

# Valuation Process

Challenges for appropriate governance



PricewaterhouseCoopers Luxembourg ([www.pwc.com/lu](http://www.pwc.com/lu)) has about 2,000 professionals from 53 different countries. PricewaterhouseCoopers ([www.pwc.com](http://www.pwc.com)) provides industry-focused assurance, tax and advisory services to build public trust and enhance value for our clients and their stakeholders. More than 163,000 people in 151 countries across our network share their thinking, experience and solutions to develop fresh perspectives and practical advice.

"PricewaterhouseCoopers" S.à r.l. refers to the group of independent firms that are members of PricewaterhouseCoopers International network, each of which is a separate and independent legal entity.

# Table of contents

Foreword	4
Which bodies are involved/responsible for the valuation process?	5
How do you determine that there is effective independence, accountability, and segregation of duties in the oversight and execution of the valuation process?	8
How does the organisational and control structure allow for the determination that the values derived are being used consistently across the firm's clients and all its sponsored products?	9
Do policies and procedures provide clear direction, address difficult valuation situations, and include effective operational controls?	10
Are senior management and the board properly informed of valuation risks and mitigating controls?	11
How PricewaterhouseCoopers can help	15
Contacts	16



Sébastien Sadzot



Valuation and Pricing  
Solutions Leader  
PwC Luxembourg

For the past two years, asset management firms, along with other financial services companies, have experienced increasing difficulty valuing their investments because liquidity dried up and volatility increased in securities, loans, derivatives, and real estate markets. But as governments respond with bailout and stimulus programs, the financial institutions that struggled in late 2008 are showing signs of recovery, and markets are showing increasing signs of stabilising. Nevertheless, the steady drumbeat of residential and commercial real estate delinquencies and defaults, corporate bankruptcies, concerns about inflation arising from large increases in government spending, and calls for more market regulation continue to fuel uncertainty, hindering the valuation process.

This ongoing market volatility has heightened the awareness of savvy investors, who are posing tough questions to asset managers. Institutional investors, regulators, and others are interested in understanding more about valuation processes and whether they are impartial. In particular, their questions are focused on checks and balances that preserve the integrity of the process. Because managers' compensation normally is tied to total assets under management and portfolio performance, their influence over valuations creates a conflict of interest.

As real estate and investment advisers seek new money to manage, it will be necessary for them to demonstrate that they are complying with the highest valuation standards practicable. However, because of the diverse nature of assets under management and differing organisational structures, establishing the appropriate checks and balances over the valuation process will continue to be a challenge.

Senior executives and boards of asset managers and their sponsored products need to be proactive to protect their investors—and themselves—and to ensure the results of the valuation process are fair to all stakeholders.

This paper explores a number of the oversight/governance questions that have been raised for asset managers, and it discusses leading practices to address them. We focus on questions that are of particular interest to asset managers of alternative funds, traditional mutual funds, and real estate investments. These questions include:

- Which bodies are involved/responsible for the valuation process?
- How do you determine that there is effective independence, accountability, and segregation of duties in the oversight and execution of the valuation process?
- How does the organisational and control structure maintain consistent values for the same instrument across the firm and all its sponsored products?
- Do policies and procedures provide clear direction, address difficult valuation situations, and include effective operational controls?
- Are senior management and the board properly informed of valuation risks and mitigating controls?

### **Valuation and Pricing Solutions at PricewaterhouseCoopers Luxembourg**

Leveraging our distinguished client and knowledge base, PricewaterhouseCoopers Luxembourg has developed state-of-art Valuation and Pricing Solutions to assist you in meeting your challenges in this area. This brochure is the opportunity to share with you our experience on your valuation considerations.

We trust you will enjoy reading this whitepaper and look forward working with you as your partner in the near future.

# Which bodies are involved/responsible for the valuation process?

A recently settled SEC enforcement action has drawn more attention to the valuation process. The action addresses allegations of prolonged and systematically inappropriate valuations of mortgage-backed securities, insufficient valuation disclosures to the fund's board, and selective distribution of information to broker dealers and investors by an investment adviser to a mutual fund and an affiliated distributor. The SEC asserted the parties were in violation of various provisions of the Investment Company Act of 1940 and the Investment Advisers Act of 1940. The parties agreed to the retention of an independent consultant to review the valuation process and to the payment of approximately \$40 million to the fund's investors and as penalties.

Asset managers follow a number of standards and principles surrounding the valuation process. The board of directors is responsible for establishing policies and procedures for pricing and valuation. However, the board can delegate some of its responsibilities to various organs like the valuation committee, risk managers, compliance officers and service providers. As members of the valuation committee, risk managers and compliance officers are often involved in the valuation process as they provide an insight into any organisation's strategic and risk management. Existing and upcoming regulations consist on the necessity to implement a risk management method that can monitor and reassure the risk of their positions and their contribution to the overall risk profile at any time. It is the board of directors obligation to ensure that risk managers and compliance officers comply with legal and regulatory requirements, and that the processes and procedures they implement/ delegate are being applied fairly and consistently. Each case being judged on its own facts and circumstances.

For example, if a board has approved comprehensive procedures that provide methodologies for how management should value securities, the board would need to be comparatively less involved in the daily valuation process to satisfy its good faith obligation, provided that the board periodically reviews the appropriateness of the methods used to value securities and the quality of the prices obtained through these procedures, and that it makes changes when appropriate. Alternatively, when the board has vested a greater amount of discretion in management, it is expected that the board's involvement must be greater and more immediate.

In return, risk managers and compliance officers are often expected to assist the board and management in adhering to fair valuation policies and procedures. Therefore, despite risk managers and compliance officers not being viewed as portfolio valuation experts, they are often expected to test and report on risk and compliance issues associated with the fair valuation process.

## Private equity and hedge funds considerations

Asset managers of private equity and hedge funds also will be subject to more guidance on their valuation processes. The International Organisation of Securities Commissions has defined principles for the valuation of hedge fund holdings, and market practice has raised the bar by requiring more transparent valuations.

Valuation remains at the top of the agenda for private equity firms and reflects increasing demands for more information and transparency from investors. This is at a time when valuation of private equity investment continues to be extremely challenging given market volatility and few transactions. It was in this environment that the Updated Private Equity Valuation Guidelines (“Updated Guidelines”) were released by the International Private Equity and Venture Capital Valuation Board (the “Board”) on 9 September 2009 with immediate effect, replacing the previous 2006 version of the Valuation Guidelines (the “Guidelines”). We also note that the current draft EU directive on Alternative Investment Fund Managers (the “Directive”) raises the prospect of increased valuation requirements for the industry by establishing the need for independent review over the valuation process for funds. While it is not clear at this stage exactly what this will mean in practice, it would appear that additional external reviews of management’s valuation process are likely when the Directive is finally issued. Our own perspective on this emerging issue is that it is consistent with the general trend towards increased scrutiny of valuation and the processes that surround it and that this remains an area where improvements can and should be made.

Similarly, the valuation process for hedge funds will be more disciplined with development of more formal valuation methodologies, documentation of valuation of positions with no ready market, and greater scrutiny of the use of valuation models.

Some hedge funds are turning to fund administrators or valuation experts for valuations of instruments not readily traded in the market, with many large funds receiving independent valuations for a fee. Even when traditional broker valuations are employed for less liquid holdings, third parties may be brought in to validate that prices are fair and consistent with the market. A best market practice consists on the formation of a valuation committee to oversee the process. This governance model includes establishing the committee’s roles and responsibilities, the appropriate composition of the committee (including maintenance of sufficient independence from portfolio management and trading), and policies and procedures to review valuation decisions and the appropriateness and consistency with market transactions of broker quotations and prices derived from internal models.

Certain hedge fund groups are considering the use of an advisory board comprised of individuals who are independent and respected by the hedge fund adviser’s management team to offer guidance on valuation and other important business areas of focus.

## Real Estate property valuation standards

Because real estate investments do not normally have readily available market prices, asset managers frequently need to provide an internally developed valuation to assess these investments and calculate the net asset values of a real estate fund. For example, the REIS (Real Estate Information Standards) guidance suggests real estate investments to be valued, internally or externally, at least quarterly, with valuation by an appraiser or other third-party at least once every 36 months.

The most recent guidelines are specific about the roles and responsibilities in the valuation process. They assert that internal valuations of real estate should be performed only by those who have knowledge, skill, and experience to complete the analysis competently, demonstrating expertise and experience relative to an acceptable professional standard or the view of peers. The guidelines also specify that valuations should be performed with impartiality, objectivity, and independence; with controls to demonstrate they have been completed fairly.

Management should identify and disclose the scope of work to be performed and the appropriate valuation methods and techniques to be used prior to an internal valuation. Additionally, the methods and techniques should be compared with those used in the preceding period and should include one or more of the industry recognised valuation methods (income, cost, and sales comparison approaches) and standards (IVSC/RICS/EVS). The scope should include an accounting and financial reporting process for determining the fair value measurements and reporting. The fair value of an investment property should reflect market conditions at the balance sheet date. Upon completion of the valuation, management should ensure that the presentation and disclosure contain sufficient information to allow the intended users to understand the scope of work performed.

If multiple valuation techniques are used, the appraiser should reconcile the final estimate to the most representative fair value in the circumstances. The appraiser must disclose information that enables the intended users to assess the inputs, assumptions, and methodologies used to arrive at the value conclusion.

# How do you determine that there is effective independence, accountability, and segregation of duties in the oversight and execution of the valuation process?

Independence, accountability, and segregation of duties are important organisational concepts that are embraced by effective boards and managers. Management's valuation committee, as referred to above in the private equity and hedge fund discussion, normally consists of senior managers who are given responsibility to resolve valuation questions and exercise oversight responsibilities covering the pricing vendors, administrators, and fund personnel involved in the valuation process.

Because a clear responsibility is placed on registered investment companies' directors for valuation, this governance responsibility normally resides with the board or a valuation committee of the board. This board committee would establish the valuation policies and procedures to be executed by fund managers and pricing services and normally would review valuation results on a timely basis. When markets become more volatile, as we have seen them do in the past two years, and fair valuations increasingly replace prices based upon market transactions, this committee would become more active and may meet more frequently (either in person or via telephone or video conferencing) to determine how to provide the needed oversight.

When independent directors serve on multiple committees, including the valuation and audit committees, they may attend a meeting with multiple agendas. When this occurs, senior management and directors need to ensure that sufficient time is allocated to a discussion of all valuation questions on a timely basis. In the current climate, legal counsel may advise that it is prudent to conduct separate valuation committee meetings and not combine this committee's oversight/governance roles with other appropriate roles for independent directors.

Management overrides are normally infrequent and typically occur when management is able to provide information to the valuation committee supporting a challenge to the prices provided by a pricing service or a fund administrator. Sometimes challenges are resolved relatively quickly. Price challenges should be reported to and researched by the original pricing

source to determine whether the service, rather than management, was in possession of superior information. Key features of any management override process include assessing why the override came about and determining whether it indicates a problem with the quality of pricing service information or whether it is an isolated instance where management had better, or more timely, information not available to the pricing service or fund administrator.

Frequent overrides are often a "red flag," either that the quality of pricing service valuations has declined, or that a bias needs to be addressed. Accordingly, it is important for senior managers and directors to regularly ask for information about management overrides. The valuation process can be shielded from management bias by independent oversight of both the pricing service and management's override procedures.

To reduce the potential for management bias, it is desirable for voting members of the valuation committee to be persons independent of the investment management function. Certainly, investment managers and traders should provide input to the committee, but they should not serve in a decision-making role. It has been our experience, though, that the chief compliance officer (CCO)/chief risk officer (CRO) also rarely serves in a decision-making capacity, more often attending valuation committee meetings to observe and ensure that the process is performed in accordance with approved valuation policies and procedures. Organisationally, it is often more appropriate to separate CCOs from operational roles so that they are not conflicted in reporting on compliance processes in which they actively participated. Further, it is possible that persons in these positions may not have sufficient valuation experience to make a substantial contribution. It is important that any valuation committee member bring objectivity and good judgement to the deliberations and recognise that the charge is to be fair to all stakeholders, not to always seek the highest valuations (or, equally, to be automatically conservative).

# How does the organisational and control structure allow for the determination that the values derived are being used consistently across the firm's clients and all its sponsored products?

Using values consistently across all investment products protects the organisation against charges that it is favoring one group of stakeholders over others. In some instances, different values can be justified. For example, it has been recognised that two boards overseeing mutual funds within a fund complex managed by the same (or affiliated) advisers could arrive at different good faith valuations for the same security. Additionally, some funds within a complex may value securities at a bid price while others value at a price between bid and asked; affiliated advisers who do not otherwise coordinate trading activity may access different markets for the same security or value their portfolios at different times; or unique mandates written into an offering document to meet the needs of a certain investor or investors may cause unusual valuation challenges. However, these situations are infrequent, and they are particularly difficult to justify when the same portfolio managers and traders are responsible for buying and selling positions across multiple products.

Asset managers need to promote consistent pricing policies across their organisations and foster a sense of awareness and urgency, particularly among those who are responsible for valuing portfolios and calculating net asset values. To facilitate compliance, a single, primary source should be identified and the quality should be monitored. Where it is not practical to do this, a process is needed to compare results and understand why differences are justified. These differences and the reasons for them should be shared across business units and with senior management and boards for their review and approval. Because of advances in technology, information sharing is becoming instantaneous around the globe, so reviewers will be increasingly called upon to justify differences in valuations.

# Do policies and procedures provide clear direction, address difficult valuation situations, and include effective operational controls?

Creating policies and procedures that provide employees with helpful guidance and practical operational controls requires careful evaluation of an asset manager's operations for key controls and the asset classes and investment products managed. Policies and procedures need to be reviewed and updated regularly to address changes in the business. The more dynamic mix of investments managed, combined with increasing volatility in investment markets, heightens the importance of frequent review and updating of policies and procedures to keep them relevant.

A controls-based approach may be an effective way to establish policies and procedures that will provide the most effective guidance and control. The first step of the approach involves identifying an objective, such as a fair value measurement, followed by developing policies and procedures to meet that objective. Finally, the parties to be held accountable for execution and monitoring of the policies and procedures are clearly identified. This approach needs to involve senior management and the persons responsible for actual performance and monitoring to ensure buy-in and commitment.

While many organisations have a hierarchical chain of command, a number of asset management organisations tend to have flatter organisation charts due to relatively small numbers of personnel, creating a greater danger of overlapping responsibilities and potential conflicts of interest. Thus, care is needed to assess that what is crafted is effective and provides adequate control. The CRO/CCO within an asset management organisation may want to determine that policies and procedures are effective and being adhered to, and report their findings to senior management and boards. In a dynamic organisation, this may need to occur more frequently than annually and ideally should be part of a continual improvement process that seeks to stay abreast of difficult valuation situations and maintain the effectiveness of controls as circumstances change.

If this approach is employed and documented, it may help an organisation demonstrate that it has put in place an effective compliance program consistent with the standards and guidelines adopted. Demonstrating compliance with the standards and guidelines can help mitigate an organisation's vulnerability to prosecution for employees' illegal actions.

# Are senior management and the board properly informed of valuation risks and mitigating controls?

The process starts with a robust definition of the key valuation risks that operating management, senior management, and the board agree need to be monitored and mitigated. Operating management should be charged with developing controls that monitor these risks so that they are addressed and mitigated timely and senior management and boards are provided with timely information. The following key valuation risks, if not appropriately monitored and controlled, significantly increase the potential for error in valuing portfolios:

- The impact that market volatility and changing liquidity may have on existing pricing policies and procedures;
- The extent to which matrix pricing is used;
- Obtaining valuations from a single source or counterparty;
- Using internal information provided by asset managers to estimate fair values;
- Using models that do not have the right level of control, such as third-party model vetting, change control and independent validation of the resulting prices;
- Management overrides and the possibility of bias in favor of a price direction by a pricing vendor or in the override process;
- Failing to identify significant events in time to perform reliable valuations.

Chief investment officers, portfolio managers, and traders are key providers of daily input to monitor these risks; however, as discussed above, the valuation process should be controlled by others without conflicts of interest. A CRO/CCO, along with financial and accounting management, should play important roles in developing the monitoring controls and mitigating valuation risks that can arise. Certain asset management firms have sessions to identify potential valuation risks, to determine how to control the recurring risks, and to develop plans to address the risks that could occur unexpectedly, such as a significant event.

As with all risk management operations, there is no foolproof method to eliminate valuation risk. Operating management needs to be ever vigilant, and senior management and boards need to provide the oversight and governance to ensure that operating management does not lose sight of the target—valuations that treat all stakeholders fairly.

## What this means to your business

Asset managers need to assess valuation risks, policies, operating procedures, and related internal controls more frequently than ever before. For example, with respect to traditional mutual funds, we have observed that leading boards and fund executives are:

- Evaluating more frequently the sufficiency of the recurring market pricing and fair valuation processes and ensuring that the fund's senior management and directors understand these processes;
- Determining that all disclosures about valuation processes are consistent and current;
- Applying more skepticism to and requiring more transparency about model-based valuation techniques provided by external and internal pricing providers;
- Using more back-testing and sensitivity analysis to determine that valuation biases that may exist in the process are identified and addressed timely;
- Determining that the incentives and disincentives for those involved in the valuation process are appropriately set to encourage fairness to all stakeholders.

The valuation framework outlined in the chart on the next page can help all parties proactively pursue the mission to treat all stakeholders fairly. Leading practices that are part of executing an effective framework include:

- Conduct a valuation diagnostic to assess the effectiveness and independence of oversight/governance activities;
- Document procedures for valuing all types of assets, particularly new investments, and identify the gaps in those procedures;
- Inventory of all asset classes, valuation models, methodologies utilised, and tolerance limits within each class while factoring in current market conditions;
- Hold workshops between senior management/directors and valuation process control owners to discuss valuation risks and process and alternative policies, operating and key control procedures and practices, and recommendations;
- Continually assess third-party pricing services and internally generated model prices;
- Evaluate and refresh relevant disclosures to all stakeholders.

Valuation process framework components		Frequently asked questions by boards and senior management
Organisation and governance		<ul style="list-style-type: none"> <li>• Is there effective independence, accountability, and segregation of duties in the oversight and execution of the daily valuation process?</li> <li>• Does the existing structure allow for a determination that the values derived are being consistently used across the firm and all its sponsored products?</li> <li>• Do policies and procedures provide clear direction, address difficult valuation situations, and include effective operational controls?</li> <li>• Are senior management and the board properly informed of valuation risks and mitigating controls?</li> </ul>
Culture		<ul style="list-style-type: none"> <li>• Does our culture and “tone at the top” support sound and robust valuation practices?</li> <li>• To what extent are incentive structures and talent management promoting the “right” behaviors?</li> </ul>
Valuation Process Management	Valuation strategy and methodologies	<ul style="list-style-type: none"> <li>• When do we use exit prices and fair valuation methodologies?</li> <li>• How have our fair valuation methodologies been vetted, what are the results, and are they still relevant as the markets evolve?</li> <li>• How do our strategies/methodologies compare with those of our competitors?</li> </ul>
	Issue identification and assessment	<ul style="list-style-type: none"> <li>• How do we identify valuation issues? How do we assess and resolve them?</li> <li>• How do we ensure that our issue identification practices are current and effective in volatile markets?</li> <li>• Is our new product approval process adequate to identify valuation risks and ensure proper controls?</li> </ul>
	Measurement and analysis	<ul style="list-style-type: none"> <li>• Do we have sufficient valuation measurement tools and processes?</li> <li>• Is management able to aggregate valuation exposures, identify concentrations, and manage these risks to avoid inappropriate net asset values?</li> </ul>
	Mitigation, control, and monitoring	<ul style="list-style-type: none"> <li>• Do we have an effective process to escalate valuation risk issues?</li> <li>• Are our materiality limits current and management practices adequate?</li> </ul>
	Reporting and performance measurement	<ul style="list-style-type: none"> <li>• Do current valuation reports facilitate timely and informed management decision-making for board-level and senior management?</li> <li>• Do we evaluate our performance on a risk-adjusted basis?</li> </ul>
	Periodic review	<ul style="list-style-type: none"> <li>• Are we executing our valuation strategies and methodologies effectively?</li> <li>• Are our processes consistent with industry-leading practices?</li> </ul>
Infrastructure		<ul style="list-style-type: none"> <li>• Is our infrastructure appropriate given our growth strategy and complexity of the investments and type of risks?</li> <li>• Are there adequate controls to guarantee valuation and finance data completeness, integrity, and accuracy?</li> <li>• Do we have a robust process in place to assess and monitor risk at third-party service providers?</li> </ul>

In our experience, many firms do not regularly perform a robust exercise to identify “gaps” that may develop, largely because no valuation framework has been established initially or management has insufficient expertise to properly assess compliance with a robust valuation framework. It is also common to fall behind on addressing external and internal trends and events that impact valuation methodologies and models.

### **The robust execution of a comprehensive valuation framework requires:**

#### **Governance and organisation**

- Strong governance structure to support the valuation framework;
- Clearly defined roles and segregation of duties.

#### **Policies and procedures**

- Comprehensive valuation policy addressing each area of the valuation framework and asset class;
- Consistent application of valuation policies and procedures;
- Operational procedures to support policy and ensure consistency in application tailored to liquidity and complexity of asset classes;
- Periodic review of policies as market conditions change.

#### **Methodologies and models**

- Methodologies consistent with market practice and fair value principles;
- Controls around use of valuation models and processes to ensure consistent application and model changes.

#### **Price verification**

- Process to independently verify security valuations and model inputs;
- Sufficient independent expertise to challenge valuation assumptions Data analysis.

#### **Data Analysis**

- Consistency and quality of market and pricing data;
- Tools and processes to maintain pricing data—level of automation and scalability;
- Controls around sources of external data—error identification;
- Reconciliation of data to accounting ledgers;
- Audit trail of pricing overrides, stale prices, etc.

#### **Reporting**

- Results of independent price verification, outliers and exceptions are compared to variance thresholds;
- Early identification of pricing issues;
- External fair value disclosures that adequately describe risk/other salient factors;
- Clear documentation summarising the investment, valuation approach applied and key assumptions.

When these elements are integrated, particularly by leveraging technology and sharing information, the results can be greater valuation process consistency across all asset classes and investment products, that can be more cost effective and provide the protection that boards and senior management need.

Investors and regulators will continue to demand greater transparency surrounding the valuation process across asset classes and investment products. This may require enhanced disclosures in offering documents and financial statements and will require senior management and boards to more proactively provide oversight to the valuation process to ensure that, in their business judgement, the process continues to be appropriate under changing circumstances, that checks and balances continue to be effective, and that the results are based on the most relevant information available.

# How PricewaterhouseCoopers can help

PricewaterhouseCoopers has partners and other senior personnel dedicated to serving and understanding the business issues of asset managers. The valuation process, the documentation of its results, and the management of the inherent conflicts of key personnel are important considerations. Our dedicated team members can advise and assist you across different asset classes, investment products, and methodologies and models. Across your valuation framework we can:

- Assess the design and effectiveness of valuation policies and practices;
- Evaluate valuation methodologies;
- Assist with development of valuation methodologies and models;
- Assist directors and those with governance responsibilities in reviewing their valuation oversight responsibilities;
- Assess management of the third-party valuation appraisal process;
- Assess valuations of complex assets and liabilities;
- Assist/mediate valuation differences among reputable parties;
- Provide third-party assurance services;
- Share best market practices observed thanks to our large market shares.

# PricewaterhouseCoopers Luxembourg Contacts

**Sébastien Sadzot**

Valuation and Pricing Solutions Leader  
+352 49 48 48 2514  
[sebastien.sadzot@lu.pwc.com](mailto:sebastien.sadzot@lu.pwc.com)

**John Parkhouse**

Luxembourg Asset Management Leader  
+352 49 48 48 2505  
[john.m.parkhouse@lu.pwc.com](mailto:john.m.parkhouse@lu.pwc.com)

**Amaury Evrard**

Real Estate Leader  
+352 49 48 48 5751  
[amaury.evrard@lu.pwc.com](mailto:amaury.evrard@lu.pwc.com)

**François Génaux**

Asset Management Consulting Leader  
+352 49 48 48 4011  
[francois.genaux@lu.pwc.com](mailto:francois.genaux@lu.pwc.com)

**Steven Libby**

European SAS 70 Champion and  
Controls Reporting Leader  
+352 49 48 48 4139  
[steven.libby@lu.pwc.com](mailto:steven.libby@lu.pwc.com)

**Régis Malcourant**

Hedge Funds Leader  
+352 49 48 48 2540  
[regis.malcourant@lu.pwc.com](mailto:regis.malcourant@lu.pwc.com)

**Didier Prime**

Alternative Investments Leader  
+352 49 48 48 6130  
[didier.prime@lu.pwc.com](mailto:didier.prime@lu.pwc.com)

**Valérie Tixier**

Private Equity Funds Leader  
+352 49 48 48 5822  
[valerie.tixier@lu.pwc.com](mailto:valerie.tixier@lu.pwc.com)







[www.pwc.com/lu](http://www.pwc.com/lu)