



PRINCIPALITY OF ANDORRA

SELECTED ISSUES

June 2022

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PRINCIPALITY OF ANDORRA

SELECTED ISSUES

May 25, 2022

Approved By
European Department

Prepared By Ana Lariau and Michelle Tejada (both EUR)¹

CONTENTS

ESTIMATION OF ANDORRA'S POTENTIAL OUTPUT	3
A. Introduction	3
B. Data and Methodology	4
C. Results	5
D. Policies to Boost Potential Growth	8
References	9
SUSTAINABILITY OF ANDORRA'S PENSION SYSTEM	10
A. Introduction	10
B. Overview of the Andorran Pension System	11
D. Benchmarking and Cross-Country Comparison	13
E. Methodology	13
F. Scenario Analysis	15
G. Policy Implications	18
FIGURES	
1. Benchmarking the Pension System	14
2. Pension Sustainability Under the No Policy Scenario	15
3. Pension Sustainability Under Alternative Scenarios	17

¹ The authors thank seminar participants during the 2022 Article IV Consultation mission in Andorra for useful comments and suggestions.

TABLE

1. Pension System Overview and Reforms to Date _____ 12

References _____ 19

ANDORRA'S BANKING MODEL AND ASSOCIATED VULNERABILITIES _____ 20

A. Introduction _____ 20

B. Key Features of the Andorran Banking Sector _____ 21

C. Risks and Vulnerabilities of the Andorran Banking Model _____ 24

D. Policy Implications _____ 26

References _____ 28

ESTIMATION OF ANDORRA'S POTENTIAL OUTPUT¹

Andorra's growth potential is estimated to be low, though in line with the region. This could be explained by low levels of investment, both private and public, as well as multiple structural vulnerabilities that may be limiting the country's growth potential. Boosting growth in the medium term calls for a multi-pronged approach aiming at diversifying the economy, increasing investment, and building human capital.

A. Introduction

1. Estimates of potential output are critical for macroeconomic surveillance and policymaking. In economic terms, potential output is defined as the maximum level of output that can be achieved without creating inflationary pressures (Okun, 1962). In practice, it is normally associated with trend output, which is estimated using a wide range of statistical approaches that vary in their degree of precision and data requirements. By providing a benchmark against which to assess the economy's position in the business cycle, estimates of potential output provide guidance on the appropriate policy mix. They are key to assess the stance of fiscal policy and to determine the returns on public investment, which would then inform policy decisions. Estimates of potential output are also a fundamental input into economic forecasting, acting as the long-run anchor for economic growth. Understanding the drivers of potential output—capital, labor and TFP—can shed light on the policies needed to raise it.

2. Data limitations are a key challenge in estimating Andorra's potential output. In general, the estimation of potential output relies on statistical and theoretical hypotheses that make the results very sensitive to the model specification, the method of estimation and the time horizon. In the case of Andorra, data limitations pose an additional challenge due to the small sample and the lack of data on the GDP level at quarterly frequency and the capital stock. The COVID-19 pandemic imposes additional difficulties because it produces a break in the series.

3. Several methodologies are considered to identify an adequate measure of potential output for Andorra. The premise for this exercise is to use all the available information, overcoming data limitations. Potential output is estimated using standard univariate approaches as well as a multivariate filter that incorporates empirical relationships between actual and potential GDP, unemployment, and inflation. Implementing the production function approach is not possible in the case of Andorra due to the lack of statistics on the stock of physical capital.

4. Potential growth is estimated to be low, possibly due to lackluster investment and structural vulnerabilities. Potential growth in Andorra is estimated at 1.5 percent, in line with the euro area's medium-term growth. The country faces multiple structural challenges that have curbed growth potential, such as difficult geographic accessibility, a limited stock of affordable housing and a small internal market. The economy is concentrated in a few sectors, notably tourism and banking,

¹ Prepared by Ana Lariau (EUR).

and hence is vulnerable to shocks specific to those sectors. In addition, activity is highly correlated with developments in neighboring countries, particularly Spain. Raising potential output in Andorra requires a wide set of structural reforms aiming at diversifying the economy and building both physical and human capital.

B. Data and Methodology

5. Standard univariate filters are used as the starting point to estimate potential output for Andorra. The measure of potential output considered in this case is the Hodrick-Prescott (HP) filtered trend. The trend obtained with the HP filter (Hodrick and Prescott, 1997) minimizes a loss function that increases in the distance between trend and actual GDP and in the curvature of the trend function. This method is simple and very convenient for countries with limited data availability, since it only requires the time series of real GDP. In the case of Andorra, such series is available at annual frequency for the period 2000–2021. The estimation also requires projections for the period 2022–27, which are obtained from the April 2022 World Economic Outlook. Unfortunately, its relative simplicity also brings limitations. First, the estimates are based purely on statistical methods, which do not incorporate any economic structure, and thus are not necessarily in line with the economic concept of potential output. Second, the HP filter suffers from an ‘end-of-sample problem’, with estimates at the end of the sample subject to considerable revision when the sample is extended with new data releases.

6. Results from univariate techniques are complemented with estimates from a multivariate filter. This approach, based on Balgrave et al. (2015), adds economic structure to potential output estimates by conditioning them on two basic theoretical relationships: the Phillip’s curve that links cyclical unemployment to inflation, and the Okun’s law that links cyclical unemployment to the output gap. By incorporating information on inflation and unemployment to pin down potential output, this filter yields estimates that are more consistent with Okun’s concept of potential output. Furthermore, it is relatively easy to implement, requiring data on just three observable variables: real GDP level, CPI inflation, and the unemployment rate. All variables are incorporated to the model at annual frequency.

7. The production function approach cannot be implemented for Andorra due to the lack of capital-stock data. The production function approach involves computing the potential levels of the factor inputs (capital and labor) and the trend total factor productivity (TFP), which are then combined with a two-factor production function (generally Cobb-Douglas) to calculate potential output. This approach is useful because it allows for a more detailed examination of the drivers of potential growth. However, it requires capital-stock data, which in the case of Andorra is not available.

8. Regardless of the method used, the COVID-19 pandemic introduced a break in Andorra’s GDP series that requires a special treatment when estimating potential output. This avoids an artificially much lower medium-term estimate of potential growth, at odds with the temporary nature of the shock and the limited scarring effects in Andorra. The pre-crisis trend is estimated to establish an anchor for medium-term potential growth and to determine how potential

output should evolve from the low in 2020. Since 2020 is our starting point for the calculation of potential output in subsequent years, it is important to pin it down well.

9. For both the univariate and the multivariate filters, the first step is to estimate the pre-crisis trend output that will provide the medium-term anchor for potential growth. This is done using actual GDP data up to 2019 and the pre-crisis projections from 2020 onwards. Since Andorra was not included in the World Economic Outlook database until 2021, the pre-crisis projections used in the analysis are those produced by the Andorran authorities for the 2020 budget approved in 2019. Once the pre-crisis trend output is estimated, the next step is to determine the impact of the COVID-19 pandemic in 2020. Assumptions are made regarding the role of supply factors—which are those that would ultimately affect potential output—in driving the GDP contraction observed in 2020. The negative shock in 2020:Q2 is attributed 50 percent to supply factors (e.g., contraction of the labor force due to a deterioration in the health situation) and 50 percent to demand factors, while the recovery in the second half of 2020 is fully attributed to demand factors. So, when considering the entire year, only a small part of the GDP decline in 2020 is translated into lower potential output. Finally, potential growth is assumed to converge gradually to the pre-crisis estimate from 2021 onwards, since limited scarring effects are expected in Andorra.

C. Results

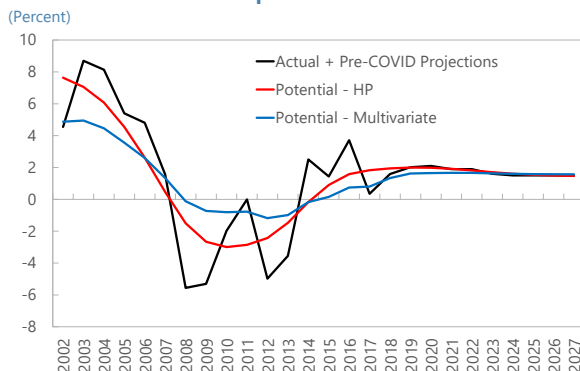
Pre-Covid Trends

10. By the end of 2019, right before the COVID-19 outbreak, Andorra’s output gap was almost closed, and the economy was growing at its potential rate, albeit low. While there are differences in magnitudes, all filters depict the same three-phase pattern. The first phase, preceding the Great Financial Crisis (GFC), was characterized by high potential growth, which averaged between 3.7 and 5.2 percent in 2001–07, depending on the filter used. The second phase, covering the GFC and the European sovereign debt crisis, featured a lower potential growth, at a rate that ranged between -2.0 and -0.3 percent on average in 2008–14. Finally, the third phase, from 2015 to 2019, displays positive potential growth during the recovery, though lower than in the first phase. Regarding the output gap, it was positive during the first phase, negative in the second phase, and was nearly closed by the end of the third phase. This implies that it took Andorra 10 years from the through of GFC to close the output gap, reflecting significant scarring associated with the negative impact of the crisis on supply factors, particularly labor. Inflation developments were consistent with the evolution of the output gap.

Right before the COVID-19 outbreak, Andorra was growing at its potential rate, albeit low...

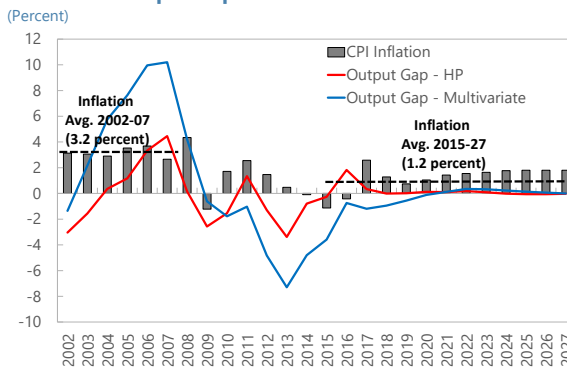
...and the output gap was almost closed.

Pre-COVID Potential Output Growth



Sources: Haver Analytics and IMF staff calculations.

Pre-COVID Output Gap and Inflation



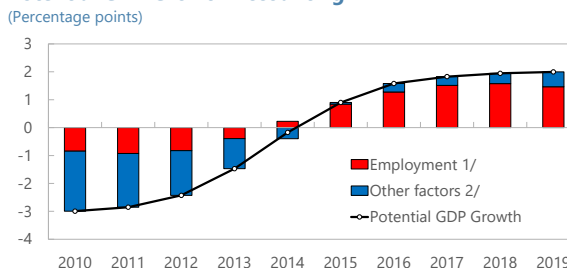
Sources: Haver Analytics and IMF staff calculations.

11. A relatively lower potential growth in the third phase (2015–19), compared to the pre-GFC rates, could be reflecting lingering effects from the GFC and the sovereign debt crisis.

The contraction of potential output in 2011–14 was driven by a decline of employment and, to a larger extent, by a decline of other factors, including total factor productivity (TFP) and physical capital. In the recovery phase of 2015–19, the rebound of potential output was largely supported by a strong employment growth, with a very modest contribution by other factors. This implies that the crises in 2008–14 may have resulted in a lower accumulation of physical capital (i.e., lower investment) in subsequent years and/or in a decline of TFP.

The recovery from the 2008–14 crises was largely supported by a recovery of employment, with a very modest contribution from physical capital and TFP.

Potential GDP Growth Accounting



Sources: Haver Analytics and IMF staff calculations.

1/ The calculation of the contribution of employment to potential GDP growth assumes a labor share of 70 percent.

2/ 'Other factors' is computed as a residual and corresponds to the contribution of both physical capital and total factor productivity to potential GDP growth. Such contributions cannot be disentangled due to data constraints.

Impact of the Covid-19 Pandemic

12. The COVID-19 shock had a relatively small, negative impact on potential output in 2020. While actual output declined by 11.2 percent in 2020, potential output is estimated to have declined only by nearly 1.5 percent. The supply-side component of the COVID-19 pandemic is assumed to explain only half of the output contraction in 2020:Q2; the rest of the impact in 2020:Q2, and through the rest of the year, is attributed to demand factors. The larger decline of actual relative to potential GDP created a negative output gap in 2020, which is expected to close in 2024 as the economy recovers.

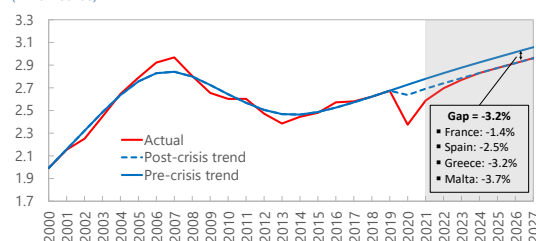
Potential Growth in the Medium Term

13. Prior to the COVID-19 crisis, potential growth in the medium term was estimated at 1.5 percent. Furthermore, output gap was expected to remain close to zero and inflation stabilized at around 1.8 percent. The estimates from the univariate and multivariate filters are very similar. While a potential growth rate of about 1.5 percent is assessed to be low, both in absolute terms and relative to historical levels in Andorra, it is in line with medium-term growth in the euro area (see [Euro Area 2021 Article IV Staff Report](#)).

14. While potential growth is projected to reach the pre-crisis estimate in the medium term, the COVID-19 pandemic caused a permanent income loss. After a short phase of relatively more rapid recovery, and due to limited scarring effects, potential growth should converge to 1.5 percent in the medium term. However, the level of output is expected to remain at a permanently lower level. Such permanent income loss, estimated at 3.2 percent, could be attributed to the missed 2020/21 winter season and the sharp contraction in investment, which recovered only partially with the construction boom and large inflows of foreign direct investment. Other tourism-dependent economies (e.g., Greece) are also expected to suffer significant income losses due to missed tourism seasons.

The permanent income loss caused by the pandemic is projected to be larger than in neighboring countries.

Real GDP: Gap Relative to Pre-Crisis Trend
(Billion euros)



Sources: Govern d'Andorra Statistics Department and IMF staff calculations.

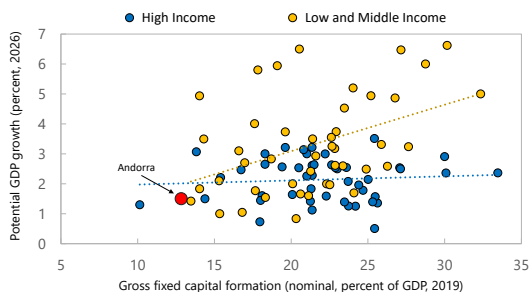
Note: In the case of Andorra, the gap relative to the pre-crisis trend corresponds to the difference between the projected real GDP and the Hodrick-Prescott pre-crisis trend, which is computed using historical data up to 2019 and the pre-crisis projections produced by the Andorran authorities. For other European countries, the gap relative to the pre-crisis trend is obtained from the staff reports of the 2021 Article IV consultation for each country.

Drivers of Potential Growth

15. Low investment could be behind Andorra's low potential growth rate. Andorra is one of the countries with the lowest investment in the sample of countries for which data on both investment and potential output is available in the World Economic Outlook database. Averaging about 13 percent of GDP, investment in Andorra is significantly lower than the average in high-income economies (21.8 percent of GDP) and euro area countries (21.0 percent of GDP). This is mostly driven by low levels of private investment. Public investment (nearly 5 percent of GDP) tends to be larger than in other countries, especially compared to high-income (3.7 percent of GDP) and euro area (3.2 percent of GDP) countries. Increasing public investment should be leveraged to induce higher private investment, including through a more favorable business environment.

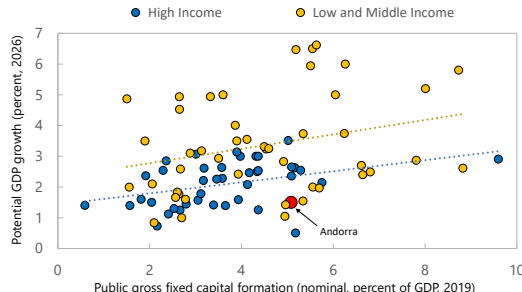
Potential growth is positively associated with total and public investment. Andorra's low level of total investment—particularly private—could be behind the relatively low rate of potential growth.

Total Investment and Potential GDP Growth



Sources: WEO Database and IMF staff calculations.
 Note: The chart only shows countries for which data on both investment and potential output are available. Outliers were removed.

Public Investment and Potential GDP Growth

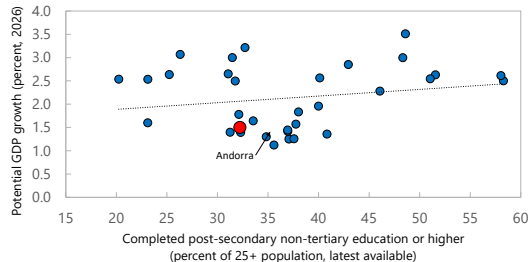


Sources: WEO Database and IMF staff calculations.
 Note: The chart only shows countries for which data on both public investment and potential output are available. Outliers were removed.

16. Low potential growth in Andorra could also be explained by lower levels of human capital. Higher educational attainment is positively associated with higher potential growth amongst high-income countries. In Andorra, 32 percent of the population older than 25 has completed post-secondary non-tertiary education or higher. Such educational attainment is lower than the averages for high-income economies (36.6 percent with complete post-secondary education) and euro area countries (37.2 percent with complete post-secondary education). Policies that encourage the population to pursue vocational training and tertiary education would boost human capital and support higher potential growth. It is important to highlight that the relationship between educational attainment of the Andorran population and potential output growth may be weakened by the fact that the Andorran population represents a relatively small share of the labor force due to the large inflow of foreign seasonal workers.

Relative to other high-income economies, Andorra has lower levels of educational attainment, which might explain the low rate of potential growth.

Educational Attainment and Potential GDP Growth in High-Income Economies



Sources: UNESCO, WEO Database and IMF staff calculations.
 Note: The chart only shows high-income countries (as defined by the World Bank) for which data on both educational attainment and potential output are available.

D. Policies to Boost Potential Growth

17. Raising potential growth in Andorra calls for a multi-pronged approach focused on diversifying the economy, boosting investment and building human capital. Reducing red tape and administrative rigidities and improving access to credit would support diversification and boost investment. Expanding the supply of affordable housing and easing immigration requirements will help attract the needed high-skilled workers, while training will improve human capital. Andorra's vulnerability to natural events calls for continuing building resilience to climate change, including by greening transportation and energy, and reducing dependency on imported energy. Current negotiations on an EU Association Agreement have the potential to unlock substantial benefits.

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SUSTAINABILITY OF ANDORRA'S PENSION SYSTEM¹

Reforming the Andorran pension system is a key priority to ensure its sustainability and reduce contingent liabilities. In the absence of reform, the Andorran social security system will accumulate deficits starting in 2024, rising to about 9 percent of GDP per year by 2040. The Andorran Parliament has appointed a special commission to elaborate a reform plan before end-2022. This paper draws on scenario analyzes to identify options available for an optimal reform. The results show that measures will need to be comprehensive and adjust all three key parameters—the contribution rate, the conversion factor, and the retirement age. Reforms will need to also be guided by public policy choices on affordability, adequacy, and equity that go beyond the scope of a sustainability analysis.

A. Introduction

1. **The Andorran pension system is unsustainable and needs an ambitious reform given projected spending pressures and demographic trends.** The social security fund is projected to have annual deficits starting in 2024 and to deplete its reserve fund by 2039 in the absence of government's financial support. This trend is partly driven by the combination of an aging population and a structural imbalance between low contribution rates and a relatively high replacement rate. Recognizing the urgency of the reform, the Andorran Parliament has appointed a special commission to elaborate a reform plan before end-2022.
2. **This paper analyzes the key features of the pension system to understand their relevance to its sustainability challenge.** First, it presents the main structural characteristics of the current system, the evolution of the main demographic and financial variables, and benchmarks against other European countries. Second, scenario analysis is used to identify options available for an optimal reform that ensures the long-term sustainability of the pension system.
3. **The results presented in this paper show that measures will need to be comprehensive to achieve sustainability.** The reform package will need to include increases in the contribution and conversion factor and in the retirement age. Beyond sustainability, the reform package should also take into consideration other important key principles and trade-offs that are outside of the scope of this analysis, such as pension adequacy, affordability, intergenerational equity, among others.
4. **The paper is organized as follows.** Section B gives an overview of Andorra's pension system and past reforms. Section C provides benchmarking and cross-country comparison of key pensions-related variables. Section D describes the methodology used to analyze the drivers of pension expenditures and deficits. Section E presents the projections of the pension system over the long run under different policy scenarios. Section F discusses reform options and policy implications.

¹ Prepared by Michelle Tejada (EUR).

B. Overview of the Andorran Pension System

5. Previous reforms of the Andorran pension system were insufficient to ensure its long-term sustainability. Since its inception in 1968, the retirement branch of the Andorran Social Security System (CASS) has been responsible for the administration of pension contributions and benefits. The first major reform of the system took place in 2009 and modified the contribution and the conversion coefficient, the minimum contribution period, introduced early retirement, and mandated that the non-contributory pension benefits should be funded by the government (see Table 1). In 2015, the *Fons de Reserva de Jubilació (FRJ)* was established in 2015 to independently manage the assets of the pension system, a task previously done by the CASS. The government increased the contribution rate further and introduced a progressive ceiling on high retirement annuities, among other measures. Although these reforms temporarily improved the financial situation of the pension system, they were insufficient to ensure its long-term sustainability.

6. The general pension scheme, under Pillar I, is a mandatory pay-as-you-go by points defined contribution system. It is compulsory for all workers including self-employed persons. The contribution rate is set at 12 percent of gross salary (8.5 percent paid by the employee, and 3.5 percent by the employer). The statutory retirement age is 65 years old after at least 15 years of contribution with the option of early retirement at 61 years old with a minimum contribution period of 40 years. The conversion coefficient increased from 6.4 percent to 8 percent in 2009, and then, in 2015, to 9.6. This coefficient implicitly assumes that pensions will be paid for 9.6 years after retirement at 65 years old, much lower than actual payouts given the high life expectancies. The replacement rate is set at 50 percent. In 2020, the system had a dependency ratio of about 3 with an average of 47,439 members (90 percent of the working-age population), of which 97 percent resided in Andorra. In the same year it had 15,840 pensioners including widows, of which 59 percent resided in the country and represented 83 percent of the Andorran elderly population. The average annual contribution amounted to €2,979, while the average annual pension was €7,009. The system also has a Pillar 2, which is mandatory for government employees and voluntary for those in the private sector. Its contribution rate is at the discretion of workers, and the employer matches up to a total of 3 percent of the salary.

7. The investment strategy of the pensions' fund follows a traditionally moderate profile management. The investment portfolio is comprised around 60 percent investment in high credit quality fixed income (minimum 50 percent), 30 percent in equity (maximum 35 percent) and 10 percent in other assets (maximum 15 percent). About 90 percent is denominated in euro, and the rest is in currencies from other advanced economies. The authorities are conducting a deeper review of the current investment strategy and its implementation plan with the aim of upgrading the risk management policy and increase geographic and asset classes diversification of the portfolio.

Table 1. Andorra: Pension System Overview and Reforms to Date

PARAMETERS	1968–2009	2009–2015	2015–PRESENT
Affiliates	Mandatory for employees. Voluntary for self-employed.	Mandatory for employees and self-employed (from 07/2013).	
Contribution rate	Employer 6,0% Employee 2,0% (no ceiling)	Employer 7.5% Employee 2.5% (no ceiling)	Employer 8.5% Employee 3.5% (no ceiling)
Points conversion factor (purchase price / sale price of the retirement point)	6.4	8.0	9.6
Replacement rate (for a 40-years contribution period in Andorra)	50% average salary		
Retirement pension calculation	Entire contribution period		
Benefits	Retirement, widow, and orphan pensions	Retirement and widow pensions (orphan pension out)	
Retirement age	65 years old		
Early retirement age	-	58 years old	61 years old
Minimum contribution period for a pension	No minimum	5 years (12 months required for international agreements enforceability)	15 years (12 months required for international agreements enforceability)
Minimum contribution period for a lump-sum	-	1 year	5 years
Annual update of pension benefits and point value	- Until 1998: Andorran average wage increase - From 1998: inflation (CPI)	- Inflation (CPI) - From 2012: 0% on pensions over 2x minimum wage	
Retirement's pension Ceiling	No ceiling		Reduction coefficients applied on pensions over 2x minimum wage
Widow pensions (life annuity)	50% of the retirement pension		
Widow pensions (temporary annuity)	-	50% of the salary or pension (between 60% and 120% of the minimum wage)	
Non-contributory pension benefits	Funded by CASS	Funded by the Government	Funded by the Government

Source: CASS.

Note: amendments highlighted in blue.

C. Benchmarking and Cross-Country Comparison

8. Expected demographic changes in Andorra are broadly in line with peer countries but will create substantial pension spending pressures. With one of the highest life expectancies in the world (84.5 years) and a retirement age (65 years) in line with its peers, Andorra enjoys a long life expectancy at retirement (about 19.5 years). Ageing pressures will accelerate as the baby-boom generation retires and the population is expected to live longer. The country currently has the lowest old-age dependency in the region—20.7 percent compared to average of 32.3 percent in the EU—but it is set to almost double by 2070 due to rising life expectancies and a shrinking working-age population. The coverage rate is expected to decline from its already low level of three members per pensioner, exacerbate pension spending pressures and lead to rising deficits. As a result, although Andorra currently has the lowest pension expenditure in the region, it is expected to have the largest increase in the next two decades.

9. The structural imbalances of the pension system are contributing to sustainability issues. The generosity rate—measured as the ratio of average pension to average contribution—was estimated at 2.35 in 2020. The Andorran pension system has one of the lowest contribution rates in the region, at 12 percent of gross salaries compared to an EU average of 21 percent, but an average replacement rate (50 percent) above the EU average. Going forward, unchanged low contribution rate, relatively high replacement rate, and high dependency ratio will be a source of financial stress for the system.

D. Methodology

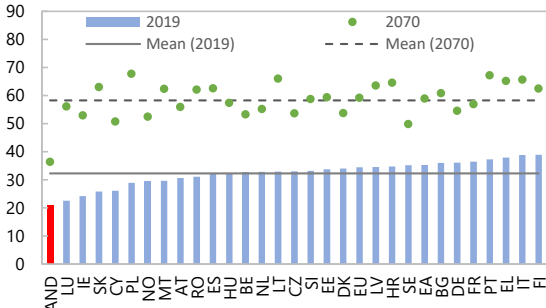
10. To assess the sustainability of the Andorran pension system, this paper uses a simplified diagnostic to estimate pension expenditure and deficits. The key elements of the pension system are analyzed including pension expenditure over time (i.e., share of the elderly in the population, retirement age, and benefit indexation) and the structure of the pension system. We compare different measures of long-term sustainability and potential contingent liabilities under the no policy change scenario and under alternative scenarios assuming changes to key pension parameters.

11. The analysis relies on the following inputs and data sources: background material describing the pension system and past reforms; actuarial reports and underlying data, and other relevant reports; multiple international databases, including ageing reports, OECD, Eurostat, UN population projections, and IMF.

Figure 1. Andorra: Benchmarking the Pension System

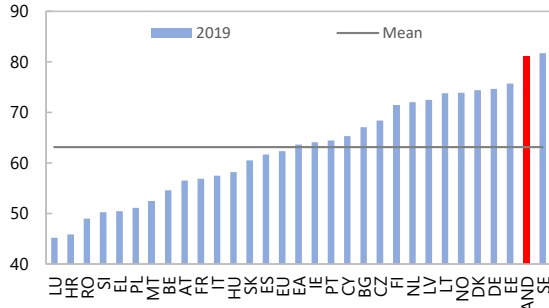
Andorra has the lowest old-age dependency ratio in the region but set to almost double by 2070 due to rising life expectancies and shrinking working age population.

EU and AND: Old-Age Dependency Ratio, 2019-70 (Percent)



Sources: EC's 2021 Ageing Report, Andorran authorities, and IMF staff calculations.

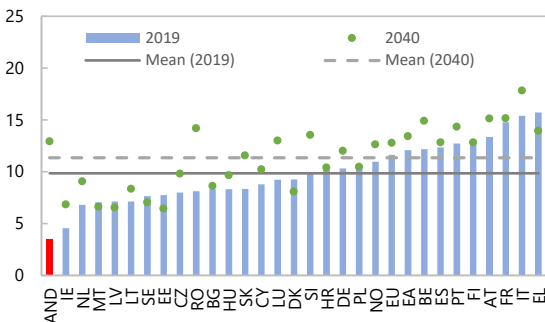
EU and AND: Labor Market Participation, Pop 55-64, 2019 (Percent of Total Population)



Sources: EC's 2021 Ageing Report, Andorran authorities, and IMF staff calculations.

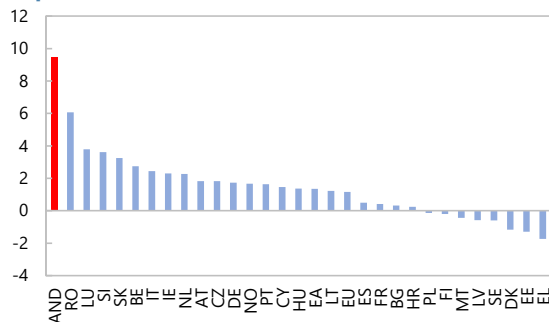
It has the lowest pension expenditure in the region but expected to have the largest increase in the next two decades driven by increases in the number of pensioners and pension benefits.

EU and AND: Gross Public Pensions Expenditure, 2019-40 (In Percent of GDP)



Sources: EC's 2021 Ageing Report, Andorran authorities, and IMF staff calculations.

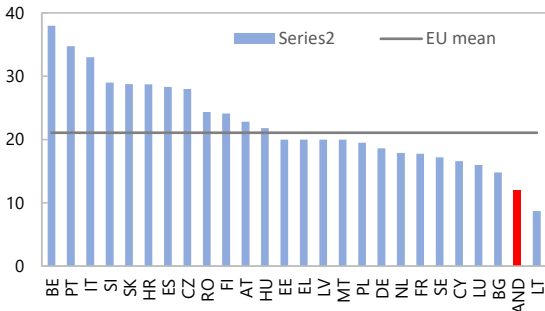
EU and AND: Change in Gross Public Pensions Expenditure 2019-40 (In PP of GDP)



Sources: EC's 2021 Ageing Report, Andorran authorities, and IMF staff calculations.

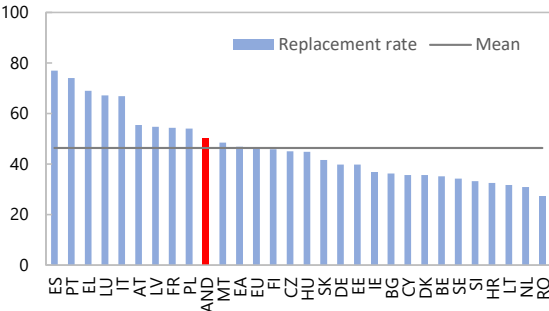
Despite having one of the lowest contribution rates in the region, it has above average replacement rate, contributing to the unsustainability of the system.

EU and AND: Contribution Rates (Pension as Percent of Wage)



Sources: EC's 2021 Ageing Report, Andorran authorities, and IMF staff calculations.

EU and AND: Replacement Rate at Retirement, 2019 (Pension as Percent of Average Wage)

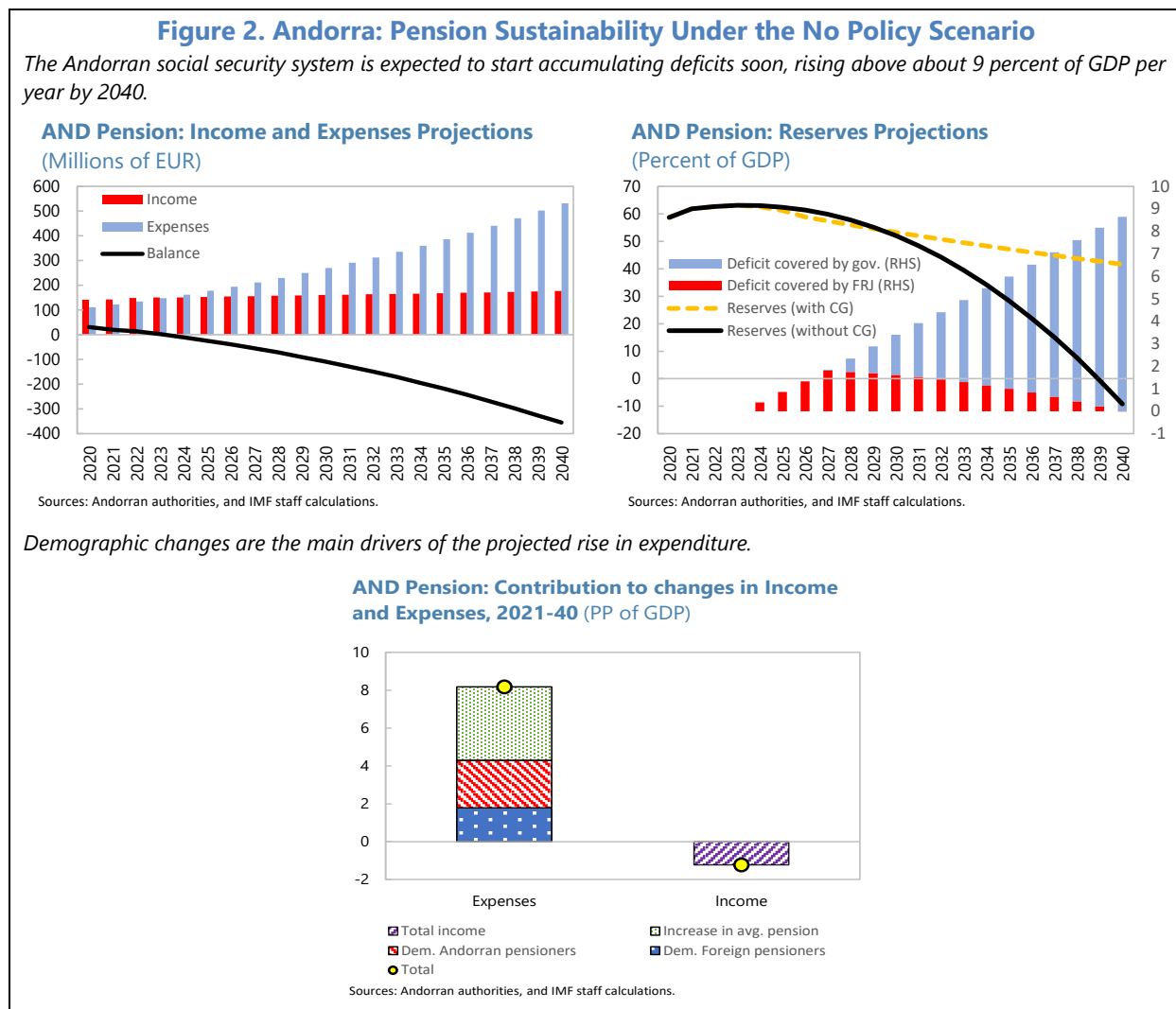


Sources: EC's 2021 Ageing Report, Andorran authorities, and IMF staff calculations.

E. Scenario Analysis

No Policy Change Scenario

12. Under the no policy change scenario, the system is projected to have annual deficits starting in 2024 and to deplete its reserve fund by 2039. In this scenario, long-term GDP and inflation trends are in line with IMF’s baseline projections (at 1.5 and 1.7 percent, respectively), the real return on the fund’s investment is one percent, and long-term population projections are in line with those for France and Spain. The projections yield similar results to the latest actuarial report. The pension system has had surpluses every year since its inception, but their size has been shrinking over time. The Andorran social security system is expected to start accumulating deficits soon, rising above about 9 percent of GDP per year by 2040.²



² Under the law, deficits are covered by the *Fons de Reserva de Jubilació* up to the amount of its previous year gains on investments and by the central government for the rest. The government’s contribution significantly slows reserves’ depletion, but rapidly crowd out much needed expenditure and jeopardizes fiscal sustainability.

13. A decomposition of the changes in pension income and expenses show the key drivers of the projected worsening of the financial position of the pension system. Pension income is set to decline as the negative impact from the shrinking working age population participating in the pension system would be larger than the positive impact from the increase in average contributions. Pension expenses are set to increase driven by population aging.

Alternative Scenarios

14. Scenario analysis is used to model the impact of different potential reforms on the long-term sustainability of the pension system. These include increases in the contribution rates, the conversion factor, and the retirement age, and implementing different combinations of these reforms. More specifically, we study the following three reform scenarios:

- i) a one-time increase in the contribution rate from 12 to 16 percent of gross salary in 2023;
- ii) a gradual increase in the conversion factor from 9.6 to 17 in 25 years; and
- iii) a gradual increase in the retirement age from 65 to 67 years in 8 years.

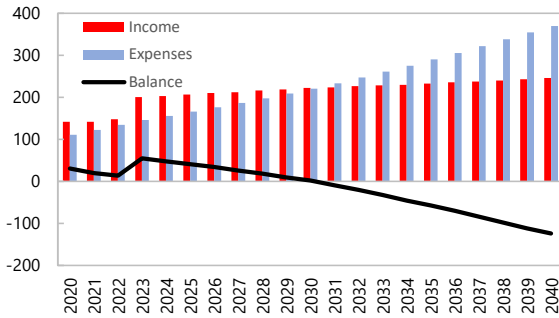
15. The results show that all three scenarios improve the financial health of the Andorran pension system. Under the no policy change scenario, the pension system is expected to have deficits starting in 2024 and reach about 9 percent of GDP by 2040 which, in the absence of government support, will lead to reserves depletion by 2039. An increase in the contribution rate from 12 to 16 percent of gross salary is estimated to delay deficits to 2027 and the level of reserves are estimated to decline from 62.7 percent of GDP in 2022 to 17 percent of GDP in 2040. The proposed increase in the conversion factor implies that the pension system starts accumulating deficits in 2024 as in the no policy change scenario because the rise in the conversion factor is only implemented gradually. However, the estimated deficit by 2040 is 4.2 percent of GDP, significantly lower than under the no policy change scenario, and the reserves level are estimated to decline only to 27.9 percent of GDP by the end of the projection period. The gradual increase in the retirement age is also expected to have a positive impact but, in itself, is not enough to significantly improve the financial health pensions partly because of the high old-dependency ratio and life expectancy.

16. A combination of the above reforms yields the biggest improvement in the sustainability of pensions. Pension expenditure is set to increase by 7.8 percent of GDP under the no policy change scenario (present discounted value of 63 percent of GDP). When all three reforms are implemented simultaneously, the projected increase in expenditure is only 3.3 percent of GDP (present discounted value of 28.3 percent of GDP). In this case, the system accumulates small deficits starting in 2031 which reach up to 3 percent of GDP by 2040, with government support starting in 2037. Reserves decline from 62.3 percent of GDP currently to 59.9 percent of GDP at the end of the projection period. Although all three proposed reforms yield some improvements, only their joint implementation substantially improves the sustainability of the system.

Figure 3. Andorra: Pension Sustainability Under Alternative Scenarios

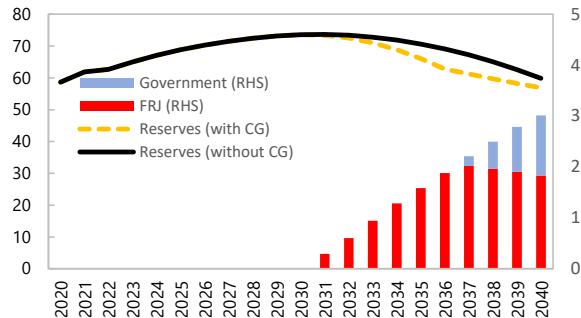
Changes to the contribution rate, the conversion factor, and to the retirement rate improve the financial health of the system, but only a comprehensive reform that modifies the three parameters would bring a significant improvement to its sustainability.

AND Pension: Income and Expenses Projections - Combined Scenario (Millions of EUR)



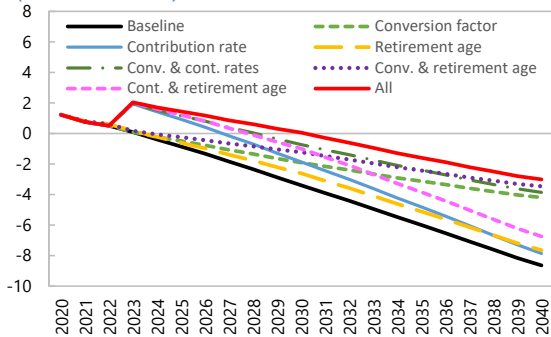
Sources: Andorran authorities, and IMF staff calculations.

AND Pension: Reserves Projections - Combined Scenario (Percent of GDP)



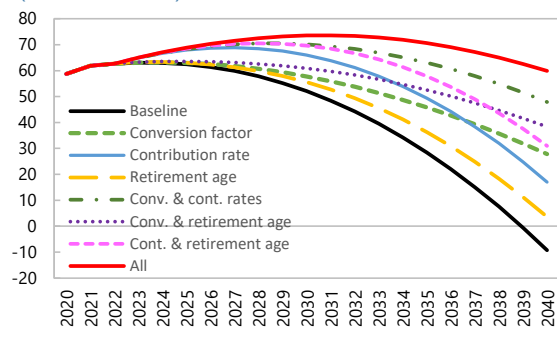
Sources: Andorran authorities, and IMF staff calculations.

AND Pension: Balance Projections, 2020-40 (Percent of GDP)



Sources: Andorran authorities, and IMF staff calculations.

AND Pension: Reserves Projections, 2020-40 (Percent of GDP)



Sources: Andorran authorities, and IMF staff calculations.

AND Pension: Pension Expenditure Increase

	2022-2030		2022-2040	
	Percentage Points of GDP	Present Discounted Value (% of GDP)	Percentage Points of GDP	Present Discounted Value (% of GDP)
Projected spending increase	3.3	13.5	7.8	63.0
Impact of reforms	-1.9	-6.5	-4.5	-34.7
Conversion factor	-1.5	-5.3	-4.5	-31.5
Contribution rate	0.1	0.4	0.7	3.8
Retirement age	-0.5	-1.6	-0.7	-7.0
Net change	1.4	7.0	3.3	28.3

Source: Andorran authorities, and IMF staff calculations.

F. Policy Implications

17. A comprehensive reform package is essential to reduce contingent liabilities and ensure soundness of the Andorra pension system in the medium-to long-term. The system has been adequately managed, but the country's aging population combined with substantial structural imbalances in the pension system is exacerbating spending pressures and Andorran pensions will become unsustainable in coming years. Recognizing the urgency, the Parliament's special commission is working on a reform plan to be approved by end-2022.

18. The results of this analysis show that the reform plan should adjust all three key parameters to ensure the sustainability of the system. All three scenarios improve the financial health of pensions compared to the no-policy change scenario. However, only a combination of the three alternative scenarios—increasing the contribution rate from 12 to 16 percent of gross salary, increasing the conversion factor from 9.6 to 17, and increasing the retirement age from 65 to 67—would significantly ensure the financial soundness of the Andorran pension system. In this case, our estimates show that the system accumulates small deficits starting in 2031 which reach up to 3 percent of GDP by 2040, with government support starting in 2037. Expanding the “second pillar” pension scheme could help achieve pension adequacy but should not supplant the measures needed to achieve financial sustainability of the “first pillar” scheme.

19. Financial sustainability considerations need to keep in mind equity issues and other important principles and trade-offs that are public policy choices beyond the scope of this analysis. A public pension system has two basic objectives: to protect participants against income poverty and to limit the decline in consumption after retirement. Public policy choices must be made to achieve the right balance between actuarial fairness, intra and intergenerational equity, incentive compatibility, affordability, and adequacy of pensions.

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CASS (2022). *Position Paper – Pension Reform in Andorra: Sustainability, Sufficiency, and Equity*. Caixa Andorrana de la Seguretat Social, Andorra la Vella.

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ANDORRA'S BANKING MODEL AND ASSOCIATED VULNERABILITIES¹

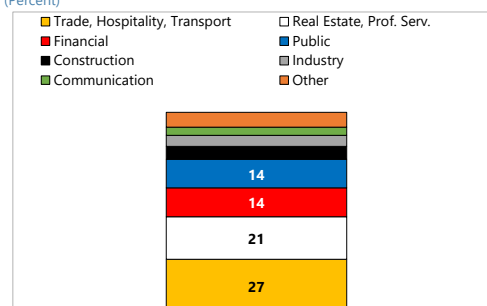
Andorra's large banking sector (with assets equal to 600 percent of GDP and assets under management—largely off-balance sheet—nearly 23 times the GDP), which is dominated by private banking, is a key feature of the economy. The aim of this paper is to systematically analyze its main features. Building on key stylized facts and cross-country comparisons, the paper discusses the implications of the business model of Andorran banks and the associated vulnerabilities, particularly those related to the reliance on foreign funding, the focus on private banking, and the use of internationalization to grow and remain competitive. These vulnerabilities and the exposure to risks calls for continued vigilance and strong supervision.

A. Introduction

1. The Andorran banking sector is sizeable and contributes significantly to the country's economy. The financial sector is a cornerstone of the Andorran economy due to its significant contribution to the country's GDP. Comprising both banks and insurance companies, the financial sector accounts for 14 percent of GDP and employs approximately 5 percent of the workforce. Consolidated bank assets amount to about 600 percent of GDP and assets under management (AUM)—largely off-balance sheet—are nearly 23 times the GDP, reflecting the primary focus on private banking services. A banking sector of this size, and comprising only three banking groups, implies that all banks are systemic in nature.

The financial sector is one of the largest sectors in the Andorran economy.

Sectoral Shares in GVA, 2015-19
(Percent)

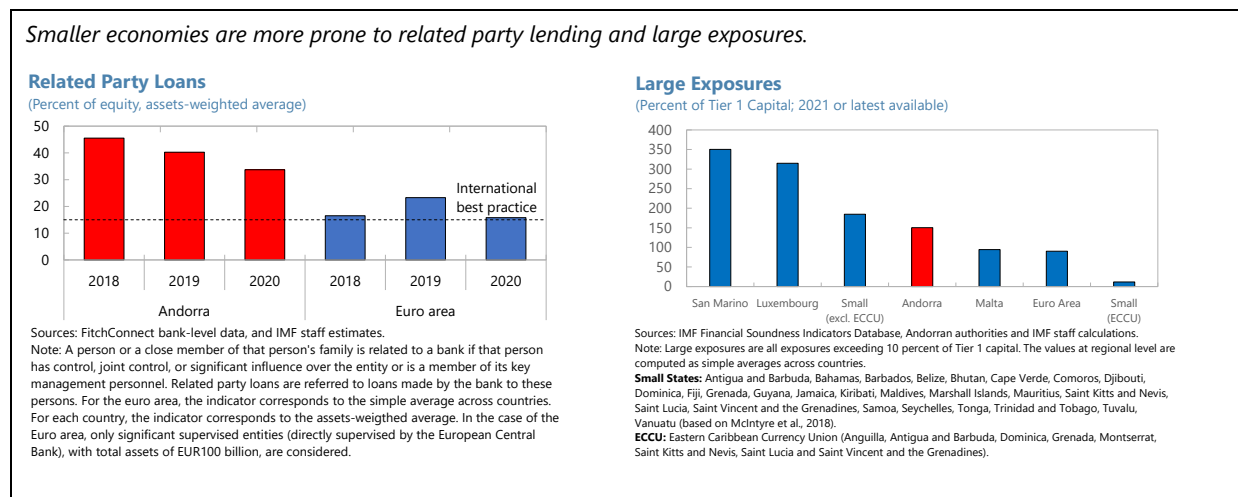


Sources: Government of Andorra Statistics Department and IMF staff calculations.

2. While Andorran banks have performed well, their size and business model entail vulnerabilities. The Andorran banking entities have expanded internationally and have more than doubled their AUMs in the past 10 years. However, they feature structural vulnerabilities that make them more prone to shocks. A key vulnerability is the reliance on foreign funding, particularly nonresident deposits, which exposes the system to liquidity risks. In addition, private banking tends to be operationally more costly, entails additional risks such as those related to ML/TF, and coupled with an internationalization strategy, may have resulted in lower credit to the domestic economy.

¹ Prepared by Ana Lariau (EUR).

Furthermore, operating in a small and low-diversified economy makes the system more prone to large exposures and related-party lending, which lead to concentration of credit risks.^{2,3}



3. Continued vigilance and strong supervision are critical considering these vulnerabilities. IMF staff recommend enhancing liquidity supervision, continue improving the understanding of AML/CFT risks, and reducing the concentration of credit risks by limiting related party lending and large exposures.

B. Key Features of the Andorran Banking Sector

4. The three banking groups in the system are mainly owned by Andorran families. The acquisition of two foreign-owned banks by their Andorran competitors left the system with three banking groups that are owned by Andorran families. Such ownership structure ensures stability over time. However, the fact of not being listed companies may limit their ability to raise capital and conduct corporate operations.

5. While the Andorran banking groups offer a full range of services, they are specialized in private banking and wealth management.⁴ As a result, about 80 percent of the banks' income corresponds to non-interest income sources (largely commissions), a feature that is typical of the

² A large exposure is defined as any exposure that is taken on by an entity with a client or group of connected clients by an amount higher than 10 percent of the entity's eligible capital.

³ A person or a close member of that person's family is related to a bank if that person has control, joint control, or significant influence over the entity or is a member of its key management personnel. Related party loans are referred to loans made by the bank to these persons.

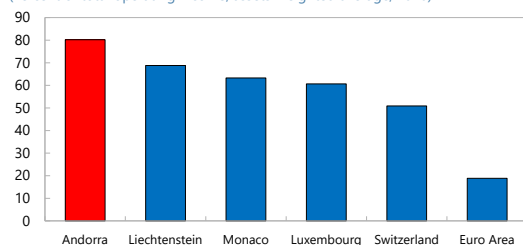
⁴ The three Andorran banking groups combine domestic commercial banking with private banking both in Andorra and internationally. However, the weighing of each business line to the overall business and the relevance of international businesses differs by bank. Andbank is the largest bank by business volumes and is largely focused on international private banking. Credit Andorra is the largest bank by business volumes in Andorra, thus it is more exposed to commercial banking and to the domestic economy, though it continues to seek growth through its international private banking business. MoraBanc is the second largest player in the domestic market and, while its international expansion has been more modest than its peers, it has accelerated in recent years (Fitch Ratings, 2021).

private banking model. Since the commissions that banks charge for managing and investing funds provide a stable and recurrent source of income, the profitability of Andorran banks has not suffered as much as their European peers from the low interest environment and other market disruptions.

The share of non-interest income in total operating income and the cost-to-income ratio are higher in those countries where banks tend to be specialized in private banking.

Non-interest income

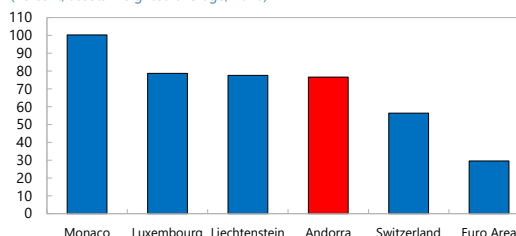
(Percent of total operating income, assets-weighted average, 2020)



Sources: FitchConnect bank-level data, and IMF staff estimates.
 Note: For the euro area, the indicator corresponds to the simple average across countries. For each country, the indicator corresponds to the assets-weighted average across banks. In the case of the Euro area, only significant supervised entities (directly supervised by the European Central Bank) are considered.

Cost-to-Income Ratio

(Percent, assets-weighted average, 2020)

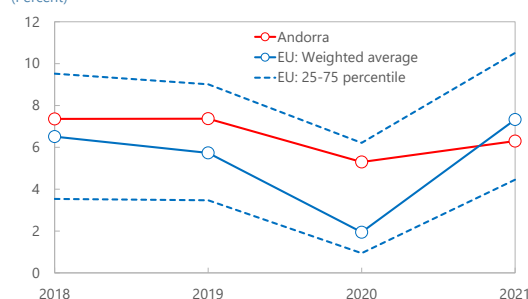


Sources: FitchConnect bank-level data, and IMF staff estimates.
 Note: For the euro area, the indicator corresponds to the simple average across countries. For each country, the indicator corresponds to the assets-weighted average across banks. In the case of the Euro area, only significant supervised entities (directly supervised by the European Central Bank) are considered.

The profitability of Andorran banks remained relatively stable in recent years despite large (COVID-related) exogenous shocks.

Return on Equity

(Percent)

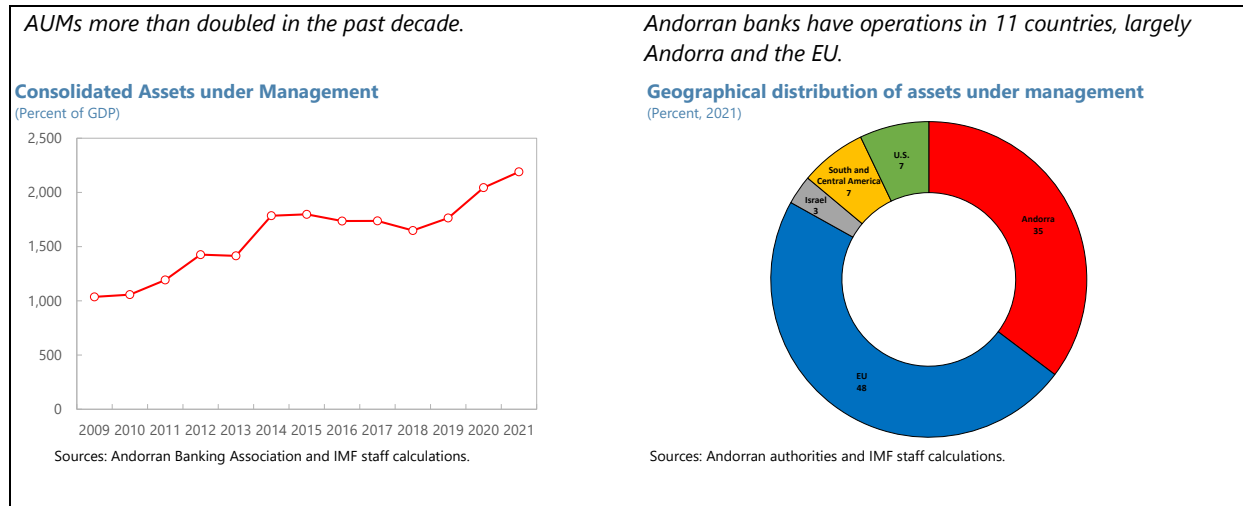


Sources: EBA Risk Dashboard 2021Q4 Andorran authorities and IMF staff calculations.

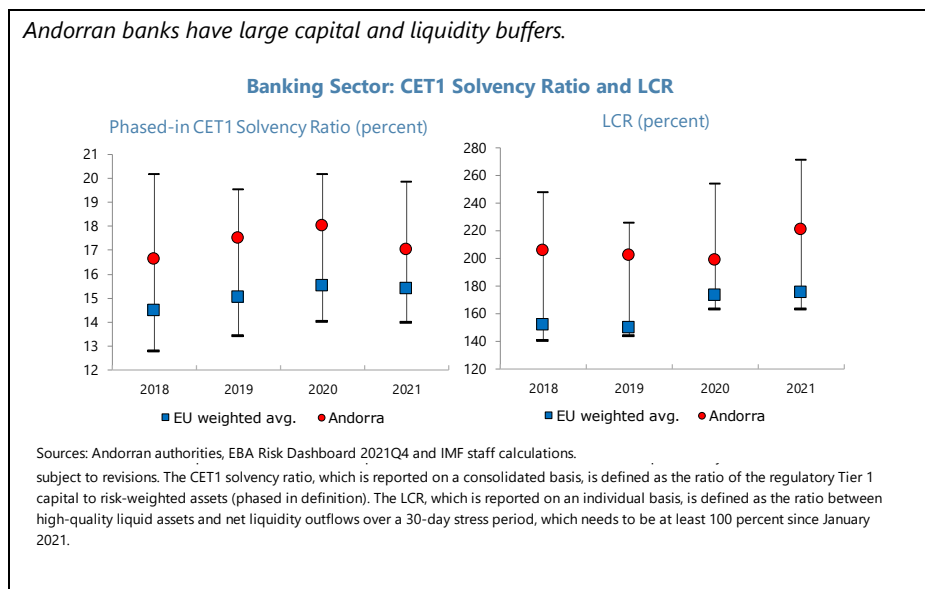
6. The private banking model is associated with higher cost-to-income ratios than those in commercial banking. The potential for economies of scale in private banking is limited by the nature of wealth management services, which entail high-quality customer service and knowledgeable staff. Because of their focus on private banking, cost efficiency in Andorran banks has been weak. The ongoing consolidation process should help reduce the cost-to-income ratio, but the supervisor should ensure that it does not significantly hinder competition. In addition, continued AUM growth would also increase efficiency by covering fixed costs and bringing additional commissions.

7. The internationalization strategy of the past 10 years has geographically diversified the business and led to a significant increase of AUMs. The limited size of the domestic market has pushed Andorran banks to seek business abroad to gain market share and remain competitive. Andorran banking entities established a network of subsidiaries in international markets, including Europe, the United States, South America, and the Middle East. By end-2021, about 65 percent of

AUMs were managed in 10 countries outside Andorra. AUMs more than doubled since 2009, and by end-2021 they were nearly 23 times Andorra’s GDP, of which nearly 80 percent are off-balance sheet.⁵



8. Despite their rapid expansion and several shocks, Andorran banks have been able to maintain solid solvency and liquidity ratios. Besides the impact of the low-interest rate environment of recent years, the Andorran banking system faced three shocks in the past 10 years: (i) the transparency process carried out by the country; (ii) the BPA crisis; (iii) the COVID-19 crisis. While these episodes put stress on the system, banks remained resilient and preserved their buffers. Capital and liquidity ratios have been stable and well-above the EU weighted average in recent years. These buffers should be able to cushion shocks and mitigate vulnerabilities.



⁵ AUMs declined slightly following the AML/CFT breach episode of *Banca Privada d’Andorra* (BPA), but have recovered since then and continued growing despite the COVID-19 shock.

9. Even though the country is not an EU member, Andorran banks operate in the same regulatory environment as their European peers. Andorra has undergone a process of regulatory convergence with Europe in the past decade. This has entailed significant changes, including the implementation of regulations in matters of tax transparency, measures for international criminal cooperation and the fight against money laundering and the financing of terrorism, as well as banking regulation.

C. Risks and Vulnerabilities of the Andorran Banking Model

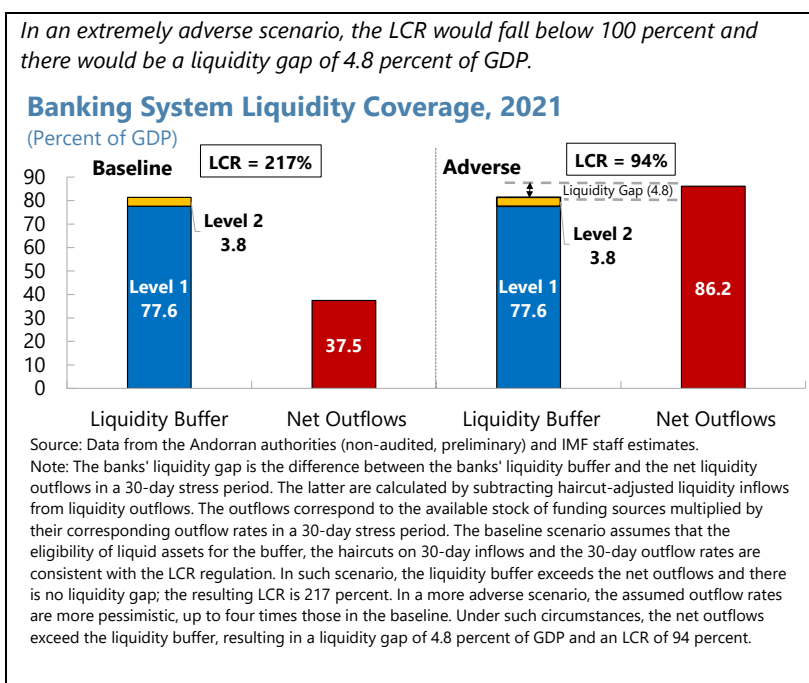
Reliance on Foreign Deposits and Liquidity Risks

10. The assessment of banks’ liquidity, based on Basel III’s LCR, is done using detailed bank-by-bank data. The LCR is defined as the ratio between high-quality liquid assets and net liquidity outflows over a 30-day stress period, which needs to be at least 100 percent since January 2021. Against this requirement, Andorran banks’ LCR is above 200 percent, under baseline outflow assumptions that are consistent with the LCR regulation and with regional crisis scenarios. The calculations in the baseline and stress scenarios are based on detailed bank-level data for 2021, including information on the stock of liquid assets by asset type, cash outflows by funding source, and cash inflows by asset type. It also includes assumptions regarding the outflow rates for each funding source over a 30-day period as well as the asset-specific haircuts applied to liquidity inflows.

11. The large reliance on foreign deposit funding entails liquidity risks. Staff analysis shows that, in an extremely adverse scenario in which the outflow rates are assumed to be up to four times those in the baseline, the LCR of the entire system would fall below the 100 percent requirement and there would be a liquidity

gap of 4.8 percent of GDP, though with bank-by-bank differences. Those banks that display sharp declines in the LCR tend to rely more on funding from retail deposits (particularly those less stable), on unsecured funding from nonfinancial corporates and sovereigns not covered by deposit insurance, or on undrawn but committed credit facilities to retail and other nonfinancial customers. While it is admissible for the banks’ LCR to fall below 100 percent under stress, the existing regulation

requires banks to build plans in coordination with AFA to quickly re-build their buffers. While recent



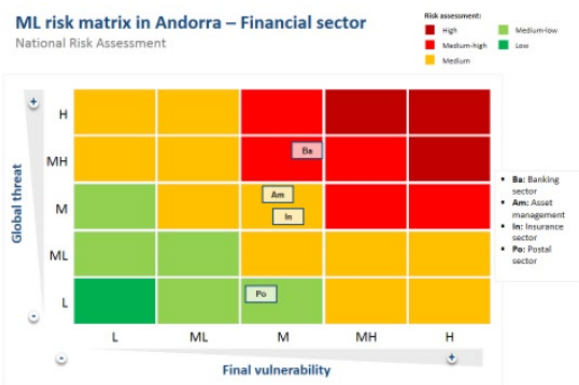
stress episodes (transparency process, BPA crisis and COVID-19 shock) did not lead to significant outflows, the supervisor should remain vigilant.

Focus on Private Banking and Internationalization Strategy

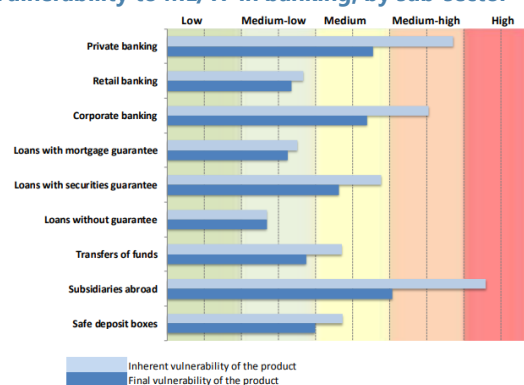
12. Private banking activities and operations through subsidiaries abroad are vulnerable to money laundering and terrorism financing (ML/TF) risks. The most recent National Risk Assessment, produced by the Financial Intelligence Unit of Andorra (UIFAND), qualifies the vulnerability to ML/TF of private banking and of subsidiaries abroad to be medium-high. The complexity associated with the provision of services in different jurisdictions by each of the banking groups adds significant risks to the activity. This is partially mitigated by the banking entities' relatively good control systems, which bring down the vulnerability score to medium.

Private banking and subsidies abroad are the sectors most vulnerable to ML.

Vulnerability to ML/TF by sector



Vulnerability to ML/TF in banking, by sub-sector



Source: 2020 National Risk Assessment (UIFAND).

13. The internationalization strategy exposes the system to external risks which may limit the benefits from diversification. With the domestic market limited by the size of the economy, Andorran banks have expanded their international presence to support profitability and geographical diversification, which also limits their exposure to the volatility of the local economy. However, this exposes banks to other sources of risks and vulnerabilities associated with the foreign market (e.g., foreign exchange fluctuations, local competition, local culture, regulatory environment, economic and political instability, market imperfections and asymmetric information, operational diseconomies associated with monitoring from a distance). Berger et al (2016) find a positive relationship between the degree of internationalization and bank risk for U.S. banks.

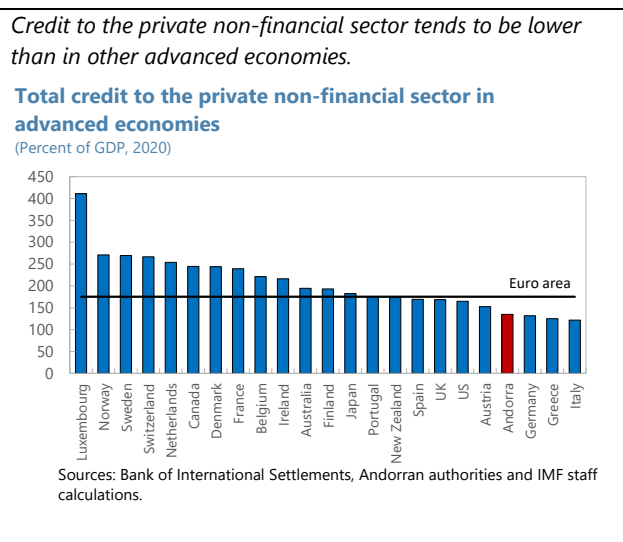
Large Banking Sector in a Small and Low-diversified Economy

14. The size of the Andorran banking sector warns attention, especially in the absence of lender of last resort (LOLR) facilities. Total consolidated assets of the Andorran banking entities are 600 percent of GDP, and AUMs—largely off-balance sheet—amount to nearly 23 percent of

GDP. Any exogenous shocks to Andorran banks would directly affect Andorra's economy given their systemic nature. Public finances would also be impacted via the materialization of contingent liabilities in the event of an extremely adverse scenario.

15. Loan concentration risks, coupled with the focus on private banking, may lower banks' incentives to expand domestic credit.

Operating in a low-diversified economy (LDE) such as Andorra entails an inherent risk of loan concentration for banks, including large exposures to a few clients or sectors, which could lead to a higher sensitivity of loan losses to economic downturns. To compensate for this, banks require a higher return and may only select the best lending opportunities. As a result, in equilibrium, they generate less lending. Narain et al (2003) show that domestic credit tends to be lower in LDEs. However, they find that higher income LDEs may have alternative ways of mitigating the risks and be less constrained by the lack of diversification.



D. Policy Implications

16. Liquidity risks. The AFA could further reinforce the supervision of liquidity risk including by enhancing the monitoring and stress testing of net liquidity outflows, undertaking analysis of liquidity risks for longer horizons (the LCR considers only a 30-day horizon), including onsite liquidity inspections in supervisory planning, and accelerating the development and review of liquidity contingency plans by banks. A strengthening of the AFA more broadly, including by more solid funding and staffing, would also be welcome.

17. AML/CFT risks. Further improving the effectiveness of the AML/CFT framework is necessary to ensure financial stability. Building on significant progress made in recent years, Andorra should persevere in its efforts to align the AML/CFT framework to FATF standards, including in the area of virtual assets. It would also be important to continue refining the national risk assessment, building on the improvements introduced in 2020, and to act upon the findings of the 2020 assessment to mitigate risks and make supervision more effective. The supervisor should continue to carefully analyze data on cross-border transactions and exchange information with counterparts in relevant originating countries to further improve its understanding of ML/TF risks. Resources for AML/CFT supervision should be increasingly focused on higher risk areas, and sanctions for breach of regulatory requirements should be effectively imposed.

18. Absence of LOLR. While a LOLR is not in place, the recent buildup of international reserves—up to the reference level estimated by IMF staff of 8.7 percent of GDP—may help the government to cope with the materialization of financial-sector-related contingent liabilities.

19. Loan concentration risks. Andorra has already transposed into its legal framework the EU regulation limiting large exposures to a given client to be less than 25 percent of the bank's capital. The AFA also reinforced reporting requirements on large exposures. Implementation of this regulation will be critical to keep risks at bay, especially as banks increase their financing of the economy. The planned diversification of the economy should also help to mitigate risks from concentration and create the incentives to expand domestic credit, which would support medium-term growth.

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