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LUXEMBOURG

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April 18, 2014

Approved By
European Department

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THE FISCAL POSITION–SOUND FOR NOW, BUT SIGNIFICANT CHALLENGES AHEAD[1]

Luxembourg's healthy fiscal position will be challenged by forthcoming revenue losses as well as rapid trend growth in expenditures. An overall strategy to address this coming deterioration is needed. Beyond the planned VAT increase, recurrent property taxes are a possible additional source of revenue. On expenditures, social benefits should be an area of focus, and reforms of these benefits should also aim to reduce disincentives to work.

A. The Deficit, Debt, and Net Worth

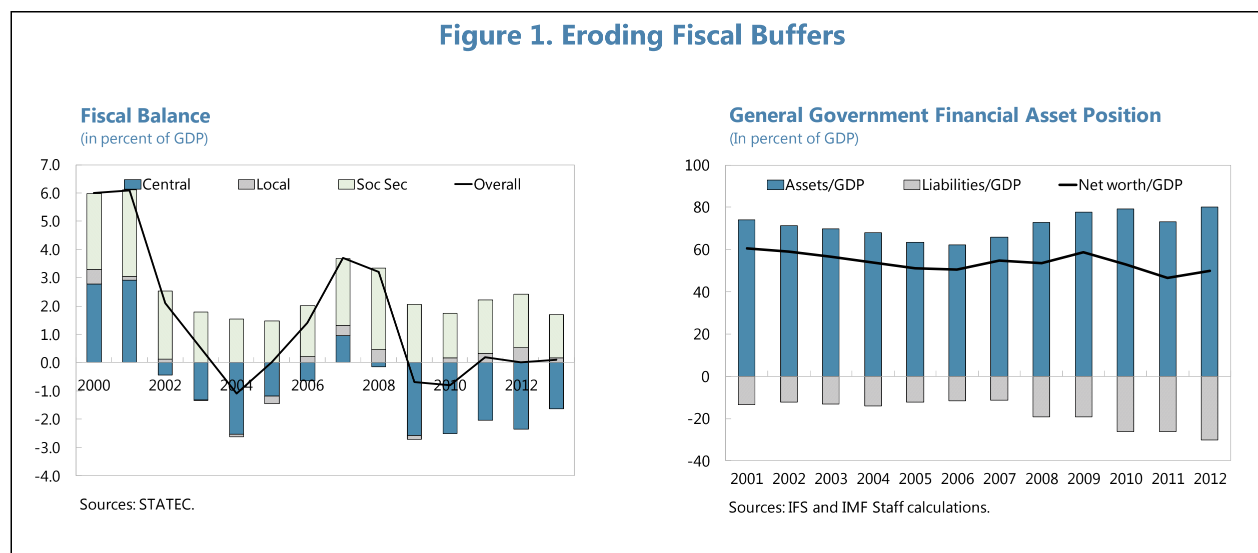
1. **Luxembourg's fiscal position is currently sound.** Thanks to prudent fiscal management, surpluses in the years prior to the global crisis have provided useful room for maneuver during the crisis. The fiscal deficit has consistently remained well below EU's excessive deficit procedure thresholds. Public debt, at 23 percent of GDP, is among the lowest in the euro area and, unlike many of its euro area partners, the country has accumulated assets to fund future pension liabilities, to the tune of 29 percent of GDP. Luxembourg remains one of the few AAA-rated sovereigns in the region.

2. **However, fiscal safety buffers are being eroded.** The crisis extracted a heavy toll, as public debt tripled since 2007—when it amounted to 7 percent of GDP—driven by the costs of bank restructuring (around 8 percent of GDP) and persistent deficits at the central government level[2]. As a consequence, Luxembourg's overall financial asset position has been eroded over the past decade. The position, a still strong net worth of 48 percent of GDP, has, however, deteriorated significantly from 61 percent of GDP in 2001, including due to the debt increase. These developments go against the need to further build buffers in view of the upcoming age-related expenditures in years to come.

3. **Inherent macroeconomic volatility calls for strong buffers**. Luxembourg's small open economy is continually buffeted by economic conditions in its large neighbors—as the recent crisis evidenced—and it experiences higher volatility in economic aggregates. The difficulties in forecasting economic activity also argue for adopting prudent macroeconomic policies to ensure that buffers are maintained and allow for smoother adjustment when shocks inevitably hit. So far, surprises have been positive (stronger revenues than expected), but in view of the challenges ahead, this trend could be reversed in the near future. Given the small size of the economy, a moderate shock, especially in the financial sector, could knock Luxembourg off course.

[1] Prepared by Piyabha Kongsamut (EUR).

[2] Local governments are legally restricted from borrowing large amounts, and social security is in surplus as pension contributions exceed pension outlays for the time being.



4. Luxembourg also faces several significant challenges to fiscal revenues:

- In the most immediate future, Luxembourg will lose VAT revenues from digital e-commerce beginning in 2015. At this point, these will accrue to the country of residency of the purchaser, not of the service provider, as per the E-Business Directive (EU directive 2008/8/EC). The authorities estimate the related loss at around €800 million (1½ percent of GDP) in 2015, and up to 2 percent of GDP from 2019 onward.[3]

- Luxembourg's financial sector is faced with substantial challenges, including the planned introduction of exchange of information on savings in 2015, the implementation of Basel III requirements and progress toward euro area banking union, as well as the deleveraging process of euro area banks—with which Luxembourg banks are highly interconnected.[4] As a result, Luxembourg's financial sector will not be as strong a driver of economic growth as in the past as it retools to adjust to those challenges, with detrimental consequences for fiscal revenues.

- Another looming challenge stems from the ongoing work on international corporate taxation, with potential repercussions for Luxembourg revenues. At the initiative of the G20, the OECD has designed an action plan aimed at addressing Base Erosion and Profit Shifting (BEPS) by multinational enterprises. Luxembourg serves as headquarters for many multinationals and other legal entities, which benefit from taxation treaties with countries in which these entities operate. These operations can be large, as evidenced by the size of the operations of these entities in the balance of payments, reaching about €2.1 trillion as of June 2013, or more than 40 times

[3] Revenues from digital e-commerce are large, as several e-commerce firms' headquarters in Europe are located in Luxembourg (e.g. Amazon, iTunes), and purchasers had been reaping the benefits of its comparatively low VAT rate.

[4] See also the Selected Issues Paper: "The Financial Sector: Strengths and Challenges".

- Luxembourg's GDP.[5] While information on their contribution to fiscal revenues is not currently available, and it will take time for changes to be agreed and implemented at the international level, these could potentially entail a non-negligible impact on activity and revenue.

5. Pressures on expenditures have been building up.

- Expenditure growth has consistently outstripped that of both revenues and GDP in real terms since 2009. Revenues, even excluding those from e-VAT, have grown strongly, driven by direct taxes and VAT. However, expenditure growth has been even stronger, and across virtually all major categories, except for investment spending.

- Contingent liabilities from the financial sector will continue to pose a risk to Luxembourg's fiscal position, particularly through domestically-oriented banks (with balance sheet size of around 2½ times GDP) which have concentrated exposures to the domestic real estate market.[6]

- A longer-term challenge from age-related expenditures remains, despite some reforms adopted in 2012. The authorities' own analysis recognizes that the 2012 reforms are insufficient: according to preliminary estimates presented in the 2013 Stability and Growth Program, the increase in age-related expenditures between 2010 and 2060 would still reach 13 percent of GDP even after the reform.[7]

6. The 2014 budget takes a broadly neutral stance, awaiting more significant measures in the following years. Some measures have been taken to curb expenditure growth at the central government level, including on public investment, current expenditures, and the growth of public service employment, but overall expenditures are still projected to grow by around 2½ percent in real terms. The 2014 budget does not include any revenue measures.

7. The remainder of this note elaborates on these trends and challenges, and suggests policy options, both for revenues (section II) and expenditures (section III). Section IV concludes.

[5] This figure refers to assets of "special purpose entities" as part of Foreign Direct Investment in the BCL's International Investment Position statistics.

[6] See also the Selected Issues Paper: "The Residential Real Estate Market".

[7] The projections will be formally updated in 2014, in the context of the European Commission's Ageing Working Group.

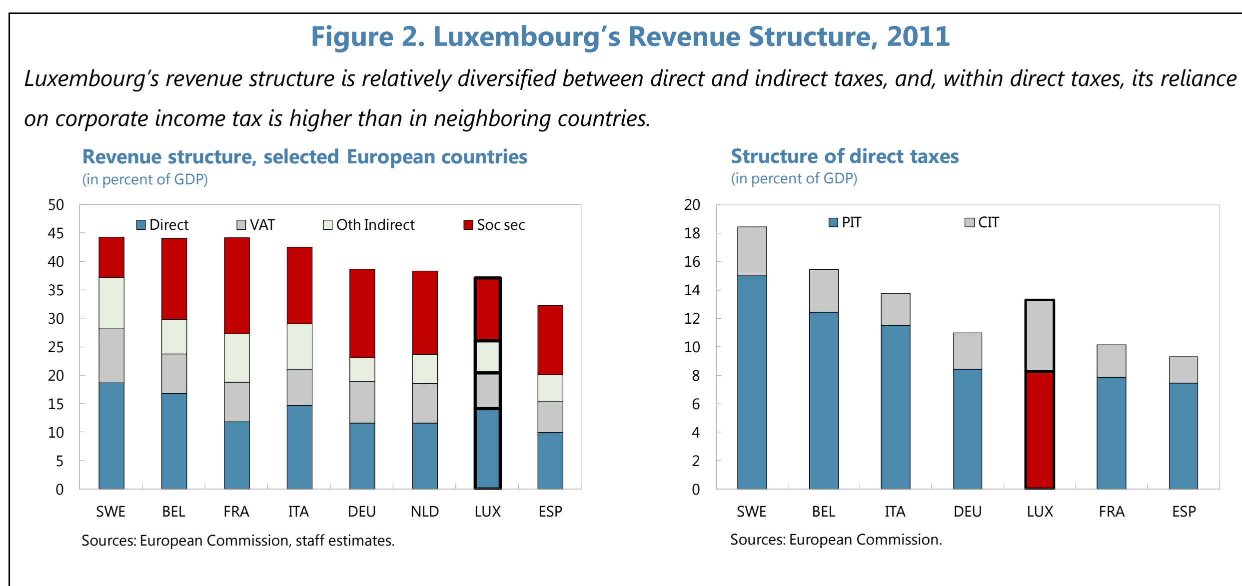
B. Fiscal Revenues: Much to Lose

Trends

8. Luxembourg has a modest revenue-to-GDP intake compared to European peer countries, and a revenue structure that is relatively balanced and diversified (Figure 2). Direct taxes, indirect taxes, and social security contributions each make up roughly one-third of revenues. Relative to GDP, Luxembourg relies somewhat more on direct taxes than Germany and France, but less than peers on social security contributions. Within direct taxes, corporate income tax brings in a larger share of revenue than in neighboring countries, although the top corporate and personal income tax rates do not diverge much from its neighbors. The standard VAT rate, currently at 15 percent, is the lowest in the European Union.

Figure 2. Luxembourg's Revenue Structure, 2011

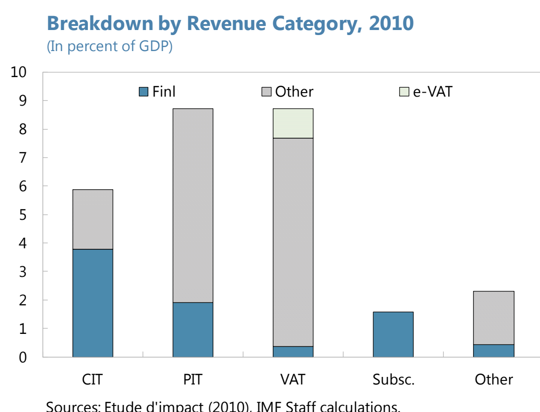
Luxembourg's revenue structure is relatively diversified between direct and indirect taxes, and, within direct taxes, its reliance on corporate income tax is higher than in neighboring countries.



9. But Luxembourg relies heavily on the financial sector for fiscal revenue, and to a higher degree than other large financial centers in Europe. The financial sector contributes almost 20 percent of total revenues (8 percent of GDP) via many channels, both direct and indirect. The channels include corporate income taxes paid by financial sector institutions, the personal income tax paid by employees, a subscription tax on investment funds, a tax on savings (a withholding tax, part of which is shared with the EU), and VAT through indirect channels, for example paid by those employed in the financial sector. Country–specific studies of financial sector contributions to the economy in Switzerland and the United Kingdom show that Luxembourg relies to a greater degree on the financial sector than these peers, with figures on share of value added, employment, and tax revenues exceeding the corresponding figures for peers by a large margin (Figure 3).

Figure 3. Revenues from the Financial Sector

Of the financial sector revenues, the CIT contributes most, followed by PIT and subscription taxes. Withholding tax on savings (in "other" category) contributes relatively little.



Sources: Etude d'impact (2010), IMF Staff calculations.

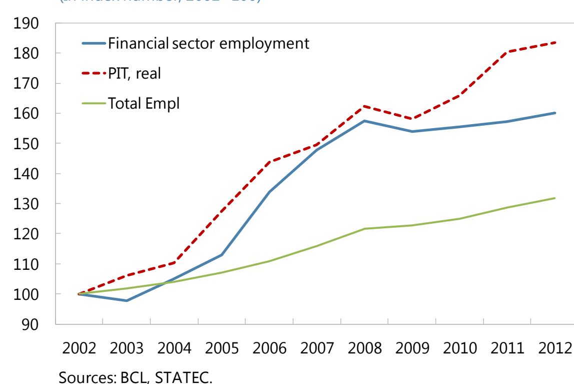
Luxembourg's economic reliance on the financial sector exceeds those of peer financial centers.

In percent of respective total	Value added	Empl	CIT	Tax revenue
Luxembourg (2010, 2011)	26	14.2	64.0	30.0
Switzerland (2008)	11.6	5.9	…	10.0
United Kingdom (2011)	9.4	3.6	20.9 (06-08)	12.1

Sources: Etudes d'impact (2010), Maer and Broughton (2012), Swiss Bankers'Association (2010).

10. The observed revenue buoyancy has been driven mainly by the VAT (even excluding e-VAT revenues), and personal income tax (Figure 4).

- VAT growth in recent years has also been partly driven by cross-border receipts; that is, consumers from neighboring countries making purchases in Luxembourg, partly to benefit from lower VAT rates.



Sources: BCL, STATEC.

- The dynamism in personal income tax (PIT) reflects the strong growth in financial sector employment through 2009, and the increase in the solidarity tax in 2011 and 2013.

- Since 2002, corporate income tax (CIT) revenues have not kept full pace with real GDP growth, including because of reductions in rates in the early 2000s. However, during the crisis period, CIT revenue was relatively resilient, because the tax base is computed as an average over a number of years, and at that time the base included pre-crisis years when profits were buoyant. When the impact started to wane, discretionary measures were taken, including a minimum tax on corporations.

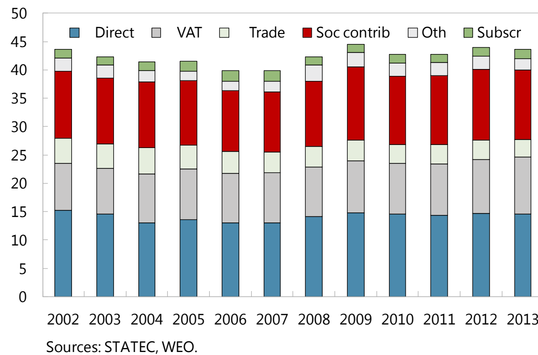
- Revenue from the subscription tax on investment funds was severely dampened by the global financial crisis, but has subsequently recovered some ground.

- Taxes on international trade and transactions stayed broadly stable in real terms, but fell behind GDP growth.

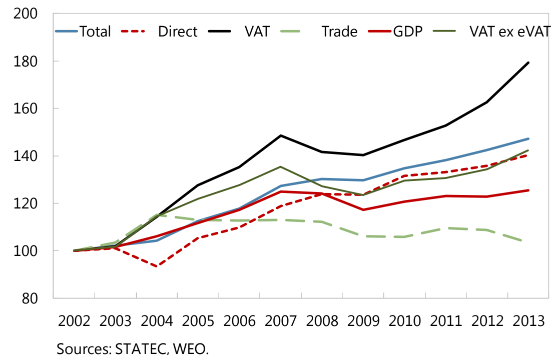
- In accordance with the 2005 EU savings directive, a 35 percent withholding tax on savings was imposed, of which 25 percent was kept in Luxembourg; the remainder was sent to respective countries where the depositors reside. As mentioned earlier, this arrangement will end in 2015, when the automatic exchange of information on non-resident personal accounts begins. The budgetary impact is expected to be observed in 2016, with a loss of around 0.1 percent of GDP.

Figure 4. Luxembourg: Revenue Trends

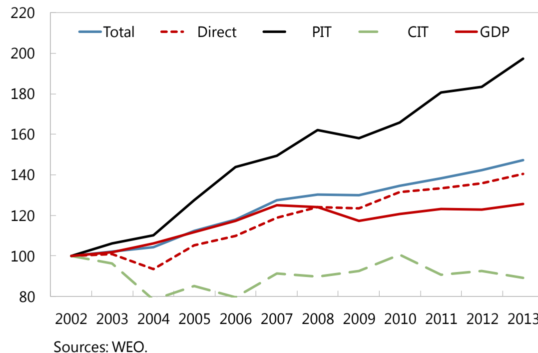
Luxembourg relies mainly on direct taxes and VAT for almost half of its revenues. Subscription taxes (paid by investment funds) and taxes on international trade and transactions are also significant, together accounting for close to 15 percent of revenues.



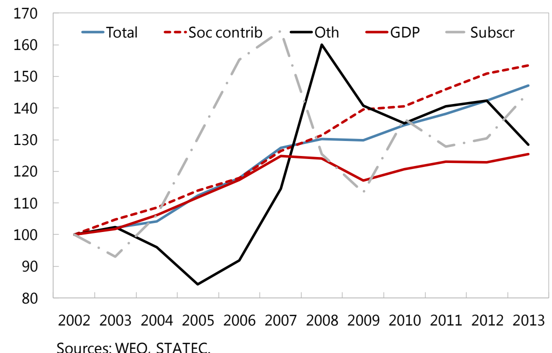
Real revenue growth has been driven mainly by direct tax and VAT, while international trade tax has been stable since 2003. VAT excluding e-VAT has broadly kept pace with GDP since 2008.



Within direct taxes, PIT grew most strongly during this period, while CIT has been relatively stable.



Subscription taxes have been more volatile due to the financial crisis, and "other" taxes reflect the imposition of the savings tax that is shared with other countries.



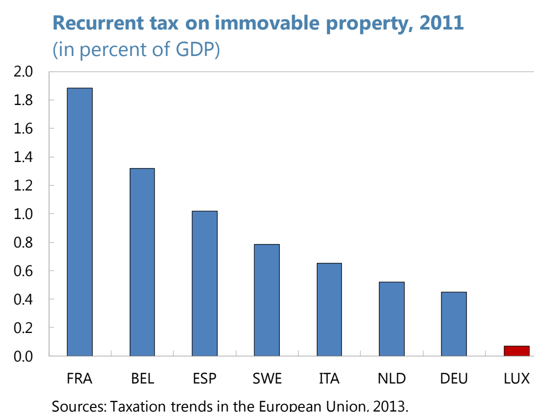
Challenges and Options

11. Luxembourg stands to lose around 2 percent of GDP of revenue in the next five years related to the loss of e-VAT revenues. This shortfall may be compounded if the financial sector is further hampered by balance sheet adjustment at the euro area level, or if the international efforts at tackling BEPS trigger revenue losses in Luxembourg. While there is room to adjust expenditures—an issue we analyze in the next section—options on the revenue side should also be fully explored.

12. A natural candidate is to raise VAT rates, a measure the authorities announced they would implement beginning in 2015. Indirect taxation has been found to be more growth-friendly than direct taxation.[8] In addition, the standard VAT rate is the lowest in the euro area, and 2 percentage points below the next lowest rates in Malta. The authorities plan to raise the standard rate as well as other intermediate rates, but not touch the lowest rate of 3 percent. However, this super-reduced 3 percent rate will now only apply to remodeling and repairs of primary homes, and not anymore to secondary real estate properties. The authorities estimate the direct effect of this increase will yield around €350 million, or 0.7 percent of GDP, with the impact spread over time.

13. Besides raising VAT rates, possible options for revenue sources in the near-term include the following:

- *Raising recurring taxes on immovable property*. Luxembourg's income from such taxes is very low by international comparison: it raises less than 0.1 percent of GDP through those taxes, while the average euro area stands at 0.7 percent of GDP. Increasing real estate taxes would also help address supply constraints in the housing market as it would raise the cost of holding unused land and housing properties. Such a tax is considered less distortionary to productive decisions and harder to evade than other taxes.



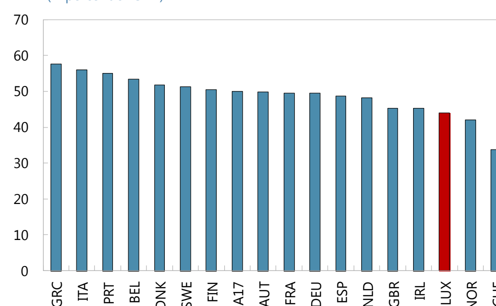
- *Raising direct taxes could also be an option, but would have to be carefully weighed against its impact on Luxembourg's competitiveness.* As shown in Figure 2, Luxembourg already relies on direct taxes to a significant extent, including via the solidarity taxes paid by both individuals and businesses.

[8] See Villafuerte et al (2010) and Clements et al (2010).

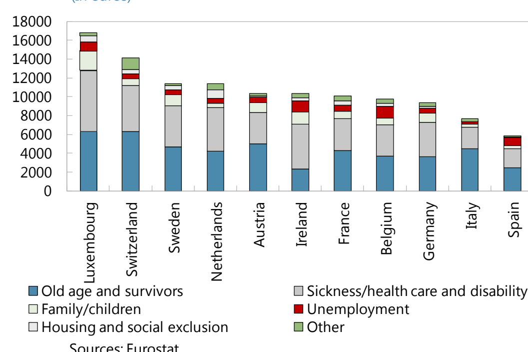
C. Expenditures: Growing Unsustainably

Trends

14. Luxembourg is not an outlier relative to its European peers in terms of overall expenditure-to-GDP ratio. In fact, it is on the low end compared to its neighbors. In terms of efficiency, it also seems to be spending in the "right" places, as it spends relatively less in operating expenses or interest (thanks to its low debt), but more on benefits and investment (Appendix).



15. In per capita terms, however, Luxembourg outspends all its peers in social benefits, a feature that underpins a relatively generous safety net. Luxembourg spends close to €17,000 per resident on social benefits, twice the euro area average. Unemployment benefits offer high replacement rates and are available to the young without a work history, which explains why unemployment benefits per capita are far above the euro area average despite one of the lowest unemployment rates in the currency union. The family allowance, whose stated aim is to support the birth rate, is the most generous among OECD countries, and most family benefits are not means tested. Even adjusted for the share of payments to cross-border workers, per capita family benefits remain large. Finally, compared to OECD peers, the pension scheme is characterized as "rather generous." (OECD, 2012)

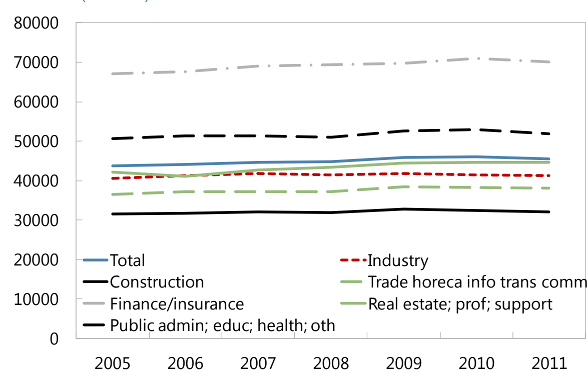


16. Trend growth of real expenditure in virtually all major categories has outpaced that of GDP, particularly since 2007. (Figure 5)

- Spending on social benefits naturally expanded in the wake of the crisis, but expenditure on wages and salaries, as well as on goods and services, have continued to grow at a similar pace as during the pre-crisis period, despite a substantial deceleration in the pace of real activity; public investment is the only spending item that has lagged.

- Wages and salaries in real terms have grown much faster than GDP. Their growth has also exceeded that of the size of the civil service, a reflection of the institutional mechanisms driving public wages, including the structural progression of the salary scale, and the automatic wage indexation to inflation. This trend should moderate somewhat due to the temporary wage indexation agreement covering 2012–2014, which limits indexation adjustments to once every 12 months. However, a recent wage agreement awarded an increase in real terms of 2.2 percent in 2015. In addition, average wages in public administration (including health and education) are

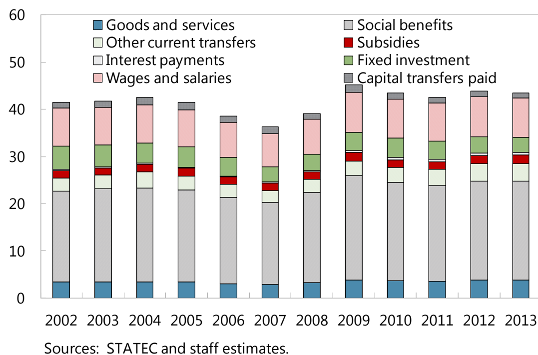
second only to the finance industry. In particular, entry and lower-level civil servants are paid relatively high wages, while higher level employees are compensated relatively less than high-level employees in the private sector. As part of agreed structural reforms, a review of the wage scale is currently underway. The review includes objectives to change the seniority system and greater flexibility to reallocate staff between ministries.



- "Other current transfers" have grown strongly since 2009 and account for around 3½ percent of GDP. Among many other items, this category includes financial grants and loans for students in higher education (around 0.4 percent of GDP), also available to children of cross-border workers. In the context of the 2014 budget, the authorities have adjusted this benefit to introduce partial means-testing and to take into account any relevant benefits cross-border families receive from their home country.

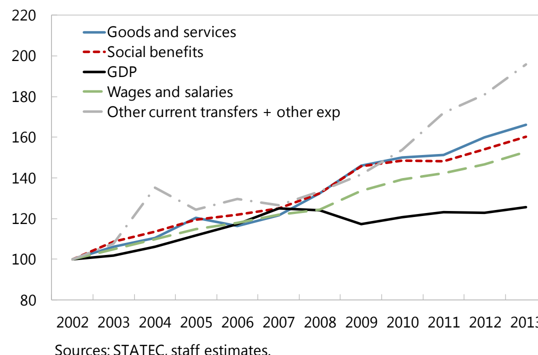
Figure 5. Luxembourg: Expenditure Trends

Social benefits and wages and salaries comprise the largest expenditure items.



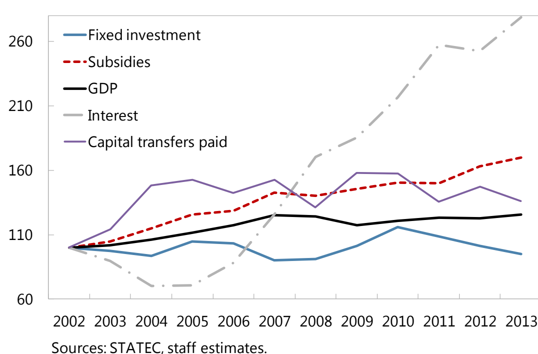
Sources: STATEC and staff estimates.

Virtually all expenditure categories have grown faster than GDP since 2007.



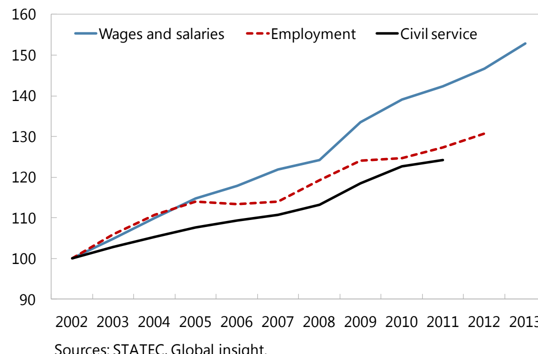
Sources: STATEC, staff estimates.

Only investment spending growth has been slower than that of GDP.



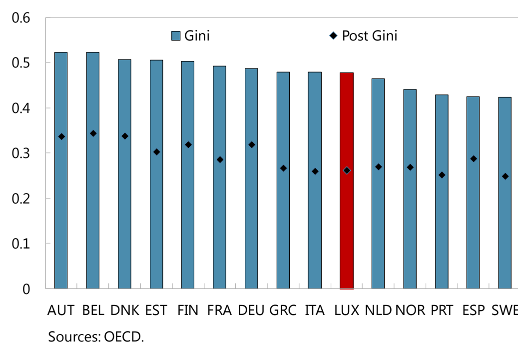
Sources: STATEC, staff estimates.

Growth in the real wage bill has outpaced growth in the number of civil servants by a large margin.



Sources: STATEC, Global insight.

17. This social safety net provides for extensive income redistribution. Indeed, Luxembourg achieves one of the largest declines in income inequality through social transfers among European countries. In 2010, the Gini coefficient was estimated to fall from 0.46 before taxes and transfers to 0.27 after taxes and transfers.



Sources: OECD.

Challenges and options

18. While public spending has been underpinned so far by Luxembourg's wealth, some rationalization is warranted. Buoyant fiscal revenues in the past have hidden the unsustainable spending trend, but the decline in trend GDP growth and imminent disappearance of some revenue sources are making spending pressures increasingly apparent. While revenue substitutes are being explored, complementary action on the spending side is essential to help fill the opening fiscal gap, while addressing some inefficiencies.

19. A significant challenge is to reduce the rigidities in expenditures coming from automatic indexation in a permanent fashion. Around 60 percent of central government current expenditure is automatically indexed to inflation. As a consequence, increases on many expenditure items are automatic, including for staffing costs, transfers to social security, and other income and capital transfers. Limiting indexation to once per year in 2012-2014 has helped mitigate the impact of automatic increases with respect to the government's own wage bill as well as moderate the increase in other expenditure items. But more should be done to temper the effects of wage indexation more permanently. Those efforts should best be combined with a broader revision of the automatic indexation mechanism that applies to the entire economy, especially starting from 2015 when the current agreement expires.[9]

20. Another key challenge is to improve the efficiency of social transfers without sacrificing Luxembourg's admirable record of reducing inequality. Reforms should aim at tilting incentives toward supporting economic activity and away from inactivity. This would both help restrain the growth in social spending and increase labor participation rates, with beneficial effects for fiscal sustainability (see next section). As part of the efforts to restrain expenditure growth, some of the benefits could be de-indexed, or indexed to inflation only (as opposed to inflation and real wage increases, as is currently the case for pension benefits), while others could be redesigned.

21. The authorities have embarked on a comprehensive expenditure review, with its results to feed into the budget for 2015. This is the first such expenditure review for Luxembourg, and aims to identify savings and improve the cost-efficiency ratio of public spending. The review is being conducted in four phases from conception to implementation, with analysis across both ministerial and functional lines. Savings are to be identified by early summer 2014; discussions with social partners will take place during the summer, in time for inclusion in the 2015 budget due in October 2014. Social benefits are also to be reviewed, but expected reforms might be legislated over a longer horizon.

22. The planned introduction of a medium-term budgetary framework and other ongoing reforms could also help identify further ways to achieve efficiency gains. The transposition of the Fiscal Compact into national law will set a legal framework for multi-annual budgeting, and will

[9] See also the Selected Issues Paper: "External Developments, Competitiveness, and Labor Market Policies".

include the introduction of a budgetary rule on central administration spending—though the exact formulation of this rule will be specified at a later stage. Reforms toward output-based budgeting are in train, but will take time to bear fruit.

23. Pension reforms adopted in late 2012 will likely be insufficient to raise the effective retirement age and do not adequately address inter-generational equity. No change to the official retirement age of 65 was made, and it remains to be seen whether new incentives to keep older employees in employment longer (by receiving higher benefits in exchange for staying at work longer) will be effective. In addition, the reforms rely on fairly optimistic assumptions about growth in output and employment, which may not materialize. Automatic provisions to ensure solvency are in place, but at the cost of adjustments in the contribution rate that come too late and would therefore have to be drastic—preventing an even sharing of the adjustment burden across generations.[10] Furthermore, generous accumulation periods remain (such as during studies, or maternity leave). One measure that could be taken in the short-term is to remove the pension indexation to wage growth, while retaining cost of living adjustments. A temporary annulment of this wage indexation is in place, and should be made permanent.

D. Addressing Disincentives to Work

24. Part of the effort to rationalize expenditure should focus on reducing disincentives to work. The existing literature focuses on three types of "traps": unemployment traps (for those receiving unemployment benefits), inactivity traps (for those not participating in the labor market and receiving social assistance), and low-wage traps (for those earning low wages and whose social benefits would be withdrawn faster than they can rise up the income ladder). For those falling into these traps, it often makes more financial sense to stay inactive or unemployed than to take a job, because the take-home pay after taxes and social contributions and taking into account the reduction in social benefits is less than it would be if they stayed inactive or unemployed. That is, the marginal effective tax rate (METR) on income is larger than 100 percent; all the effort is being "taxed away". The analysis below focuses on the unemployment and inactivity traps, and is based on the OECD's tax and benefits model.

25. The system offers a broad safety net. Unemployment benefits are relatively generous, with an 80 percent replacement rate, for a maximum of 12 months. Those ineligible for unemployment benefits can access the minimum guaranteed income (RMG), with amounts received varying by family status and by income up to a certain level. The RMG also includes a small housing benefit portion. Other relevant benefits include family benefits, which are not means-tested, a credit for single parents, a cost-of-living type allowance ("allocation de vie chère"), and a minimal income tax

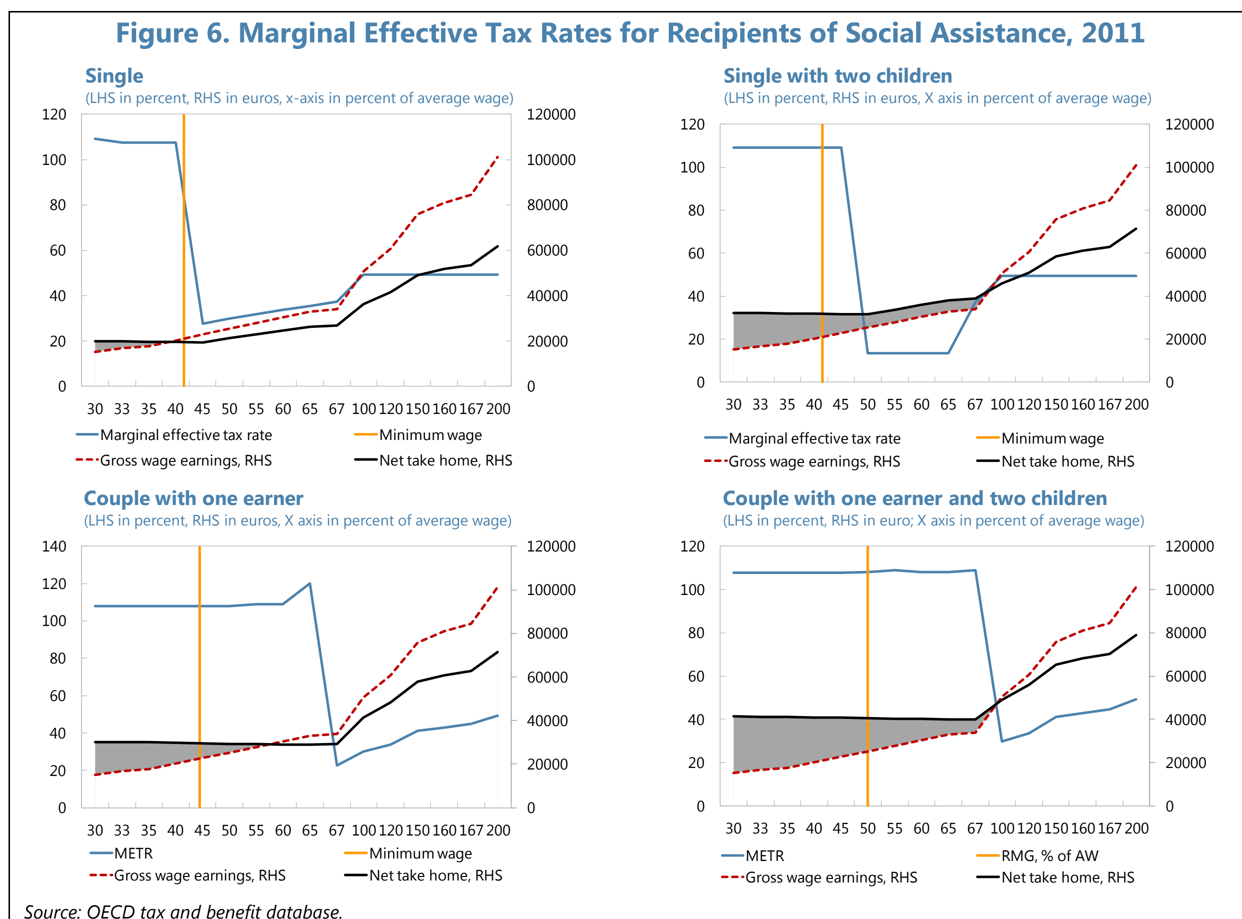
[10] If the legal contribution rate (now fixed for 10 years) is below the required rate to keep a specific legal surplus requirement, adjustments to some parameters (such as indexation to wage growth) would be made to ensure solvency.

credit for work (25 euros per month). Some of the RMG benefit is withdrawn as individuals start to earn more.

26. However, the upshot is that unemployment traps are relatively prevalent, with METRs prohibitively high across a range of family situations. The METR peaks consistently around 100 percent for the full range of analyzed categories including singles, single earner couples, two-earner couples, all with or without children. The wage level at which this peak occurs differs, starting from 90 percent of average wage and rising to over 200 percent of average wage, depending on the family situation. This means that, for example, a single person receiving unemployment benefits would not gain from finding employment unless the pay exceeded 90 percent of average wage, which is relatively high. A more degressive regime over time, as was in place before the crisis, should be restored to preserve the incentive for the unemployed to actively pursue job opportunities.

27. The inactivity trap also appears strong, although for a smaller range of family situations than the unemployment trap. In this case, the METR rises to over 100 percent for singles and single earner couples, each with or without children, in the ranges of around 50 to 70 percent of average wage. The charts in Figure 6 illustrate this range. Gross wage earnings (red dotted line) is below the net take home pay (including social benefits, black solid line) for a range of income levels (grey shaded area), as the wage earnings cannot replace forgone benefits (including lower RMG) as well as the additional taxes and social contributions to be paid. For singles, it is only when pay rises to above minimum wage (40 percent of average wage) that the earner is able to keep more than what is lost, and that the METR drops to the "normal" tax, which would include income tax as well as social contributions. The equivalent figure for a single-earner couple with two children is 70 percent of average wage.

28. The unemployment challenge has been long in the making but has been exacerbated by the economic crisis. Unemployment has been on an upward trend even before the onset of the crisis, rising from 2.4 percent in 2000 to 4.2 percent on the eve of the crisis in 2006, and to 7.1 percent at the end of 2013. Participation rates in the resident population have increased between 2007 and 2012, from 67 percent to 69 percent; figures for cross-border workers are not available. While these unemployment figures are low from a regional perspective, their inexorable increase, combined with the generosity of the social safety net, could suggest an unemployment trap in which the incentive to work is blunted by some aspects of the social benefits system. Moreover, the share of long-term unemployed is large—at 23.8 percent in December 2013— and rising. A significant part of this increase is due to the inclusion of workers who can no longer work at full capacity (*salariés à capacité de travail réduite*), for example because the demand for their services has fallen, and whose redeployment to other sectors would likely be difficult and take some time, as they tend to be more low-skilled workers. These workers account for 21 percent of unemployment.



Source: OECD tax and benefit database.

29. The design of some benefits affecting the labor market needs to be adjusted to create a bias toward participation rather than inactivity. Modifications of the benefit scheme could also help induce this group toward greater participation, reduce unemployment and spur greater economic activity. The aim is to increase the share of take-home income related to activity. The existing earned income tax credit, currently minimal, could also be redesigned so as to drive a larger wedge between inactivity income and work income, and offset the reduction in existing social benefits received as income from work rises. Plans have been made for a reform of the RMG to try to address this trap, by reducing METRs and making it more financially rewarding to take up work. It is yet unclear whether these plans will be adopted by the new government. Additional training initiatives may be needed to complement these initiatives, as unskilled labor supply exceeds demand, while that for more skilled labor is insufficient. While some of these changes may reduce fiscal savings, this could eventually be revenue-creating, as it would spur greater labor market participation.

30. The authorities have revamped the employment agency to more actively tackle this growing challenge. They have brought in new management, reorganized the agency to take a more proactive approach, and are upgrading their information technology systems to allow for

better matching. The registered unemployed will be offered services according to their profile. Those deemed more difficult to place would be provided with more intensive help, including training efforts. A contract would be signed between the jobseeker and the agency, specifying which actions would be taken by each party to improve employment prospects. This would include regular interactions with the agency to ensure that the jobseeker continues to actively search for employment; if these conditions are not met, assistance would be discontinued. In addition, closer contacts with employers are being developed so as to better match the needs of the private sector with the skill set of potential employees, as well as ensuring that provided training is in line with private sector needs.

31. Experience in neighboring countries such as Germany suggest more active labor market policies may indeed support a reform of social benefits. Starting in 2002, a series of measures known as the Hartz reforms were taken over several years, including improving the targeting of active measures, introducing market mechanisms into placement services and training, tightening conditions for acceptability of jobs, introducing sanctions for non-compliance, and liberalizing temporary work regulations. In 2003, certain wage subsidies were introduced for specific groups of workers. In addition, the Federal Employment Agency was restructured and active and passive policy measures were simplified. Starting in 2005, unemployment benefits were reformed, significantly reducing the replacement rate, and the duration of benefits was shortened a year later. Finally, in 2006-2010, measures were taken to encourage older workers to stay employed, including through phasing out of early retirement options, and requiring active job search efforts for older workers. While the effects of these reforms are still unfolding, they are widely credited for the reduction and current low level of unemployment in Germany.

32. Significant savings could also be achieved through greater means-testing of benefits. In particular, family benefits are currently awarded to all regardless of income level. They consist of a suite of benefits for maternity leave, parental leave, and include such allowances as general monthly stipends based on the number of children, the "boni pour enfant", primary and higher-level education, and "back-to-school" expenses. The across-the-board provision of family benefits has the advantage of being less distortionary, but it comes at a significant fiscal cost, amounting to 2½ percent of GDP in 2012. Some means-testing could be introduced for certain family benefits, but thresholds should be set at higher income levels so as not to exacerbate inactivity traps at lower wage levels. Benefits that favor home ownership could also be revised (e.g. partial mortgage interest tax deductibility, the tax credit against registration and transactions taxes due), so as not to distort the decision between renting and ownership.[11]

[11] See also the Selected Issues Paper: "The Residential Real Estate Market".

E. Conclusion

33. Luxembourg's public finances are at a turning point. While the levels of deficit and public debt remain in sound territory for now, significant losses in revenue will soon materialize. The trend increase in expenditure has been supported by buoyant revenue so far, limiting the impact on the overall deficit. But the upcoming loss in e-VAT revenue widens the gap that opened up during the financial crisis, and increases in age-related expenditures, though not immediate, loom large still. Uncertainty over the permanence of financial sector revenues and the corporate tax intake has also increased.

34. It will be essential to design an overall strategy to prevent a permanent deterioration in the fiscal position. The loss in most of these revenues will come without any relaxation in the tax burden at the domestic level, as both e-VAT and the withholding tax is paid by non-residents. Any compensating measure, however, be it by increasing domestic taxes or curtailing some of the spending items, will have a contractionary effect on the Luxembourg economy. It will be critical to design measures that are as growth-friendly as possible, and at a minimum, preserve Luxembourg's competitiveness.

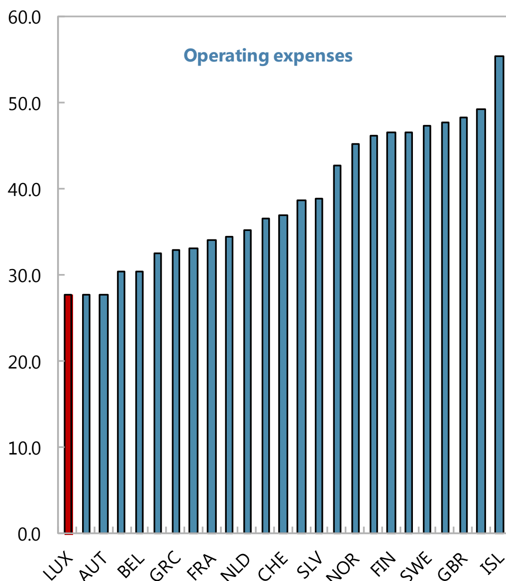
35. In all likelihood, a combination of measures will be necessary. The most natural options on the revenue side include raising VAT rates and increasing the yield of property taxes. Those on the expenditure side include reducing the rigidity of expenditures due to indexation of wages and salaries, adjusting social benefits, and reforming pensions toward a more equitable outcome for the young and the old. Adjustments to benefits should also aim to increase incentives to work by lowering marginal effective tax rates of taking on employment. The introduction of an earned income tax credit could complement these efforts, particularly for those at the lower end of the wage scale.

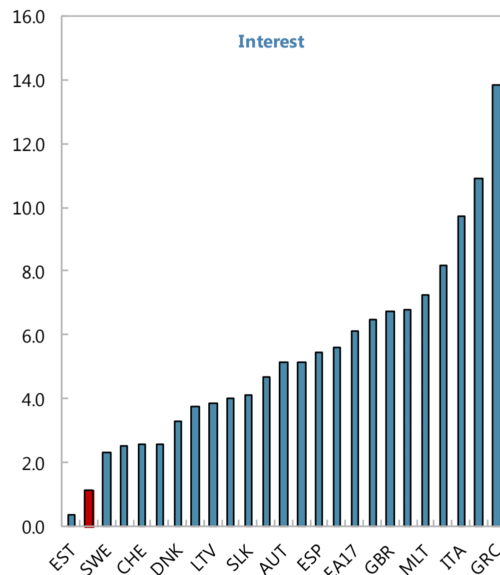
Appendix: Expenditures by Function

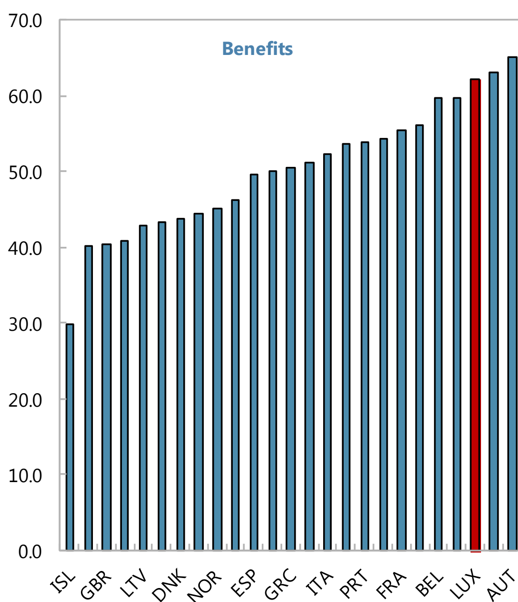
Luxembourg Expenditures in a Cross Country Context, 2011

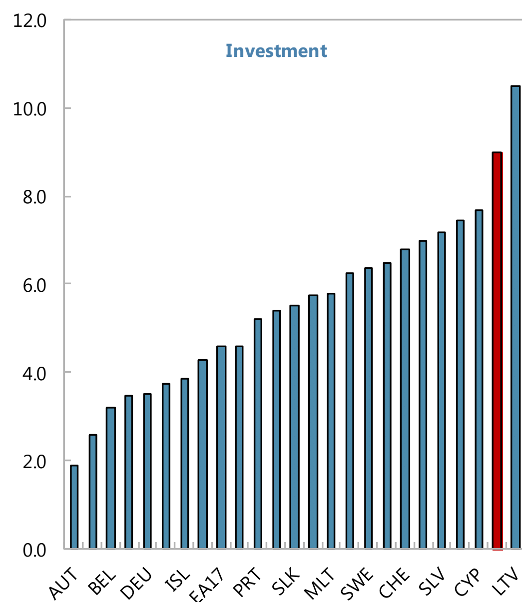
(in percent of total expenditures)

Luxembourg's government seems to operate quite efficiently, with operating expenses the lowest among its peers, and low interest payments, allowing it to spend on a greater share of expenditures on benefits and investment.









Source: Eurostat

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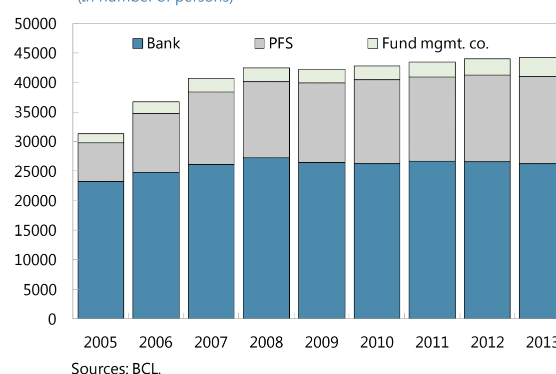
THE FINANCIAL SECTOR: STRENGTHS AND CHALLENGES[1]

Luxembourg's financial sector has weathered the global crisis relatively well, and appears to be in a sound position. However, challenges are looming, ranging from deep regulatory changes at the European level to the move to automatic exchange of information for individual savings, pressures to increase the transparency of a broader range of cross-border activities, and the rise in real estate exposures at the domestic level. On the other hand, if dealt with properly, these changes could also provide opportunities for growth and diversification. To navigate those challenges, the authorities will have to proactively maintain buffers, monitor risks and plan for the likely adjustments in business model. This paper assesses the challenges in more detail and provides recommendations to continue to strengthen the resilience of the financial sector.

A. A Unique Business Model with a Strong International Orientation

1. Luxembourg hosts a large financial sector mostly focused on cross-border businesses (Figure 1). It hosts the second largest fund industry in the world and is one of a few hubs of European UCITS funds.[2] The banking industry's assets are 15 times GDP, centered around a wide range of mostly cross-border business lines. In synergy with those activities, the country is home to a number of custodian banks and an important central security depository, and is one of the largest primary markets for international bond issuance globally. A wide spectrum of specialized financial service providers gravitate around the industry, with support ranging from legal to accounting and IT activities. The financial sector contributes 22 percent of GDP and 14 percent of employment, and is a substantial contributor to the large current account surplus.

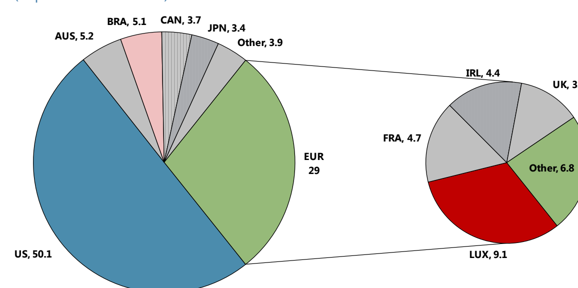


[1] Prepared by Mamoru Yanase (MCM).

[2] UCITS (Undertakings of Collective Investment in Transferable Securities) funds are investment funds regulated at European level. The UCITS Directive provides a regulatory and supervisory framework that makes the funds suitable for retail investors. UCITS funds are given European passports, thus enabling them to be sold in every EU jurisdiction.

2. The country continues to be one of the global hubs for investment funds. The fund industry is second only to the U.S., with 2.6 trillion EUR of assets under management, and has been growing steadily. The industry invests in a diversified class of assets, mostly outside Luxembourg, and caters to a diversified pool of non-resident investors—only 2 percent of promoters of UCIs (Undertaking of Collective Investments) are from Luxembourg. A large part of the investors are from outside of the euro area, but similarly, a substantial part of the funds are invested outside the country, including in assets from non-euro area countries. UCITS funds under EU regulation dominate, with around 80 percent of assets; the rest is accounted for by funds that do not meet UCITS requirements and includes alternative funds such as hedge funds. Money market funds' share is less than 10 percent of UCIs in asset volume, around half of which are Constant NAV funds.

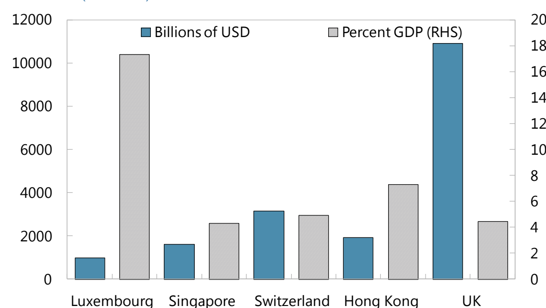
Investment fund assets by country, 2013
(In percent of the total)



Source: EFAMA

3. The banking sector is dominated by subsidiaries and branches of foreign groups. Those mostly conduct cross-border businesses, including wealth management, intragroup treasury and liquidity management, custody services to investment funds, and international wholesale lending. Only a handful of banks—less than 20 percent of total banking assets, but still about 250 percent of GDP—are catering to domestic non-financial corporate and retail customers through branch networks in Luxembourg. Half of these domestically-oriented banks are stand-alone banking groups with head offices in Luxembourg; the rest are banks owned by foreign European banking groups.

Bank Assets
(End 2012)



Sources: National Authorities, IFS, IMF Staff

4. Other businesses include bond issuance, and custodian and settlement activities. Luxembourg is one of the biggest international bond issuance markets in the world. It hosts an important global clearing and settlement player focusing on euro denominated bonds, Clearstream Banking—which also holds a banking license. The amount of assets under custody by banks in Luxembourg, including Clearstream Banking, reaches over 11 trillion EUR. It is also home to various kinds of other financial schemes, such as SICARs, PFSs and Securities Undertakings, although their combined asset size remains small. The insurance sector is relatively large and growing, with total assets over 200 billion euro (over 5 times GDP), of which life insurance accounts for close to half. The captive insurance business is another important pillar of the insurance industry. SOPARFI, a form of company, is also often used as an investment vehicle, but is not supervised.

5. The country's business model benefits from several key factors, which over time have created a unique "eco-system" supporting Luxembourg's role as a financial hub within the euro area:

- There has been a first-mover advantage. The country's financial center status was first built on its flexible regulation that attracted foreign exchange and euro loan businesses of European banks. Since then, taking advantage of established operations, these banks have grown global treasury and cash management businesses.

- The industry has taken full advantage of EU and euro area market integration, in particular the European passport for financial intermediaries and single rulebooks for financial regulation, such as UCITS directives.[1]

- The extensive financial infrastructure has grown to support banks' treasury and cash management businesses and the investment fund business. These include the clearing and settlement system as well as a number of banks providing custodian services. The auxiliary services have also grown, including legal, accounting, and IT activities. The concentration of these players makes it possible for the financial center to provide services and create products based on the EU regulation and the civil law tradition.

- Stable political and economic conditions, as exemplified by the AAA sovereign rating, have attracted the industry. The authorities have generally been proactive in implementing new European regulations. A multilingual workforce and the absence of a wealth tax for individuals are also regarded as supporting the financial center.[2]

- In the past, bank and tax secrecy had also been seen as an advantage in attracting money from individual and corporate customers mostly from neighboring countries.

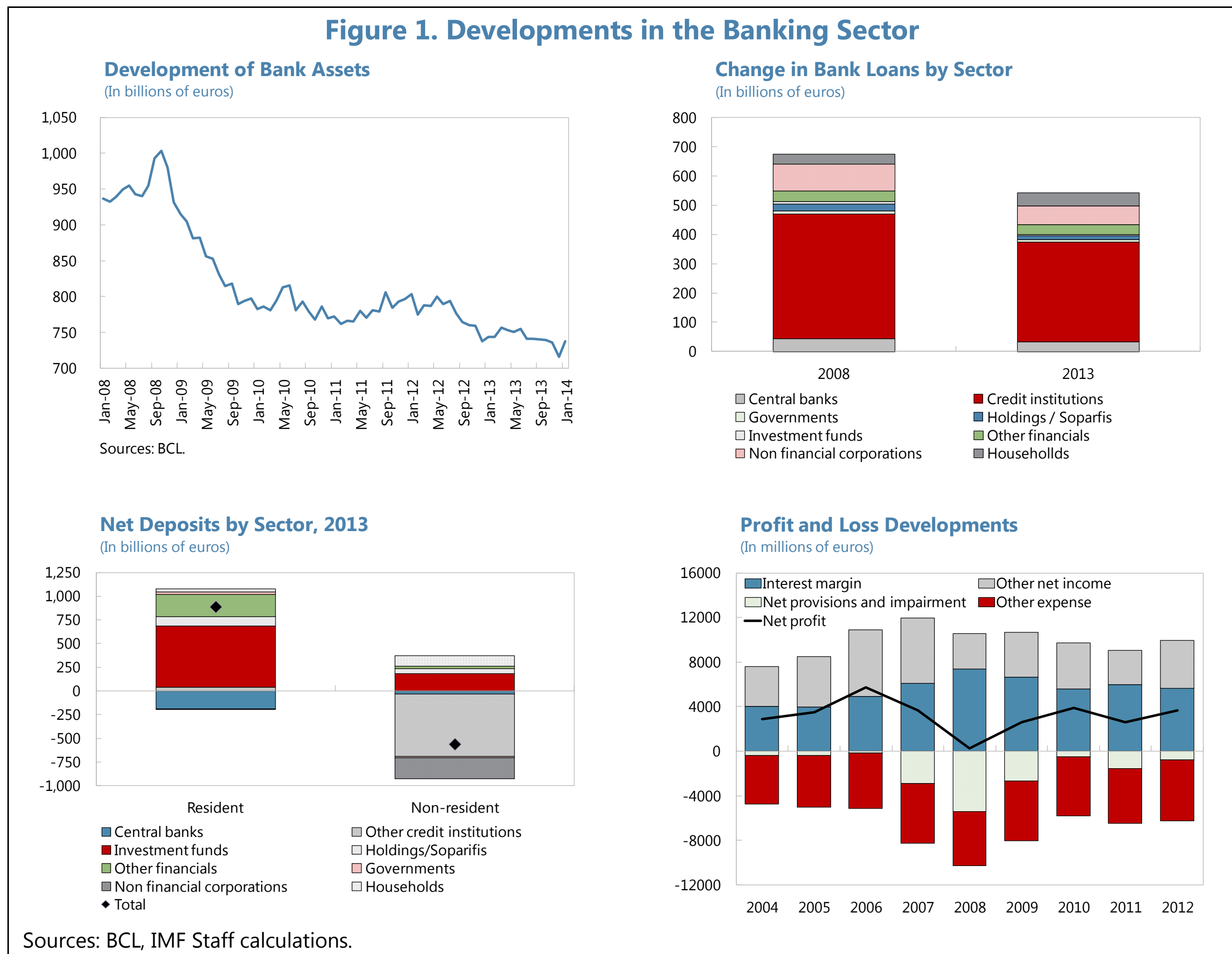
B. Recent Developments: Adjusting to Ongoing Challenges

6. As the deleveraging trend in the euro area continues, Luxembourg's banking sector balance sheet has continued contracting, although the soundness of the system has been maintained (Figure 1). Total assets declined from 931 billion EUR at end-2008 to 714 billion EUR in February 2014. This reduction has largely been driven by the contraction in intragroup exposures with core euro area parent banks. Other activities, such as domestic credit and private banking, have been less affected. This development, together with the low interest rate environment, has hampered profitability, although fee incomes from rapidly growing investment fund activities have

[1] Being a euro area country is regarded as an important competitive advantage over other major international financial centers, notably Switzerland and the UK.

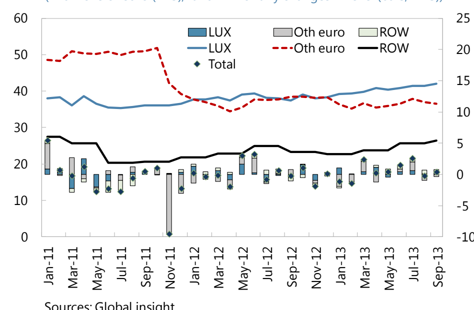
[2] The capacity to provide services in non-English European languages is also seen as a big advantage in attracting customers from continental European countries and service providers targeting them.

been compensating. The capitalization and liquidity ratios remain healthy, with Tier 1 capital ratio of over 16 percent and liquid assets to total assets at around 60 percent. NPLs are low, at just 0.3 percent of total loans.[1] An additional strength of the banking sector is that it is a net liquidity provider; customer deposits are one and half times larger than non-interbank loans, with net deposits of residents for the entire system of more than 600 billion EUR. These excess deposits, partly arising from deposits from the investment fund industry, are financing cross-border interbank lending, mostly intra-group.

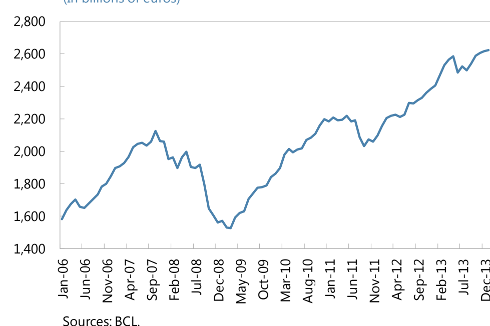


[1] The low NPL partly reflect the unique business model of the sector, where a large part of the exposure is to counterparties with low risk weights, such as parent banks. But domestically-oriented banks with more traditional retail banking activities also have high capital ratios.

7. Another challenge is the move toward more tax transparency, although the April 2013 announcement to switch to the automatic exchange of information had a negligible impact on deposits so far.[2] Some outflows occurred for retail deposits from neighboring countries, but these had been offset by an increase in other deposits, mostly from institutional depositors. The extent of the impact may not have fully materialized yet and some banks whose business is mostly with affected customers may face difficulties. But the benign impact observed so far could be an indication that the role played by bank secrecy has already diminished in Luxembourg. Indeed, the government has been signaling the need to increase transparency for the past few years and had urged the financial industry to prepare for it. Thus the move was not a surprise for the industry.[3]



8. The investment fund sector has continued growing, despite bouts of volatility on global financial markets since May 2013. The net inflow to the sector remains strong. Assets under management declined in June and August, mostly due to a fall in asset values triggered by the tapering discussions by the U.S. Federal Reserve, but net outflows were only recorded in June, and growth resumed thereafter. The diversified nature of the industry, both in terms of the investment policies (categories of assets invested) and the customer base, contributed to the stability—a shock to specific asset classes is not believed to cause a substantial impact on the industry as a whole as investors are expected to shift funds only from one type of funds to another. In December 2013, the volume of assets under management amounted to more than 2.6 trillion EUR—a historical peak.



9. To cope with the ongoing challenges, the financial sector has started to diversify into new areas, with the support of the government:

- *Emerging market economies*. The financial center is trying to strengthen its ties with emerging market economies, such as China and the Gulf countries. During 2013, 8 banks—of which 2 Chinese banks—opened a branch or subsidiary, making up for exiting euro-area banks. It is also working to position itself as a European hub for the Renminbi business, such as Renminbi-denominated bonds issuance.

[2] In April 2013, the authorities announced that from 2015, they will start automatically exchanging information on EU residents' savings income with other tax authorities under EU Savings Directive. Currently, the government imposes a withholding tax of 35 percent—a provision allowed as a transitionally measure under the directive.

[3] The authorities and the industry did not expect any substantial impact from the implementation of U.S. FATCA (Foreign Account Tax Compliance Act), as the sector's cross-border customer base is centered on Europe.

- *High net-worth customers*. In response to the move toward more transparency and, in particular, to the switch to automatic exchange of information under the EU Savings Directive, banks have started to shift their private banking activities from "mass-affluent" and "affluent" customers, generally from neighboring countries, to "high net-worth" individuals from broader regions.[4] Because the fee structure is different for that type of clientele, this move could however put pressure on profit margins and smaller banks might have difficulties adapting to the new business model.
- *Alternative Investment Fund Management*. Luxembourg was one of the first countries to transpose the Alternative Investment Fund Directive (AIFMD). The effort is part of a broader strategy to make Luxembourg a hub for AIFMs.

10. Regulatory and supervisory efforts have been stepped up since the 2011 FSAP. Staffing at the *Commission de Surveillance du Secteur Financie*r (CSSF), the supervisor for banks and investment funds, has continued to grow. Techniques for stress testing banks have been improved and now cover various scenarios. Investor protection was also strengthened, including through enhanced monitoring of adequacy of disclosures by investment funds and bond issuers. The collaboration between the CSSF and the central bank, *Banque Centrale du Luxembourg* (BCL), is being enhanced through the evolution of institutional arrangements such as the start of the Single Supervisory Mechanism (SSM) and will be further enhanced in the context of the proposed establishment of a national Systemic Risk Committee. The latter will be chaired by the Finance Minister, with participation of the CSSF, BCL and Insurance Commission; the BCL will serve as its secretariat. It will meet at least twice a year. Also, importantly, the organic law for the CSSF was revised in December 2012 and a provision that could have been interpreted as giving the supervisor an objective of promoting the financial center was removed.[5]

C. Challenges Ahead: European Regulatory Initiatives and Responses

European regulatory and supervisory initiatives

11. Financial regulation and supervision will go through unprecedented changes due to European developments. These include the move to the Banking Union, particularly the start of SSM, and the enhancement of the single rulebook—including the CRD IV/CRR, which transposes Basel III for the EU, as well as the BRRD and DGSD, now finally agreed at the EU level. There are also developments in capital market-related regulations. These add to the challenges Luxembourg's financial industry is facing, particularly banks, and have the potential to further change the landscape of the financial sector in the Grand Duchy. (Box 1)

[4] While there is no set definition, "high net-worth" individuals are often regarded by the private banking industry as those having more than 1 million USD or EUR in financial assets.

[5] CSSF Law (Law of 23 December 1998), Article 3.

Box 1. Regulatory and Supervisory Initiatives at the EU and Euro Area Levels

<u>**Banking Union**</u>

SSM (Single Supervisory Mechanism):

The ECB will assume the role of single supervisor for banks in euro area countries (and other EU countries who opt in) in November 2014. It will directly supervise around 130 significant banks in the region. For other banks, national supervisors will continue to operate direct supervision.

Comprehensive assessment:

ECB and national supervisors (with the support of third parties) will conduct a comprehensive assessment of the banking system in preparation for SSM. The comprehensive assessment is composed of three pillars: a supervisory assessment; an asset quality review; and a stress test. An eight percent Common Equity Tier 1 (CET1) will be used as a threshold. Results of the comprehensive assessment will be disclosed in fall 2014.

SRM (Single Resolution Mechanism):

In December 2013, the ECOFIN agreed on the establishment of a single resolution board—which will have broad powers over bank resolution—and a single fund to support resolution processes, and in March 2014, an agreement was found between the Council and the European parliament on a common position. The SRM will cover all banks in countries that participate in the SSM.

<u>**Single Rulebook**</u>

CRD IV/CRR (Capital Requirements Directive/Capital Requirements Regulation):

It transposes the Basel III framework in EU law. A phased-in implementation starts in 2014 for the minimum risk-weighted capital ratio, including the introduction of Common Equity Tier 1 (CET1). Liquidity Coverage Ratio (LCR) starts in 2015. The full implementation will be completed by 2019.

DGSD (Deposit Guarantee Schemes Directive)

It harmonizes deposit guarantee schemes in the EU. National deposit funds will have to cover at least 0.8 percent of eligible deposits. A shorter payout period, of less than seven days, was also introduced.

BRRD (Bank Recovery and Resolution Directive)

It harmonizes tools and powers of national regulators to deal with the resolution of banks. It requires recovery plans to be prepared by banks and resolution plans by regulators and introduces the ability to bail-in bank liabilities with a specific pecking order. Some liabilities are exempt, such as short-term liabilities and insured deposits. Countries need to set up national resolution funds of 1.0 percent of covered deposits to support the process. The directive becomes effective from 2015 and bail-in of bank liabilities can happen starting from 2016.

UCITS IV/V (Undertakings for Collective Investment in Transferable Securities)

UCITS is a harmonized regulatory framework for investment funds that can be marketed to retail investors in EU. UCITS IV, which became effective July 2011, harmonized disclosures and introduced an EU passport for management companies. UCITS V, for which the Commission published a proposal in 2012, will introduce harmonized rules on depository functions, remuneration policies and sanction regimes.

AIFMD (Alternative Investment Fund Managers Directive)

It introduced a harmonized regulatory framework of alternative investment funds, covering all non-UCITS funds and some other joint investment schemes. Existing AIF managers are required to be authorized and to become subject to supervision by July 2014.

Box 1. Regulatory and Supervisory Initiatives at the EU and Euro Area Levels (Concluded)

MMFR (Money Market Funds Regulation)

In September 2013, the Commission published a proposal which requires MMFs to be authorized and regulates such matters as eligible assets for investment, diversification requirements and liquidity levels. For CNAV (Constant Net Asset Value) funds, which seek to maintain a fixed price per share for redemption and purchase of shares through the use of amortization valuation, a three percent capital buffer would be required.

12. The progress towards Banking Union was seen as having a positive impact on the banking sector in the long run. The majority of the sector, at this point 69 banks representing about 80 percent of total assets, including many subsidiaries and branches of major European banks, will come under the direct supervision of the ECB when the SSM starts operating in November 2014. To the extent that these changes will strongly contribute to the stability of the euro area banking sector, this could have positive impact on Luxembourg. However, the comprehensive assessment as well as the prospect of bail-in might exacerbate deleveraging pressures on euro area banks, with implications for intra-group exposures, possibly leading to a further reduction in the size of the Luxembourg banking sector. There could also be long-term implications for the business case of having Luxembourg as a treasury hub for euro area activities. As banks are supervised at the group level, euro area parent banks may review their current group structures to maximize the use of their current capital and liquidity, which could negatively affect their Luxembourg operations. Finally, some in the industry are concerned about the lack of familiarity of SSM supervisors with the unique business model of banks in Luxembourg.

13. The role of national supervisors will remain important in the SSM. In the transition phase, efforts are needed to make the hand-over of the responsibilities smooth and seamless. In particular, care needs to be taken that the establishment of SSM does not result in any supervisory gaps or disruptions. Also, while supervisory responsibilities will be shifted to the central level, responsibilities for resolution will remain at the national level until the SRM is fully in place. This will give a strong interest for national supervisors to remain closely involved in supervisory activities.

14. Basel III implementation has begun in Europe as CRD IV/CRR became effective. The new capital requirements are to be implemented from 2014, although phase-in will be applied in most jurisdictions. Given the current high CAR, most Luxembourg banks will not have problems meeting the new capital requirement. However, a number of banks, particularly those depending on their parent banks for funding, may have difficulty meeting the Liquidity Coverage Ratio (LCR); these banks are expected to apply for an exemption, allowed in the framework, whereby the LCR will be applied only at the consolidated level, and not at the level of individual subsidiaries in EU countries. Meeting the leverage ratio recently agreed by the Basel Committee on Banking Supervision (BCBS) may also be challenging for banks focused on activities that carry low risk weights, such as interbank

loans or investment in sovereign bonds. But banks have time to adjust, and the BCBS has not decided whether the leverage ratio will be a binding measure.[6]

15. The recent European agreement on deposit guarantee scheme and bank resolution and recovery will require changes in the country's current arrangements. Luxembourg's current deposit guarantee scheme is based on ex-post funding only, although banks provision explicitly to cover insured deposits. This scheme worked smoothly during the financial crisis when a few small banks had to be resolved, and various improvements have been made recently, including shortening the time necessary to gather depositor information. However, the directives will require fundamental changes to the current scheme.

16. There are also ongoing EU regulatory initiatives for the investment fund industry. These include the AIFMD, the UCITS V proposal, and the MMF reform proposal. The AIFMD has been transposed and the number of institutions authorized and registered is steadily increasing.[7] The CSSF has established a new department responsible for AIFMs. The impact of UCITS V and the MMF reform is expected to be limited: for the former, the intention is to align the regulatory framework to that of AIFMD and the industry has already started to prepare for it. For the latter, while the proposal could impact CNAV MMFs, it is still unclear how the final rules would be, and CNAV MMFs in Luxembourg account for a relatively small share, of about five percent of total UCIs.[8]

Authorities' actions

17. The authorities are taking steps to ensure a smooth adjustment to these changes while maintaining higher regulatory thresholds. They viewed these European reforms as supportive to the Luxembourg financial sector in the long run, as they would provide an improved and more integrated European regulatory framework. However, they also stressed the imperative for the country to adapt quickly and effectively. The authorities are well aware of the need to preserve existing buffers even under the new framework. Measures being taken include:

- *SSM*: The authorities are actively participating in the ongoing discussion in the SSM. The CSSF will be part of the Joint Supervisory Teams for many of the Luxembourg banks that will be supervised directly by the SSM, and is expected to be substantially involved in the supervision of those banks. Preparation is proceeding according to schedule, although it is taxing the resources of the supervisor. The authorities did not expect the comprehensive assessment to have a substantial impact on their banks given the high level of capitalization.

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[6] Even if the leverage ratio were to become binding, it would only become so in 2018.

[7] As of February 2014, 16 entities are authorized as AIFMs, and 10 more authorizations have been finalized. In addition, 263 other entities do not need a formal authorization as they fall below the AIFM threshold.

[8] The asset under management for CNAV MMFS is EUR 161 bn at end-June 2012, according to an ESRB survey.

- *Capital requirements*: After the 2011 EBA stress test, the authorities decided to apply a 9 percent core Tier 1 ratio as a minimum for all banks—above the 8 percent European minimum—as a way to ensure a level-playing field and signal the resilience of the sector.[9] For domestic systemic banks, a 10 percent solvency ratio has been required. Under the new Basel III framework, the authorities decided to frontload the implementation of the new capital requirements; banks have to meet a 7 percent CET 1 requirement from 2014, without any phase-in period.[10] Again, given the high level of capitalization, the authorities expected that most banks would be able to meet this requirement without much difficulty.

- *Deposit guarantee*: Last year, the authorities introduced a new requirement for banks to provision at least 1 percent of their covered deposits, in part to prepare for the introduction of ex-ante contributions[11]. With the DGSD and BRRD now close to adoption, they have started the work to transpose them expeditiously—a move they see as important for the confidence of the financial center. A final decision has not yet been made, but the authorities saw merit in making the new deposit insurance scheme partially ex-ante funded while preserving the overall amount of protection for the deposit guarantee scheme at the level currently provisioned, which amounts to 2.2 percent of insured deposits.

D. Remaining Risks

Residential real estate exposures in domestically-oriented banks

18. Rising residential real estate exposures are emerging as a risk for domestically-oriented banks. At 250 percent of GDP, these banks' size is in line with euro area peers' domestic banking sector. Soundness indicators suggest they are generally in a good position: capital ratios are high, NPLs low, and deposits comfortably cover total (non-interbank) loans. Yet, the share of real estate exposure in their total balance sheet has increased substantially, from 12 percent in 2008 to 24 percent in 2012. Loan to value ratios (LTV) of new loans have also been rising.[12] Given the high level of concentration in the domestically-oriented banking sector, any distress would have a significant impact on the domestic economy and could pose a risk to public finances (Figure 2). Furthermore, a few of those domestically-oriented banks are subsidiaries of large European banks, exposing them to the risk of contagion from troubles in their parents, as happened with Dexia. In case of severe stress, the large size of the parent groups compared to their home countries could further complicate things, as sole bail-out by the home country may be difficult.

[9] In addition, risk-based capital add-ons are applied, in particular with respect to intragroup exposures.

[10] This includes the 4.5 percent minimum common equity capital ratio and the 2.5 percent conservation buffer, which should be fulfilled by CET1 capital.

[11] Banks need to satisfy this requirement by end-2016.

[12] See also Selected Issues Paper: "The Residential Real Estate Market".

19. Aware of these risks, the authorities have taken several positive steps, but continued vigilance is warranted. Since July 2013, banks using the standardized approach to compute capital requirements need to apply a 75 percent risk weight for the part of residential mortgage loans exceeding 80 percent LTV—rather than the 35 percent risk weight prevailing until then. Banks are also required to conduct stress tests on their retail real estate portfolios periodically to make sure they have adequate capital buffers. Early indications suggest that these measures are gaining traction as LTVs for new loans have been declining most recently. Still, close monitoring will be important and additional macro-prudential measures should be taken if exposures continue to rise and loan standards deteriorate further.

20. Additional capital buffers for domestically-oriented banks should also be considered. The systemic importance of these banks for the domestic economy would warrant that these banks maintain higher capital levels, particularly given that real estate activities are concentrated among a few banks. The authorities should explore ways to do so, for example by applying a Domestic Systemically Important Bank (D-SIB) buffer under the Basel III framework.

Deposit outflow and large intragroup exposures in internationally-oriented banks

21. Internationally-oriented banks are exposed to a number of risks, depending on their business lines, although there are some mitigating factors. The private banking business could experience a drain on deposits as the automatic exchange of information is introduced and as non-covered deposits could be subject to bail-in. However, there has been no evidence so far of deposit outflows at the aggregate level (see also paragraph 7). Banks as a whole remain net providers of liquidity, and the soundness of the banking system has not been affected. Intragroup credit is still the largest exposure for these banks, amounting to more than 40 percent of total loans (Figure 2). A failure of a parent group would therefore have substantial reputational repercussions for Luxembourg, potentially exacerbated by the fact that new bail-in requirements will apply to such exposures. The new power given to the supervisor by the CRD IV framework to limit the amount of intragroup exposures will provide a valuable tool in containing these risks.

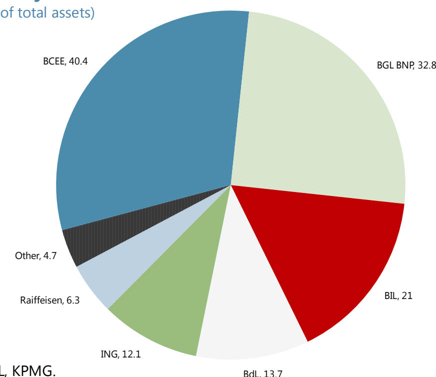
Figure 2. Domestically-Oriented Banks and Internationally-Oriented Banks

Cross-Border Exposures of Luxembourg banks
(percent of total, end of year)

Assets			Liabilities		
	2012	2013		2012	2013
Germany	22.1	21.4	Luxembourg	35	38
Luexmbourg	20.2	19.3	Germany	20.4	19.2
France	11.5	10.5	Switzerland	6.6	6.5
UK	7.1	8.5	France	7.1	6.1
Italy	4.7	5.2	UK	4.2	3.2
Switzerland	4.5	4.4	Italy	1.2	1.5
US	4.3	3.6	Others	25.5	25.5
Netherlands	3.1	3.1			
Belgium	2.2	2.4			
Others	20.4	21.6			

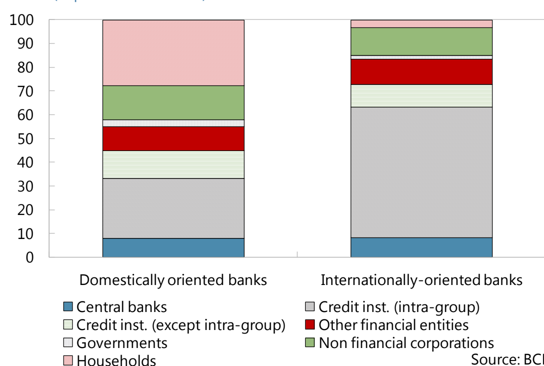
Source: CSSF

Domestically-Oriented Banks, 2012
(In percent of total assets)



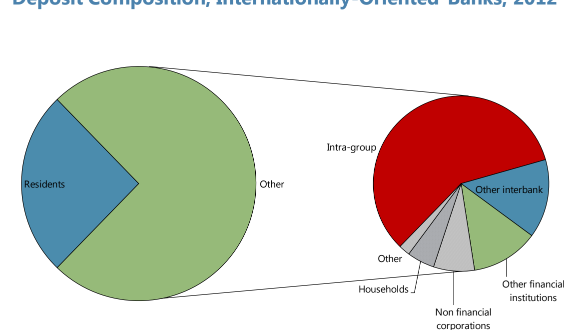
Source: BCL, KPMG.

Composition of Loans, 2012
(In percent of the total)



Source: BCL.

Deposit Composition, Internationally-Oriented Banks, 2012



Source: BCL

Growing links among domestic financial sector players and ongoing diversification

22. A severe shock to the investment fund industry could have potential systemic implications through the liquidity channel, even though various measures to contain the risk are in place. In principle, investment fund losses are borne by investors and do not have systemic implications. If redemptions are requested by investors, the first choice for a fund to generate cash is to sell some of its assets. However, if sudden and substantial redemptions were to take place—possibly triggered by extreme market events or if substantial reputational risks materialize—demand could exceed the amount of assets that can be liquidated easily, leading investment funds to request liquidity support from sponsoring banks (Box 2). In this way, shocks in the investment fund would spill over to banks, and banks would be exposed to liquidity and credit risks of the investment fund. This was the case for Luxembourg CNAV MMFs during the crisis, some of which faced severe redemptions—leading sponsoring banks to step in. Some sponsoring banks accessed BCL liquidity at the time. If funds are short of liquidity, the risk is that they would proceed to fire-sale their illiquid assets, which would

push down further those assets' price and increase contagion.[1] However, a number of measures already exist to minimize such risk. Unlike bank deposits, investment funds usually do not need to meet redemption requests immediately, and the supervisors also have the power to suspend redemptions. UCITS funds, which form the bulk of funds in Luxembourg, are subject to a set of regulations to ensure that they invest in liquid assets, and UCITS directives limit these funds' borrowing from banks to no more than 10 percent of their net assets. Finally, funds are required to conduct stress tests, including on redemption risks.

23. More generally, strong and growing links between various domestic financial players could be channels for spillovers. The fund industry, specialized financial service providers, and financial holdings are all connected to the banking sector via financial infrastructures and substantial deposits. The latter amount to, respectively, 13 percent, 5 percent and 4 percent of total deposits. Acute liquidity stress in one of those sub-sectors could have the potential to spillover to the banking sector through deposit withdrawals. In addition to close monitoring, new techniques to assess such risk are needed. For example, system-wide stress testing, applying the same scenario both to banks and investment funds, would be able to show the system-wide impact of a liquidity shock as well as the system's weakest links.

24. Risks may also emerge from ongoing diversification of financial activities. For example, as banks increase foreign currency businesses, the currency mismatch risk grows, which was less of an issue when activities were mostly denominated in euro. Similarly, as private banking activities target more high-net worth individuals from different parts of the world, unless KYC (know your customer) policies also change accordingly, banks could possibly be exposed to higher risks. Supervisors should be proactive in capturing and assessing these risks. Publishing assessments periodically would be beneficial in communicating supervisors' concerns (or lack thereof) to the industry and customers. As these assessments should be made in a cross-sectoral fashion, the proposed Systemic Risk Committee would be a natural candidate to perform these tasks.

25. The potential impact of reputational risks is growing as the financial sector's business model changes. If reputational risks materialize, the impact on the investment fund industry, for example, could be substantial, as it draws part of its attractiveness from the established trademark. Once this image is tarnished, investors may easily shift funds to other financial centers in the euro area. It is therefore critical that Luxembourg's regulatory and supervisory frameworks and procedures as well as industry practices are seen as adhering to the highest international standards. In that context, enhanced and proactive communication by the government and the industry would be beneficial, emphasizing ongoing efforts focused on investor and depositor protection.

[1] See, for example, "Asset management and financial stability", U.S. Office of Financial Research, 2013, for the discussion on the financial stability implication of asset management business.

Box 2. Estimating Possible Redemptions from Investment Funds—Applying a Historical Scenario

While it is not easy to estimate possible redemptions in case of shocks, past experiences provide some guidance. In this box, we use redemption behaviors derived from past experiences to illustrate how they would applied to the current level of asset under management by investment funds.

The table shows past episodes where the highest redemption was recorded on a monthly basis (in September 2008), including the percent changes and how much impact they would have if the same level of redemption (relative to the total asset) happened now. For reference, the average monthly changes in the preceding 12 months are also shown. Gross redemptions correspond to repurchases in the month, while net redemptions deduct purchases from repurchases during the month. Both are shown for the whole investment fund sector.

	Gross redemptions	Net redemptions
Month, Year	September 2008	
Amount (billion EUR)	571.5	69.1
percent change	-31.8	-3.8
Amount if applied to the recent data (billion EUR)	823.9	99.6
Average monthly percent change in the preceding 12 months	-13.8	0.2

(source: BCL, IMF staff estimates)

Although using past episodes to estimate the size of redemptions has inherent limitations, such as not reflecting changes in investment strategies among funds or in investor behaviors to date, a few observations can be made:

- The amount of redemption under a very severe stress could be substantial as the investment fund industry has grown further since the crisis.
- When a significant shock hits, the level of redemption, both gross and net, can rise substantially from levels observed immediately before the shock.
- The net redemption is much smaller than the gross redemption, as many investors likely shifted money between funds with different investment strategies, rather than retrieving their investment.[1]

Investment funds have a number of options to address an increase in redemption requests. The first choice is to sell assets, in particularly for UCITS funds, which are subject to regulations aiming at ensuring funds have a liquid portfolio of assets. Redemptions can be suspended to avoid disruptions. However, in some cases, funds may still need to withdraw their deposits in banks (175 billion EUR total at end-2012, 65 billion EUR in banks in Luxembourg and 110 billion EUR in banks outside of the country) in order to avoid fire sales of assets. If more liquidity is needed, funds may borrow from banks, possibly resulting in increased liquidity needs for banks.

While it is difficult to estimate the level of liquidity needs for each investment fund based on published industry-wide data, supervisors could use more granular data from individual investment funds to compute more accurate estimates, also taking into account alternative strategies pursued by funds to respond to redemption requests. The estimates could also be used by supervisors to assess the severity of assumptions used by investment funds and banks for liquidity risk management and associated stress testing scenarios.

In this context, the CSSF plans to undertake, in the near future, further reflections on possible approaches to estimate liquidity needs arising for investments funds and banks in the case of stressed market conditions.

[1] However, this does not necessarily eliminate all the shock to the industry if investors may decide to shift to a fund managed by another management company or to use another depository.

Macroeconomic stability and fiscal sustainability

26. Finally, macroeconomic policy could also be an important source of risk for the financial sector. The country's business model as a financial center hinges upon the economic and political stability of the country. A potential deterioration in the country's fiscal situation and, in an extreme case, doubts about the stability of the AAA sovereign credit rating, could lead investors and the industry to question the viability of the current regulatory and tax environment, ultimately undermining the Luxembourg's attractiveness as a financial center.[2]

E. Conclusions and Recommendations

27. The financial sector in Luxembourg is at a critical juncture, faced with economic, market and regulatory changes, as exemplified by the continued decline in banking assets and the growth of investment funds. The authorities need to continuously address those challenges and continue to strengthen the resilience of the financial center.

28. The authorities should transpose the necessary European regulatory reforms initiatives expeditiously, while preserving existing buffers in the banking system:

- The decision to frontload CRD IV minimum capital requirements is welcome, but the authorities should remain vigilant and carefully monitor systemic banks to determine, in collaboration with European authorities, whether specific additional measures, including requiring additional buffers in a way consistent with the CRD IV framework, might be warranted over time. Applying the D-SIB buffer to domestically-oriented banks should also be considered.

- An ex-ante deposit guarantee scheme should be established. The overall level of protection should not be lowered from the amount currently provisioned. The authorities should also expedite their work on the national resolution fund while taking into account the ongoing discussion on the design of the SRM, particularly with respect to the single resolution fund.

29. Financial sector oversight could be strengthened further, including through continuing cooperation with the SSM. The operational independence of the CSSF as well as its sanctioning power could be further strengthened as part of the SSM-related revision of the institutional framework. The national supervisors need to continue to play an active role in JSTs of major banks in Luxembourg, as envisaged in the framework. This will also require continued close cooperation between the CSSF and BCL. Close monitoring of domestic residential real estate exposures should be continued, and further macro-prudential measures should be considered if the need arises.

30. Finally, the authorities should closely monitor the entire financial sector, carefully scrutinize new risks, and communicate more proactively on actions to mitigate them. Spillover

[2] See also Selected Issues Paper: "The Fiscal Position: Sound for Now, but Significant Challenges Ahead".

risks arising from different sectors of the financial industry, as well as emerging risks from ongoing diversification efforts need to be carefully watched and regularly assessed. These assessments should be periodically published to show that the authorities are closely following new developments and emerging trends in the industry. The soon-to-be-established national Systemic Risk Committee will be ideally placed to carry out these mandates. Likewise, to maintain the confidence in the financial sector and ward off reputational risks, more communication on the authorities' commitment to investor and depositor protection should be carried out, with Luxembourg for Finance, the private-public partnership to market the financial center, to spearhead the effort.

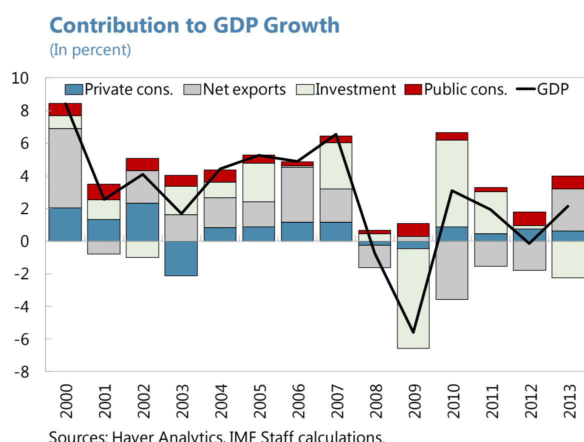
EXTERNAL DEVELOPMENTS, COMPETITIVENESS, AND LABOR MARKET POLICIES[1]

Luxembourg maintains a comfortable external position, supported by strong export services underpinning cross-border financial activities. Yet, price and cost developments have been far less benign. If sustained in the future, those developments could hamper Luxembourg's ability to diversify its economy, at a time when the financial landscape is undergoing significant changes. In order to turn those trends around, some features of the labor market, in particular the automatic wage indexation mechanism, will need adjustment.

A. Background and Overview

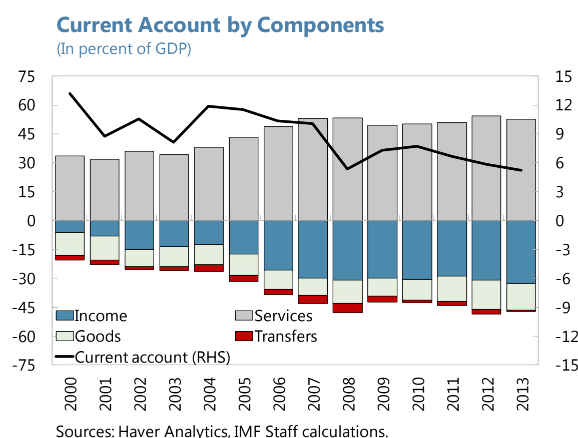
External developments

1. **Luxembourg has been relatively resilient to the euro area crisis as a financial center**. As the world's second largest investment fund center and a leading place for private banking and reinsurance business, Luxembourg has maintained its unique competitive advantage in the euro area and continued to explore new businesses. Since 2011, the financial sector (service exports) has provided a solid buffer to growth, when domestic demand and other exports were more depressed. Moreover, the Luxembourg authorities have developed a diversification strategy around several areas, including ICT. As a result, some internet start-ups and data centers have settled in Luxembourg, which has also supported employment and exports.[2] Over the past decade, sound economic policies, including a prudent fiscal stance, have buttressed the economy and allowed Luxembourg to maintain a generous social safety net.



Contribution to GDP Growth
(In percent)

Sources: Haver Analytics, IMF Staff calculations.



Current Account by Components
(In percent of GDP)

Sources: Haver Analytics, IMF Staff calculations.

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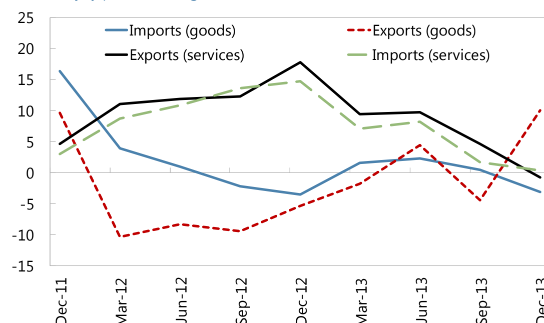
[1] Prepared by Shengzu Wang (EUR).

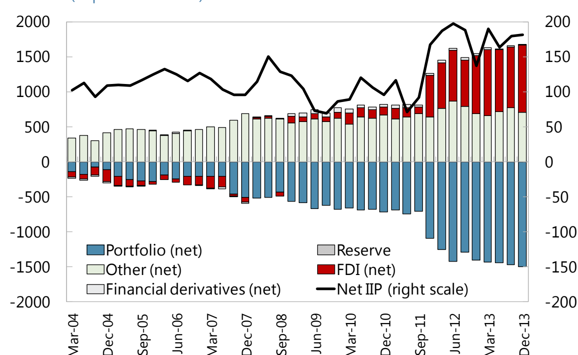
[2] Unlike other parts of the euro area, employment growth has remained positive in Luxembourg, reaching more than 2 percent in both 2011 and 2012.

2. Subdued demand from the euro area led to a moderate correction of the current account surplus in the past two years. The current account balance fell to 5.8 percent of GDP in 2012 from its 2010 peak of 7.7 percent, on the back of weak good exports to the rest of euro area. In 2013, the current account is estimated to have moderated further to 5.2 percent of GDP, as a result of less buoyant service exports. However, there are mitigating factors: service exports still contribute half of the total surplus, and good exports have picked up recently. Income outflows, mainly salary remittances of cross-border workers and investment income, remained strong and are close to the pre-crisis peak.



Sources: Haver Analytics, IMF Staff calculations.

3. Mirroring sustained current account surpluses, the International Investment Position (IIPs) has continued to build up. Luxembourg's net IIP position reached about 180 percent of GDP by end-2013, one of the highest in the euro area, and to a large extent reflecting activities associated with a financial center.[3] Despite net portfolio inflows from investment fund activities, the overall financial account balance vis-à-vis the rest of world has registered a deficit largely due to "other investment" activities. A new survey methodology was implemented from 2011Q4 onward, resulting in an overall upward revision to the net FDI position and statistical changes in the composition of the IIP, due to an upward revision to the FDI gross asset position and a downward revision to the gross liability position.



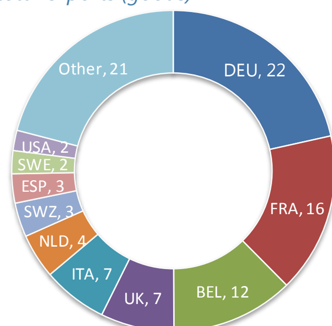
Sources: Haver Analytics, IMF Staff calculations.

[3] These include banking and investment fund activities, as well as activities of Special Purpose Entities (SPEs). SPEs include for example in-house banks for corporate groups, or proceeds from international issuance of securities in Luxembourg by multinational corporations.

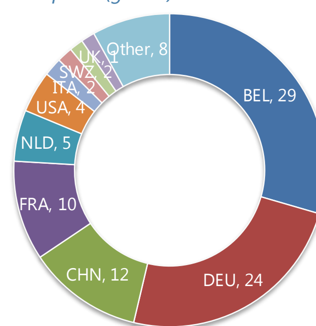
Market structure and shares

4. Luxembourg registers a significant trade deficit in goods. More than half of Luxembourg's good exports (steel and processed food) go to neighboring countries in advanced Europe, and over 70 percent of imports (lumpy investment and consumption goods) are from the euro area. As a small open economy with a modest production base, the traded good balance has been registering a deficit of around 10-13 percent of GDP for the past decade. Trade with other euro area members has been increasing, against the overall trend of declining intra-EA trade since the mid 2000s. The top three trading partners are Luxembourg's direct neighbors, Germany, Belgium, and France. But the share of China has been increasing; it is now the third largest trading partner on the import side.

Luxembourg's Top 10 Exports Destination: 2007-12
Share of total exports (goods)



Luxembourg's Top 10 Imports Destination: 2007-12
Share of total Imports (goods)



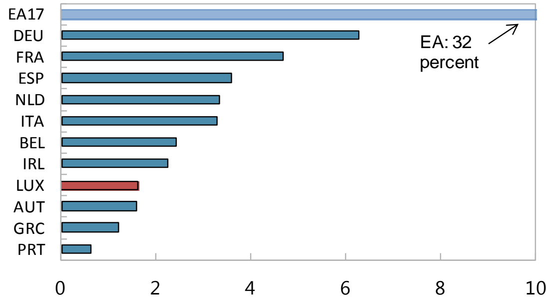
Sources: UNCTAD and IMF Staff calculations.

5. But Luxembourg also maintains a sizeable market share in service exports, driven by financial sector activities, which are at the root of its significant current account surplus. Over the past decade, financial services have been Luxembourg's largest exporting sector, and the country accounts for about 15 percent of global financial exports. Besides a large investment fund industry, the banking sector operates diversified business lines on a range of cross-border activities.[4] While the sector faces substantial challenges, the authorities are turning their diversification efforts toward non-euro area markets, especially emerging markets. A specific recent emphasis has been on Renminbi business, with several Chinese banks setting up in Luxembourg to benefit from access to the single market. Other sectors, such as IT and communication, have been fast growing, but market shares remain small.

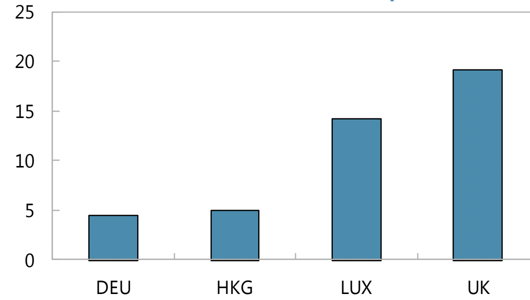
[4] See also the Selected Issues Paper: "The Financial Sector: Strengths and Challenges".

World market shares of service exports

Average 2000-2011, in percent



Market Share of Financial Service Exports: 2011



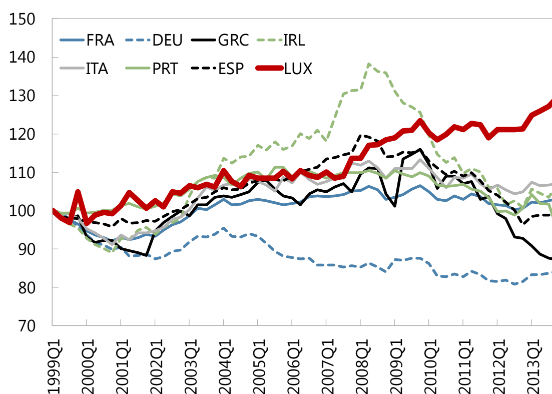
Sources: UNCTAD, IMF Staff calculations.

B. External Competitiveness

6. Despite a healthy current account position, price developments have been less benign. Luxembourg's real effective exchange rate (REER) appreciated markedly compared to other euro area peers since the beginning of the crisis. Measures based on Unit Labor Cost (ULC) and GDP deflators have increased by 8 and 6 percent since 2008, while they have declined by 0-5 percent in Germany, France, and Belgium during the same period. If this trend were to continue, it could eventually have a negative impact on external competitiveness from higher labor and living costs. In addition, the CPI-based REER has been showing signs of decoupling from the ULC- and GDP-based measures recently with less appreciation, suggesting that imported inflation from trading partners dropped significantly.[5]

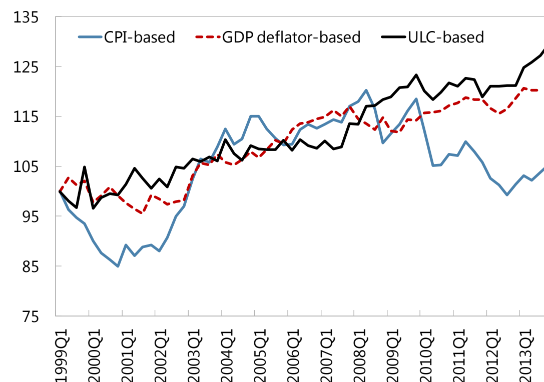
ULC-based REERs for Total Economy

(In index number, 1999Q1 = 100)



Luxembourg: Real Effective Exchange Rates

(In index number, 1999Q1 = 100)

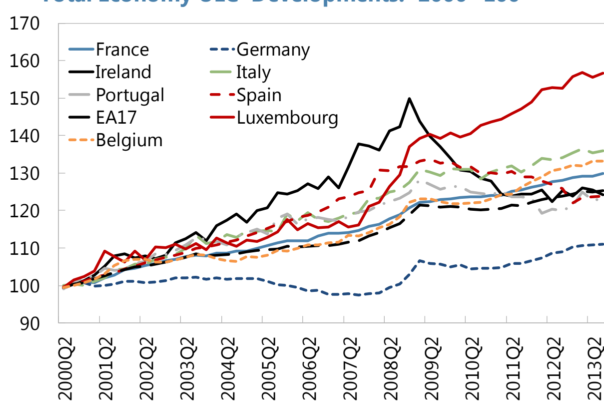


Sources: Haver Analytics, IMF Staff calculations.

[5] The CPI basket, for example, has a much higher content in imported prices than the GDP deflator.

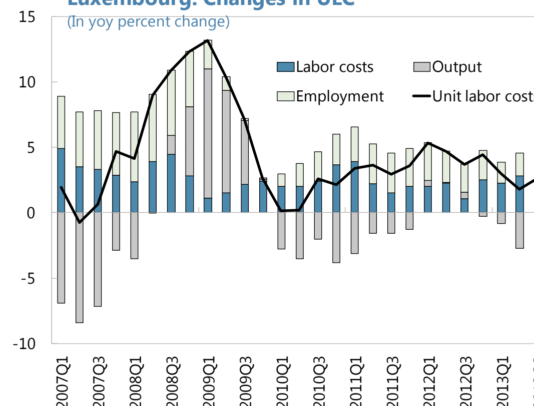
7. The progression in Luxembourg ULCs has outpaced that of most euro area members. Total economy ULC in Luxembourg rose by 11 percent since end-2009, and more than 30 percent since the beginning of the global crisis.[1] Labor hoarding, in particular in the financial and manufacturing sectors at the onset of the crisis, led to a sharp decline in labor productivity, but wage inflation has also been particularly dynamic (see next section). As a consequence, wage growth, partly resulting from the automatic wage indexation, has consistently outstripped productivity gains for a number of years. More recently, labor cost increases have been moderated by a less dynamic labor market as well as by the temporary adjustment of the automatic wage indexation mechanism, which puts a cap on the frequency of wage adjustments until end-2014 (see next section).[2]

Total Economy ULC Developments: 2000=100



Sources: Statec and IMF staff calculations.

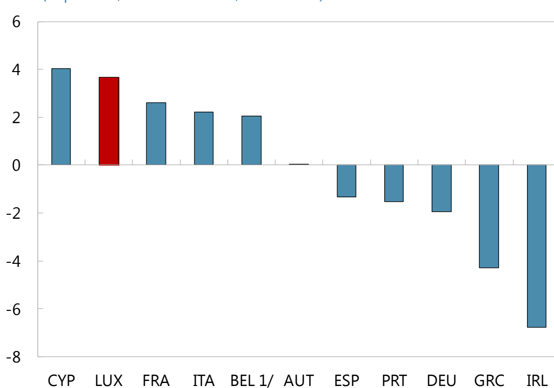
Luxembourg: Changes in ULC

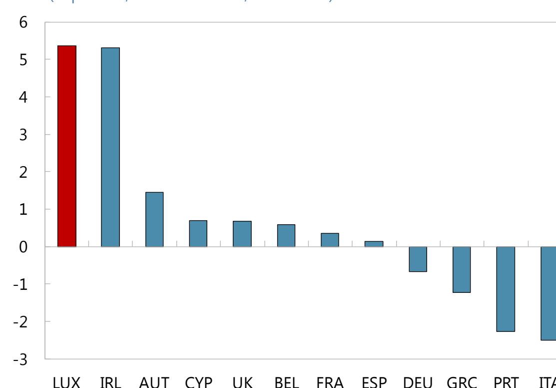


8. The pattern of ULC developments is also confirmed at the sectoral level. It is well known that for exports to grow, production cost in tradable sectors must be competitive relative to trading partners, other things equal. In the case of Luxembourg, manufacturing and financial services are the two largest tradable sectors, and they both experienced large ULC increases in past years. The annual ULC change in both sectors has been close to 4 percentage points higher than the EA average over 2010-2012. If these trends are not reversed, there is a risk of pricing out core activities with the largest share of employment, in particular in comparison with other financial centers in the EU like the UK.

[1] ULCs of Luxembourg's major trading partners like France, Germany, and Belgium increased by 5-10 percent since end-2009, and 10-20 percent since the global financial crisis.

[2] Under a temporary regulation in place until December 2014, automatic wage indexation is limited to once every 12 months—as opposed to up to twice a year in the main framework.





1/ Industry ULC for Belgium.

Sources: Eurostat, STATEC, and IMF.

C. The Role of Labor Market Policies

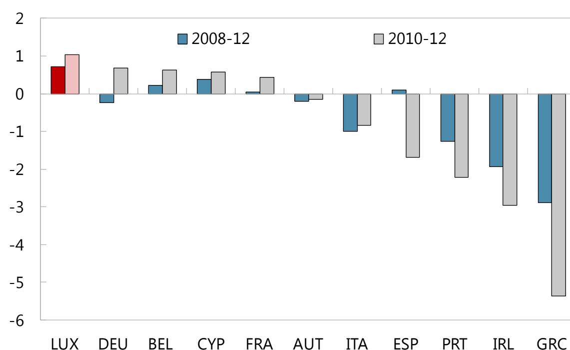
Implications for competitiveness

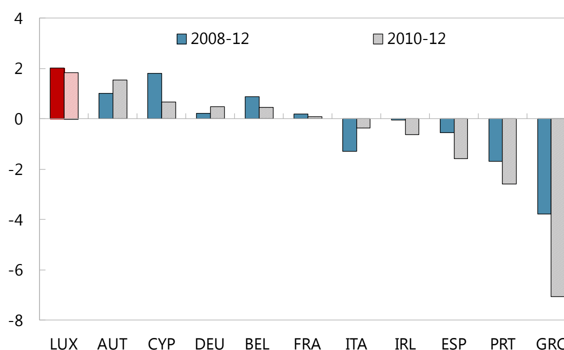
9. **The recent crisis has shown how labor market policies can have important implications on competitiveness and macroeconomic stability for euro area members**. Up to the crisis, many euro area periphery economies experienced a large deterioration in competitiveness due to rising labor costs. Wage growth surpassed the rise in labor productivity, and was accompanied by consumption booms, which led resources to be allocated to non-tradable sectors and eroded competitiveness. Cross-country experiences suggest that some labor market features, including in relation to wage determination and some social benefit schemes, can contribute to the deterioration of competitiveness.

10. **While Luxembourg enjoys a comfortable external position, wage indexation plays a large role in price developments and ultimately competitiveness**. This type of wage adjustment mechanism exists only in a few other countries in the euro area, namely Belgium, Cyprus, and Malta. The principle is to automatically adjust wages according to an index that tracks cost of living standards, calculated in Luxembourg using the CPI. Once the cumulative increase in the CPI index reaches 2.5 percent, all wages are adjusted. Up to 2011, the adjustment could happen up to twice a year. The traditional indexation mechanism was suspended in 2012, and a temporary regime is in place until December 2014. During this period, the initial indexation (which should have taken place in March 2012) was postponed to October 2012, and a minimum period of twelve months must elapse between two indexations. At the current juncture, the next indexation can not happen before October 2014.

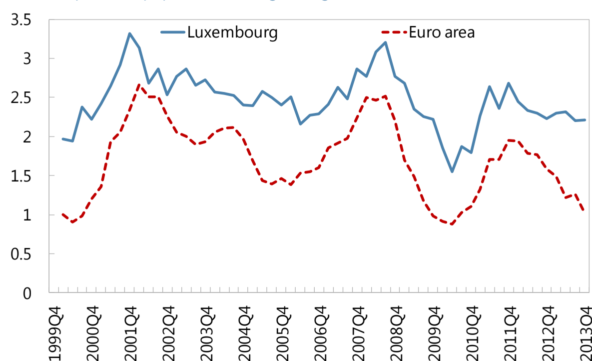
11. **The automatic indexation of wages may be partially responsible for the strong dynamism of labor costs and inflation in recent years**. Strong wage increases can trigger higher inflation than in euro area partners, as the rise in inflation automatically causes wages to increase, and as a second round response, the subsequent rise in wages increases inflation further—a process that can result in labor cost increases that diverge from productivity gains when labor productivity

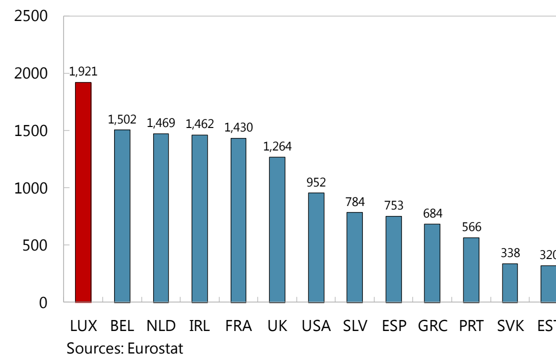
declines, as has been the case since the crisis in Luxembourg.[1] Moreover, the annual wage inflation has been relatively higher than elsewhere in the euro area, where adjustments are ongoing.





12. The inflation differential between Luxembourg and the euro area has been relatively persistent, at close to 1 percentage point on annual basis. This wedge has been positive since the inception of euro, even during recessions. The bi-annual review of the minimum wage has also contributed, with the minimum wage being one of the highest among advanced economies.





13. An econometric analysis suggests that at least half of the inflation differential with the euro area can be attributed to the automatic indexation mechanism. In a model linking Luxembourg inflation to the euro area inflation and idiosyncratic effects such as the automatic

[1] Lünnemann, Patrick and Wintr, Ladislav, (2010), "Downward wage rigidity and automatic wage indexation: Evidence from monthly micro wage data", No 48, BCL working papers, Central Bank of Luxembourg.

indexation and the review of minimum wages, the latter effects are found to contribute ½ to 1 percentage point to the annual inflation rate.[2] In this context, the temporary arrangements in place until end 2014 limiting the frequency of adjustment are welcome, but a permanent system less conducive to high inflation persistence should be designed to preserve competitiveness and promote a sound macroeconomic environment. This is especially important in a context where, unlike in neighboring countries, the increase in labor compensation has been accompanied by a decline in labor productivity since the crisis.

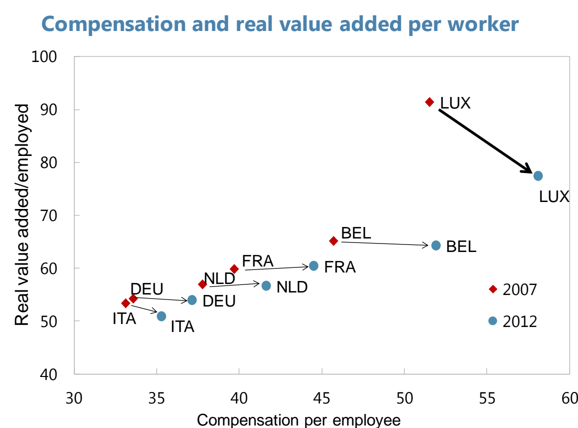
Luxembourg inflation	Diff 1/	Level	Level
Constant	0.55***	1.67***	1.25***
Euro area inflation	…	0.45***	0.58***
Output gap	…	0.02	0.03
Indexation (-1)	0.53***	…	0.59***
Minwage (-1)	0.37	…	0.40**
Observations	47	47	47
R^2	0.13	0.28	0.48
AR(1) error coef.	…	-0.36***	-0.52***
Durbin-Watson	2.61	1.97	2.09

1/ Differential with euro area inflation

2/"***" <1 percent, "**" < 5 percent, "*"< 10 percent.

Sources: IMF staff estimations.

Compensation and real value added per worker



Policy agenda

14. Alternative growth drivers should continue to be explored, along with continuing social and economic reforms. Besides a prudent fiscal stance and a low-tax business-friendly environment, Luxembourg's success has also reflected its ability to react quickly to changes in the global environment, often giving it a first-mover advantage, in particular in the financial sector. The new government has stated its commitment to sustain the long-term development of Luxembourg as a financial center in general and to continue to pursue diversification beyond the financial sector. However, rapidly increasing labor costs—themselves reflecting specific features of the labor market—could have significant repercussions on the ability of the economy to react, in particular as the financial sector adjusts to significant EU-driven changes. Delaying reforms in these areas could therefore not only erode competitiveness, but also hamper the growth potential in the long run.

15. The trend increase in labor costs should be halted to preserve competitiveness, and in particular to avoid placing barriers to diversification beyond the financial sector. Luxembourg's efforts to limit the negative side-effects of indexation—in particular by limiting the adjustment to 2½ percent a year—have helped contain rising unit labor costs. While wage indexation is seen as an

[2] See technical appendix for a detailed description of the empirical analysis and model specifications.

intrinsic part of the social contract, several options could be explored to help reduce its undesirable consequences on competitiveness:

- *Making the limit of one indexation round per year a permanent feature of the mechanism after the current arrangement expires, but setting the annual cap closer to the ECB price stability objective* (close but below 2 percent) than the current 2½ percent threshold. This would not preclude additional wage increases negotiated between employees and employers, but would allow for wages to reflect more closely labor productivity developments.
- *Supplementing the current mechanism with escape clauses* when inflation among the main trade partners falls significantly below the annual cap to automatic indexation.
- *Modifying the reference index to exclude volatile prices* (notably food and fuel prices).

16. Measures to strengthen labor skills and the business environment will further support Luxembourg's diversification efforts. In particular, policies should aim at:

- *Continuing to reduce the gap between workers' skills and private sector needs*. Human capital accumulation can be further supported by life-long learning and continued attention to improving vocational and formal education, where Luxembourg ranks low compared to OECD peers.[3] Efforts should continue to be made to match workers' skills with private sector needs, including through support for training in the areas of targeted growth, in close collaboration with the private sector. A review of the current education system should complement these efforts, with a view to reducing dropout rates and increasing efficiency.[4]
- *Reduce barriers to entry and competition*. Luxembourg also has relatively more stringent product market regulations (PMR) compared to other EU members, notably on professional services and network industries (e.g., retail distribution).[5] Further relaxation of these regulations would support resources to move freely across sectors, especially those sectors that will be Luxembourg's future sources of growth (text table). The emergence of new firms could be facilitated by improving administrative processes to start a business.

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[3] Luxembourg's education system faces two unique challenges. It has to provide students with the skills that are in demand in a labor market with strongest employment growth in the financial sector and related services; and equip students with the language skills necessary to communicate effectively and work within a country with three official languages (OECD Working Paper 778).

[4] "Global Competitiveness Report 2013-14", World Economic Forum, Geneva.

[5] "2014 OECD Going for Growth Interim Report", OECD.

Summary of Recommendations for Luxembourg: 2014 OECD Going for Growth Interim Report

Areas of improvement	Recommendations
Improve the design and integration of unemployment benefits and active labor market policies	Address early exit of older workers from the labor market
Reduce impediments to job creation	Review some provisions of employment protection legislation
Reduce barriers to entry and competition	Reduce entry barriers to professional services and network industries

Sources: OECD.

17. Overall, deepening labor and product market reforms are imperative to enhance sustainable growth and boost competition, which requires addressing long-term unemployment, fostering productivity growth, and more efficient resource allocation. The economic downturn has brought to the core the burden of these policies on the fiscal purse, as well as their unintended disincentives to work and impediments to competition, which remain to be addressed.

Appendix: Identifying the Potential Impact of Wage Indexation and Minimum Wage Review on Luxembourg's Inflation

A. Background and model specifications

1. Inflation in Luxembourg has been higher than many of its euro area peers. In general, as a small open economy subject to relatively large external shocks, it is not unusual for Luxembourg to exhibit more economic volatility. However, the inflation differential between Luxembourg and the euro area average has been quite persistent over time, at close to 1 percentage point on annual basis since the inception of euro. This raises the question as to whether there are any structural or country-specific factors other than cyclical conditions that may contribute to this fact.

2. In this context, the analysis explores the potential impact of the automatic wage indexation mechanism and minimum wage review, two distinct features of the Luxembourg labor market, on its inflation dynamics. In general terms, persistence of inflation (or inflation differentia) may be defined as the tendency of inflation to revert slowly to its equilibrium or long run level after a shock. In Luxembourg, all wages are adjusted according to an index that tracks cost of living standards, which is calculated using the CPI. Once the cumulative increase in the CPI index reaches 2.5 percent, all wages are adjusted and it can happen up to twice a year.[1] In addition, minimum wages are reviewed at the beginning of every two years. Both can be considered as exogenous shocks to domestic inflation.

3. To help explain the inflation differential with the euro area and inflation dynamics, two sets of time series model are used to estimate inflation differential and inflation in levels. To start with, we consider a simple model as follows:

$$Inflation.differential_t = c_1 + c_2 Indexation_{t-1} + c_3 Minwage_{t-1} + \mu_t$$

where "inflation differential" represents the difference between Luxembourg inflation and the euro area inflation (qoq annualized), and "Indexation" and "Minwage" are time dummies indicating the quarter when wage is adjusted. In addition, the constant captures the part of the wedge between Luxembourg and euro area inflation that is not related to those two variables.

4. An alternative model is also estimated using a modified Philips Curve. As euro area inflation could be an importance source of imported inflation to Luxembourg, which is suggested by

[1] Under a temporary regulation in place until December 2014, automatic wage indexation is limited to once every 12 months—as opposed to up to twice a year in the main framework.

the Granger causality test (see appendix table), it is included in the estimation equation together with other explanatory variables as below.

$$Inflation_t = \alpha_1 + \alpha_2 EAInflation_t + a_3 outputgap_t + \alpha_4 Indexation_{t-1} + \alpha_5 Minwage_{t-1} + \mu_t$$

$$\mu_t = \rho\mu_{t-1} + \varepsilon_t$$

5. Inflation in Luxembourg and euro area are measured by HICP excluding energy and unprocessed food. Both equations are estimated using quarterly data from 2001 to 2013.

Granger Causality Test

Null Hypothesis:	F-Statistic	Prob.
EA inflation does not Granger Cause LUX inflation	5.86	0.01
LUX inflation does not Granger Cause EA inflation	1.44	0.25

B. Results summary

6. The estimation results are presented in the table below. First, the inflation differential is well captured by both the constant and indexation, but to a less extent by the minimum wage review dummy (but close to 10 percent significance level). Results suggest that indexation alone could increase explain ½ percentage point of the inflation differential. Second, spikes in inflation are found to happen the quarter directly following an episode of automatic wage indexation, suggesting indexation have a significant impact on the inflation gap with the euro area.

Luxembourg inflation	Diff 1/	Level	Level
Constant	0.55***	1.67***	1.25***
Euro area inflation	…	0.45***	0.58***
Output gap	…	0.02	0.03
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Observations	47	47	47
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Durbin-Watson	2.61	1.97	2.09

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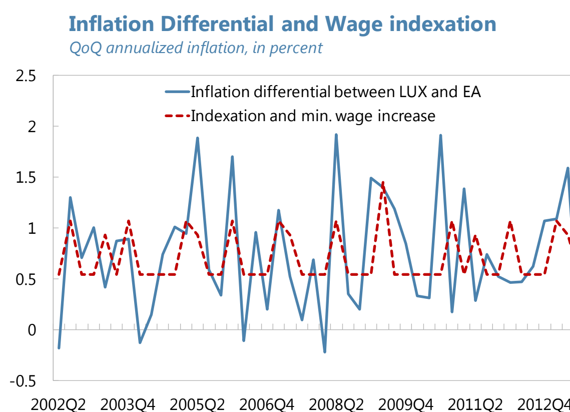
Sources: IMF staff estimations.



7. Finally, inflation dynamics in Luxembourg are better captured by the alternative models with increased fitness and reduced serial correlation (see table). As suggested by the Granger Causality test, inflation from the euro area truly contributed to the domestic inflation with a 50 percent passthrough, e.g., one percentage increase in euro area inflation would bring up inflation in Luxembourg by around ½ percentage point. In addition, while the sign of output gap is correct, the impact is small and insignificant. More importantly, there is evidence showing both indexation

and minimum wage review have a substantial impact on inflation. If indexation and minimum wage review happen within the same year, they can contribute up to one percentage point of inflation differential with the euro area, other things equal.

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THE RESIDENTIAL REAL ESTATE MARKET[1]

Relatively high prices for residential real estate in Luxembourg reflect both upward pressures from strong demand and bottlenecks on the supply side. While households' financial position appears relatively sound, rising real estate exposures in domestically-oriented banks warrant close monitoring. Given the structural nature of the demand for housing, policy efforts should focus on loosening the constraints on the supply side. This should include in particular more flexible rules on land use and higher holding costs on unused properties. A review of credits and subsidies and tax policies encouraging home ownership should also be conducted.

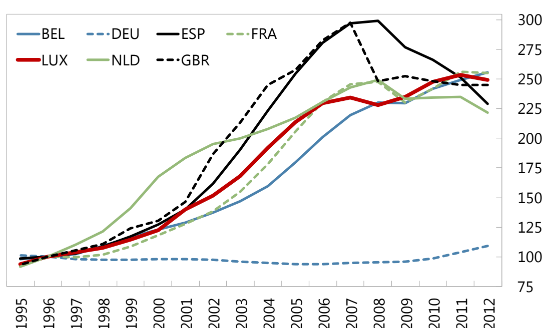
A. Should the Housing Market Be a Source of Concern?

1. **Nominal housing prices are picking up in Luxembourg**. From a long-term perspective, prices have not reached the peaks seen in Spain or the United Kingdom (Figure 1), but their progression is now nearing that of neighboring countries in which some concerns about house prices have been raised, such as in Belgium and France. In addition, in the last year, sales prices in Luxembourg have picked up strongly in real terms for both apartments and houses, rising by 6½ percent and 9 percent, respectively, in 2013Q4 from a year ago.

Figure 1. Nominal Housing Price Trends

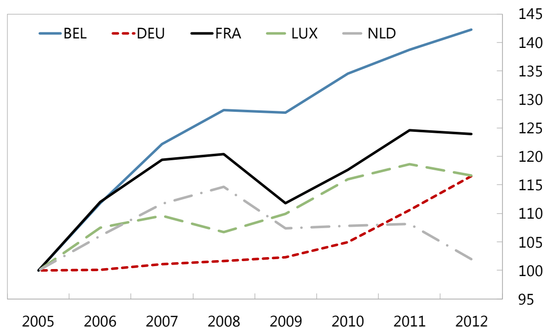
Over a long period, real estate price increases have been in line with most neighboring countries. From a more recent perspective (since 2005), the trends have been more moderate.

Residential Real Estate Prices, 1995-2012
(In index number, 1996 = 100, nominal)



Sources: ECB.

Residential Real Estate Prices, 2005-2012
(In index number, 2005 = 100, nominal)



Sources: ECB, Observatoire de l'Habitat.

[1] Prepared by Piyabha Kongsamut (EUR).

2. However, this comes after a period of moderate real house price increases. Prior to the crisis, real house prices, unlike in many other EU countries, rose only modestly (Figure 2). Since then, prices declined in real terms through 2012, and it is only in 2013 that they picked up again, as inflation has been on a downward trend, and nominal prices rose strongly.

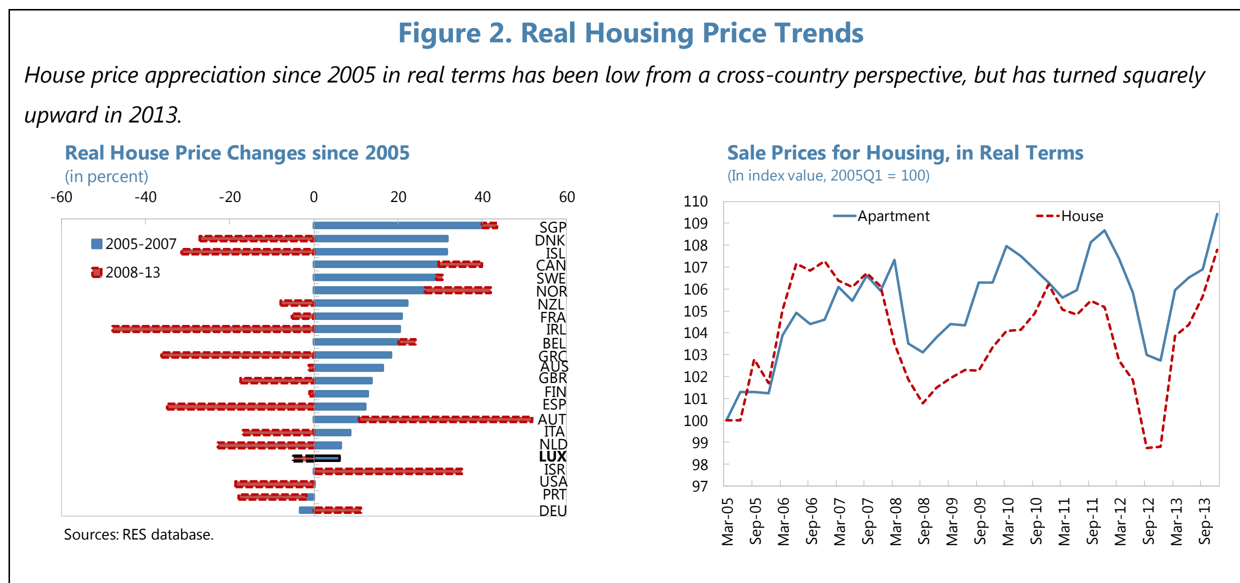


Figure 2. Real Housing Price Trends

House price appreciation since 2005 in real terms has been low from a cross-country perspective, but has turned squarely upward in 2013.

3. Meanwhile, domestically-oriented banks' balance sheets have become more concentrated in Luxembourg real estate. While real estate exposures are only a small proportion of total banking sector assets, at around 3 percent, they are concentrated in the handful of banks that serve the domestic market.[2] In the wake of the economic downturn since the financial crisis, banks have reduced their lending to non-financial corporations, while continuing to expand mortgage lending; residential real estate exposures reached 24 percent of total assets of domestic banks in 2012, from 12 percent in 2008. With the assets of domestically-oriented banks accounting for around 2½ times GDP—broadly on par with the size of the banking sector in other European economies—, these banks are concentrated and systemically important for the economy. If one of them were to come under distress, potential recapitalization costs could be high relative to the economy's size.

4. This note examines the factors contributing to the state of the housing market, including influences on demand and supply such as government policies, household finances, and bank lending policies. It finds that structural factors play an important role, and that certain government policies could be adjusted to address some of the structural constraints, both to induce greater supply and not to inadvertently stoke demand for ownership—with a view to preventing existing imbalances between demand and supply in the real estate market from widening.

[2] See also the Selected Issues Paper: "The Financial Sector: Strengths and Challenges."

B. Factors Driving the Imbalance Between Housing Demand and Supply

5. Both structural and cyclical factors are contributing to the divergence between housing demand and supply. Long-standing challenges in terms of land availability for residential building, and strong demand from continued population growth, continue to affect the dynamics in the market. These have been compounded by some cyclical factors such as the downturn in construction, which is partly weather-related.

6. Some structural factors are supporting housing demand …

- *High demand from both residents* (who, with an average GDP per capita of €84,000 are among the wealthiest in the euro area) and cross-border commuters (over 40 percent of employment) who would prefer to live closer to their workplace.
- *A relatively high rate of population growth* over the past 5-6 years of close to 2 percent. Employment growth has also continued, though it has slowed somewhat below population growth since the downturn. Further, housing patterns and a tradition of home ownership also contribute to demand pressures: a greater share of the population lives alone, and Luxembourg's ownership rate, at 69 percent of households, is close to the EU average but higher than Germany and France.
- *Government policies through housing benefits for eligible households*. These benefits include partial tax deductibility of interest on mortgage loans, super-reduced 3 percent VAT rate for housing remodeling and repairs, tax credits for notary acts, tax benefits on savings for housing, and other "primes". Direct assistance amounted to around €64 million in 2012 (0.15 percent of GDP), including €51 million in interest and other subsidies. Tax credits and other revenues foregone are more substantial, at around €375 million (1 percent of GDP), including €202 million from the reduced VAT rate, €134 million in tax credits for notary acts, and €39 million of VAT reimbursement relating to housing.[1]

7. … while others constrain supply, despite long-standing attempts to loosen them:

- *Constraints on building*. Insufficient housing is being built, even though land appears available.[2] As of 2010, 28 percent of lands theoretically available for housing could have been ready for construction within 2 years, based on its administrative status. But there are numerous hurdles to building housing, including the administrative burden in terms of environmental and other impact studies (including requirements coming from the EU). In addition, a large degree of independence of the communes in managing land use has meant that changes to zoning are difficult to push through. As a consequence, lengthy delays are observed before construction can take place. Aware of these bottlenecks, the government adopted a "Pacte logement" in 2011

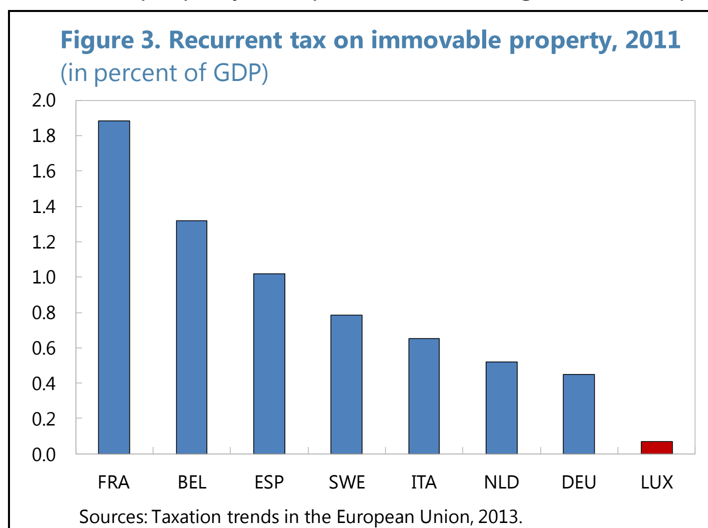
[1] Ministère du Logement (2012) and Conseil Economique et Social (2013).

[2] Population density was 205 inhabitants per square kilometer in 2012, compared to 103 in France, 367 in Belgium, and 229 in Germany.

in an attempt to boost supply and ensure that public services kept pace. The plan included central government co-funding for fast-growing communes to build supporting infrastructure such as transport and community services.[1] However, this plan has delivered mixed results so far. A 2012 report indicated that an average 22 percent of land available for housing use has not yet been constructed upon (including in desirable locations). The authorities are preparing a new plan to try to address this deep-rooted challenge.

- *Low recurring taxes on immovable property*, which blunt incentives to sell and increase the opportunity cost of holding to unused land or property in expectation of rising real estate prices (OECD (2008)). A property in Luxembourg is subject to municipal ground tax, levied annually at 0.7 to 1 percent of its assessed unit value. The tax due is derived from the preceding computation multiplied by a municipal coefficient between 120 and 900 percent. The property's unit value, basic tax rate and the municipal coefficients depend on the property's classification such as size, age, site, and economic use. This source of revenue is very low by cross-country comparison (Figure 3).[2] Increasing the revenue collected by that tax, via a tax rate increase or a re-assessment of land prices, would limit the incentives to hold on to unused land or property.[3] It is worth noting that the law governing land valuation and assessment dates from the mid 1940s, and the latest land valuation for these purposes is from the 1950s.

Figure 3. Recurrent tax on immovable property, 2011
(in percent of GDP)



Sources: Taxation trends in the European Union, 2013.

8. Cyclical factors also play a role, both spurring demand and constraining supply.

- *Low mortgage interest rates spur demand*. Rates are lower than those paid in neighboring countries, after a period during which they rose to comparable levels in the crisis years, and

[1] Projections show a baseline need of 6500 new housing units per year between 2010 and 2030 to deal with the projected increase in demand (Peltier, 2011). As a comparison, between 2000 and 2010, an average 2677 housing units were completed each year. In addition, some estimates suggest that, even with this plan fully implemented, around 50,000 new housing units would become available, versus a need for 80,000 units by 2030 (CES study, 2013).

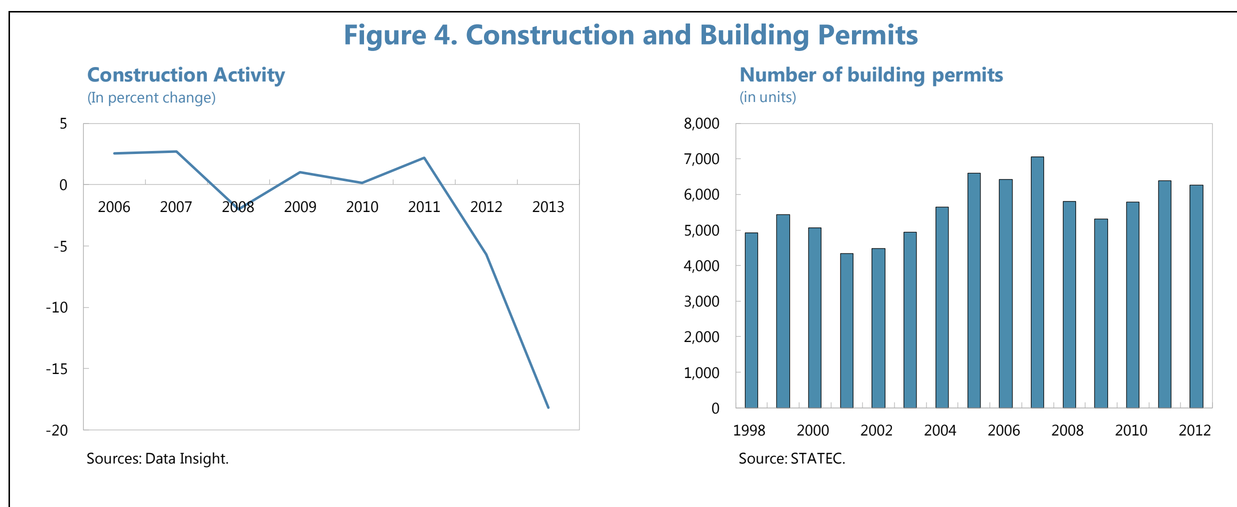
[2] See also the Selected Issues Paper: "The Fiscal Position—Sound for Now, but Significant Challenges Ahead".

[3] The "Pacte de logement" included the possibility to introduce a tax on vacant homes and residential buildings that have been unoccupied for 18 months, and for land approved for residential construction since 3 years but not built on. However, only a few communities are implementing this kind of tax.

accommodative monetary policy in the euro area is likely to continue to support mortgage applications.

- *Slowing construction activity*. Though the number of building permits approved picked up since its 2009 trough, this is not yet reflected in construction activity (Figure 4). Construction activity, resilient for some time even after the outbreak of the global economic crisis, slowed in 2012 and its rate of shrinkage accelerated in 2013. The exact reason for the divergence between building permits and construction activity is unclear, but could be related to the length of time required for administrative procedures.

Figure 4. Construction and Building Permits



9. Overall, it appears that, unless action is taken to relax bottlenecks on supply, strong demand will continue to put upward pressures on real estate prices going forward, as long as population and employment continue to grow, and new buildings are coming on stream only slowly. Conversely, it would seem that any downward price correction—for example triggered by a macroeconomic shock—would be cushioned by these structural factors. A study from the *Banque Centrale du Luxembourg* (BCL) found real estate prices to be overvalued by 5-10 percent in 2010.

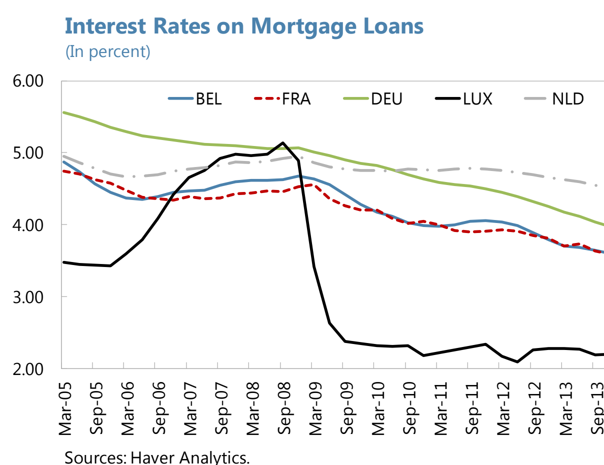
C. Households' Financial Situation: Still Manageable

10. Household debt is moderate, though mortgages are more prevalent than elsewhere in the euro area. Household debt accounted for around 55 percent of GDP in 2013, an increase from 48 percent of GDP in 2008. Most of household debt is in long-term mortgages (usually around 20 year maturity). Survey data from 2010-11 show that 39 percent of resident households have mortgage liabilities, and, that for 33 percent of them, this debt is on their principal residence.[4] This is higher than the comparable euro area averages of 23 percent and 19 percent, respectively.

[4] BCL Bulletin, 2013/2, based on results of the 2010/11 Luxembourg Household Finance and Consumption Survey (LU-HFCS).

11. Debt-to-income (DTI) **ratios are also higher than the euro area average, though debt-to-asset ratios are lower, reflecting large real estate holdings**. The DTI ratio is around 87 percent, higher than the EU average of 62 percent, with debt-to-income ratios above 100 percent more prevalent in larger households (larger than 3 persons), and largest households (5 or more) having the lowest ratio of liquid assets. These households would be most vulnerable to a loss in employment or other shocks such as higher interest rates (see below). Debt-to-asset ratios for all household groups are below euro area averages, ranging from 11 to 29 percent. However, because assets are mostly locked up in real estate (82 percent of total assets), the "low" ratio could come under stress if asset valuations were to decline sharply.

12. Debt service ratios appear relatively comfortable, though this partly reflects the very low interest rate environment. Debt service ratios for housing loans range from 14 percent of disposable income in the largest households to close to 21 percent for singles. Interest rates on these loans are currently very low, but, because loans are mostly at variable interest rate, households are vulnerable to interest rates increases, especially as these loans are long-term. Further quantitative analysis of the financial situation of households and their sensitivity to such shocks would be useful to supplement the existing stress tests conducted by banks in collaboration with the supervisors, which shock the system through bank balance sheets. In recent years, more fixed rate loans have been granted, providing greater certainty for households on payments due.[5]

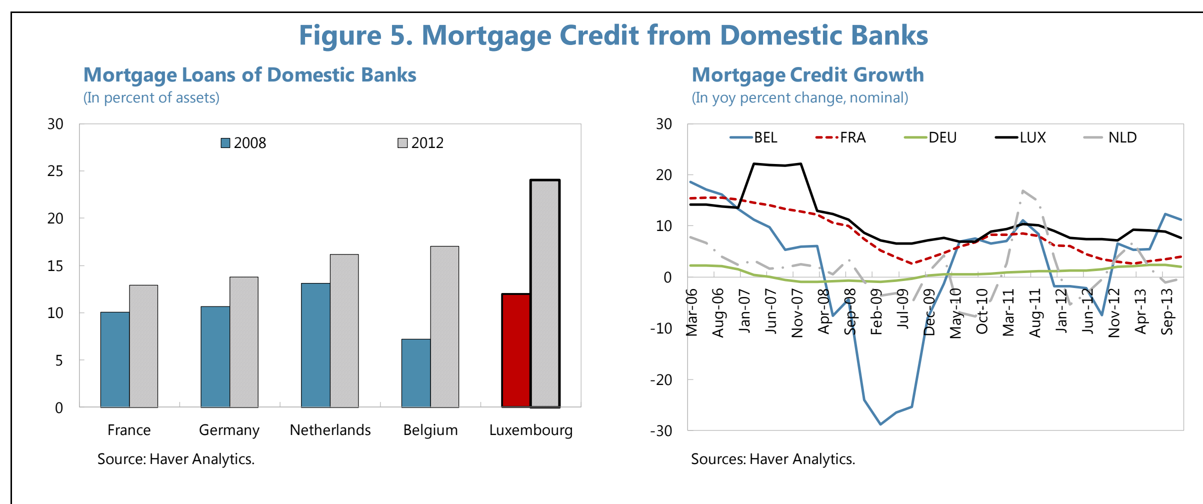


Sources: Haver Analytics.

13. Risks to households thus stem from a fall in asset prices, a rise in interest rates, and reduced employment prospects. As noted above, debt to asset ratios appear comfortable, but if asset prices were to fall significantly, this ratio would worsen accordingly, as the debt principal owed would not change. With most loans provided at variable rates, a rise in interest rates could put households under stress. Large households appear more vulnerable, particularly if the principal earner becomes unemployed, with only small liquid asset buffers to rely upon. In the current conjuncture, with unemployment at a cyclical high and only expected to decline gradually, unemployment risk is expected to remain elevated for some time.

[5] BCL data suggests that as much as 30 percent of housing loans provided in 2013 were fixed-rate loans.

D. Bank Exposures to Real Estate: On the Rise



14. Banks with a domestic orientation have increased their exposures to real estate significantly since 2008 (Figure 5). These have risen to 24 percent of the domestically-oriented banks' balance sheet in 2012, from 12 percent in 2008. In terms of domestic loans, these account for 43 percent of them in December 2012, from 22 percent only four years earlier. While this involves only eight banks, these are the banks that support the local economy. As noted above, given their systemic nature for the domestic economy, any distress felt by these banks would pose a contingent liability on the government to ensure their continued viability.

15. Banks continue to extend mortgage credit quite steadily, in contrast to peer countries. In contrast to Belgium or the Netherlands, mortgage credit growth has hovered between 6 and 9 percent over the past few years in Luxembourg, or 4-6 percent in real terms. The rate of growth has broadly followed that in France until late 2011, after which French mortgage lending growth slowed, while it continued at a stable pace in Luxembourg.

16. To help ensure adequate buffers, the *Commission de Surveillance du Secteur Financier* (CSSF) has tightened capital requirements for domestically-oriented banks. A capital surcharge of 2 percent (implying a 10 percent solvency ratio requirement) was applied to the four largest domestically-oriented banks, mainly in view of this real estate exposure. Most recently, effective July 2013, the authorities have adjusted up the risk-weight requirements on the part of the new loans that exceed 80 percent of loan-to-value (LTV) ratios. In addition, the authorities indicated that they would be prepared to take additional macro-prudential measures if these proved insufficient, but preferred to take a step-by-step approach.

17. Since then, credit-granting standards appear to have become more prudent. Possibly in response to the authorities' efforts, lending surveys suggest tightened conditions in housing credit supply during 2013. Loans with LTVs lower than 80 percent currently represent 83 percent of the aggregate stock of mortgages. For loans granted since mid 2013, the average LTV lies around 75 percent.

18. Risks to banks from real estate exposures include market risk and indirect interest rate risk. If house prices were to fall significantly—following for example a sharp macroeconomic shock resulting in lower activity and increased unemployment—, asset values would fall and affect banks' balance sheets. The CSSF has conducted aggregate stress tests for this possibility, subjecting six banks to a 30 percent decline in asset values, and a 10 percent probability of default on the resulting under-collateralized loans. All domestic banks remained above the Common Equity Tier 1 required ratio of 7 percent in this stressed scenario. Tests for increases in interest rates were also conducted by the BCL, finding that the interest rate risk is relatively low in comparison to the risk from lower economic growth.

E. Overall Assessment and Recommendations

19. Without policy action, underlying forces for housing price appreciation will likely persist. In the baseline scenario of a sustained recovery in output and employment growth, excess demand for housing will continue to stem from persistent structural factors and will require a concerted effort to overcome. Prices do not appear overvalued at this time, though they have recently picked up.

20. Households' financial position appears relatively sound. Overall, households do not appear overly indebted, though there are pockets of vulnerability in certain segments. Households are relatively wealthy, but their assets are mostly in the form of real estate, which would also be affected in case of a shock on housing prices. They are nevertheless vulnerable to interest rate risk, market risk (valuation), and unemployment risk. A mitigating factor on valuation risk is that any price declines would likely be gradual, given structural forces.

21. Banks' increased exposure to mortgages bears vigilance, and buffers should be maintained. The tightening in the risk weights for LTVs above a certain level for banks, and the capital surcharge for domestically-oriented banks, are appropriate. If these measures are found to be insufficient after some period of observation, further steps may be needed. Over time, consideration should also be given to maintaining higher capital requirements for domestically-oriented banks in the new Basel III framework.

22. Government policies should become more neutral in relation to home ownership vs. renting. Current policies provide incentives for ownership, spurring demand pressures further. To help make more land available for residential building, the authorities should raise the cost of holding on to unused land or property, in particular by increasing recurrent taxes on immovable properties. This could for example take the form of a revision to legislation to allow for updating property valuation assessments regularly to reflect current market values. The removal of tax advantages and tax credits should also be considered, as they feed into greater demand. With current interest rates at very low levels, removing the partial tax deductibility of mortgage interest would be less painful to households. Finally, more flexible rules on the use of land should be considered to boost supply and reduce the time required for completion of construction projects.

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