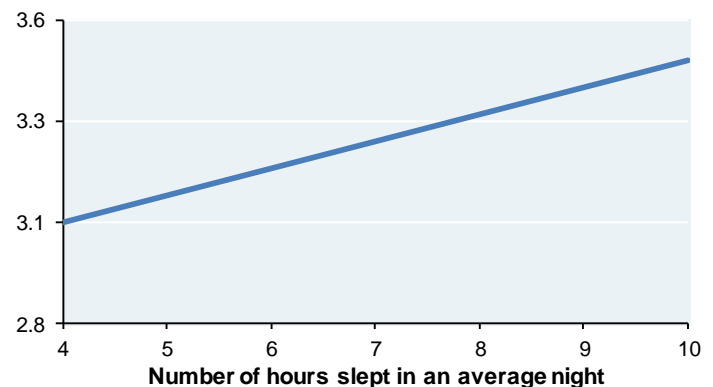
This sounds straightforward, but it's worth documenting. There are clear patterns regarding the relationship between GPA and getting enough sleep (shown below as the number of days per week with less than 5 hours of sleep, and the average hours of sleep per night). Sleep is a much more reliable and less dangerous way of helping to keep your grades up than resorting to unprescribed Adderall or other "study drugs" that college students are reportedly using in greater numbers.

Grades decline with more sleepless nights in a week...

Grade point average

**...and get better with more hours of sleep each night**

Grade point average



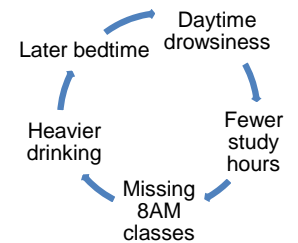
Source: "The Link Between Sleep Quantity and Academic Performance for the College Student", The University of Minnesota Undergraduate Journal of Psychology, Lowry, Dean and Manders, 2010. Lines represent best fit of regression results. Note: maximum GPA score = 4.0

Life away from home

[4] I hope you get a roommate who does not drink too much; moderation matters

College males assigned to roommates who drink frequently had lower GPAs than those assigned to non-drinking roommates, as per a study from Harvard and Mathematica Policy Research². To illustrate the point, an average student's GPA is not influenced by a roommate's high school grades, SATs, or family background; but is influenced by roommate drinking habits. And of course, heavier drinking causes well-documented reductions in academic performance, particularly for higher-performing students.

The best research I have seen on the subject synthesizes both prior topics. There's a feedback loop in which alcohol disturbs sleeping patterns and increases daytime drowsiness such that both factors negatively impact grades³. The study was based on drinking habits, sleep patterns and GPA at a Northeastern liberal arts university with an average math + verbal SAT score of 1260. Their findings: the average college student has around 5 drinks on a weekend night (for the record, that's around 2 more than I had). **For every additional drink beyond that, GPAs declined by 0.17 points, and the impact of that extra drink on sleeping patterns subtracted another 0.07 points for a total GPA reduction of 0.24** (out of a 4.0 scale, that's a lot). Have a good time but keep it under control.

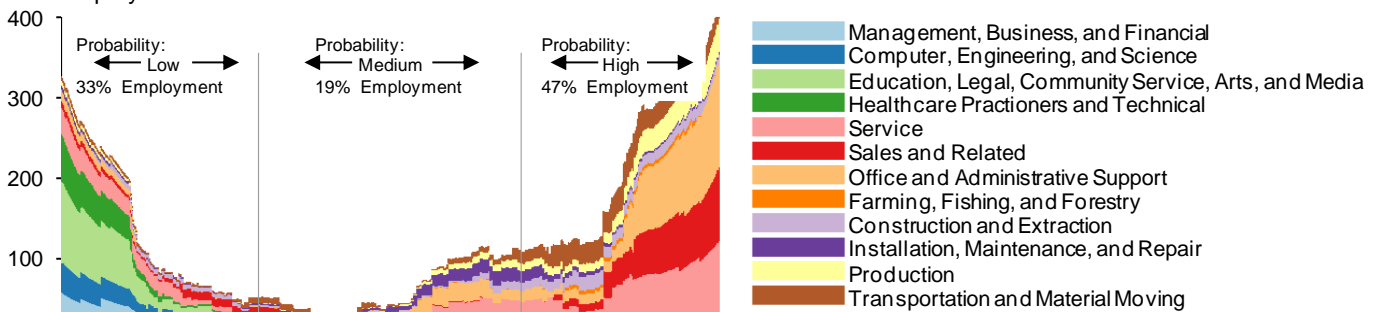


[5] Life after college: be prepared for technology to continue changing the job landscape

There's plenty of data on unemployment rates and salaries by undergraduate major; I have shown those to you before⁴ (the majors with the lowest unemployment rates and highest salaries: computer, chemical, electrical, civil and mechanical engineering; math/physics; and economics. Drama and film majors are a recipe for living at home). A more important long-run issue to think about may be how technology affects your career. Researchers at Oxford just published an analysis assessing what jobs might be computerized in the future. Their conclusion: a staggering 47% of the US workforce, spanning a range of career types. There are vigorous debates about outsourcing, but increasingly, computerization may grow as a factor affecting employment conditions.

Probability of computerization by occupation

US employment in thousands



Source: "The Future of Employment: How Susceptible are Jobs to Computerisation," Frey and Osborne, September 2013.

In *The Man in the White Suit*, Alec Guinness invents a suit that never has to be cleaned or replaced. London's tailors and dry cleaners angrily chase him down in the street to destroy his invention. They are relieved when the suit finally starts to unravel, since the fiber's design is flawed. Productivity improvements are great things, but there might be a point at which too much power shifts to capital over labor. Anyway, when you think about a career, remember that in some professions, **eventually a computer might be able to do it too, or reduce the economic value of you doing it** (e.g., the impact of the internet on print journalism).

²"Peer effects and alcohol use among college students", Kremer (Harvard) and Levy (Mathematica Policy Research), July 2003.

³"Alcohol Consumption, Sleep, and Academic Performance Among College Students", Journal of Studies on Alcohol and Drugs, Singleton and Wolfson, May 2009.

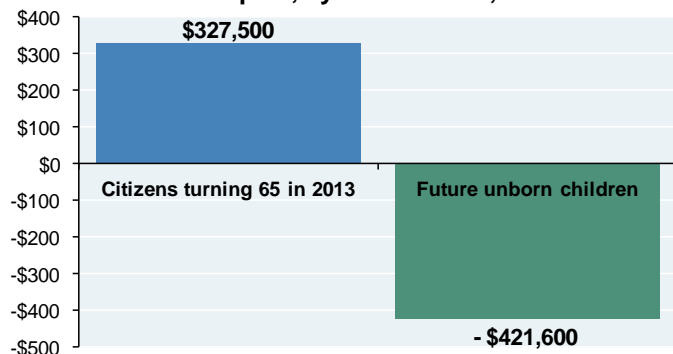
⁴"Hard Times: College Majors, Unemployment and Earnings: Not All College Degrees are Created Equal", Georgetown Center on Education and the Workforce, January 2012.

Life away from home

[6] The fiscal debates of your post-graduation future

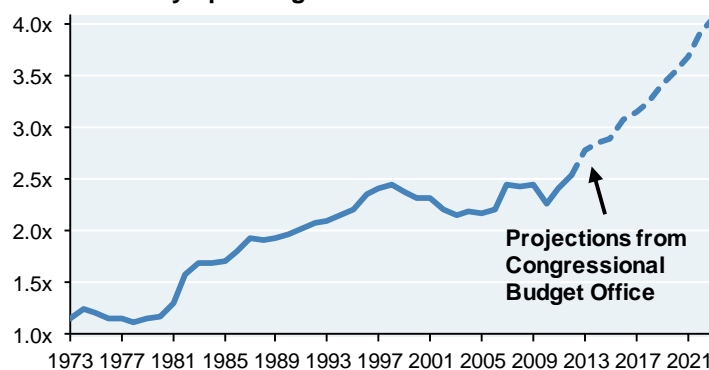
After you graduate, the US will be in the thick of the “generational theft” issue; here's a heads-up on what this is all about. Generational accounting is an estimate of who benefits from and who pays for government programs. As shown in the first chart, the average person in the generation that turned 65 this year received \$327 thousand dollars more in lifetime government benefits than they paid in Federal taxes. On the other hand, children born in the future (e.g., yours) will have a lifetime deficit on this basis of -\$421 thousand dollars. If it sounds unfair, it is.

US generational theft: government benefits received less federal taxes paid, by date of birth, USD



Source: "How the millennial generation will pay the price of Washington's paralysis", Callegari and Kotlikoff, August 2013.

Ratio of entitlement spending to non-defense discretionary spending



Source: CBO. September 2013.

The 2nd chart is another take on this. The Federal government spends on discretionary items like infrastructure (roads, bridges, tunnels, electricity), the judiciary, pollution control, energy research & development, worker retraining, disease control and general science. The government also spends on entitlements (Social Security and Medicare). The “discretionary spending to entitlement” ratio used to be 1:1, is now 2.5:1 and is projected by Congress to be 4:1 in 2020 as discretionary spending falls to the lowest level in 40 years. In utopias, governments spend money on everything people want without worrying about how to pay for it. In reality, choices are made. Be aware that such issues are often more complicated than how they are presented on TV. OK, enough of that.

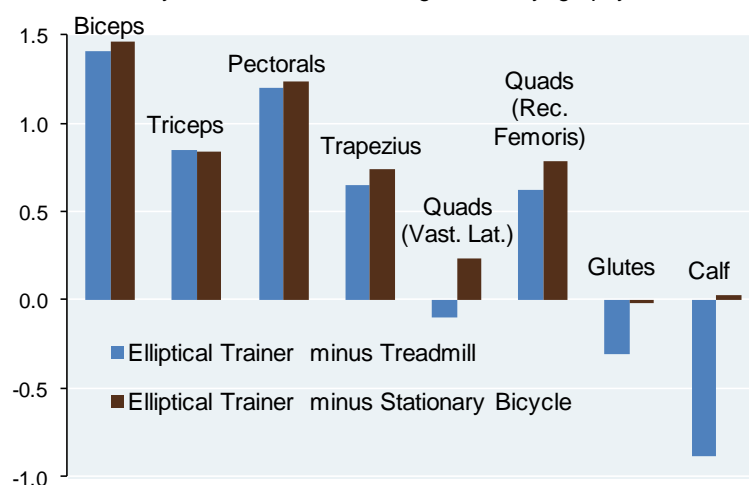
[7] Don't be a slug

You need to get some exercise: 85% of adults continue the same exercise patterns they establish during their senior year of college, and ~40% of college students exercise regularly (≥ 3 days per week). Aside from the associated health benefits, **exercise goes hand in hand with better grades**. The causal effects are unclear, but in one study, students with a GPA of 3.5 or higher were three times more likely to exercise than those with lower grades⁵.

If you go to a gym, the **elliptical trainer is your best choice**. Compared to a treadmill and stationary bike, an elliptical trainer activates more muscle groups simultaneously, and as shown in the chart, to a greater degree (the bars show excess muscle activity of the elliptical over the treadmill and bike). Also: less joint strain than the treadmill. What should you listen to while exercising? See the last section on the next page.

Elliptical Trainer is a more effective exercise machine than a Treadmill or Stationary Bike

Muscle activity score differences, using electromyography



Source: "Comparison of Muscle Activation During Elliptical Trainer, Treadmill and Bike Exercise", Biology of Sport, Volume 27, 2010.

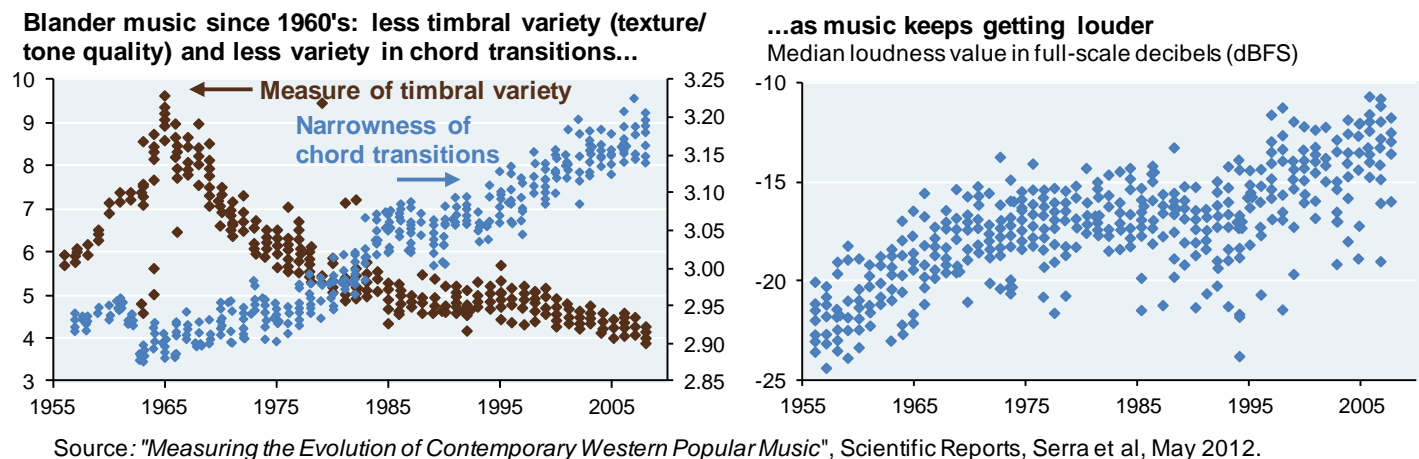
⁵ "The association between study time, grade point average and physical activity participation in college students", Medicine & Science in Sports & Exercise, American College of Sports Medicine, 2009.

Life away from home

[8] Bring those classic rock and R&B playlists with you

I arrived at college in 1980 (the inception of a decade-long musical graveyard) when many people turned off the radio and instead listened to classic rock and rhythm & blues produced from 1965 to 1978. I notice you like this music as well. Now you can substantiate to today's generation why that era's music was objectively "better".

The Million Song Dataset is a database of western popular music produced from 1955 to 2010. As described in *Scientific Reports* (affiliated with the publication *Scientific American*), researchers developed algorithms to see what has changed over time, focusing on three variables: **timbre, pitch and loudness**. Timbre is a proxy for texture and tone quality, terms which reflect the variety and richness of a given sound. Higher levels of timbre most often result from diverse instrumentation (more than one instrument playing the same note). Pitch refers to the tonal structure of a song: how the chords progress, and the diversity of transitions between chords. Since the 1960's, **timbral variety has been steadily declining, and chord transitions have become narrower and more predictable.**



The researchers also found that popular music has gotten a lot louder. The median recorded loudness value of songs by year is shown in the second chart. One illustrative example: in 2008, Metallica fans complained that the *Guitar Hero* version of its recent album sounded better than it did on CD. As reported in *Rolling Stone*, the CD version was re-mastered at too high a decibel level, part of the Loudness Wars affecting popular music.

Overall, the researchers concluded that there has been a "progressive homogenization of the musical discourse", a process which has resulted in music becoming blander and louder. This might seem like a reactionary point of view for an adult to write, but the data does seem to back me up on this. All of that being said, I do like that Method Man-Mary J. Blige duet.

Have a great time at college. Whether you become a mathematician or drummer, I know you'll be a great one.

Life away from home

IRS Circular 230 Disclosure: JPMorgan Chase & Co. and its affiliates do not provide tax advice. Accordingly, any discussion of U.S. tax matters contained herein (including any attachments) is not intended or written to be used, and cannot be used, in connection with the promotion, marketing or recommendation by anyone unaffiliated with JPMorgan Chase & Co. of any of the matters addressed herein or for the purpose of avoiding U.S. tax-related penalties. Each recipient of this material, and each agent thereof, may disclose to any person, without limitation, the US income and franchise tax treatment and tax structure of the transactions described herein and may disclose all materials of any kind (including opinions or other tax analyses) provided to each recipient insofar as the materials relate to a US income or franchise tax strategy provided to such recipient by JPMorgan Chase & Co. and its subsidiaries.

The material contained herein is intended as a general market commentary. Opinions expressed herein are those of Michael Cembalest and may differ from those of other J.P. Morgan employees and affiliates. This information in no way constitutes J.P. Morgan research and should not be treated as such. Further, the views expressed herein may differ from that contained in J.P. Morgan research reports. The prices/quotes/statistics referenced herein have been obtained from sources deemed to be reliable, but we do not guarantee their accuracy or completeness, any yield referenced is indicative and subject to change. References to the performance or characteristics of our portfolios generally refer to the discretionary Balanced Model Portfolios constructed by J.P. Morgan. It is a proxy for client performance and may not represent actual transactions or investments in client accounts. The views and strategies described herein may not be suitable for all investors. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. To the extent referenced herein, real estate, hedge funds, and other private investments may present significant risks, may be sold or redeemed at more or less than the original amount invested; there are no assurances that the stated investment objectives of any investment product will be met. JPMorgan Chase & Co. and its subsidiaries do not render accounting, legal or tax advice and is not a licensed insurance provider. You should consult with your independent advisors concerning such matters. Bank products and services offered by JP Morgan Chase Bank, N.A. and its affiliates. Securities are offered through J.P. Morgan Securities LLC, member NYSE, FINRA and SIPC, and its affiliates globally as local legislation permits.

In the United Kingdom, this material is approved by J.P. Morgan International Bank Limited (JPMIB) with the registered office located at 25 Bank Street, Canary Wharf, London E14 5JP, registered in England No. 03838766 and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and Prudential Regulation Authority. In addition, this material may be distributed by: JPMorgan Chase Bank, N.A. Paris branch, which is regulated by the French banking authorities Autorité de Contrôle Prudentiel and Autorité des Marchés Financiers; JPMorgan Chase Bank, N.A. Bahrain branch, licensed as a conventional wholesale bank by the Central Bank of Bahrain (for professional clients only); JPMorgan Chase Bank, N.A. Dubai branch, regulated by the Dubai Financial Services Authority.

In Hong Kong, this material is distributed by JPMorgan Chase Bank, N.A. (JPMCB) Hong Kong branch except to recipients having an account at JPMCB Singapore branch and where this material relates to a Collective Investment Scheme in which case it is distributed by J.P. Morgan Securities (Asia Pacific) Limited (JPMSAPL). Both JPMCB Hong Kong branch and JPMSAPL are regulated by the Hong Kong Monetary Authority. In Singapore, this material is distributed by JPMCB Singapore branch except to recipients having an account at JPMCB Singapore branch and where this material relates to a Collective Investment Scheme (other than private funds such as a private equity and hedge funds) in which case it is distributed by J.P. Morgan (S.E.A.) Limited (JPMSEAL). Both JPMCB Singapore branch and JPMSEAL are regulated by the Monetary Authority of Singapore.

With respect to countries in Latin America, the distribution of this material may be restricted in certain jurisdictions. Receipt of this material does not constitute an offer or solicitation to any person in any jurisdiction in which such offer or solicitation is not authorized or to any person to whom it would be unlawful to make such offer or solicitation. To the extent this content makes reference to a fund, the Fund may not be publicly offered in any Latin American country, without previous registration of such fund's securities in compliance with the laws of the corresponding jurisdiction.

If you no longer wish to receive these communications please contact your J.P. Morgan representative.

Past performance is not a guarantee of future results.

Investment products: Not FDIC insured • No bank guarantee • May lose value

© 2013 JPMorgan Chase & Co. All rights reserved