April 2009
IMF Country Report No. 09/129

Spain: Selected Issues

This Selected Issues paper for Spain was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 10, 2009. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of Spain or the Executive Board of the IMF.

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International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

SPAIN

Selected Issues

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Approved by the European Department

February 10, 2009

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ABSTRACTS OF THE SELECTED ISSUES PAPERS

Chapter I—Developments in the Spanish Housing Sector

Spain's housing boom was supported by rapid economic expansion, strong employment growth, an immigration boom, and low real interest rates. With the abrupt drying up of funding since mid-2007, these factors have eroded quickly. Through 2010, employment and value added in construction are projected to halve as peak housing starts are completed. Given that these home completions are adding to an already substantial inventory, the sharp fall in activity (housing starts) is inevitable in order to assist market clearing and orderly house price adjustments. The authorities have launched efforts to help limit foreclosures and to activate the underdeveloped rental market. In the medium run, housing market cyclicality could be reduced by fading out generous home ownership incentives.

Chapter II—The Spanish Banking Sector

The Spanish banking sector has weathered well the first impact of the financial turmoil. Cautious regulation, sound supervision, and strong retail-oriented business models have served Spanish banks well. However, the financial crisis continues to affect severely the banks' operating model. With wholesale funding drying up, Spanish banks have started restructuring their balance sheets. The outlook is very challenging given high private sector indebtedness, as well as the severity and suddenness of the economic downturn. Staff stress tests, based on public data, suggest a likely need for additional capital, depending on how long and deep the crisis continues. The authorities are monitoring developments closely, and some bank consolidation appears likely to rationalize the wide-spread banking system.

Chapter III—The Long-run Fiscal Outlook and the Public Sector Balance Sheet

Spain, like most industrialized countries, faces population aging with significant budgetary implications. Despite an improvement in the fiscal position over the past 15 years, the downturn in overall activity and in the housing market have exposed that the underlying structural fiscal position may not be as strong as was previously thought, and needs to be bolstered to cope with the challenges going forward. The analysis of this paper, which maps the results of a long-run baseline scenario into the public sector balance sheet, suggests that current fiscal policies are not sustainable. To enhance transparency into the long-run fiscal challenges, and to bring out options for policy decisions to tackle these issues, the paper recommends that the authorities publish the public sector balance sheet every year as part of the budget documents. The public sector balance sheet can offer valuable guidance to long-term fiscal policy as a complement to the Stability and Growth Pact.

Chapter IV—Productivity Growth and Structural Reforms

Spain's relatively poor productivity performance during the last decade has widened the gap with the EU and the U.S. The productivity gap appears due more to the lack of dynamism within industries, than to reallocation effects between industries. With the growth model of the last decade all but exhausted, an economic resurgence will likely require substantial productivity improvements. The analysis in this paper suggests that structural reforms in labor and product and services markets could help increase productivity growth. These reforms are particularly important for the ICT sectors, where Spain stands to get the largest gains from productivity catch-up.

I. DEVELOPMENTS IN THE SPANISH HOUSING SECTOR[1]

A. Summary

1.   **Improving fundamentals created a decade-long housing demand boom.** Spain changed significantly with democratization in the late-1970s and EU integration in the mid-1980s. In the 1990s, incorporation into EMU further improved confidence and lowered interest rates. Ample access to global liquidity spurred corporate investment and employment, and crowded in females and the unemployed. Increasing household incomes, lower interest costs, and longer mortgages increased housing affordability. Jobs in construction and services attracted large immigrant flows while Spain's baby boomers increased household formation. Thus, a number of positives for housing demand aligned, driving Spain's housing boom.

2.   **Supply reacted forcefully but with delay to rising prices.** House price appreciation was comparable to that in other countries experiencing housing expansions. The notable difference has been the accompanying major construction upswing in Spain—thus both prices *and* volumes boomed. However, gestation periods for new supply are long. Land laws provide incentives for municipalities to keep approved land scarce,[2] building permit processing is lengthy, then it takes 3 months to start construction, and another 18–24 months to finish. Various authors (Garcia-Montalvo 2007, Callau and Pac 2008) suggest that speculative demand kept prices high despite the supply response later in the cycle.

3.   **Now fundamentals are deteriorating while inventory is accumulating**. The tightening of funding has stopped construction in its tracks. Slowing growth is moreover reducing immigration, household formation, employment, and household income. With the long gestation lags, inventory is accumulating while interest rates first rose after the funding dry-up in mid-2007 just as indebtedness was peaking before easing again in late 2008 with the decline in the euribor interest rate index. Most mortgages are at variable interest rates.

4.   **The adjustment could run deep**. Many young people are in fixed-term jobs and hesitant to commit to home ownership under current conditions. The rental market is underdeveloped so houses stay vacant longer and, as noted, the demographics could be reversing. With high and growing inventory, house price undershooting may occur, creating its own adverse dynamics. Indeed, the strong dependence on construction for employment is now ricocheting into rapidly growing unemployment, and the boom is turning to bust.

5.   **Absorbing inventory into the rental market is one option to limit undershooting.** With inventories driving short-run house values, their absorption is paramount to stabilize prices. Given price expectations to the downside, fostering development of the small rental market holds potential, because it can tap into large unsatisfied demand from credit-constrained clients. Other useful measures aim at forestalling foreclosures, but increasing construction of subsidized housing is likely counterproductive. In the medium run,

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[1] Prepared by Christian Henn.

[2] See OECD (2007, p. 79).

policies should aim at preempting boom-bust cycles. Cutting red tape could make supply more elastic, while curbing (fiscal) distortions favoring home ownership could result in a more efficient and transparent market.

B.   The Boom

6.   **The Run-up to EMU entry (1995–2000) bolstered nominal stability and confidence** (Figure 1)**.** Short term interest rates were over 10 percent at the beginning of the 1990s. After devaluations of the peseta through 1995, increasing confidence and EMU entry cut nominal rates by over one-half. Real rates decreased even more as Spain did not eliminate its inflation differential with euro partners. Lower rates made many corporate investment projects attractive, resulting in high capital formation and job growth. Fiscal retrenchment to meet the Maastricht criteria crowded in the private sector.

7.   **New-found prosperity led to a desire to upgrade housing.** Investment and employment creation reduced unemployment by 9 percentage points. The dynamic economy increased female participation and household incomes. Households already servicing mortgages benefited from lower interest rates because 98 percent of mortgages are indexed to the 12-month Euribor. Consumers prioritized upgrades of lower quality (older) housing.[3]

Spain: Key Indicators, 1995-2000 (average annual percent change)	
Real GDP	4.1
Machinery & Equipment Investment	10.4
Population	0.4
GDP per capita	3.0
Employment growth	3.1
Female Employment Rate (cumulative change)	+10 pp

Sources: IMF World Economic Outlook; and Eurostat.

8.   **Spain's baby boomers moved out to set up their own households** (Figure 2)**.** The baby boom in Spain happened about 10 years later than elsewhere in the EU. Thus, many baby boomers reached household formation age in the 1990s. Furthermore, strong declines in youth unemployment from 1995 made it viable to move out, and household formation took off toward smaller households.[4] Housing starts increased after 1997. Still, the fraction of young people (18–35) living with their families remained high at 63 percent in 2002.

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[3] According to the 2001 census, 58 percent of properties were constructed before 1980.

[4] Household size in the mid-1990s was well above the EU average of 2.5 persons. See Figure 1.

Figure 1. Spain: Run-up to EMU and Convergence

Lower real interest rates made many investments profitable ...

Decline in real interest rates between 1994-96 and 2005-07 (percentage points)

ESP SWE ITA FRA DEN IRE USA FIN UK NLD DEU
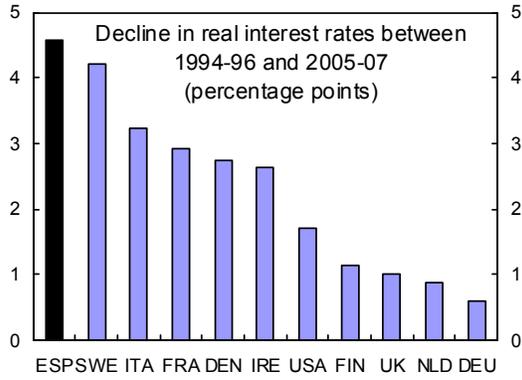
...and fiscal retrenchment crowded in the private sector.

Bank credit to private sector (percent of GDP)

Share of bank credit to public sector (percent, right scale)
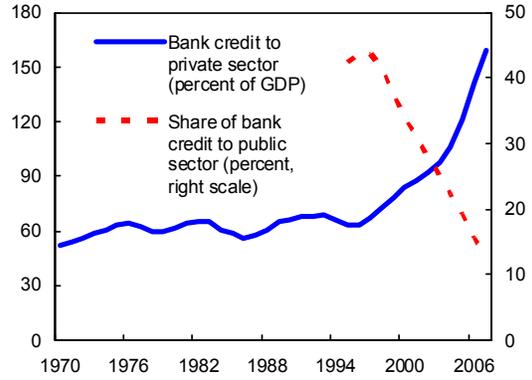
Resulting strong employment creation ...

Employment (percent change)
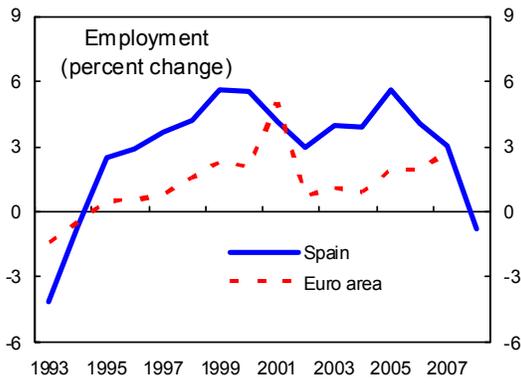
Spain
Euro area

...drew in females and unemployed persons.

Unemployment rate

Female Employment Rate (right scale)

(Percent)

Higher incomes led to ...

GDP per capita, PPP (percent of Euro area)

Euro area average
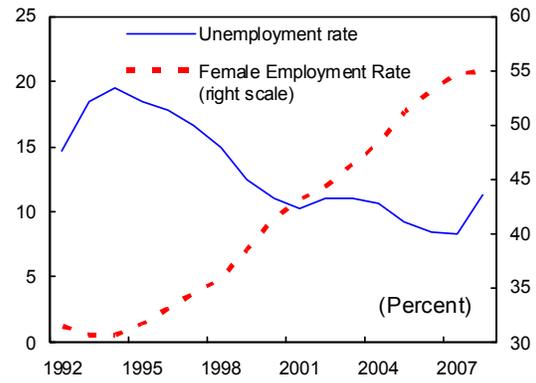
Spain
Germany
France
Italy
Portugal
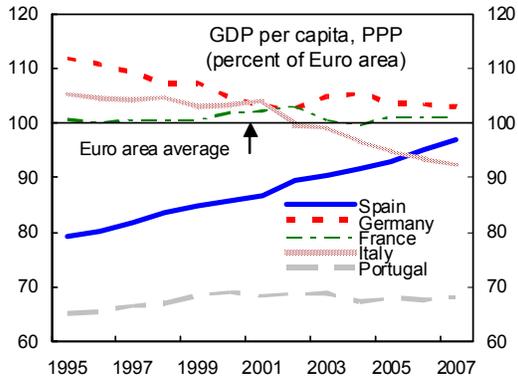
… a desire to upgrade housing and reduce household sizes.

Spain: Average household size (persons)

European average = 2.5
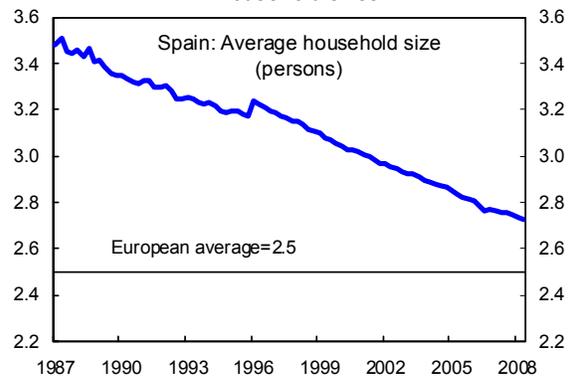
Sources: Bank of Spain; Spain Ministry of Housing; and IMF staff calculations.

Figure 2. Spain: Demographic Developments

House prices and construction were supported by...
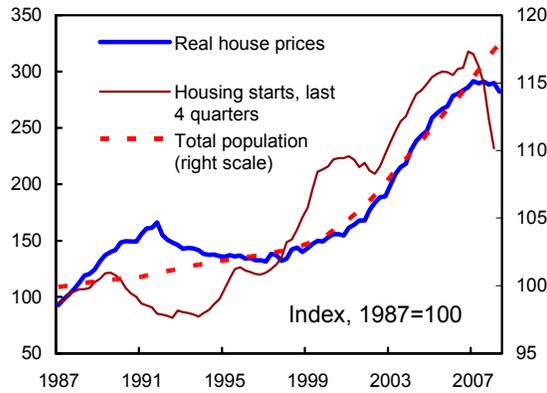
…strong population growth...
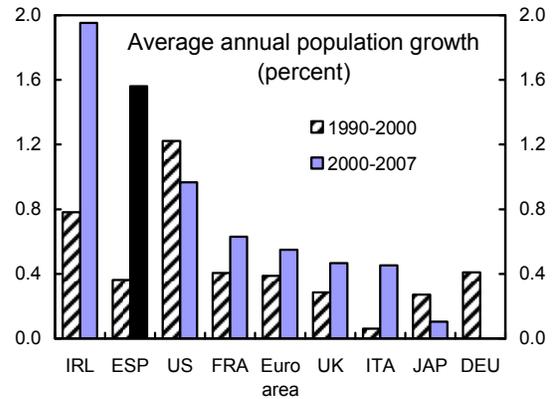
…largely due to immigration...
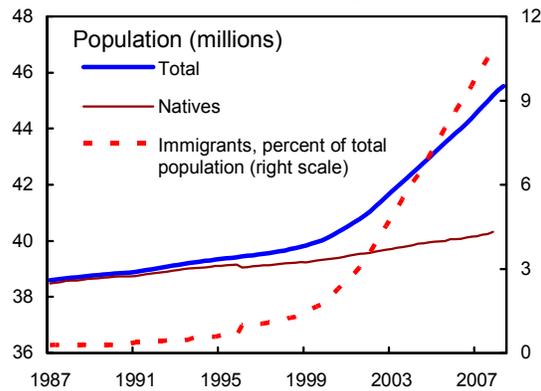
…from Latin America, Eastern Europe and North Africa.
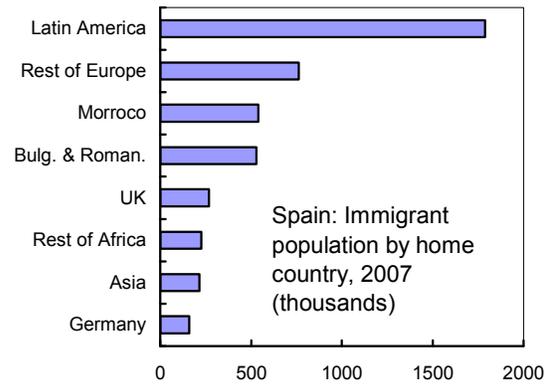
High employment growth made Spain attractive.
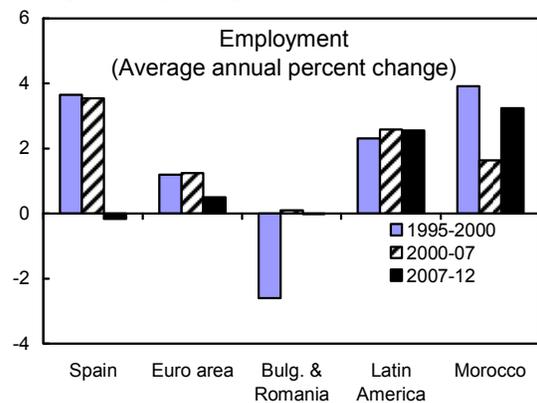
Also, Spain's baby boomer generation reached household formation age.
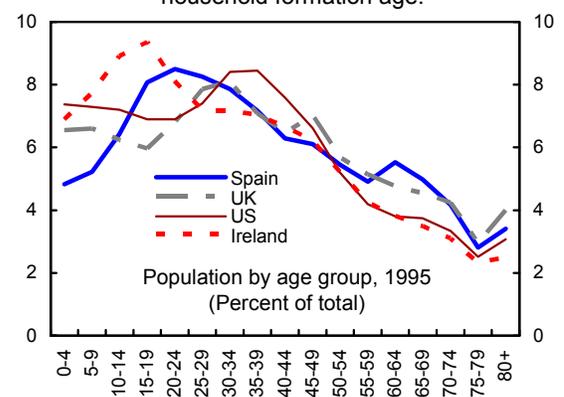
Sources: INE; Ministerio de Vivienda; IMF, *World Economic Outlook;* and US Census Bureau International Database.

9.   **Housing prices first recovered from their 1996 trough.** Real house prices fell by 20 percent in the early-1990s recession. They recovered in the later half of the decade but did not surpass their previous peak until 2002.[5]

10.   **A jump in immigration after 2000 accelerated housing demand.** Spain's upswing attracted many immigrants from Latin America, Eastern Europe and Northern Africa. Immigration's contribution to population growth increased from 0.3 percentage points in 1999 to over 1.2 percentage points after 2002. Additionally, increases in income were partly related to immigration, which accounted for 20–25 percent of gains in GDP per capita.[6]

11.   **The supply response was slowed by zoning regulations, reinforcing house price increases.** House price inflation in Spain deviated significantly from construction and land costs. This is related partly to costly land use regulations.[7] Land approved for building saw average price increases of 30 percent in 2000–01, while agricultural land increased only 5 percent.[8] Application processes for building permits are lengthy.[9] Furthermore, Spain's land law entitles local governments to 5–15 percent of rezoned sites (for roads etc.). Until 2007 this provided municipalities incentives to keep prices high to benefit from sales of excess land later on (OECD, 2007).[10] Bureaucracy, segmentation and uncertainty induced by zoning processes aggravate scarcity of developable land further.[11] Thus, relatively tardy supply translated the sizable demand shock into a doubling of real housing prices between 1999–2007.

12.   **Supply is also subject to long building times** (Figure 3)**.** Average time between building permit and house completion is around 2 years. Such delays can cause large swings in house prices, in both directions. On a structural basis, Ayuso and Restoy (2006) estimate that 2004 prices exceeded long-run equilibrium values by 24–32 percent. However, prices were only marginally overvalued compared to their short-term equilibrium, which takes supply rigidities into account. At the current juncture, supply sluggishness implies peak housing starts of 2006/07 reach completion in the recessionary period 2008/09. Thus, inventories will keep increasing for some time. This is exerting downward pressure on prices and transacted volumes, because price expectations are now to the downside.

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[5] Ayuso and Restoy (2003) judge that house price increases in the second half of the 1990s mainly constituted a correction of previous undershooting.

[6] According to Oficina Económica del Presidente (2006) and Bank of Spain (2006).

[7] Brueckner (2007), Eicher (2008), Glaeser and Gyourko (2002) or Glaeser et al. (2005).

[8] OECD (2005, p. 74), OECD (2007, p. 79) and Ministerio del Medio Ambiente (2008, p. 22).

[9] In particular, planning of electricity and water infrastructure is complex and lengthy at 7-10 years (OECD, 2007).

[10] From 2007 on legislative changes obligated municipalities to use this percentage of land exclusively for utility provision.

[11] Tribunal de Defensa de la Competencia (1993, p. 149 and 1995, p. 37).

Figure 3. Spain: Supply Rigidities, House Prices and Debt Dynamics

Long lead/completion times and other supply rigidities ...

(Thousands, 12 months-to-date)

House starts
Houses completed
Building permits (right scale)

...transfer rents to construction companies.

Profit Share
(percent of gross value added) 1/

Total economy
Construction

Price/rent and price/income ratios could rise ...

Real house prices (1995=100)
Price to rent ratio (1995=100)
Price to income ratio (Years, RHS) 2/

… as interest rates and user costs kept housing affordable.

(Percent)

User cost 3/
Real mortgage interest rate 4/

However, households became highly indebted ...

Household debt (percent of household disposable income)

Total
Mortgages

… and are vunerable to interest rate increases.

Variable Rate Mortgages (percent of outstanding mortgages)

DEU DNK FRA USA SWE U.K. AUS ITA IRL FIN ESP

Sources: Thomson Datastream; OECD; Bank of Spain; Spain Ministry of Housing; Ministry of Finance BDSICE database; INE, Garcia-Vaquero and Martinez (2005); and IMF staff calculations.
1/ The economic profit share is defined as unity minus the labor compensation share.
2/ In years of an average household's annual income.
3/ The user cost assumes perfect foresight of households regarding house price changes as in Hilbers et al (2008). Fiscal reductions relating to mortgage debt service are considered in the calculation using the results of Garcia-Vaquero and Martinez (2005).
4/ The real interests rate applicable to mortgages is calculated as the Euribor (MIBOR before 1999) plus 50 basis points minus HICP inflation.

13. **The absence of a rental market exacerbates house price swings because it eliminates a cushioning reservoir of home use.** Spain's rental market is underdeveloped containing only 12 percent of residential properties or one-third of the OECD average.[12] Incentives work against renting in supply and demand. In supply, slow court proceedings for eviction, and inflexible lease contracts with initial durations of 5 years discourage landlords (Matea, 2006).[13] In demand, generous income tax deductions for mortgage payments and low real interest rates lower the user cost of house ownership.[14] With the rental market underdeveloped, swings in housing demand quickly translate into house prices.

14. **Fiscal deductibility of mortgage payments likely amplified house price increases.** Fiscal incentives to home ownership tend to fail relieving homebuyers as sellers fix home prices at households' payment capacity with the fiscal deduction taken into account (Garcia-Montalvo, 2007). The difference between house prices and land/construction costs— and thus the income-tax deduction—is then captured by construction companies, landowners and municipal governments. Strongly rising profit shares of construction companies and buoyant revenues for subnational governments during the boom reflect this.[15]

15. **Housing affordability was gradually eroded.** Over the last decade price-to-income and price-to-rent ratios of Spanish housing increased substantially. This was counteracted by lower financing costs, brought about by currency union. The user cost of owning a house, which subtracts expected capital gains on the property from the net financing cost, resulted even lower (and negative in many years) due to expectations for high price increases. This environment may have led to significant speculative demand in the later stages of the housing cycle. However, increased price-to-income ratios implied that average homebuyers needed to take on more leverage.

16. **As a result, households became highly indebted at variable interest rates and longer maturities.** Households' willingness to take on debt rose for two reasons. First, fast per-capita income convergence elevated households' perceived permanent income. A desire for consumption smoothing then helps explain higher indebtedness (Bank of Spain, 2006). Second, lower interest costs could be attributed to joining monetary union, and hence were seen as permanent. With the Euribor hovering around 2 percent and a persistent positive inflation differential of ½-1 percentage points with euro partners, real mortgage interest rates were around zero during the peak boom years. Nominal stability allowed lengthening of mortgage durations from 10–15 years in the late-1980s to 25–30 years in the 2000s. With

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[12] In 2005. See OECD (2007).

[13] Landlords are obligated to renew leases annually during the first five years. Rent payments are adjusted by the CPI.

[14] Income tax relief is available for both principal and interest payments as well as other items such as taxes, and other permit and licensing costs. The general deduction rate is 15 percent and up to around 9000 euros may be applied to the deduction annually. The deduction also applies for deposits into dedicated savings accounts for home purchase. See e.g., OECD (2007).

[15] See Figure 3.

collateral effects working in their favor, households took on mortgage liabilities to acquire higher-priced homes. They thereby increased their indebtedness from 70 to 130 percent of disposable income between 2000–07.[16] This leverage has left households vunerable to increases in the mortgage index (12-month Euribor plus spread); this vulnerability is further exacerbated by longer mortgage terms. The Bank of Spain (2008a) estimates that a one higher-priced houses.[17] They thereby increased their indebtedness from 70 to 130 percent of percentage point increase in interest rates leads to a loss of 0.7 percent of household disposable income.[18] During most of 2008, therefore, household finances got increasingly squeezed, with relief only coming through Euribor declines at the end of the year. However, the recession has lowered expectations of future incomes and keeps housing demand low.

17. **Households are cutting consumption to increase saving, yet defaults are rising.** Spanish households are stretched: the amount of "free" household savings (not required for debt amortization) has steadily fallen from 8 percent of disposable income in 1996 to under 2 percent since 2000 and even negative territory in 2006.[19] Given personal liability for mortgages,[20] households are cutting back on consumption. However, most households (66 percent) in Spain own their main residence outright. Thus, the mortgage burden is unevenly distributed, and will likely prove excessive for those households that acquired homes recently at high loan-to-value (LTV) ratios, or that become unemployed.

18. **Adjustment will feed through the real economy as the large construction sector needs to shrink.** The size of the construction sector has become unsustainable at 13 percent

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[16] Indebtedness also became more widespread. As of 2006, more than 40 percent of persons had pending debt in Spain, compared to just 10 percent in 1990 (Bank of Spain, 2006).

[17] Nieto (2007) identifies higher household wealth—largely due to higher house prices—to be the single most important determinant of credit expansion to households in Spain. There has thus been a strong reverse causality through collateral effects facilitating twin booms in credit and housing prices; this financial accelerator effect is now expected to reverse and exacerbate the downwards adjustment. Gimeno and Martinez-Carrascal (2006) also find that the housing and credit booms in Spain were strongly interrelated. In a VAR model, they estimate that a one percent increase in credit growth is associated with a 0.15 percent rise in house prices. Likewise, a one percent house price increase translates into a 0.1 percentage point higher growth rate in mortgage credit.

[18] This income effect of interest rates was still positive in the early 1990s. Then, households on average profited from higher rates, because they owned less real estate and more interest-bearing assets.
 In the current environment, competition among banks for customer deposit may lower the mentioned 0.7pp average effect on households in the short run. It is likely, however, that these benefits accrue mainly to those with higher financial wealth and thus less at risk of losing their homes.

[19] See OECD (2005) and Nieto (2007).

[20] Mortgages are collateralized by the property and income of the mortgagee.

of employment and 9 percent of GDP in residential investment.[21] Thus, more so than in other countries, in Spain the negative consequences of the bust will be felt through unemployment as construction sheds workers. Other sectors will feel the knock-on effects. This will weaken housing demand fundamentals. Moreover, with roughly 25 percent of construction workers being foreigners,[22] immigration has already started to slow.

C. The Correction

19.   **How will current dynamics settle down into a longer-run sustainable housing market equilibrium?** To answer this question, we analyze demand, supply, inventories, and house prices. To gauge high uncertainty of population and consequently housing demand developments we set out three scenarios: low, high, and central.

Demand

20.   **Population growth may have peaked.** Population growth surged from 0.2–0.3 percent during most of the nineties driven by native fertility, to 1.6 percent during the last five years owing to immigration. Immigration is now slowing. The 1.4 percent population growth in the first half of 2008 is already below the most pessimistic short term projections of the National Statistics Institute (INE).

21.   **INE's long-run projections anticipate annual population growth to drop to 0.4–0.8 percent** (Figure 4, Table 1)**.** A low population growth scenario postulates that immigration will slow to 100,000 persons a year, resulting in population growth of 0.4 percent. A high scenario allows for a somewhat higher influx to yield 0.8 percent population growth, still well below recent peaks. A central scenario averages these two.[23]

22.   **Alongside population, household formation is set to slow drastically.** From a peak of 530,000 in 2006, we expect household formation to stabilize in a range of 240,000–390,000 per year. To obtain estimates for household formation, we combine the population projections with assumptions on the number of persons per household. The latter has followed a steady decline towards the European average. The high scenario envisions the number of persons per household to fall as rapidly as during the boom years 2000–07. The low scenario decreases changes in household size to the pace experienced in the last economic slump in 1991–95. The central scenario again describes the middle ground and translates to 310,000 households being formed. The range for household formation is between 240,000 (low) and 390,000 (high), thus ¼ to ½ less than the 530,000 new households recorded in 2006.

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[21] In 2006, more housing units were under construction in Spain than in Germany, France, Italy and the UK combined. Bover and Jimeno (2007) explain the distinct reactions of construction activity to house price increases amongst countries with remaining building possibilities, using population density and persons living in free-standing houses as proxies. Their result is that in countries with few spatial building constraints, including Spain, relative employment in construction increases by roughly 0.5 percent for every 1 percentage point increase in real house prices. In dense countries, such as the UK, construction activity hardly reacts.

[22] See OECD (2007).

[23] INE's long run population projections from 2002 initially underestimated population growth. The staff scenarios construct a transition from this higher population growth to the INE long-term projections (Table 1).

Figure 4. Spain: Demographic Housing Need

Population growth has already plunged below official short-term projections ...

Population growth (percent), historical and INE short-term projections 1/

- Actual
- Low scenario
- Middle scenario
- High scenario
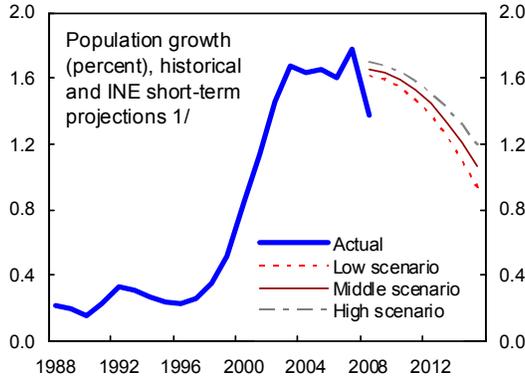
…and is likely to quickly decrease to long-term projected levels.

Population growth (percent), historical and IMF scenarios based on INE long term scenarios 1/ 2/

- Actual
- Low scenario
- Central scenario
- High scenario
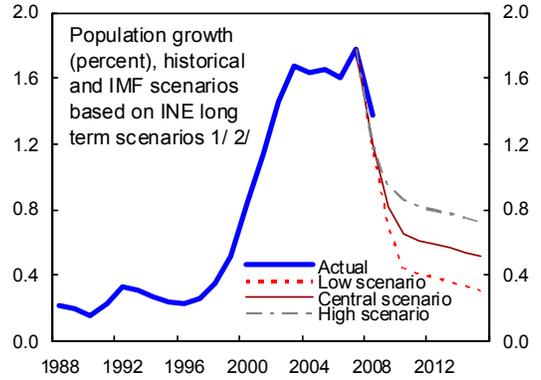
Decreases in household size may also slow ...

Persons per household, historical values and IMF projections 3/

- Actuals
- High scenario
- Central Scenario
- Low Scenario

Current European average = 2.5
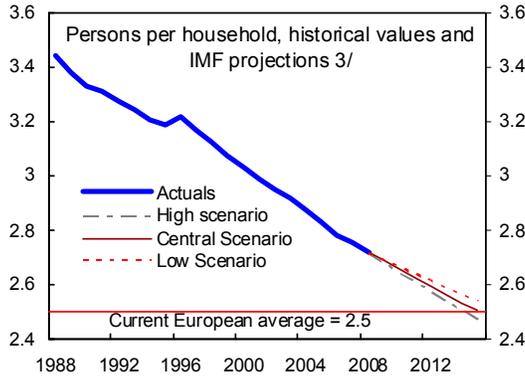
… resulting in much lower household formation.

Household formation (thousands), historical and IMF scenarios 4/

- Actual
- Low scenario
- Central scenario
- High scenario
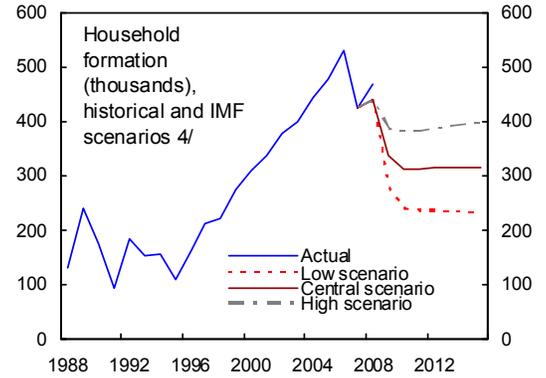
Completions have been higher due to vacation homes ...

(Thousands)

- Household formation
- Housing starts
- Housing completions
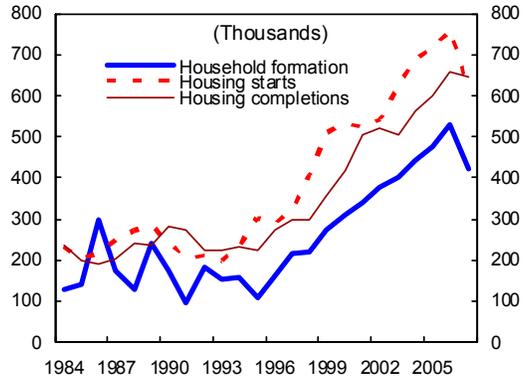
…so that 400,000 new units per year are sustainable.

Home completions (thousands), historical and demographically sustainable amounts 5/

- Actual
- Low scenario
- Central scenario
- High scenario
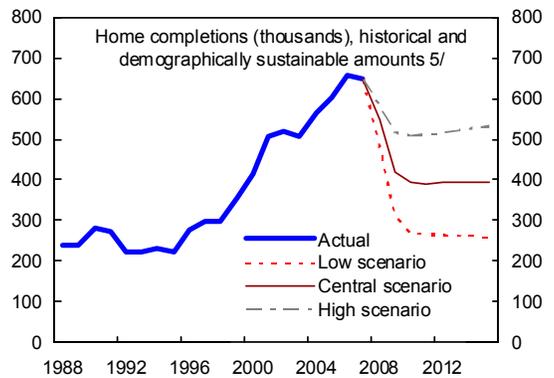
Sources: Instituto Nacional de Estadística; Ministerio de Vivienda; and IMF staff projections.
1/ Actual value for 2008 is the annualized growth rate of 1.4 percent during the first half of the year.
2/ Our projections assume a fall of the growth rate for the year 2008 as a whole to 1.2 percent in light of rapidly deteriorating economic conditions.
3/ Value for 2008 is computed using growth rates of households and population available data through November 2008. The High scenario assumes a rate of change as in period 2000-07; Central scenario assumes a rate of change as in period 1987-2007; Low scenario assumes a rate of change as in period 1991-95.
4/ Scenarios are calculated by combining assumptions of previous scenarios on population growth and persons per household. Actual data point for 2008 is up to third quarter.
5/ In addition to previous assumptions, the high scenario assumes that 25 percent of home construction can be sold as vacation homes. The low and central scenarios assume 10 and 20 percent respectively.

Table 1. Spain: Demographic Housing Needs, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Population growth (percent):									
Actuals 1/	1.8	1.4							
INE short term projections									
high		1.7	1.7	1.6	1.6	1.5	1.4	1.3	1.2
middle		1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.1
low		1.6	1.6	1.6	1.5	1.4	1.3	1.1	0.9
INE long term projection									
scenario 1 (high)		1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.7
scenario 2 (low)		0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3
IMF scenarios based on INE long term projections 2/									
high scenario		**1.2**	0.9	0.9	0.8	0.8	0.8	0.8	0.7
central scenario		**1.2**	**0.8**	**0.7**	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**
low scenario		**1.2**	**0.7**	0.4	0.4	0.4	0.4	0.3	0.3
Persons per household:									
Actuals 1/	2.76	2.72							
IMF scenarios									
high scenario 3/		2.72	2.68	2.64	2.61	2.57	2.54	2.51	2.47
central scenario 4/		2.72	2.68	2.65	2.62	2.59	2.56	2.53	2.50
low scenario 5/		2.72	2.69	2.66	2.64	2.61	2.59	2.56	2.54
Number of households (millions):									
Actuals 1/	16.3	16.7							
IMF scenarios 6/									
high scenario		16.7	17.1	17.5	17.9	18.3	18.6	19.0	19.4
central scenario		16.7	17.1	17.4	17.7	18.0	18.3	18.6	18.9
low scenario		16.7	17.0	17.2	17.5	17.7	17.9	18.2	18.4
Household formation (thousands):									
Actuals 1/	424	468							
IMF scenarios 6/									
high scenario		439	387	382	382	387	391	395	399
central scenario		439	335	313	312	314	315	316	316
low scenario		439	280	240	238	237	236	234	232
Demographically sustainable number of home completions (thousands):									
Actual home completions	647								
IMF scenarios 6/									
high scenario 7/		585	516	509	510	516	522	527	531
cental scenario 8/		548	419	391	390	392	394	395	395
low scenario 9/		488	311	267	264	263	262	260	258

Sources: Instituto Nacional de Estadística; and IMF staff projections.
1/ Actuals for 2008 are based on growth rates of data available through November 2008.
2/ Numbers in bold are IMF staff projections to establish a transition to long-term INE growth projections.
3/ Assumes a -1.3 percent annual change in persons per household, the same as the average from 2000-07.
4/ Assumes a -1.2 percent annual change in persons per household, the same as in the sample average 1987-2007.
5/ Assumes a -1.0 percent annual change in persons per household, the same as the average in the last housing downturn 1991-95.
6/ These scenarios are calculated by combining assumptions of respective scenarios on population growth and persons per household from above.
7/ Assumes that the historical average of 25 percent of residential construction can be supported by demand for second homes.
8/ Assumes that 20 percent of residential construction can be supported by demand for second homes.
9/ Assumes that only 10 percent of residential construction can be supported by demand for second homes.

23.   **Vacation homes increase the sustainable long-run level of housing slightly beyond household formations.** Since the late-1980s, it has been the case that housing starts and completions outstripped new household formation owing to vacation homes. Vacation (and empty) homes make up one fourth of all units built, with some 40 percent sold to foreigners.[24] The high scenario assumes that 25 percent of output can be vacation homes, even during the downturn. The low scenario assumes this share to be 10 percent and central

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[24] This is also confirmed by anecdotal evidence; see e.g., Credito-Vivienda.com (2008).

scenario 20 percent. Under these assumptions, the 310,000 household formations in the central scenario translate to almost 400,000 units in long-run sustainable housing demand. The range spanned by the low and high scenarios is 260,000–520,000.

Supply

24.   **Buoyant housing starts of 2006–07, substantially exceeded sustainable levels and are now adding to inventories.** Property developers and construction companies were slow to react to first signs of slowing in 2006, starting 760,000 in that year and 620,000 in 2007. The implications are twofold. First, inventories will keep growing for some time even as Spain proceeds through the downturn. Second, owing to the long and relatively stable lag times, the adjustment path can be traced reasonably well (Figure 5). However, most recent data hint at actual completions falling short of those expected based on lagged starts. Hard-pressed developers may increasingly choose to suspend projects midway.

25.   **Housing starts have halved since 2007 with permits foreshadowing a further drop.** Housing starts in 2008Q3 have slowed to a pace of less than 300,000 per year—comparable to 1996 levels**.** Since then, building permits have dropped off further—to 1992–93 levels. In 1992–93, 200,000 housing units were started. Given increased tensions in financial markets in the fourth quarter of 2008, we expect some further deterioration going forward. Housing starts are expected to bottom out at 150,000 per year in 2009 and 2010 before gradually recovering to demographically sustainable levels by 2015.

26.   **Lengthy completion times suggest that home finishes will exceed demographically sustainable demand through mid-2010** (Figure 6)**.** Houses started at end-2006 were completed in 2008H2, at a pace of 760,000 a year. Given that starts after the peak slowed only gradually, finishes are expected to remain above demographically sustainable levels until the middle of 2010, thus adding to inventory. This new inventory, in turn, is expected to weigh down home starts and prices.

27.   **Value-added in housing construction is projected to bottom out in mid-2010—at 1/3 of 2007 levels.** Value at work (national accounts concept for value added) for residential construction can be proxied via a perpetual inventory method by adding new housing starts and subtracting housing completions.[25] The results show that adjustment in the construction sector is well underway.[26] Nevertheless, the largest adjustment is still to come in 2009 as housing completions pass their peak. Value at work will stop falling only in mid-2010, when

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[25] We choose the average of housing starts and finishes in 1983 as the starting point for the perpetual inventory method. Between 1980-83 the amount of housing starts and finishes in each year were very similar and exhibited little fluctuation. In addition, the long time frame between 1983 and the present will minimize the impact of the starting value on our results.

[26] See Figure 6.

Figure 5. Spain: Building Permits, Housing Starts and Completions

Housing starts generally follow building permits with a 3-month lag.

Monthly building permits and 3-month lagged housing starts (thousands)

- - - Building Permits
—— Housing Starts, lagged by 3 months
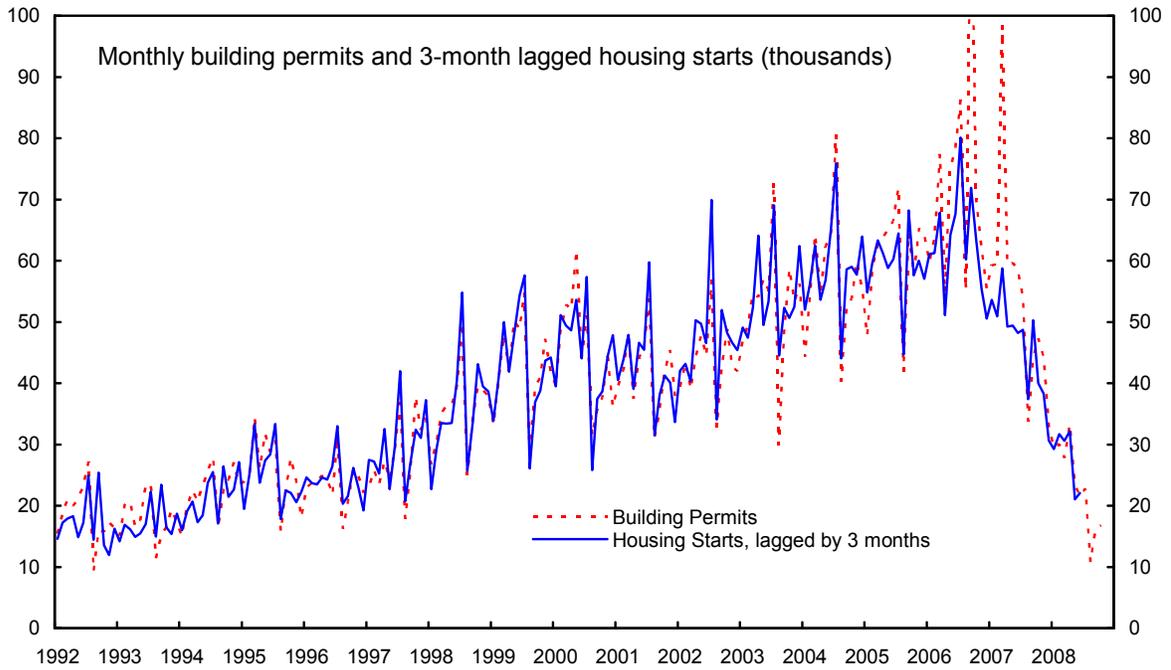
Once started, projects take on average 21 months to complete.

—— Housing starts
- - - Housing completions, lagged by 21 months

Monthly housing starts and 21-month lagged housing completions (thousands)
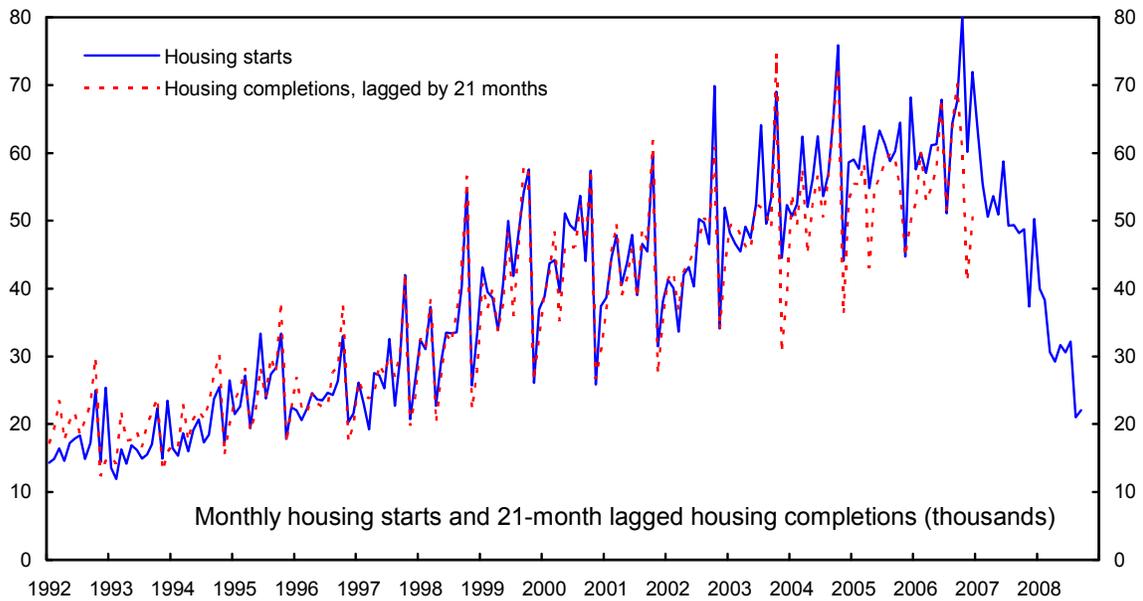
Sources: Ministery of Finance BDSICE database; and IMF staff calculations.

Figure 6. Spain: Projected Scenario for Housing Starts, Completions and Value at Work

Housing starts have been tanking with permits implying further drops.

Housing Starts (thousands, 12 months to date)

- - - Forecast scenario
—— Actuals

Demographically sustainable level

However, finishes are yet to peak as starts of 2006/07 are completed ...

Housing Completions (thousands, 12 months to date)

—— Actuals
- - - Forecast scenario

Demographically sustainable level

... after which declines in value at work will rapidly accelerate.

Units under construction (thousands, normalized) 1/

—— Actuals
- - - Forecast scenario

Demographically sustainable level

Sources: Ministery of Finance BDSICE database; and IMF staff calculations and projections.
1/ Normalized to a construction time of one year to make the numbers of units under construction directly comparable to starts and finishes. True number of units under construction is 21/12 times as high, as it takes 21 months on average to complete a residential construction project.

the now low levels of starts will have fully fed through. Then, on an annualized basis, about 230,000 housing units will be under construction—compared to 730,000 in 2007.

28.   **Consequently, housing investment and construction employment will more than halve from their 2007 peaks** (Figure 7)**.** The housing sector's value at work measure approximates closely both housing investment as well as housing sector employment (Table 3).[27] At their projected trough in 2010, both will have returned to pre-boom levels last registered in 1997–98.

Inventory

29.   **Housing inventory is difficult to estimate, particularly given the high incidence of second and empty homes.** Availability of housing statistics in Spain generally has tended to lag the sector's importance in the economy. This is evident in the continued absence of official inventory statistics. Therefore, inventories have to be estimated. These estimates utilize data on housing starts, finishes, sales, household formation and the 10-year census of the housing stock. The last census shows that in 2001, 15 percent of the housing stock sat empty, while another

Spain: Housing stock

	Thousands of Dwellings		Percent of total	
	1991	2001	1991	2001
All Dwellings	17.2	20.9	100.0	100.0
First Homes	11.7	14.2	68.2	67.7
Second Homes	2.9	3.4	17.0	16.0
Empty Homes	2.5	3.1	14.4	14.8
Population (mn)	38.9	40.8		

Source: INE Housing Census 1991 and 2001.

16 percent were second homes.[28] With vacation homes constituting about 25 percent of residential construction, they complicate the relationship between household formation and residential construction and thereby render the determination of inventories difficult. Nevertheless, we may explore a few approaches.

30.   **Since 2001, house completions have exceeded household formation by one million units.** Callau and Pac (2007) use this figure as their inventory estimate. They argue that possible upward bias from speculative demand is counterbalanced by potential

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[27] As housing sector employment we define employment in the residential construction and real estate services sectors. Notes under Table 2 explain the construction of this series. Employment in real estate services is only 10-12 percent of that in residential construction, but has more than doubled in the last 10 years.

[28] Little change since the 1991 census hints at unfavorable structural factors –such as landlord-unfriendly rental laws– forestalling a more efficient use of the housing stock.

Figure 7. Projected Scenario for Housing Investment and Employment

Value at work is a good proxy for both housing investment ...

... and housing sector employment.
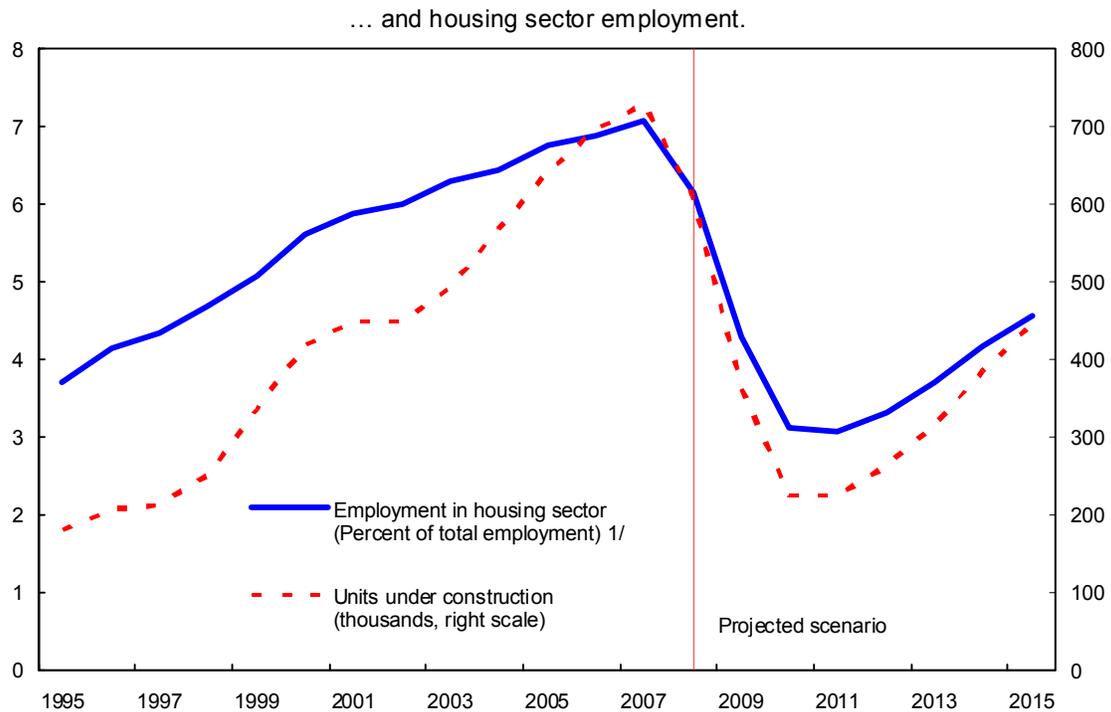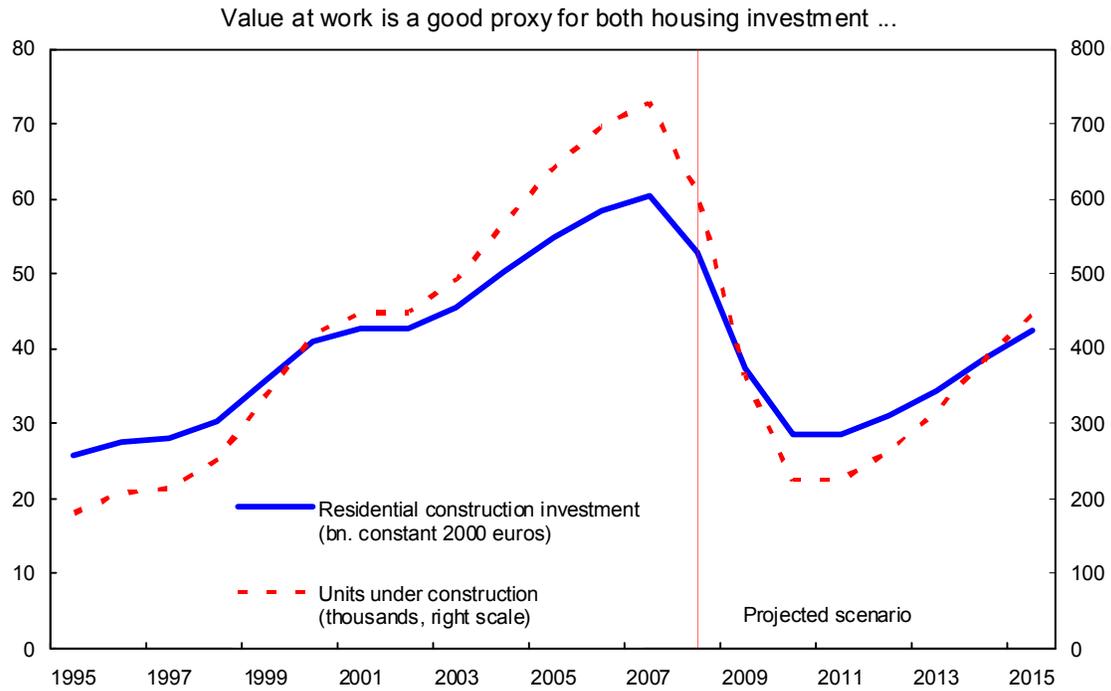
Sources: Instituto Nacional de Estadística; Ministry of Finance BDSICE database; EU Klems; and IMF staff calculation and projections.

1/ The housing sector is defined as residential construction and real estate service activities. Employment is national accounts based. Real residential and total construction investment are used to construct an estimate of residential construction investment. The ratio of employment in real estate services relative to total market services from EU Klems is employed to yield an estimate of employment in real estate activities.

Table 2. Construction Sector Dynamics
(Thousands, unless otherwise indicated)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
House Starts										
Actuals	760	616								
Jan-Sep	548	480	276							
Central projected scenario 1/			325	147	149	190	241	306	388	408
House Completions										
Actuals	656	647								
Jan-Sep	487	481	518							
Central projected scenario 2/			687	555	252	149	160	203	257	327
Number of Units under Construction 3/										
Actuals 4/	697	729								
Jan-Sep	688	733	663							
Central projected scenario			610	365	225	225	263	317	386	446
Percent change			-16.3	-40.1	-38.5	0.3	16.8	20.5	21.6	15.7
Inventory (Thousands)			1000	1136	998	757	525	333	196	128
Inventory change 5/				136	-139	-241	-232	-191	-138	-68
Residential Construction Investment (constant 2000 billions of euros)										
Actuals	58.4	60.4								
Central projected scenario			53.0	37.5	28.6	28.7	31.1	34.5	38.8	42.6
Percent change			-12.4	-29.2	-23.7	0.2	8.3	10.9	12.5	9.8
Housing sector employment (thousands) 6/										
Actuals	1380	1459								
Central projected scenario			1265	856	622	623	686	776	890	991
Percent change			-13.3	-32.3	-27.4	0.2	10.1	13.1	14.7	11.3
Percent of total employment	6.9	7.1	6.1	4.3	3.1	3.1	3.3	3.7	4.2	4.6

Sources: INE, Ministry of Finance BDSICE database, EU Klems and IMF staff calculations and projections.
1/ January through November values used in projection for 2008 are actuals or projections based directly on forward-looking building permit data. Throughout 2009 and 2010 housing starts are assumed to mimic the pattern observed in 1993. Thereafter starts increase by 14 percent per year.
2/ Projections through mid-2010 are based on already observed housing starts.
3/ These numbers are normalized to a construction time of one year to make them comparable with starts and finishes. True number of units under construction is 21/12 times as high, as it takes 21 months on average to complete a residential construction project.
4/ Actual housing starts and completions are used in the computation of units under construction. Computation of the number of units under construction uses a perpetual inventory method starting at end-1983.
5/ Calculated using a demographically sustainable absorption level of 390-400 thousand units/year, as set out in the central scenario of Table 1.
6/ The housing sector is defined as residential construction and real estate service activities. Employment is national accounts based and includes both salaried employees and self-employed. Real residential and total construction investment are used to construct an estimate of residential construction investment. The ratio of employment in real estate services relative to total market services from EU Klems is employed to yield an estimate of employment in real estate activities.

Table 3. Construction Activity: Regression Results

Dependent variable:	GFCF residential construction (constant bn. 2000 euros)	Housing sector employment (thousands of persons)
Regressors:		
Constant	14.460***	247.684***
	(1.048)	(22.511)
Units under construction	0.063***	1.666***
(thousands)	(0.002)	(0.048)
Memorandum Items:		
Adjusted R-squared	0.985	0.990
Sample Period	1995-2007	1995-2007

Source: IMF staff estimates.
Notes: Standard errors in parentheses. *** indicates significance at the 1 percent level.

downward bias from some new households having likely been formed in pre-existing homes.[29]

31.   **Also, home completions have substantially outstripped new home sales.** Since the inception of sales data in 2004, a cumulative difference of 1.3 million unsold units has built up. However, this figure constitutes an upper bound for inventories owing to two upward biases. First, completions also include homes not intended for sale, such as those build by individuals for their own use or by the public sector for rental purposes. Second, it is not taken into account that some homes are demolished or become uninhabitable. Appropriate adjustments for these biases put inventory buildup between 1997 and 2008 in a 0.8–1.4 million range (BBVA, 2008b).

Difference between housing completions and household formation (thou. units)

Difference

Difference cumulated, RHS
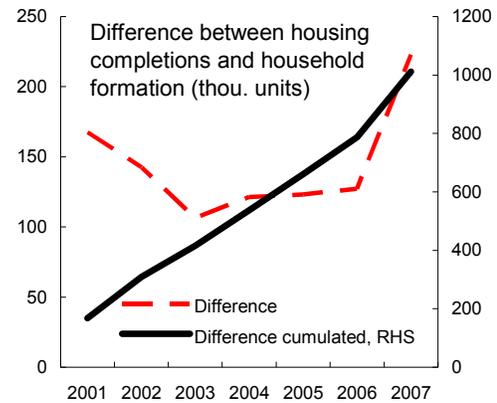
Sources: INE; Ministry of Finance BDSICE database; and IMF staff calculations.

Spain: New home sales and completions (Thousands)

	New Home Sales	Completions	Cumulative Difference
2004	295	564	268
2005	336	601	533
2006	410	656	779
2007	412	647	1014
2008 1/	256	518	1276

Sources: Ministry of Finance BDSICE database.
1/ Data through third quarter.

32.   **Taken together, analysts tend to estimate inventory at around one million homes**. For instance, Tinsa, a property appraiser with a market share of 20 percent, sees inventory reaching 930,000 by end-2008 (Tinsa, 2008a). Garcia-Montalvo's (2007) estimate is 1.3 million. A study by the Ministry of Housing put inventory at 500,000 in June 2008 with a rise to 650,000–930,000 units expected by end-2008.[30] For our staff scenarios, we use a "consensus" inventory estimate of 1 million. Inventory estimates are crucial to the analysis because inventories predominantly drive short-run housing dynamics, while demographics play a minor role (Klyuev, 2008).

House Prices

33.   **Real house prices started to decline at end-2007 and have been falling steadily since then** (Table 4). The various available house price series differ in timing and extent of

[29] Callau and Pac's calculations implicitly assume that *all* newly formed households moved into new homes with none moving to homes that existed before 2001.

[30] See El Pais (2008).

the house price downturn (Box 1). Assessed prices tend to lag the market: For instance, Ministry of Housing statistics show only a 5½ percent annual decline in 2008–Q4. Tinsa, however, already reported a decrease of 10 percent with a sharper drop after the financial turmoil started in August 2007. A new transaction price series developed by INE appears closer to the Tinsa results. Looking forward, further declines are likely. Asking prices have dropped more strongly throughout 2008, foreshadowing future declines as these properties get sold. Overall, present developments confirm that prices are playing a crucial role in the adjustment process alongside lower sales volumes.

Table 4. Spain: Recent House Price Developments
(Year-on-year percent change)

	2007				2008			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Real Prices								
Assessed Prices								
Ministry of Housing: free market	4.7	3.3	2.9	0.7	-0.6	-2.5	-4.4	-5.6
Ministry of Housing: general market	4.7	3.3	2.9	0.9	-0.4	-2.2	-4.0	-5.2
Tinsa IMIE	8.8	6.3	3.6	-0.3	-3.3	-6.1	-9.0	-10.0
Market (transacted) Prices								
INE - House price index	...	...	...	...	-1.6	-4.8	-7.6	...
Asking Prices								
Fotocasa-IESE	5.0	3.0	0.0	-4.0	-8.3	-11.4	-12.4	-10.5
Nominal Prices								
Assessed Prices								
Ministry of Housing: free market	7.2	5.8	5.3	4.8	3.8	2.0	0.4	-3.2
Ministry of Housing: general market	7.2	5.8	5.3	4.9	4.0	2.4	0.7	-2.8
Tinsa IMIE	11.5	8.9	6.1	3.7	1.0	-1.7	-4.5	-7.7
Market (transacted) Prices								
INE - House price index	...	...	...	...	2.8	-0.3	-3.0	...
Asking Prices								
Fotocasa-IESE	7.6	5.5	2.4	-0.2	-4.2	-7.3	-8.0	-8.3
Memorandum Item:								
HICP Inflation	2.5	2.4	2.4	4.0	4.5	4.7	5.0	2.5

Sources: Ministry of Housing; INE; Tinsa; and Fotocasa.

34.   **The house price correction in the current downturn is likely deeper than in 1991–96, when interest rates declined significantly**. In the past, the average European housing downturn lasted almost six years and resulted in an average real house price correction of 29 percent—varying between

Spain: House Price Booms and Busts

Booms		Busts	
Period	Cumulative real price increase (percent)	Period	Cumulative real price decrease (percent)
1973-78	33.5	1978-82	-33.3
1985-91	130.2	1991-96	-19.8
1997-2007	113.7		

Sources: Bank for International Settlements; and Hilbers et al. (2008).

Box 1: Data on House Prices in Spain

House price series for Spain can be subdivided into assessed, market, and asking prices:

A. Assessed Prices

Ministry of Housing

Free market house prices:
- Quarterly data of prices per square meter submitted by the association of property appraisers
- For properties valued at less than 1.05 million euros
- Two types of weights have been used to aggregate prices across geographic areas with surprising differences for the period 1999–2002 (see Box Figure)
  - Population (1987–2004)
  - Number of assessments (1995-present)
- Subseries are available that distinguish between houses above and below two years of age
- Shorter time series are available for prices of subsidized housing

General index of house prices (IGP):
- Weighted average of free and subsidized house prices available since 2005
- Otherwise same characteristics as price of free housing

Tinsa
- Developed by property appraiser TINSA based on its own appraisals
- Monthly chained LaSpeyres index of housing prices in the free market

B. Market Prices

INE

Index of Housing prices (IPV)
- Chain-linked LaSpeyers index based on actual sales prices in the free housing market submitted by the National Association of Notaries.
- Available from 2007Q1 with breakdown into new and used housing.
- Prices are per dwelling. Every dwelling is assigned a category. The overall index is a weighted average of the categories.

C. Asking prices

Fotocasa
- Monthly asking prices for used properties starting in 2005, constructed based on advertisements on the internet real estate portal with the most visitors and largest home database in Spain
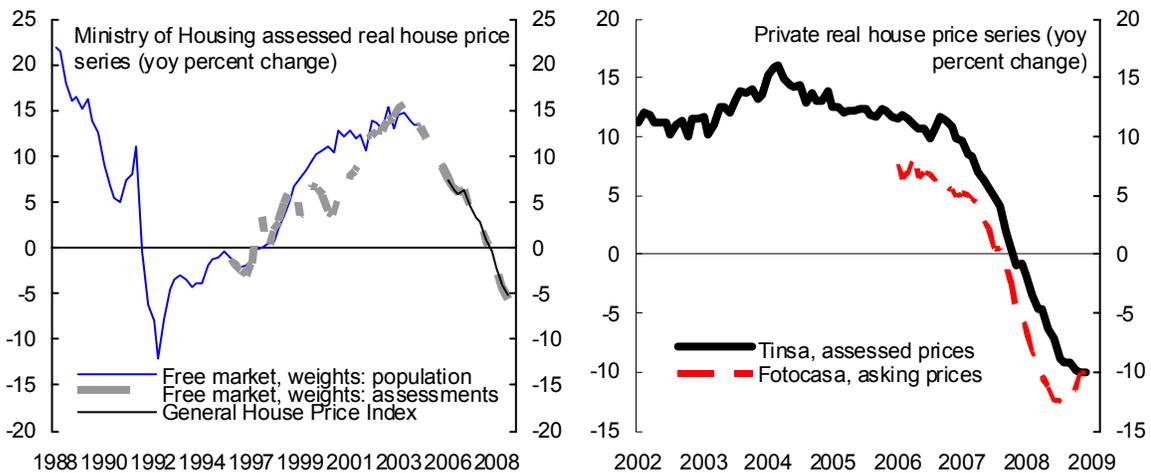
Sources: Ministry of Housing, Ministry of Finance BDSICE database, Tinsa and Fotocasa.

16–49 percent (Figure 8). In comparison, Spain's last house price correction of 20 percent between 1991–96 was mild. This was partly due to rapidly falling real interest rates in 1993 sustaining housing affordability and prices. Moreover, data suggest that Spain's last adjustment was not as strongly inventory driven as the current one; house finishes in 1992–94 were low compared to household formation.

35.   **In the current scenario, affordability is likely to be restored via real price declines—end-user interest costs are seen as playing less of a role.** While existing mortgagees are profiting from recent decreases in the 12-month Euribor, evidence suggests that Spanish banks are tightening both availability and risk spreads for new mortgages (250 bp at end-2008 versus 110 bp on average since 2000). This leaves house prices to carry out adjustment.[31] Experts indicate that a 20–30 percent correction of nominal prices will be needed. A scenario calculated by staff suggest that a real house price correction of 30 percent—in line with past European experiences—would improve mortgage affordability for new buyers roughly to levels of 2005. Regional data confirm the role of prices in reestablishing affordability: declines are most pronounced on the coasts and large cities, i.e., in locales that experienced the highest appreciation.
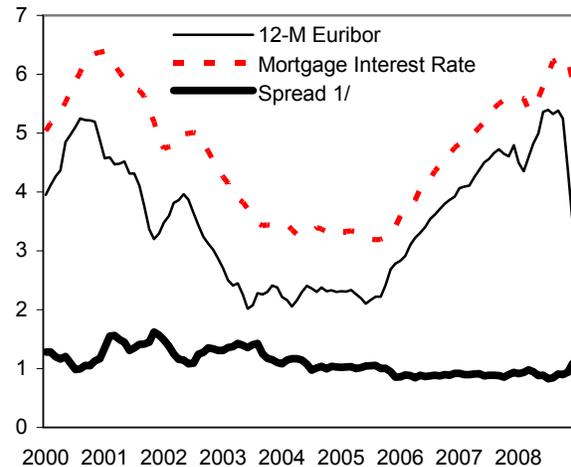
Sources: Bank of Spain and IMF staff calculations.
1/ The spread is calculated using the average Euribor over the previous two months (see Bank of Spain, 2007a).

36.   **If the recent boom reflects largely speculative demand, then the correction may be deeper.** Many authors (Garcia-Montalvo 2007, Callau and Pac 2008) point to the importance of speculative demand in fuelling the housing boom given abundant financing, low yields on alternative assets, and expectations of future price increases. Surveys show that during the peak boom years more than 90 percent of homebuyers thought homes to be overvalued, yet also expected house prices to keep increasing at rates of 20 percent per year.[32] Sluggishness of supply made it commonplace for buyers to buy an apartment in a building yet to be finished, and often yet to be started.[33] Capital gains on a deposit in such a transaction could reach 800 percent, thus dwarfing transaction costs.[34] Econometric studies

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[31] See e.g., El Mundo (2008). Furthermore, Garcia-Montalvo (2007) finds that financial variables were almost exclusive drivers of the most recent housing cycle, while demographic variables were paramount in previous cycles.

[32] See Garcia-Montalvo (2006).

[33] More than half of new homes were bought before they were finished during 2002-06 (Ministerio de Vivienda, 2008).

[34] See Garcia-Montalvo (2007).

Figure 8. Housing Slumps in International and Historical Perspective

Past European house price corrections have been substantial and drawn out.

Real House Price Adjustments in 18 European Housing Downturns (peak=100)

Upper envelope: 15.9% decline in 6 years (France 1991-97)

Average downturn: Duration = 5.8 years Total price decline = 28.8%

Lower envelope: 48.9% decline in 4 years (Finland 1989-95)
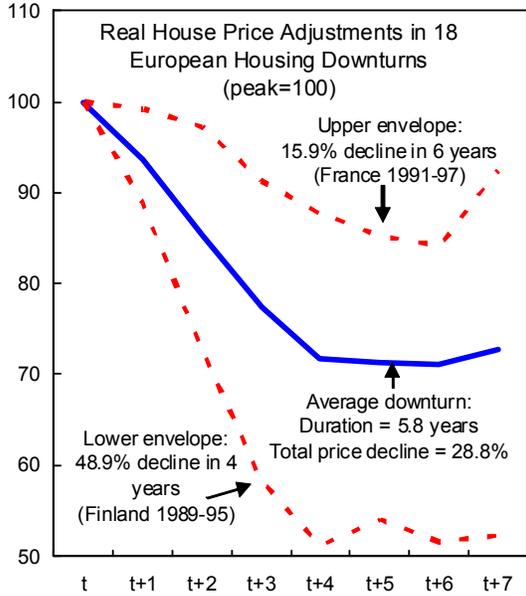
In comparison, Spain's last slump was comparatively shallow ...

Real House Prices in Spanish and European Housing Downturns (peak=100)

Spain 2007-present

Spain 1991-96: 19.8% decline

Average European downturn

Spain 1978-82: 29.2% decline
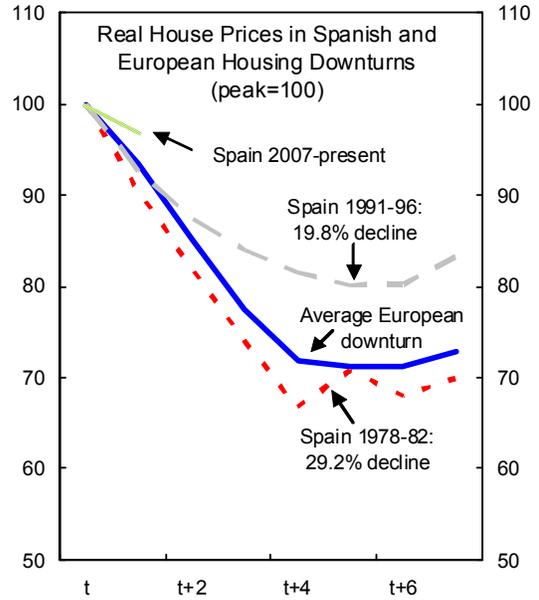
...due to significant interest rate decreases aiding affordability.

Short-term interest rates (percent)

Nominal

Real

Housing downturns
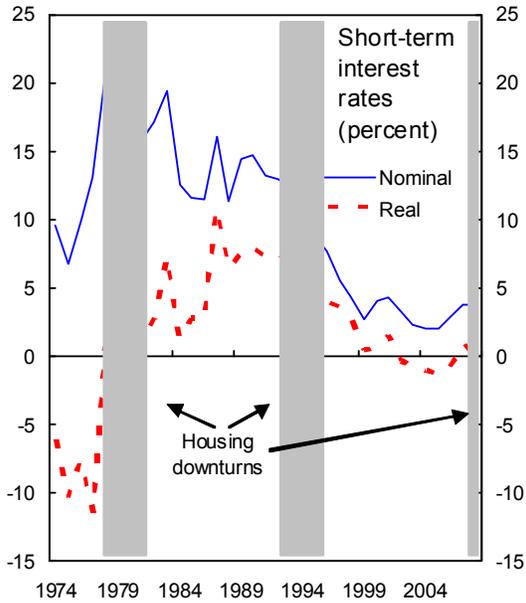
This time, rates will less owing to increasing spreads, leaving house prices to adjust more.

- - - Mortgage interest (constant 2007 euros) 1/
- - - Mortgage payment (constant 2007 euros) 2/
— Mortgage Interest Rate (percent), RHS
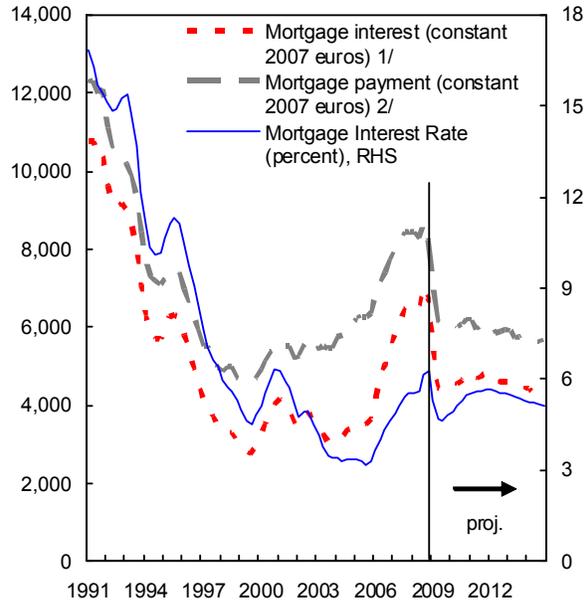
proj.

Sources: Bank of International Settlements; IMF, *International Financial Statistics*; Bank of Spain; Hilbers et al. (2008); and IMF staff calculations and projections.
1/ Interest payment on a new typical mortgage, defined as an 80 percent loan-to-value mortgage on a 149,000 euro home.
2/ Staff projections assume a front-loaded 30 percent decrease in real house prices over the next four years.

largely agree on overvaluation of Spanish house prices relative to fundamentals in a range of 15–30 percent.[35] With increased carry costs and tightening credit conditions, the price adjustment could thus still be deeper than implied by deteriorating fundamentals alone.

37.   **Given high outstanding inventory, the correction is likely front-loaded**. The staff scenario assumes an 18 percent real price decline by end-2009. High inventory and tight credit are expected to make house prices the main adjustment variable, especially as medium-term housing fundamentals are deteriorating with slowing immigration and household formation. Further, rising unemployment tends to affect crucial first time buyers the most.

D. Policy Conclusions

38.   **Reducing inventory is key to limit undershooting of house prices.** Klyuev (2008) finds that inventory-to-sales ratios and foreclosure starts tend to be the main drivers of housing market corrections. The gap between actual and equilibrium prices, however, does not exert a powerful influence over price dynamics in the short run. Thus, even if current Spanish house prices were not far above their equilibrium values, large inventory implies substantial risk for undershooting. Attempts to artificially sustain house prices above fundamental levels can be costly (Glaeser and Gyourko, 2008). At the same time, house price undershooting can also be a problem, given harmful effects of forced sales on the financial system and wider economy. To this end, rapid absorption of inventories is paramount.

39.   **Expansion of subsidized housing construction may be counterproductive.** The authorities are planning to double subsidized housing (VPO) construction, partly as a means to support construction activity (Box 2). This seems unlikely, given that VPOs are a small share of residential construction (15 percent). Instead, more VPOs may prolong the adjustment. At worst, resulting inventory increases may depress market prices and/or construction further. Moreover, as social housing is allocated below market prices, excess demand is resolved through queues with detrimental effects on labor mobility, where Spain scores poorly (ECB 2003; Bank of Spain 2007b).[36] The authorities are partly trying to address the issue by orienting 40 percent of social housing development towards rentals. However, social housing for purchase remains high—with undesired redistributive effects.[37] In present circumstances, low income households' increased difficulty in securing home financing further limits the effectiveness of social housing sales. Housing needs of disadvantaged groups are an urgent problem that may be better addressed through the private

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[35] Specified levels of overvaluation were estimated for different years. See Ayuso and Restoy (2006), Bank of Spain (2004), Girourard et al. (2006), IMF (2008) and Sosvilla (2008).

[36] Subsidies make interest rates on loans (up to 80 percent of the purchase price) attractive. Additionally, there is a subsidy of up to 11,000 euros to cover the down payment.

[37] OECD (2005) points out that approvals for purchase of a social housing unit are based on current rather than permanent income. Thus, households remain in social housing despite increases in income, thereby reducing availability for families in need.

rental market, e.g., through means-tested vouchers (below).[38] Laid-off construction workers could be aided directly in a targeted and timely manner (e.g., in public projects, re-training) to facilitate reorientation of the economy.

Box 2: Recent Housing Market Policies

A. Measures related to subsidized housing (VPO):

Reducing inventory
- Property developers are now allowed to convert free market housing into highest tier VPOs (vivienda concertada) at any time until end-2009, while before a home had to be on the market for more than one year.
- Official Credit Institute (ICO) 3 bn euro/year credit line for developers which turn finished homes into rentals. Loans can be rolled over up to seven years, while units remain rentals.
- 8 percent increase in income ceiling to reduce inventories converted into highest tier VPOs
- Increase of maximum sale price for highest tier VPOs
- New rent with option to buy scheme for highest tier VPOs for rental periods up to 10 years
- Eligibility expanded for direct subsidies of rental payments and down payments
- Autonomous communities will establish registries of potential VPO buyers to assist banks in assessing credit worthiness

Supporting construction activity
- Double construction of subsidized housing units to 150,000/year over the next 10 years, of which at least 40 percent will be rented
- Buy land from property developers for up to 300 million euros with aim of constructing 20,000 VPOs (until April 2009)
- New requirement that 25 percent of new land developments must be used for VPOs
- New subsidies for construction or refurbishing of VPOs
- ICO guarantees for securitizing mortgage loans for VPOs (5 bn euros in each 2009 and 2010)

Non-VPO measures to support construction activity include a euro 2 bn ICO credit line for residential energy upgrading ("Plan RENOVE") starting in 2009, and a VAT reduction for home renovations to 7 percent—the same as that applied to new construction. Also now only a qualified majority (instead of unanimity) is needed in home owner associations to implement energy efficient improvements.

B. Measures aimed at homeowners:

Forestalling foreclosures
- Fee-free extension of mortgage terms
- Allowing unemployed workers with dependents and mortgages of less than 170,000 euros to capitalize 50 percent of monthly mortgage payments during 2009–10 to the period 2011–20. Up to 500,000 persons are expected to qualify. ICO will guarantee delayed payments with a credit line of up to 6 bn euros, of which 3 bn are expected to be used.
- Income tax deduction for mortgage interest to be considered in the calculation of income tax withholding upon request for persons earning less than 33,000 euros/year. Expected to result in 2 million euros of additional liquidity.

Other measures
- Incentive of 1,500 euros/year for firms hiring unemployed persons with families to support
- Income tax relief on deposits in dedicated savings accounts earmarked for home purchases extended from 4 to 6 years

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[38] OECD (2005) reports that rented subsidized housing only made up 6 percent of the housing stock and only covered 35 percent of poor households (European averages are of 14 percent and a coverage of 73 percent).

Box 2: Recent Housing Market Policies (continued)

- Exempting capital gains from home sales if proceeds are reinvested in another residential property through end-2010 for those who have purchased a property but have been unable to sell their previous home.

C. Measures aimed at developing the rental market:

Supply measures
- Subsidies for construction, acquisition and remodeling of rental units
- Subsidies for purchase of insurance against damages to property and risk of non-payment
- 50 percent of revenue from rental property exempted from income tax; exemption is 100 percent if tenant is young and meets certain income requirements
- Since 2005, autonomous communities have created rental agencies to absorb risks typically borne by landlords in return for a share of the rent payment. The agencies' market share is small.
- Real Estate Investment Trusts (SCIMI in Spanish) to be introduced as vehicles to transform unused inventories into rental properties.
- Evictions for non-payment to be eased
- Arbitrage system for speedy rental conflict resolution to be implemented
- Owner's right to reclaim the property extended to when a first degree relative is in need

Demand measures
- Means-tested cash benefit of 210 euros/month for 22–30 year olds moving into rental housing
- Tax deductibility of rent payments reintroduced (after abolition in 1999 tax reform) in order to offset tax advantages of home purchase. This benefit is subject to a 28,000 euro annual income ceiling and received by 700,000 households.
- Direct grants to needy tenants of up to 2880 euros per year

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40.   **Limiting foreclosures will slow inventory expansion.** Both the authorities and the financial sector have moved to limit foreclosures. Some mortgagees were allowed to renegotiate their mortgage terms at no fee. A voluntary program allows unemployed heads of families to defer half of mortgage payments through end-2010 with official guarantees backing deferred amounts.[39] Banks are repossessing and then renting back property to former homebuyers as well as accepting properties from developers to manage loan impairments.[40] The authorities are now permitting the setting up of real estate investment trusts (SCIMIs), which should absorb properties from developers' books and turning them into rentals.

41.   **A private rental market could prove to be the most important tool to absorbing inventory.** Spain's private rental market only accounts for 6 percent of housing, much less than in peer countries.[41] On the supply side, long leases with initial durations of 5 years and landlord-unfriendly legislation are largely to blame, although some progress is being made.[42] Demand is discouraged by fiscal incentives to ownership (below). Expansion of the small

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[39] Deferred payments are to be repaid over 10 years.

[40] See e.g., Pellicer (2008).

[41] The total rental stock is around 12 percent of housing, but half of this is accounted for by social housing (OECD, 2001 and 2005).

[42] See Box 2. Also, OECD (2008) confirms that plans to speed up conflict resolution have been partially implemented with 6 out of 10 planned new courts in high eviction areas already in service.

rental market holds the most potential for inventory absorption, because potential buyers expect further price drops and are putting off purchases.

42.   **Rentals could tap into unrealized demand of the young and immigrants.** A substantial share (60 percent) of persons aged 18–35 still live with their parents. Relative to other countries, this share has further increased as housing affordability deteriorated.[43] Together with immigrants living in above-average size households, the young hold the most potential for housing demand. However, these groups are also the most immediately affected by credit constraints and unemployment because most have temporary job contracts.[44] Home appraisals for immigrants have fallen by ¾ between 2007H1 and 2008Q3 (Tinsa, 2008b). Harmonization of labor contracts could increase household formation as income streams become more certain than under temporary contracts (Bank of Spain, 2008b).

43.   **In the medium run, measures to foster the rental market should include a gradual fading out of fiscal incentives to homeownership.** Housing policy in Spain has mainly aimed at ownership, making Spain the industrialized country with the highest (85 percent)—and continually rising—home ownership rate.[45] Numerous taxes, deductions and subsidies are aimed at the housing market, resulting in a high fiscal cost (approximately 1 percent of GDP).[46] Income tax liabilities are reduced by 15 percent of mortgage expenses.[47] As the deduction is calculated on nominal payments, it becomes more powerful in a low real interest rate environment with above average inflation, inducing more volatility into prices (van den Noord, 2005). Dominguez-Martinez (2004) estimates that due to the income tax deduction, persons can afford to pay 15–20 percent more,[48] most of which inelastic supply transfers into higher prices. Higher prices imply a redistribution from younger to older people, in addition to the regressive effect of the non-means tested deduction itself. Reduced labor mobility and diversion of resources away from productive investment are negative implications for Spain's reorientation towards a new growth model. Policies to foster the rental market have aimed at offsetting the impact of income tax relief, e.g., by also exempting rental property from income tax and inducing further regressiveness. Distortions could be reduced by gradually fading out fiscal incentives to home ownership as the housing market stabilizes.

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[43] See Bank of Spain (2008b).

[44] High incidence of temporary contracts causes the young and immigrants to be laid off first in downturns. In the year to 2008-Q2 employees aged 35 and under lost 246,000 jobs, while older workers gained 320,000 (Tinsa, 2008b).

[45] In 2001 (OECD, 2005).

[46] In 2004 (OECD, 2007).

[47] Other important measures making homeownership fiscally attractive are no taxation of imputed rents for owner-occupiers, a reduced VAT rate for residential construction and favorable treatment of capital gains. See OECD (2007) for more details on fiscal treatment of housing in Spain.

[48] Lopez-Garcia (2003) obtains a similar result in the range of 15–30 percent.

44.   **A more elastic supply response will reduce price fluctuations.** Large housing demand shocks get amplified into prices due to inelastic supply. A more agile supply response can be reached by reevaluating municipalities' incentives to supply buildable land and by reducing the length and cost of planning and building permit issuance processes. This should keep house prices close to construction and land costs, even if interest rate fluctuations induce sizable demand shifts.

REFERENCES

Asociacion Hipotecaria Espanola (2007), "Estadisticas del Mercado Hipotecario, Ano 2007", www.ahe.es, accessed on October 28, 2008.

Ayuso and Restoy (2003), "House Prices and Rents: An Equilibrium Asset Pricing Approach", *Bank of Spain Working Paper*, number 0304, Madrid, Spain.

Ayuso and Restoy (2003), "House Prices and Rents in Spain: Does the Discount Factor matter?", *Bank of Spain Working Paper*, number 0609, Madrid, Spain.

Bank of Spain (2006), "Informe annual 2006", Madrid, Spain.

Bank of Spain (2007a), "Informe annual 2007", Madrid, Spain.

Bank of Spain (2007b), "Boletin economico May 2007", Madrid, Spain.

Bank of Spain (2008a), "Boletin economico March 2008", Madrid, Spain.

Bank of Spain (2008b), "Boletin economico April 2008", Madrid, Spain.

BBVA Research (2008a), "Real Estate Watch Spain", BBVA Economic Research Department, July 2008.

BBVA Research (2008b), "Real Estate Watch Spain", BBVA Economic Research Department, December 2008.

Bover, O. and J.F. Jimeno (2007), "House Prices and Employment Reallocation: International Experience", *Bank of Spain Working Paper*, number 0705, Madrid, Spain.

Brueckner, J. K., (2007), "Government Land-Use Interventions: An Economic Analysis," *4th Urban Research Symposium, World Bank, Washington, D.C.*

Callau, J.B. and R.D. Pac (2008), "Sobre el peso del sector de la construccion en la economia espanola", *Boletin Economico de Informacion Comercial Espanola*, 2944, 21–31 de Julio de 2008, pp. 31–45.

Cemex (2008), "Global Economic and Construction Outlook", *CEMEX Economic Analysis*, July 2008.

Credito-Vivienda.com (2008), "SIMA 2008 - El mercado español de segunda vivienda", http://www.credito-vivienda.com/sima-2008-el-mercado-espanol-de-segunda-vivienda.html, accessed November 10, 2008.

De los Llanos, M. (2006), "Las Medidas de la Politica de Vivienda en Materia de Alquiler y Vivienda Protegida", *Boletin Economico*, Bank of Spain, Madrid, Julio/Agosto 2006.

DiPasquale, D. and Wheaton, W. (1994) "Housing Market Dynamics and the Future of Housing Prices", *Journal of Urban Economics*, 35(1), pp. 1–27.

Dominguez Martinez, J.M. (2004), "Fiscalidad y coste de endeudamiento de la inversion en vivienda en Espana", *Cuadernos de Informacion Economica*, No. 180, May-June 2004, Fundacion de las Cajas de Ahorros Confederadas, Madrid, Spain.

ECB (2003), "Structural Factors in the EU Housing Markets", European Central Bank, Frankfurt, Germany.

Eicher, T. (2008), "House Prices and Land Use Regulations: A Study of 250 major U.S. cities", *Northwest Journal of Business and Economics*, forthcoming.

El Pais (2008), "El numero de casas nuevas sin vender sube mas del 20% en solo medio ano", El Pais November 12, 2008, p. 20.

El Mundo (2008), "Bancos y cajas encarecen las nuevas hipotecas", El Mundo November 6, 2008, http://www.elmundo.es/mundodinero/2008/11/06/economia/1225961479.html, accessed November 19, 2008.

Expansion (2008), "Corredor: El 'stock' de viviendas debe absorberse antes de dos anos", published October 25, 2008, www.expansion.com, accessed October 25, 2008.

Garcia-Montalvo, J. (2006), "Deconstruyendo la burbuja inmobiliaria", *Papeles de Economia Espanola*, 110.

Garcia-Montalvo, J. (2007), "Algunas consideraciones sobre el problema de la vivienda en Espana", *Papeles de Economia Espanola*, forthcoming.

Garcia-Vaquero, V. and J. Martinez (2005), "Fiscalidad de la Vivienda en Espana", *Bank of Spain Working Paper No.* 0506, Madrid, Spain.

Gimeno, R. and C. Martinez-Carrascal (2006), "The Interaction between House Prices and Loans for House Purchase. The Spanish Case", *Bank of Spain Working Paper*, number 0605, Madrid, Spain.

Girouard, N., Kennedy, M., van den Noord, P. and C. Andre (2006), "Recent House Price Developments: The Role of Fundamentals", *OECD Economics Department Working Paper*, No. 475.

Glaeser, E. L. and J. Gyourko, (2002). "Zoning's Steep Price," *Regulation.* 25(3) pp: 24–31.

Glaeser, Edward L. and Gyourko, Joseph (2008), "The Case against Housing Price Supports," *The Economists' Voice*, Vol. 5, Iss. 6, Article 3. http://www.bepress.com/ev/vol5/iss6/art3

Glaeser, E. L., J. Gyourko and R. Saks, (2005). "Why Is Manhattan So Expensive? Regulation and the Rise in Housing Prices," *Journal of Law and Economics* 48, (2), pp. 331–69.

Hilbers, P., Hoffmaister, A., Banerji, A. and H. Shi, (2008). "House Price Developments in Europe: A Comparison", *IMF Working Paper*, Washington, DC.

Klyuev, V. (2008), "What Goes Up Must Come Down? House Price Dynamics in the United States", *IMF Working Paper*, number 08/187,Washington, DC.

Lopez Garcia, M.A. (2003), "Politicas de vivienda: eficiencia y equidad", Sector Publico y Eficiencia", *Papeles de Economia Espanola*, No. 95, April 2003, Fundacion de las Cajas de Ahorros, Madrid, Spain.

Martinez Pages, J. and L. Angel Maza (2003), "Analisis del Precio de Vivienda en Espana", *Bank of Spain Working Paper*, number 0307, Madrid, Spain.

Martinez Pages, J. and M. de los Llanos Matea Rosa (2003), "Precios de la vivienda en Espana: evolucion y factores explicativos", *Perspectivas del Sistema Financiero*, 78, Fundacion de las Cajas de Ahorros, Madrid, September 2003.

Ministerio del Medio Ambiente (2008), "Boletin Mensual de Estadistica, Junio 2008".

Ministerio de Vivienda (2008), "Encuesta sobre la compra de vivienda principal en el periodo 2002–2006", Madrid.

Nieto, F. (2007), "The determinants of household credit in Spain", *Bank of Spain Working Paper*, number 0716, Madrid, Spain.

OECD (2005), "Economic Surveys: Spain", Volume 2005/6, April 2005.

OECD (2007), "Economic Surveys: Spain", Volume 2007/1, January 2007.

OECD (2008), "2008 Economic Review - Spain", unpublished manuscript.

Oficina Económica del Presidente (2006), "Inmigración y economía española: 1996–2006", La Moncloa, Madrid, Spain.

Oficina Economica del Presidente del Gobierno (2008), "Informe Economico del Presidente del Gobierno", La Moncloa, Madrid.

Pellicer, L. (2008), "Caixa Catalunya arrienda casas impagadas a sus antiguos proprietarios", *El Pais*, October 27, 2008, Madrid, Spain.

Sosvilla, S. (2008), "Immigration and Housing Prices in Spain", *Series Economia Regional*, Catedra FEDEA—Caja Madrid, October.

Tinsa (2008a), "Rueda de Prensa 14 de Octubre de 2008", www.tinsa.es, accessed October 17, 2008.

Tinsa (2008b), "Notas de Coyuntura Inmobiliaria – Mercado Residencial, Tercero Trimestre 2008", www.tinsa.es, accessed October 17, 2008.

Tribunal de la Defensa de la Competencia (1993), "Remedios politicos que pueden favorecer la libre competencia en los servicios y atajar el dano causado por los monopolios", Madrid.

Tribunal de la Defensa de la Competencia (1995), "La Competencia en Espana: Balance y Nuevas Propuestas", Madrid.

Van den Noord, P. (2005), "Tax Incentives and House Price Volatility in the Euro Area: Theory and Evidence", *Economie Internationale*, CEPII Research Center, issue 1Q, pp. 29–45.

II. THE SPANISH BANKING SECTOR[49]

45.   **This paper provides an overview of the Spanish banking sector and its recent developments.** It is organized as follows: Section I presents market structure and competition in the banking industry. Section II discusses main trends. Section III provides a snapshot of the impact of the ongoing global financial turmoil. Section IV discusses a simple macro stress test based on public information, which has been carried out to gauge banks' sensitivity to the deteriorating operating environment. Section V concludes.

A.   Market Structure and Competition

46.   **The rapid economic convergence of Spain in the European Union in the last decade has been mirrored by an equally rapid expansion of its banking industry** (Figure 1; Box 1). Over the period 1997–2007, per-capita income increased from 65 to 80 percent of the EU15 average.[50] At the same time, the Spanish banking sector's total assets over GDP expanded from 70 to 80 percent of the EU15 average. At end-2007, total assets held by the banking sector amounted to 280 percent of GDP; 110 percentage points higher than in 1997.

Figure 1. Spain: Economic and Financial Catching-up; 1997–2007
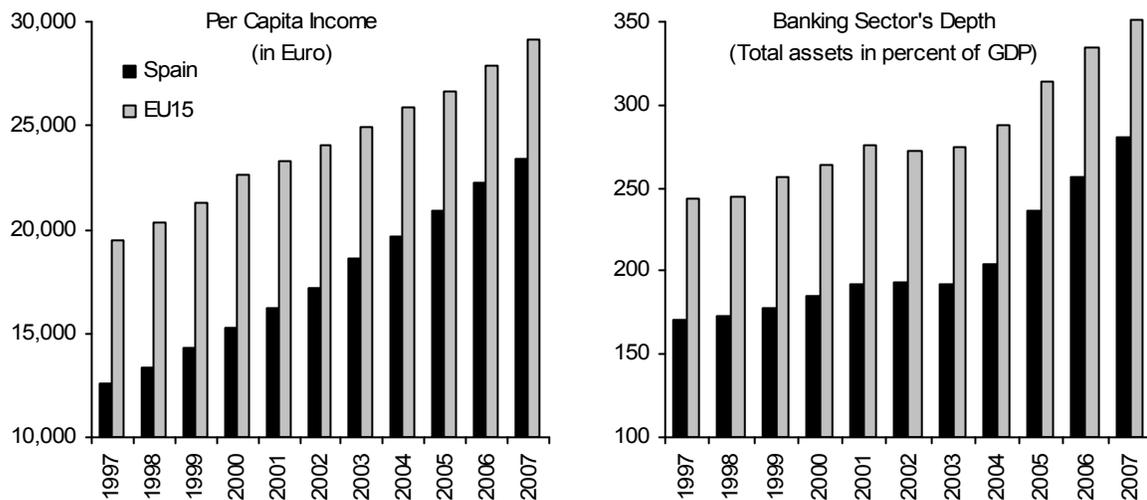
Sources: European Central Bank; and Fund staff estimates.

47.   **In Spain, banks dominate the financial market while non-bank financial institutions are less important** (Figure 2). The growth of non-bank financial entities has not kept pace with banks nor with non-banks in EU15 peers. Assets of non-banks have increased from 55 to 60 percent of GDP. Relative to peers, the share of Spanish non-banks has declined from 58 to 40 percent of the EU15 average.

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[49] Prepared by Alessandro Giustiniani.

[50] Owing to data constraints, we exclude new member states.

Box 1. Spanish Credit Institutions

The Spanish banking sector comprises four types of institutions:[1]

- **Commercial banks** – 151 entities, accounting for 54 percent of total credit institutions' assets, of which 53 are Spanish-owned, 18 are subsidiaries and 80 are branches of foreign institutions. Domestic banks are generally market-traded entities mostly engaged in retail banking;
- **Savings banks (Cajas)** –46 entities, with a market share of 40 percent. They are "not for profit foundations" with strong local government and/or autonomous communities' participation. They are not listed or traded in the stock market.
- **Cooperative banks** – 85 entities, with a market share of 4 percent. They are organized under the umbrella of Banco Cooperativo Español. They provide services based on membership, but can also offer some financial services to third parties as do other credit institutions.
- **Specialized credit institutions (SCIs)** – 76 entitites, with a market share of 2 percent. Although carrying out most of the activities of credit institutions, they are prohibited from receiving repayable funds from the public in the form of deposits, loans, temporary assignment of financial assets, or other comparable instruments.

1/ Data as of end-2007.

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48.   **Spain has witnessed some consolidation in its banking industry, although less than in the EU15 as a whole.** Between 1997 and 2004 the number of credit institutions in Spain declined by 17 percent and in the EU15 by almost 25 percent. Consolidation took place mostly within each group of credit institutions, particularly banks and cooperatives (Table 1). There were few mergers among savings banks, three acquisitions of banks by saving banks, but no acquisitions of savings banks by commercial banks, reflecting asymmetry due to

Figure 2. Spain: Financial Sector Breakdown
(in percent of total assets; 2005-07 average)

Sources: European Central Bank; and Fund staff estimates.
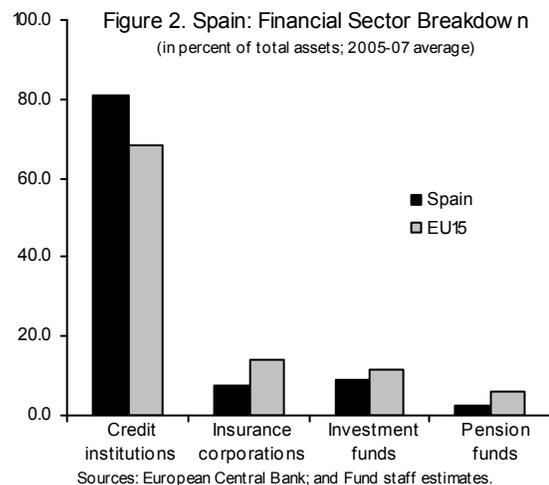
Table 1. Spain: Mergers and Acquisitions of Credit Institutions; 1999–2007

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Mergers and acquisitions 1/	**10**	**11**	**8**	**7**	**6**	**6**	**3**	**2**	**7**
Between banks	5	5 (12)	4	5 (11)	5 (11)	5	1	1	3
Between savings banks	1	2	1	—	—	—	—	—	1
Between co-operatives	3 (7)	2	3 (8)	2 (5)	1	1	—	—	1
Acquisition of banks by saving banks	1	2	—	—	—	—	—	—	—
Between specialized credit institutions	—	—	—	—	—	—	1	—	—
Acqusition of specialized credit institutions by deposit institutions	—	—	—	—	—	—	1	1	2 (4)

Source: Banco de España.
1/ The figures in brackets are the number of institutions involved where mergers/acquisitions include operations in which more than two credit institutionstake part.

institutional impediments.[51] In the period 2005–07 the Spanish banking industry also witnessed some new entries, mainly branches and subsidiaries from other EU member states and third countries, whose combined market share has risen to almost 11 percent (Figure 3).

Figure 3. Spain: Market Share of Credit Institutions; 1999–2007
(in percent)

Sources: European Central Bank; and Fund staff estimates.

49.   **Spanish credit institutions have expanded their physical presence in the territory, resulting in a capillary branch network**. Spain has the highest number of local branches in the EU as of end-2007; for example, Germany had 2,026 credit institutions with 39,777 local branches, Spain 358 credit institutions with 45,500 local units. While in the EU15 the population per branch has increased from 2,500 in 1997 to 2,700 in 2007, in Spain it has declined to less than 1,000.
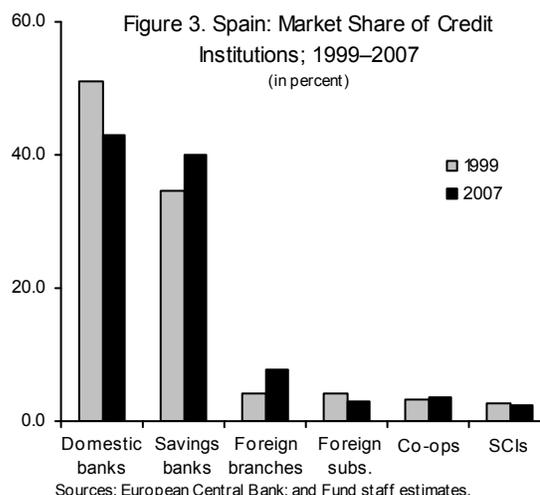
50.   **Despite the presence of two of the largest European banking groups, market concentration is low and competition intense**. Market structure indicators, such as the Herfindahl Index or the share of total assets held by the five largest institutions, indicate that the degree of concentration in Spain, albeit increasing, has remained one of the lowest in the EU15 (Table 2). A number of studies have investigated banking competition in Spain.[52] Although empirical evidence is mixed,

Table 2. Spain: Market Concentration and Competition

	1997		2007	
	Share of the 5 largest CIs in total assets	Herfindahl Index	Share of the 5 largest CIs in total assets	Herfindahl Index
Netherlands	79	1,694	86	1,928
Belgium	54	1,506	83	2,079
Finland	88	2,050	81	2,540
Portugal	26	986	68	1,097
Greece	56	1,122	68	1,096
Denmark	70	863	64	1,120
Sweden	58	800	61	934
France	40	587	52	679
Ireland	41	486	46	600
Austria	44	548	43	527
Spain	**32**	**581**	**41**	**459**
United Kingdom	24	264	41	449
Italy	25	190	33	330
Luxembourg	23	242	28	276
Germany	17	151	22	183
MU12 1/	44	845	54	983
EU15 1/	45	805	54	953

Source: European Central Bank.
1/ Unweighted average.

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[51] Mergers of savings banks, or cajas, are subject to respective regional governments' approval. Cajas cannot be purchased by private individuals or institutions due to their legal nature, but they can acquire other companies and credit institutions. Nevertheless, cajas' assets and branches can be purchased by individuals, private companies and commercial banks. For more details, see FSAP (2006) "Technical Note on Regulation, Supervision, and Governance of Spanish Cajas," (IMF Country Report No. 06/215).

[52] See Claessens S. and L. Laeven, 2004, "What Drives Bank Competition? Some International Evidence," Journal of Money, Credit, and Banking, 36, 563–83; Luis Gutiérrez de Rozas, 2007, "Testing for Competition in the Spanish Banking Industry: The Panzar-Ross Approach Revisited," Banco de España, Documento de Trabajo No. 0726; Michiel van Leuvensteijn, Christoffer Kok Sørensen, Jacob A. Bikker and Adrian A.R.J.M. van Rixtel, 2008, "Impact on Bank Competition on the Interest Pass-Thorugh in the Euro Area," European Central Bank Working Paper No. 885, March.

results tend to indicate that, on average, banking competition in Spain is intense, including in comparison with that in peer countries.

51.   **Alongside commercial banks, savings banks have been a major force in extending services and in fostering competition.** Since reforms in late 1970s, savings banks have gradually reduced their regional specificity and expanded their range of activities.[53] Many medium-sized savings banks have strengthened their national presence becoming solid competitors to commercial banks. Their market share has steadily increased from 35 percent in 1999 to 40 percent in 2007.

52.   **With the exception of the two largest players, the Spanish banking system remains essentially domestic** (Table 3). After building up franchises in Latin America, Santander and BBVA have expanded in other markets as well. Santander is now a significant player in the U.K. (Abbey National PLC and Alliance & Leicester PLC),[54] in pan-European consumer finance, and a smaller participant in the US (Sovereign Bank). BBVA has a non-negligible presence in the U.S., mainly through Compass Bankshare. Foreign activities are estimated to account for nearly half of both institutions' earnings in 2008. Other banks have small subsidiaries outside Spain, such as Banco Popular (Portugal and Florida), Caja Madrid (Mexico), and Banco de Sabadell S.A. (Mexico and Florida), while La Caixa (caja from Catalonia) has expanded internationally with acquisitions of Mexico's Grupo Financiero Inbursa and Hong-Kong based Bank of East Asia.

B. Main Trends

53.   **Convergence associated with EMU entry spurred a credit boom that abruptly ended with the outbreak of the global financial crisis in mid-2007. Interest rate convergence, both in anticipation of and since EMU membership, fueled domestic credit growth** (Figure 4). Over the period 1997–2007, credit to the non-financial private sector has increased at an average of 17 percent; about two-and-half times nominal GDP growth.

54.   **Credit expansion was especially pronounced in the construction and real estate market.** Bank activity has gradually shifted away from interbank lending and lending to the government and the manufacturing sector, to financing construction and real estate activities (Figure 5). As of end-June 2008 exposure to real estate financing amounted to 60 percent of total credit to the nonfinancial private sector, compared to 40 percent in 1997. While savings

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[53] As part of the deregulation process, savings banks were allowed to carry out universal banking activities starting in 1977.

[54] Amid the U.K. banking crisis, Santander also bought the branches and deposits of Bradford & Bingley.

Table 3. Spain: Foreign Business of Consolidated Groups and
Individual Institutions; 2000–07

|	2000	2001	2002	2003	2004	2005	2006	2007
					(in EUR million)			
Consolidated foreign balance sheet	**372,537**	**339,083**	**232,661**	**217,137**	**473,482**	**601,429**	**638,391**	**707,048**
Financial assets	243,421	250,813	184,709	169,983	357,499	504,218	521,867	590,900
European Union	47,563	54,154	44,150	46,020	214,420	277,752	277,630	306,371
Latin America	169,737	170,312	121,051	105,884	118,948	171,800	180,385	196,853
Other	26,121	26,347	19,508	18,079	24,132	54,665	63,852	87,677
Financial liabilities	246,553	245,899	201,452	188,856	337,224	462,696	480,048	544,041
European Union	40,421	34,743	29,563	34,833	169,288	271,690	250,628	267,413
Latin America	147,866	155,829	110,227	96,437	107,226	135,565	157,269	168,483
Other	58,266	55,327	61,662	57,585	60,710	55,441	72,151	108,145
					(in percent of total assets)			
Consolidated foreign balance sheet	**27.6**	**23.4**	**16.4**	**13.9**	**23.0**	**23.7**	**21.9**	**21.1**
Financial assets	18.0	17.3	13.0	10.9	17.4	19.9	17.9	17.7
European Union	3.5	3.7	3.1	2.9	10.4	10.9	9.5	9.2
Latin America	12.6	11.8	8.5	6.8	5.8	6.8	6.2	5.9
Other	1.9	1.8	1.4	1.2	1.2	2.2	2.2	2.6
Financial liabilities	18.3	17.0	14.2	12.1	16.4	18.2	16.5	16.3
European Union	3.0	2.4	2.1	2.2	8.2	10.7	8.6	8.0
Latin America	11.0	10.8	7.7	6.2	5.2	5.3	5.4	5.0
					(in percent of GDP)			
Consolidated foreign balance sheet	**59.1**	**49.8**	**31.9**	**27.7**	**56.3**	**66.2**	**65.0**	**67.3**
Financial assets	38.6	36.8	25.3	21.7	42.5	55.5	53.1	56.3
European Union	7.5	8.0	6.1	5.9	25.5	30.6	28.3	29.2
Latin America	26.9	25.0	16.6	13.5	14.1	18.9	18.4	18.8
Other	4.1	3.9	2.7	2.3	2.9	6.0	6.5	8.4
Financial liabilities	39.1	36.1	27.6	24.1	40.1	50.9	48.9	51.8
European Union	6.4	5.1	4.1	4.4	20.1	29.9	25.5	25.5
Latin America	23.5	22.9	15.1	12.3	12.7	14.9	16.0	16.0
Memorandum items:								
Total assets	1,348,717	1,446,657	1,422,825	1,565,098	2,057,111	2,536,681	2,912,656	3,343,428
GDP (EUR billion)	630	681	729	783	841	908	982	1,050
Funds managed (net asset value)	50,972	74,490	47,606	54,706	72,615	124,515	133,472	131,977
European Union	4,626	5,968	6,284	8,368	10,913	16,968	20,044	23,155
Latin America	44,673	63,285	38,144	42,519	52,681	97,249	107,707	102,263
Other	1,673	5,237	3,177	3,819	9,021	10,298	5,721	6,558

Source: Banco de España.

Figure 4. Spain: Credit and Deposit Developments; 1997-2008
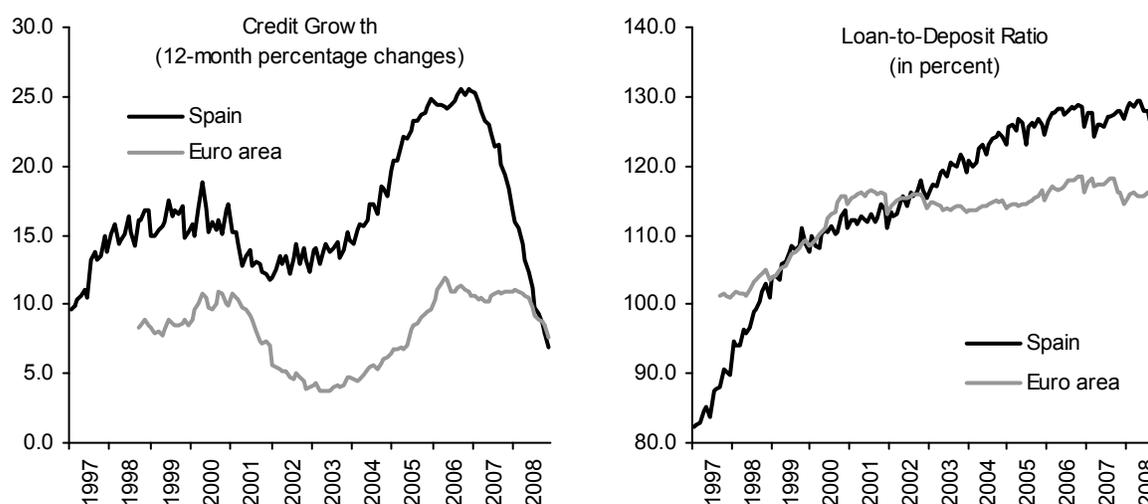
Source: Banco de España; European Central Bank; and Fund staff estimates.

banks have the highest exposure, commercial banks are those that most significantly reoriented their domestic activity. Increased competition for lending to real estate developers has led some institutions to take on added risks by forming joint ventures with real estate developers—banks granting loans and sometimes taking an equity stake. It is estimated that this type of lending exceeds the equivalent of 5 percent of Tier 1 capital on average, and can reach as high as 80 percent of Tier 1 in specific cases.[55]

Figure 5. Spain: Distribution of Domestic Credit; 1997–2008
(in percent of total)
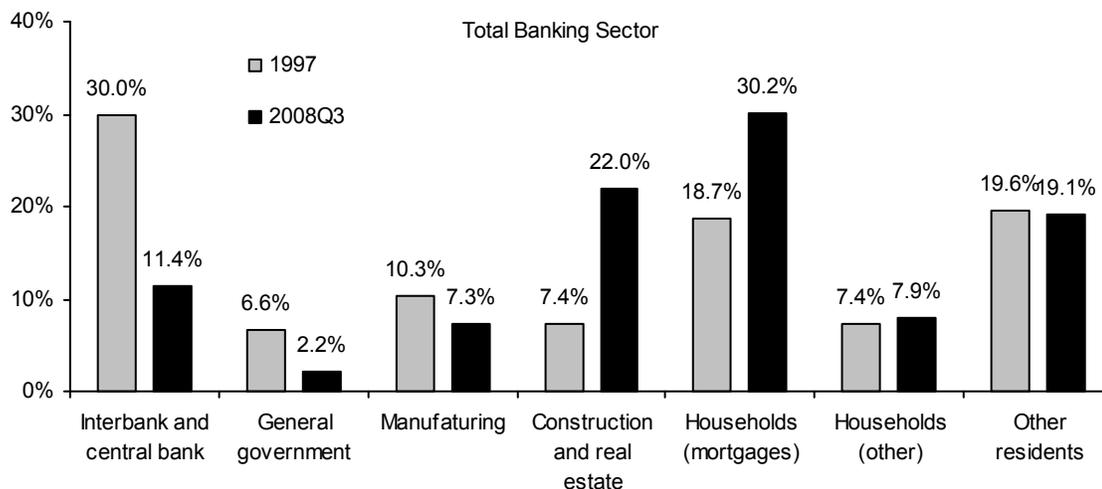
Source: Banco de España.

55.   **Since growth in customer deposits has not kept pace with domestic credit expansion, banks have increasingly tapped international capital markets.** Between 1997 and end-2007, domestic deposits grew at an average rate of 12 percent, thus financing only part of the credit expansion of 17 percent. As a result, the loan-to-deposit ratio climbed well above the Euro-area average. Securitization facilitated access by credit institutions to foreign savings (Figure 6). Credit institutions have established securitization funds, which in turn have issued their own securitization bonds, mainly covered mortgage bonds (*cédulas hipotecarias*, CH). Given the soundness of the issuer, the quality and size of the mortgage portfolio, and the level of over-collateralization, resulting from sound regulation, these securities were attractive to foreign investors.[56] Outstanding balances of Spanish

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[55] Moody's April 2008.

[56] The new Mortgage Law (Law 41/2007) further strengthens the regulatory framework of CH; in particular: (1) it creates a special register for all mortgage loans and credits forming the collateral; (2) it reduces the loan-to-value ratio for commercial mortgage loans from 70 to 60 percent while keeping the one for housing loans at 80 percent (both ceilings may rise respectively to 80 and 95 percent if there are appropriate and sufficient additional guarantees); (3) it increases the minimum legally required over-collateralization from 11 to 25 percent; and (4) it provides for the possibility of including specific liquid and low-risk assets in the pool of collateral underlying the CH issue (up to 5 percent).

Figure 6. Spain: Securitization; 2000–07

EUR bn
Outstanding Amounts of Spanish Securitization
%

- Other
- Mortgage-backed asstes
- Share securitized assets held on the balance sheet
- Share of assets hed abroad

Breakdown by Type of Originators

- Other credit institutions
- Savings banks
- Banks

Spanish ABS Investors by Country 1/

Spain, 9%
France, 11%
Germany, 14%
Other, 17%
Netherlands, 7%
Ireland, 15%
UK, 27%
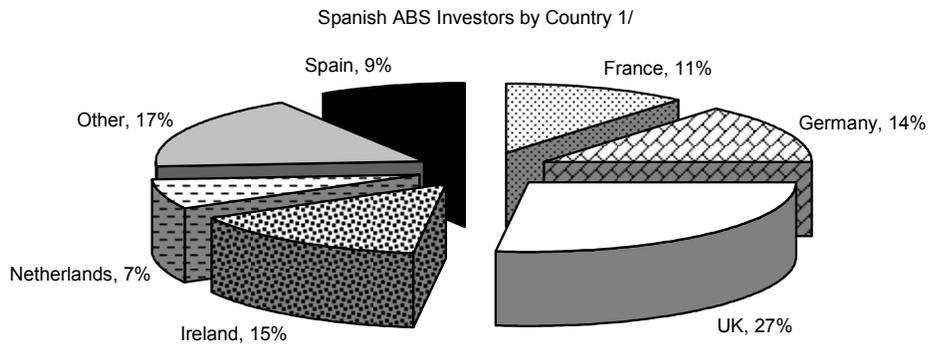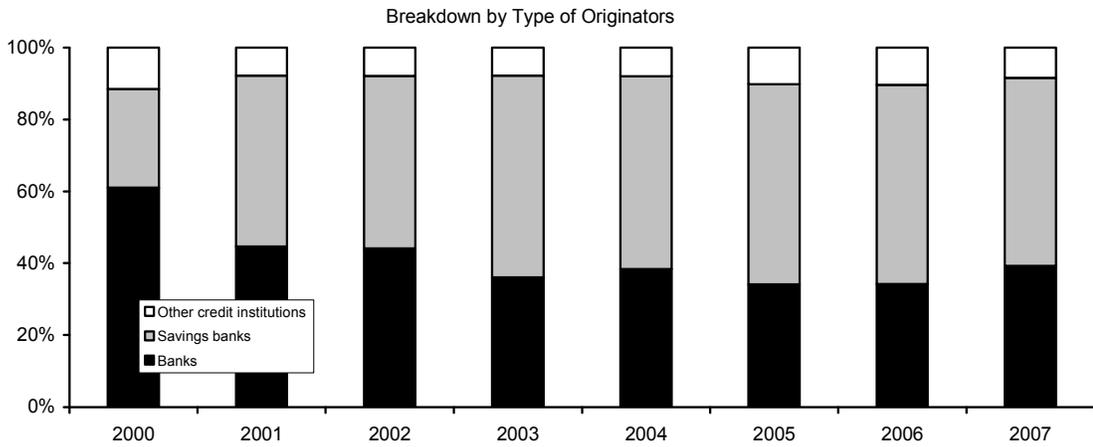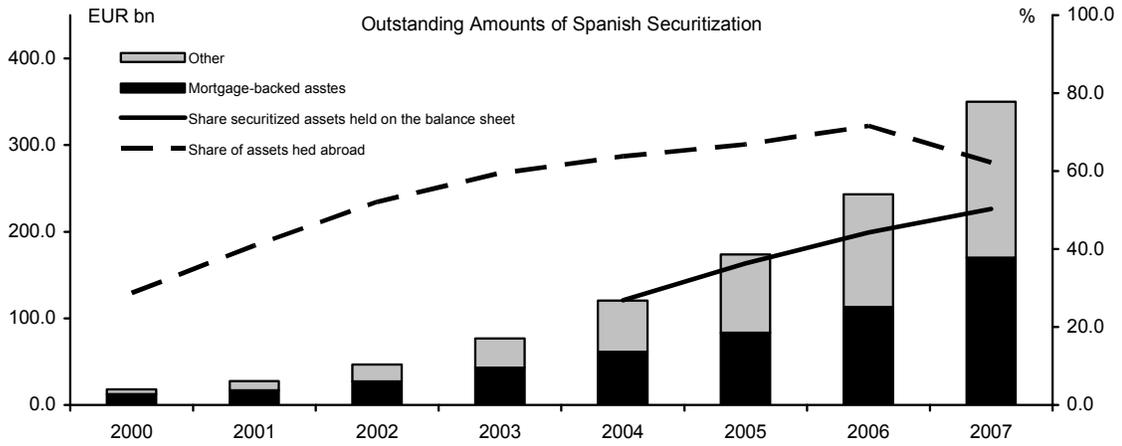
Sources: Bank of Spain; and JP Morgan-Chase.
1/ Based on JPMorgan-led transactions in 2006/07.

from €18 billion (3 percent of GDP) in 2000 to €350 billion (33 percent of GDP) in 2007.[57] Spanish CHs currently represent the second biggest Jumbo segment in European covered bonds after the German pfandbriefe.[58]

56.   **In recent years, the Spanish banking industry has enjoyed significantly higher profitability than EU peers, despite lower leverage** (Figure 7). While high volumes of intermediation have contributed to this result, higher trading and fee income as well as enduring cuts in operating costs have been important drivers.

Figure 7. Spain: Banking Sector Profitability; 2003–07
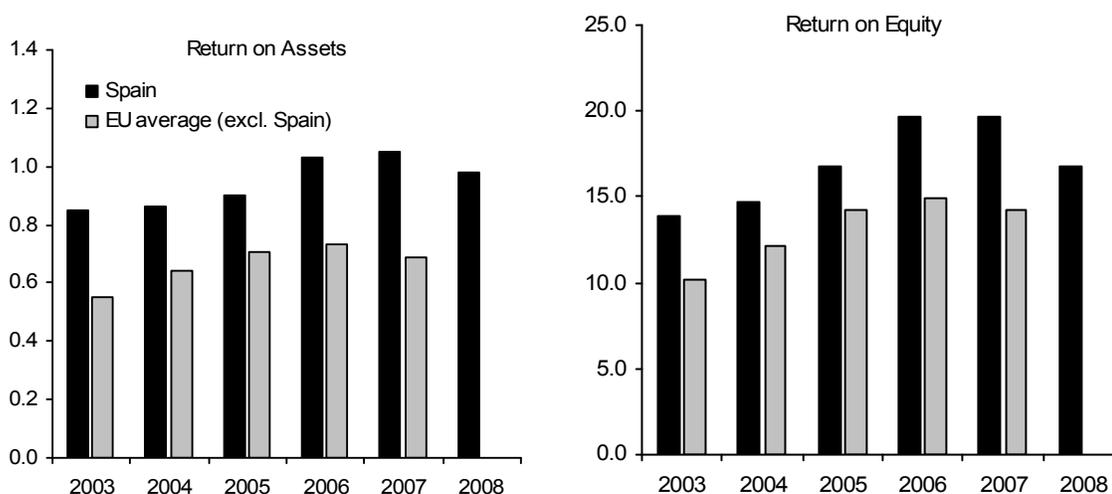
Sources: Banco de España; and Global Financial Stability Review.

57.   **To gauge the contribution of different factors, an algebraic breakdown of banks' return on equity (ROE) has been undertaken** (Box 2, Figure 8). The results indicate that while savings banks' financial strength (net income over net operating income) has remained broadly unchanged, commercial banks and cooperatives have experienced some decline in this indicator in the last years, mainly reflecting provisioning expenses and write-downs. In the case of commercial banks, this development has been partially compensated by continuous improvements in cost efficiency whereas savings banks and cooperatives have witnessed some increase in the burden of their administrative expenses, consistent with the expansion of their branch networks. While increasing leverage ratios may have weighed on credit institutions' vulnerability to shocks, improving (or undiminished) risk-adjusted asset productivity, more prudent risk strategies (as indicated by declining risk-weighted to total

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[57] It is important to note that the Bank of Spain has adopted stringent criteria regarding risk transfer and control of special purpose entities. Both steps have reduced drastically the incentives for off-balance sheet securitization and the resulting capital relief opportunities.

[58] Jumbo issues amount to at least a billion euros.

assets), and lower contribution of debt in regulatory capital (as shown by a declining regulatory capital to equity ratio) have sustained credit institutions' financial soundness.

Box 2. Breakdown of Banks' Return on Equity

Banks' ROE can be decomposed as follows:[1]

$$ROE = \frac{NI}{NOI} \times \frac{NOI}{GI} \times \frac{GI}{RWA} \times \frac{RWA}{TA} \times \frac{TA}{RK} \times \frac{RK}{E}$$

where NI = net income; NOI = net operating income; GI = gross income; RWA = risk-weighted assets; TA = total assets; RK = regulatory capital (Tier 1 + Tier 2); and E = equity.

The first ratio is an indicator of financial strength. An increase in this component indicates lower deductions from income to cover different risks and extraordinary losses. However, it may also be the result of a one-off increase in extraordinary profits and hence the improvement in ROE will prove to be temporary.

Changes in the second ratio capture changes in bank efficiency. In fact, it may be rewritten as follows:

$$\frac{\text{Net operating income}}{\text{Gross income}} = 1 - \frac{\text{Administrative costs}}{\text{Gross income}} = 1 - \text{Efficiency ratio}$$

Therefore, an increase in this ratio indicates progress in the way banks carry out their business activity.

The third ratio is a measure of asset productivity adjusted for risk. A raise in this ratio denotes that banks have improved the allocation of their investment portfolio and hence they can earn a higher return per unit of assets adjusted for the risk assumed.

While the fourth factor provides an indication of the risk profile of banks' balance sheet, the fifth ratio measures the bank's leverage ratio. A shift of banks' portfolio toward riskier activities or an increase in their leverage makes banks more vulnerable to shocks, thus weakening their financial soundness.

The sixth ratio offers a measure of the quality of banks' capital. Since the numerator includes subordinated debt, a rise in this ratio implies that banks increase their indebtedness within their regulatory capital. This implies a worsening of their risk exposure and hence of their financial soundness.

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[1] See Banco de España (2004) "Financial Stability Report," May.

Figure 8. Spain: Banks' Return on Equity Breakdown; 2002–08(H1)

Group net income/Net operating income

Commercial banks
Savings banks
Co-operatives

Net operating income/Gross income

Gross income/Risk-adjusted assets (in %)

Risk-adjusted assets/Total assets

Total assets/(Tier I + Tier II)

(Tier I + Tier II)/Group equity
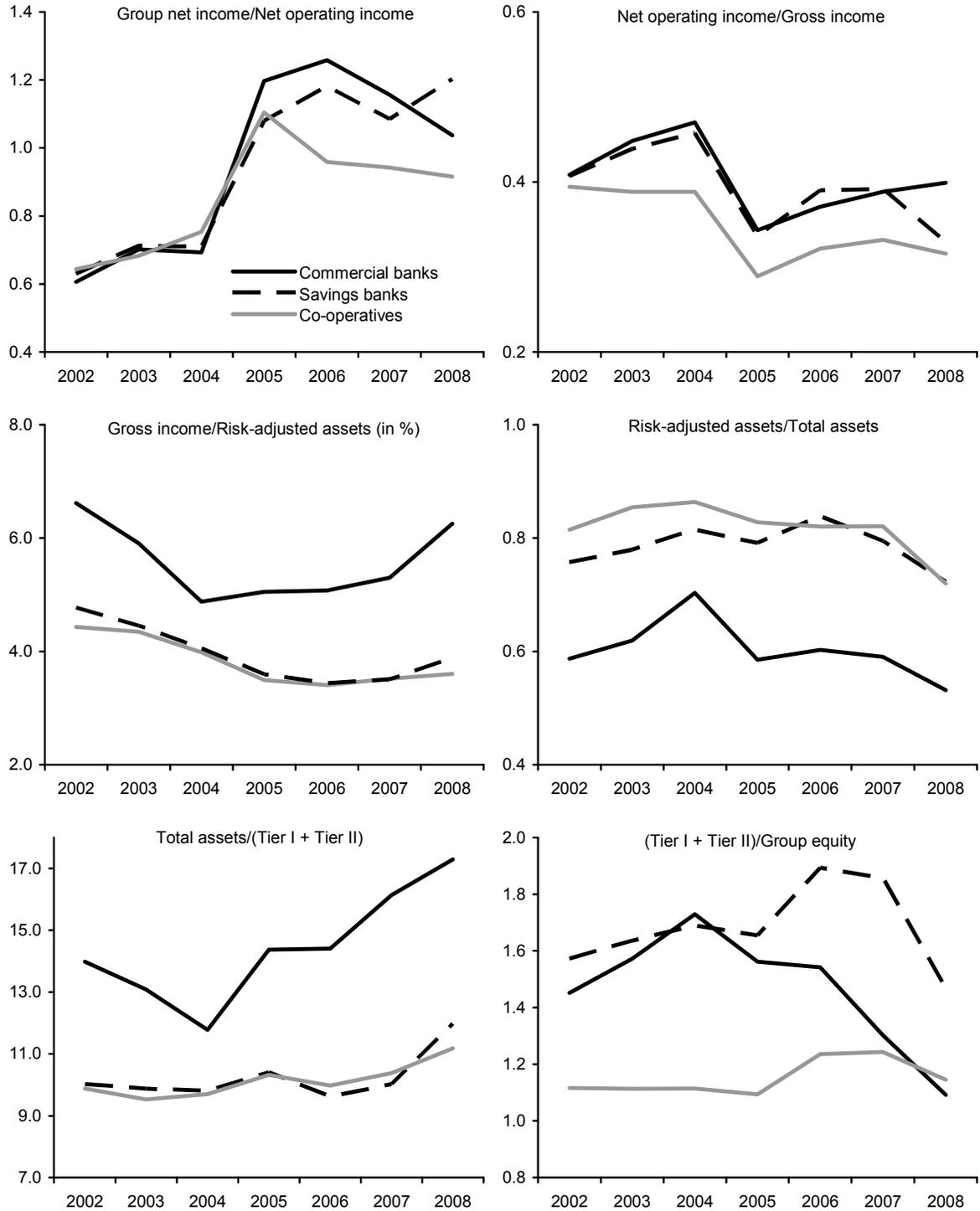
Sources: Banco de España; and IMF staff estimates.

58.   **Because of strong forward-looking prudential regulation, Spanish banks have had strong capital and provisioning buffers.** At end-2007, the average capital adequacy ratio stood at 11.4 percent (Figure 9). Although this indicator is slightly below the EU

Figure 9. Spain: Banking Sector's Soundness Indicators; 2003–07
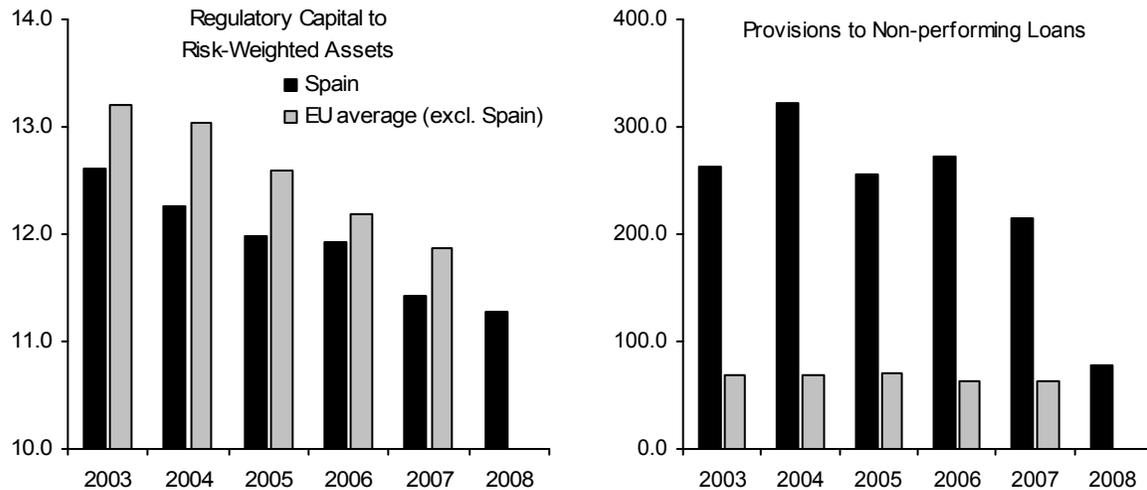
Sources: Banco de España; and Global Financial Stability Report.

average (11.9 percent), it does not include the effects of the adoption of dynamic provisioning, which forced Spanish banks to accumulate significant additional buffers. At end-2007 banks' provisions were over 200 percent of non-performing loans (NPLs). The system of dynamic provisioning increased reserves during the phase of rapid credit growth that preceded the current financial crisis. Back-of-the-envelope calculations indicate that the Spanish banking sector entered the financial turmoil with an extra provisioning cushion of some €24 billion (Figure 10).[59]

Figure 10. Spain: Credit Growth, Non-Perfoming Loans and Loan-Loss Provisions; 1999-2008
(12-moth growth rate; in percent of total credit)

Credit growth (RHS)

Loan-loss provisions (actual)

Non-performing loans

Loan-loss provisions (convergence to EU average)
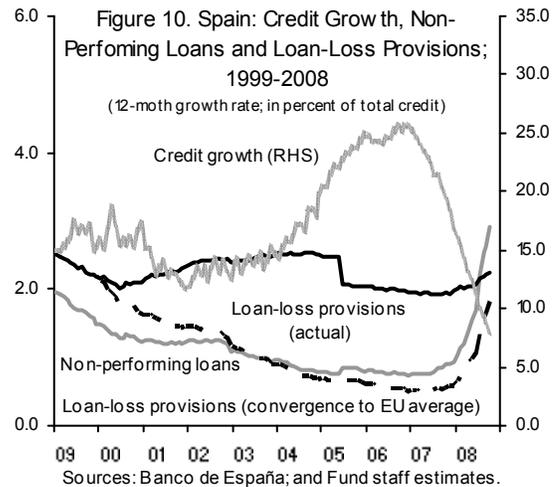
Sources: Banco de España; and Fund staff estimates.

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[59] A notional level of bank provisions has been calculated by assuming that Spanish banks' coverage ratio would have otherwise trended towards the EU average (a full convergence is assumed by end-2007).

C. The Impact of the Financial Turmoil

59.   **The outbreak of the financial crisis in summer 2007 has severely affected the operating model of the Spanish banks**. With wholesale funding drying up, Spanish banks have started restructuring their balance sheets. On the asset side, credit institutions have slowed lending growth and tightened credit standards. On the liability side, they have tapped more extensively ECB refinancing facilities by doubling access from €22 billion in the pre-crisis period to €49 billion recently. Since other banking systems also expanded their recourse to the ECB, Spain' access has remained broadly in line with that of Euro-area total assets (Figure 11). Banks have also competed fiercely for customer deposits, largely at the cost of redemptions from mutual funds.

Figure 11. Spain: Refinancing Operations with the Euro-system; 2006-08
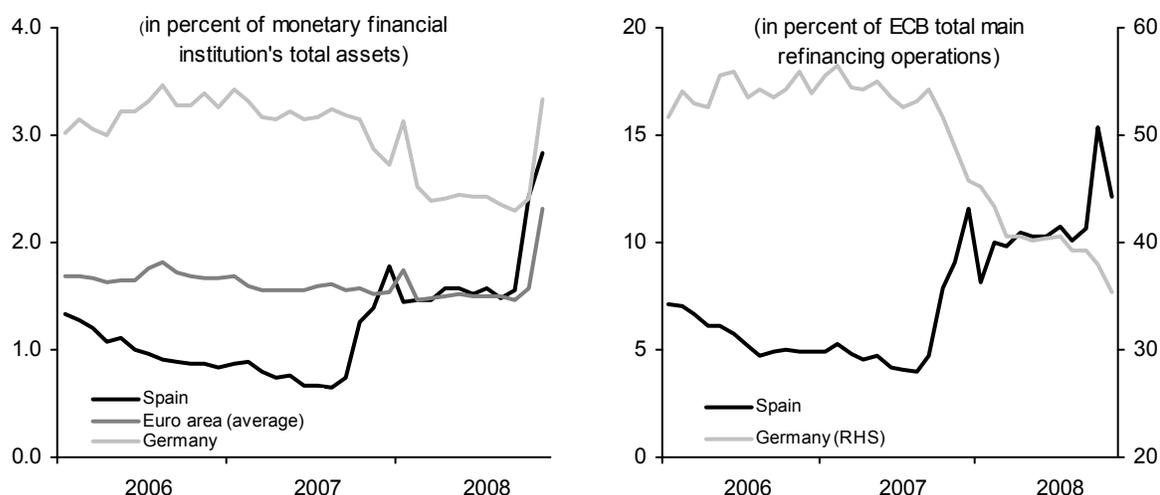
Sources: Banco de España; Bundesbank; European Central Bank; and Fund staff estimates.

60.   **Banks' operating environment has deteriorated more rapidly and severely than expected**. Given their retail-oriented nature, Spanish banks have not been directly affected by the US subprime crisis and its ramifications.[60] Nevertheless, they have to face with the bleak economic situation. Domestic economic slowdown and banks' deleveraging have been mutually reinforcing. Households and the corporate sector are highly indebted. Unemployment is rising. The housing market is rapidly cooling off. The corporate sector is facing increasing cash-flow and liquidity problems. Several large real estate developers have filed for bankruptcy. Against this environment, NPLs have increased rapidly but from a very

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[60] Spanish banks' total direct gross exposure to Lehman was estimated at US$700 million, with BBVA having the largest exposure with US$100 million. However, both Santander and BBVA were caught off guard by the Madoff fraud scandal. While Santander's direct exposure was reportedly minimal (€17 million), Santander's clients who invested in the bank's Optimal Strategic hedge fund, had an exposure of €2.3 billion. BBVA reported € 300 million losses from its activities related to Madoff Investment Securities.

low base.[61] Loans to the construction and real estate sectors have witnessed the most marked deterioration (Figure 12). As a result, savings banks have been most affected owing to their large exposure to the real estate sector. While banks' provisions are still at a comfortable level, the extra cushion provided by dynamic provisioning is falling rapidly.

Figure 12. Spain: Non-Performing Loans Developments; 1999–2008
(quarterly data; in percent)
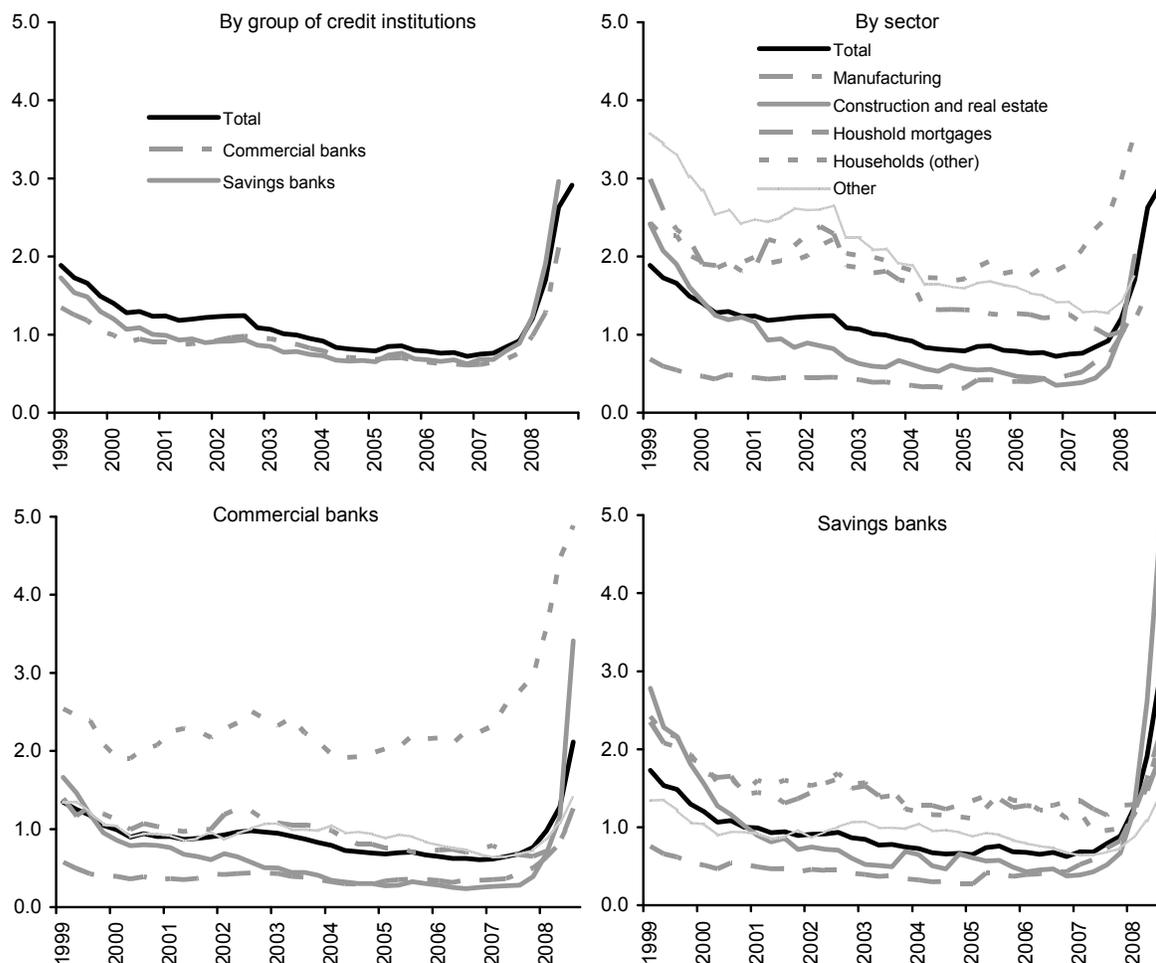
Source: Banco de España.

61.   **As a consequence, and despite broadly positive results in 2008, market sentiment on Spanish banks has turned mixed**. While Santander and BBVA continued to record high net income in line with market expectations, their stock prices have declined significantly, reflecting generalized market risk aversion and in anticipation of very difficult market conditions yet to come (Figure 13). When the financial turmoil heightened in the autumn, their CDS spreads trended above those of (retail) peers (investment banks fared much worse),

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[61] As of end-2007, NPLs amounted to less than 1 percent of total loans; half of the EU average.

mainly owing to the sharp deterioration in the Spanish economic outlook and their large exposures to emerging markets, especially in Latin America. Since then, however, CDS spreads have returned in line with those of retail peers, in part helped by the two institutions' successful market-based capital increases.[62] Small banks and savings banks have been

Figure 13. Spain: Santander and BBVA; 2007-09

Stock Exchange Indeces; 2007-09
(1/1/2007 = 100)

CDS EUR 5 Year Senior; 2007-08
(30-days moving averages; basis points)
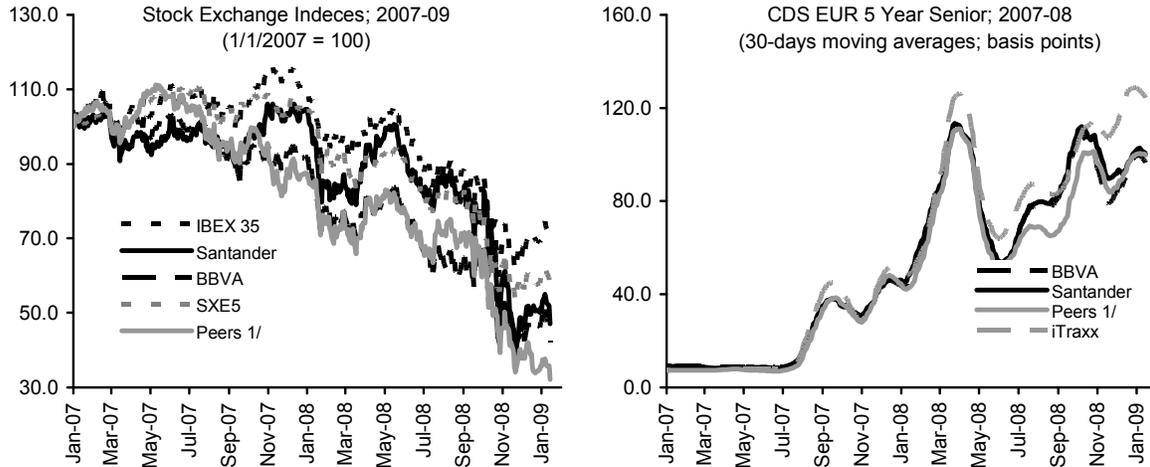
Sources: Bloomberg; and Fund staff estimates.
1/ Peers include Unicredito, Commerzbank, HSBC, ING, BNP Paribas.

penalized more severely, reflecting expected asset quality deterioration due to the downturn in the housing market (Figure 14). The markets' increasing concern about the Spanish

Figure 14. Spain: Small Banks and Cajas; 2007-09

Stock Exchange Indeces; 2007-09
(1/1/2007 = 100)

CDS EUR 5 Year Senior; 2007-08
(30-days moving averages; basis points)
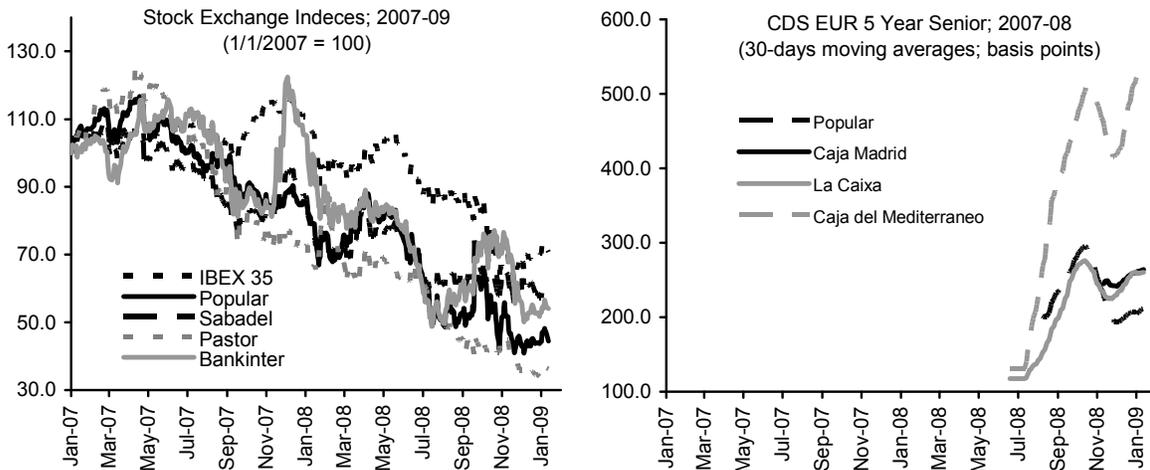
Sources: Bloomberg; and Fund staff estimates.

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[62] In late 2008, Santander increased capital by €7.2 billion (equivalent to about 130 bps of Core Tier 1 capital) and BBVA by €1 billion (preferred shares) on market terms without government enhancements.

economic and property outlook has driven spreads on residential mortgage backed securities above peers (Figure 15). As indicated by the 2006 FSAP, some of the larger credit institutions have significant equity investments in non-financial companies ("industrial participations"), concentrated in a few sectors or companies including real estate. Losses associated with the stock-market downturn can thus further affect banks' profitability and capitalization through these holdings as well.

Figure 15. Spain: Residential Mortgage Backed Securities
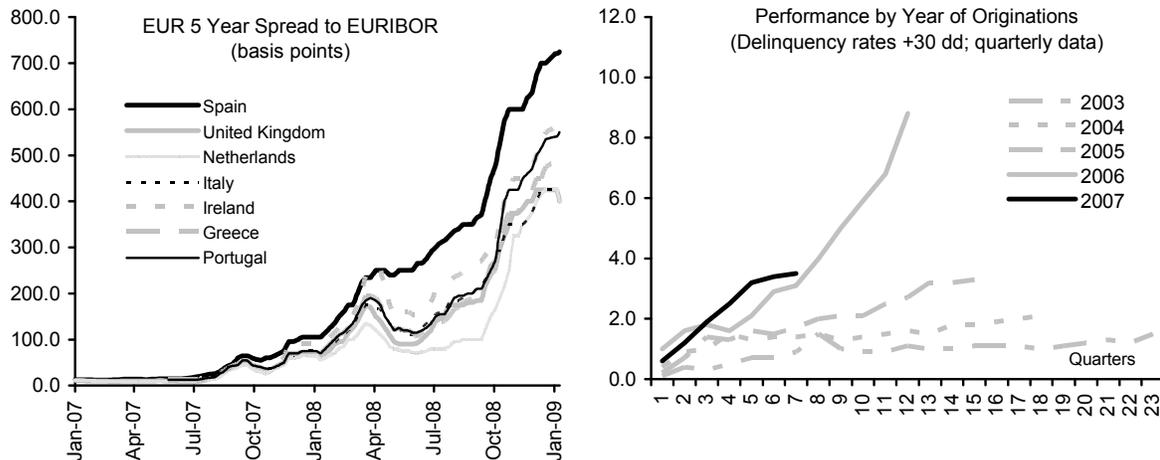
Source: J.P. Morgan.

62.   **Like other European countries, the Spanish government has taken a number of exceptional measures to shore up confidence in the financial system** (Box 3). As part of the package, the Spanish government established a €30 billion fund (which may be raised to €50 billion)—Fondo para la Adquisición de Activos Financieros (FAAF)—to provide liquidity to the banking sector by purchasing, on an outright or temporary basis, high quality bank liabilities (asset-backed securities with 3–5 year maturity).

D. A Simple Macro Stress Test of the Spanish Banking Sector

63.   **To gauge the sensitivity of banks to the deterioration in the operating environment, staff has conducted a simple macro stress tests based on public information**. To identify the key macroeconomic determinants of NPLs, staff estimated a logit transformation of bank NPLs over the period 1988–2008. This period includes the episode in the early 1990s, during the previous significant housing downturn. First, the focus is on NPLs for the banking sector as a whole.

64.   NPLs are modeled to be related to a set of macroeconomic variables (X) as:

(1) $$NPL = \frac{1}{1 + \exp(-\beta X)}$$

Box 3. Spanish Government Assistance to Banks

Following the common framework agreed by euro-area countries, the Spanish government has taken the following exceptional measures:

- The limit of the deposit guarantee was raised from € 20,000 to € 100,000.[1]

- A € 30 billion fund (which may be raised to € 50 billion) was established to purchase high quality asset-backed securities issued by credit institutions: the FAAF.[2] The operations can take the form of outright purchases or long-term swap operations (12 months or longer). Asset eligibility is slightly different in the two cases. In particular, outright purchases can be carried out for CHs and securities backed by CHs issued before October 10, 2008, traded (or in the process of being traded) in a regulated market, carrying a triple-A rating, and with a maturity no longer than the one specified in the auction. In the case of swap operations eligible assets comprise CHs and securities backed by CHs, or credit to individuals or non-financial companies and institutions provided that these securities have been issued after August 1, 2007, meet the ECB's eligibility requirements, and carry at least a rating of double-A. The FAAF consists of two separate portfolios; one for each type of operations. To safeguard a sufficient diversification, the FAAF cannot allocate more than 10 percent of its resources in each portfolio to a single entity. The FAAF's operations are conducted through an American-Type Auction; a fraction may also be allocated through non-competitive auctions. In each auction, individual allotments cannot exceed the lowest between the above-mentioned 10 percent limit of FAAF's portfolio and the result of the product between 2.5 times a credit institution's share in total credit to the domestic non-financial private sector and the amount offered.

- Government guarantee may be provided for credit institutions' new debt issues. The amount of the scheme approved in 2008 is € 100 billion to be used by mid-December 2009.[3] A possible additional € 100 billion might be allotted in 2009 if market conditions do not improve. As agreed within the EU, the pricing depends on debt maturity, CDS spreads, and rating of the originators:

Table 4. Spain: Pricing of the Government Guarantee

Maturity	Commission Fee
Less or equal to 1 year	Flat fee of 50 bp.
Greater than 1 year	Flat fee of 50 bp plus: • For beneficiary institutions with CDS data; the lowest between: 1) the median of the 5 year CDS spreads calculated over the period January 1,2007 – August 31, 2008; 2) 36.5 bp for institutions with AA rating; 3) 44.8 bp for institutions with A rating. • For beneficiary institutions without CDS data, or without representative CDS data, but with a credit rating: 1) 36.5 bp for institutions with AA rating; 2) 44.8 bp for institutions with A rating. For beneficiary institutions that are not comprised in the previous two categories, 44.8 bp plus a supplementary annual fee of 10 bp.

- If necessary, credit institutions' re-capitalization may be carried out through the government's acquisition of non-diluting instruments such as preference shares.[3]

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[1] Royal Decree 1642/2008, October 10, 2008.
[2] Royal Decree Law 6/2008, October 10, 2008.
[3] Royal Decree Law 7/2008, October 13, 2008.

By performing the logit transformation, this provides:

$$(2) \qquad \ln\left(\frac{NPL}{1-NPL}\right) = \beta X$$

65. **Possible explanatory macroeconomic variables are**: the change in nominal house prices (hs); the unemployment rate (une); the real interest rate (rr); and the private sector debt-to-GDP ratio (psd). This yields the following equation:

$$(3) \qquad \ln\left(\frac{NPL}{1-NPL}\right) = yyy = \beta_0 + \beta_1 hs + \beta_2 une + \beta_3 rr + \beta_4 psd + \beta_5 yyy(-1)$$

66. **The equation has been estimated for the period 1989Q2 to 2008Q2 and the results are reported in** Table 5. They suggest that NPLs are:

• A positive function of unemployment, private debt, and the real interest rate. An increase in these variables reduces borrowers' repayment capacity. Unemployment and private debt affect NPLs with a short lag, whereas the impact of the real interest rate is delayed, consistent with the experience of monetary policy lags.

• A negative function of house prices. Since house price developments enter without a lag, it suggests that they are an indicator of the current health of the economy.

• Finally, the results also reflect a marked inertia of NPLs as indicated by the significant lagged dependent variable.

Table 5. Spain: Results of the Regression on Non-Performing Loans

Dependent Variable: NPLs 1/
Method: Least Squares
Sample (adjusted): 1989Q2 2008Q2
Included observations: 77 after adjustments
Newey-West HAC Standard Errors & Covariance (lag truncation=3)

Variable 2/	Coefficient	Standard error	t-statistic	Probability
Constant	-0.01453	0.00639	-2.27346	0.02600
House price	-0.00417	0.00192	-2.16930	0.03340
Unemployment (-2)	0.02368	0.00875	2.70699	0.00850
Private sector debt to GDP(-1)	0.01077	0.00302	3.56736	0.00070
Real interest rate (-4)	0.02000	0.00541	3.69598	0.00040
NPLs (-1)	0.73222	0.15554	4.70769	0.00000
R-squared	0.59371	Akaike info criterion		-2.81819
Adjusted R-squared	0.56509	Schwarz criterion		-2.63556
Standard error of the regression	0.05696	F-statistic		20.74999
Sum squared residual	0.23036	Probability (F-statistic)		0.00000
Log likelihood	114.50040	Durbin-Watson statistic		2.23075

1/ Logit transformation of non-performing loans.
2/ Variables are in first difference; in parenthesis the time lag in quarters.

67.	**The estimated equation fits the data well for the whole sample, but in later quarters underestimates the actual increase in NPLs** (Figure 16). This is confirmed by a stability test of the estimated coefficients with recursive residuals. One can speculate

Figure 16. Spain: NPLs Regression result and Stability
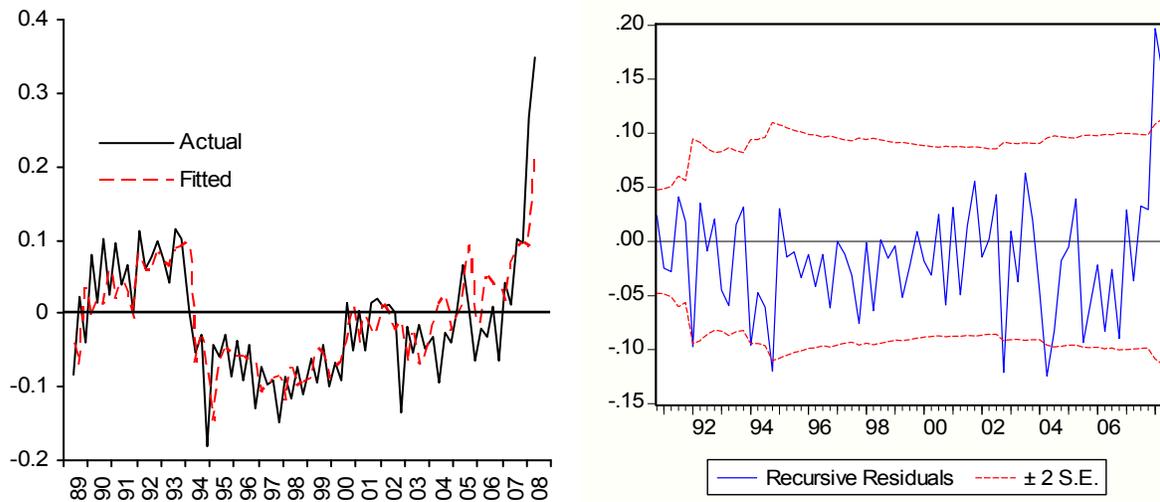
why the model underperforms on recent data. One explanation might be that the externally imposed credit crunch, originating in the US subprime crisis, has come suddenly and virulently. With very large borrowing requirements, Spain had built up vulnerability in funding markets. The virtual drying-up of the wholesale secured markets and the simultaneous downturn in the real estate market have triggered a rapid deleveraging and risk repricing by Spanish banks—unlike that experienced in previous episodes. This, in turns, has contributed to a sudden and marked increase in NPLs.[63]

68.	**With these estimates, we can now explore potential developments in NPLs under stress circumstances.** To do so, we specified the following main assumptions (Figure 17):

•	Nominal house prices decline by 16 percent from mid-2008 to end-2009 (declining at a slower pace after that for a cumulative total drop of some 30 percent in real terms);

•	The unemployment rate reaches 15 percent by end-2009;

•	The real interest rates increases to 4 percent by end-2009 reflecting persistent funding difficulties and elevated risk pricing, combined with a decline in inflation;

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[63] This development may be also explained by the regulatory changes introduced by the Accounting Circular 4/2004 that entail the earlier and fuller recognition of doubtful assets. As a result, for same pace of economic downturn, higher levels and faster rate of increase in doubtful assets will be recorded than in the past (Banco de España, 2008, "Financial Stability Report," November). However, the coefficient of a dummy variable, which was included in the estimated equation to take into account this discontinuity, did not result statistically significant.

Figure 17. Spain: Macro Assumptions; 2008Q3—2009Q4
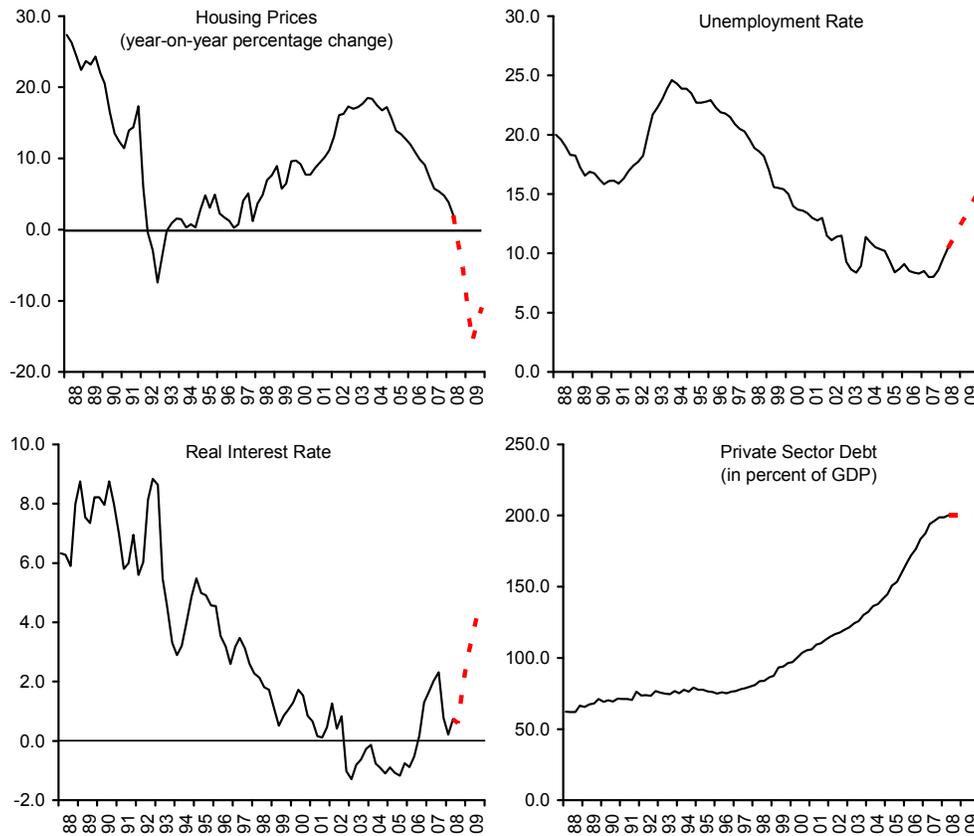
Sources: Bank of Spain; IFS; WEO; and staff estimates.

- CPI inflation declines to just below 2 percent by end-2009.

- Private sector debt remains constant in percent of GDP.

69. **With these assumptions, we can calculate two potential paths for future NPLs** (Figure 18):

- In the first path, the out-of-sample forecast through 2009Q4 suggests that NPLs could reach 5 percent by end-2009, from 1.7 percent in June-2008.

- In the second path, if we take into account that NPLs already were 2.2 percent as of July 2008, the estimated NPLs could instead reach 6.3 percent by end-2009.

Figure 18. Spain: Non-performing Loans Projections
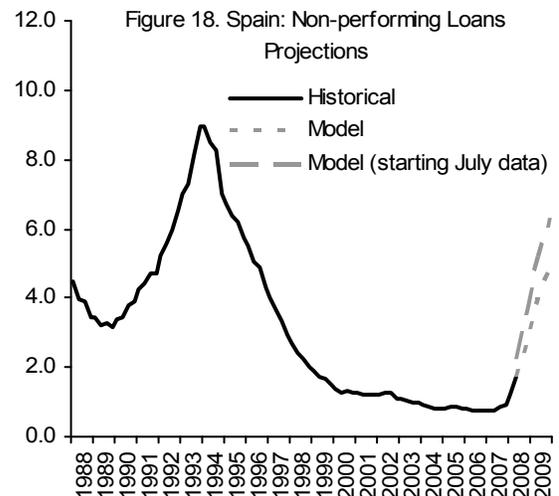
70.   **Thus, risks in an adverse scenario could be significant**. NPLs could reach well above the peak reached during the previous Spanish housing downturn in 1993–94. But such downturns are not unprecedented as this would resemble the experience of the Nordic countries during their housing and banking crisis in the early 1990s. Moreover, the result can not be dismissed out of hand considering the current very high level of indebtedness of the private sector compared with previous housing downturns (Figure 19), the severity and abruptness of the global crisis, and the fewer degrees of policy freedom under the current fixed exchange rate regime.

Figure 19. Spain: Comparing Crises (1994 vs. 2008)

Corparate sector debt (% GDP)

1994
2008

118.2
48.0
104.6   31.0   83.7
167.4
Credit-to-deposit ratio   Households debt (% GDP)

Sources: Bank of Spain; WEO; and staff estimates.
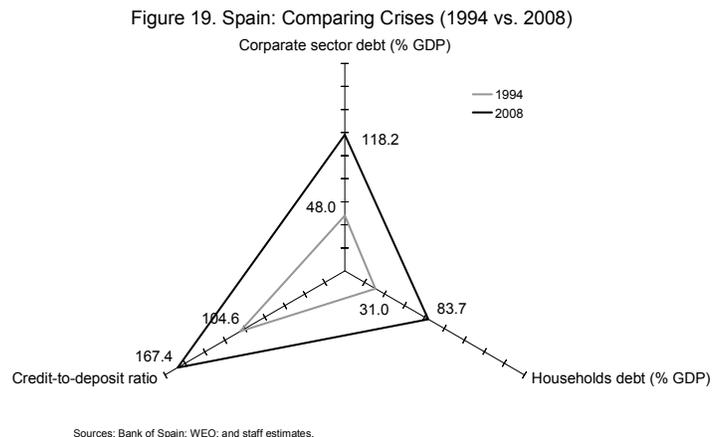
71.   **We can now use the estimated NPLs to carry out a stress test on bank-by-bank data as of end-2007**. The sample comprises 53 banks (8 commercial banks; 40 savings banks; and 5 cooperative banks). Loan portfolios are divided in three categories: mortgages, loans to construction and real estate companies, and other loans.[64]

72.   **We constructed two scenarios**. In the first, we assumed NPLs to rise to 6.3 percent of loans (the above "July" scenario). Within this total, and based on the experience of the housing downturn in early 1990s, NPLs could then reach 12.9 percent for construction and real estate companies, 3 percent for mortgages, and 7 percent for other loans. In the second scenario, we stressed total NPLs up to 10 percent. For sake of simplicity, NPLs for each loan category were increased proportionally. Also, in all two scenarios, we assumed a 50 bp decline in net interest rate margins reckoning that banks are unable to transfer fully to borrowers increasing funding costs.[65]

73.   **To calculate banks' required provisions, we needed an estimate of loss-given-defaults** (LGDs). To this end, we considered the results of other studies, namely the 2006 FSAP, Jimenez and Mencia (2007), and the Basel Committee's Results of the Fifth Quantitative Impact Study (QIS 5). This information is summarized in Table 6. Although the

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[64] In discussing this exercise, the Bank of Spain noted that the category "other loans" may be too broad for our purposes since it contains asset classes with different NPL and loss-given default experience. In their own stress tests, the Bank uses more detailed unpublished data to differentiate between these categories. The Bank believes that this could bias upward the staff's stress test findings.

[65] The Bank of Spain pointed out to staff that banks have held their intermediation margins stable so far.

2006 FSAP stress test attempted to factor in economic downturn LGDs, more recent LGD estimates tend to be higher for some loan categories, particularly mortgages.

Table 6. Spain: Loss Given Default Estimates for Different Portfolios
(in percent)

	FSAP 2006	Jimenez-Mencia (2007)	QIS 5 IRB retail 1/	QIS 5 AIRB wholesale 2/
Mortgages	10	15	11.0-26.2	
Commercial loans	45	35	28.4-49.6	35.2-39.8
Consumer and other loans	85	25	42.2-71.6	

Sources: FSAP Technical Note on Stress Testing: Methodology and Results; Gabriel Jimenez and Javier Mencia (2007) "Modelling the Distribution of Credit Losses with Observable and Latent Factors," Banco de España, WP 0709; Basel Committee on Banking Supervision (2006) "Results of the Fifth Quantitative Impact Study (QIS 5)," Bank for International Settlements, June.

1/ Results were presented for different country group banks. For commercial loans, SME retail exposures are reported.

2/ Refers to corporate loans.

74.   **The unfolding of the worst financial crisis in decades has created a situation that remains highly uncertain**. Estimates based on past history could be refuted by events. Against this background, we considered two sets of LGDs (Table 7). The first group is broadly in line with the economic downturn LGDs estimated by the Bank of Spain, although our loan portfolio breakdown is simpler, as noted. The second set of LGDs assumes some worsening in the recovery rates.

Table 7. Spain: Hypothesis on Loss Given Defaults
(in percent)

	LGD 1	LGD 2
Mortgages	20	25
Construction and real estate	45	50
Other loans	40	50

75.   **While higher NPLs translate into an increase in banks' specific provisions, we have to bear in mind that Spain has implemented a system of general dynamic provisioning**.[66] Banks are required to maintain a minimum level of general provision equal

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[66] Circular 4/2004. To calculate the latter, banks' standard loans are subdivided into six risk categories with corresponding provisioning coefficients, determined by historical experience of impairment and loss given default. In each quarter, banks are required to set aside general provisions equal to the difference between a notional amount of provisions and the amount of specific provisions accumulated during the period. The notional level of provisions is a function of both the flow and the stock of banks' exposure in each risk category multiplied by the respective provisioning coefficient.

to 33 percent of the products obtained by multiplying outstanding exposures in each of the six risk categories in which banks' loan portfolios are divided by their related provisioning coefficients, ranging between 0 and 2.5 percent.[67] Since the risk-breakdown of loan portfolios is not available, we estimated the general provision floor by applying the simple average of the provisioning coefficients (1.4 percent).

76.   **Moreover, we sought to factor in additional capital charges due to an increase in the loan-to-value** (LTV). A downturn in house prices increases the LTV ratio of a fraction of the mortgages above the 80 percent threshold. In that event, credit institutions would need to build up additional provisions and capital. Under the assumption of a 16 percent nominal decline in house prices, mortgages having a pre-shock LTV ratio between 67 and 80 percent would require, in principle, additional provisions and capital. To gauge the magnitude of these additional requirements, we assumed that the LTV distribution of mortgages granted until 2006 has remained broadly unchanged since then. Therefore, the share of mortgages to be reclassified was assumed to be equal to about 25 percent of total mortgage loans.

77.   **The results of the stress test scenarios are only indicative given that more detailed data are needed for a precise assessment, but they help point toward several considerations** (Table 8):

- *Spanish banks appear to enjoy sufficient capital buffers to withstand quite severe shocks, even by historical standards*. Sound prudential regulation, in particular the system of dynamic provisioning has served the Spanish banking sector well.

- *Nonetheless, buffers can erode rapidly*. Even in the least severe scenario (Scenario 1— LGD 1), the need for additional specific provisions absorbs, on average, three quarters of the banks' pre-shock profits. A few banks record losses. However, capital buffers remain adequate. The picture tends to deteriorate when we consider larger shocks Scenario 2). The number of banks falling below the minimum capital requirement (of 8 percent) increases. However, the amount of new capital needed to restore compliance with prudential minimum requirements is relatively small.[68]

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[67] The exercise was carried out before the BdE revised the regulation on general provision (Circular 6/2008). Currently, the BdE maintains an indicative minimum level of general provision equal to 10 percent.

[68] This result is explained by the fact that Tier 2 capital is limited to 100 percent of Tier 1 capital. Therefore, if losses bring a bank's Tier 1 capital below the pre-shock level of its Tier 2 capital, the amount of supplementary capital in excess cannot be included in the calculation of the minimum capital requirement. However, the replenishment of Tier 1 capital allows a proportional reinstatement of those financial instruments as Tier 2 capital.

Table 8. Stress Test Results

	Number of banks with CAR < 8%	Market share	o/w Number of banks with CAR < 2%	Market share	Capital injection (EUR bn)	Capital injection (in percent of GDP)
Scenario 1 (NPLs up to 6.3 percent)						
LGD 1	0	0	0	0	0.00	0.00
LGD 2	3	2.3	0	0	0.03	0.00
Scenario 2 (NPLs up to 10 percent)						
LGD 1	9	9.8	0	0	0.77	0.07
LGD 2	20	19.6	0	0	3.20	0.29

Scenario 1, NPLs breakdown: mortgages = 3 percent; construction and real estate = 13 percent; other loans = 7 percent.
Scenario 2, NPLs breakdown: mortgages = 4.5 percent; construction and real estate = 19.3 percent; other loans = 10.4 percent.
LGD 1: mortgages = 20; construction and real estate = 45; other loans = 40.
LGD 2: mortgages = 25; construction and real estate = 50; other loans = 50.

relatively small.[69] Nevertheless, if a number of banks are perceived to be problematic, confidence could erode and distressed financial conditions in a few institutions could then escalate to a wider problem with nonlinear effects on confidence. In this context, the banking system may need to go through consolidation to safeguard stability. Indeed, this process has already started with some recent mergers among Spanish banking institutions.

E. Conclusions

78.   **The Spanish banking sector has weathered well the first impact of the financial turmoil**. Cautious regulation, sound supervision, and strong retail-oriented business models have served Spanish banks well. They entered the ongoing crisis with robust capital and exceptional provisioning buffers.

79.   **However, the outlook continues to be very challenging**. Persistent difficult external conditions (dislocation of funding markets) together with increasing costs of funding as competition for deposits intensifies, may force banks to deleverage further their balance sheets. Additional tightening of credit conditions would feed back to slow activity and continue to push the Spanish economy into a severe recession—accelerating the banks' asset deterioration. A sharp fall in banks' capacity to generate earnings might be offset, at least in

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[69] This result is explained by the fact that Tier 2 capital is limited to 100 percent of Tier 1 capital. Therefore, if losses bring a bank's Tier 1 capital below the pre-shock level of its Tier 2 capital, the amount of supplementary capital in excess cannot be included in the calculation of the minimum capital requirement. However, the replenishment of Tier 1 capital allows a proportional reinstatement of those financial instruments as Tier 2 capital.

part, by restrictive cost strategies. Lower profitability and higher capitalization demanded by markets will weigh on banks' outlook and drive consolidation in lending capacity.

80.   **Staff stress test results suggest that banks may face capital needs.** Even in moderately severe scenarios, a number of banks could fall below the minimum capital requirement standards, although, based on the information available to staff, the needed capital injections are estimated to be relatively small. Nevertheless, if a significant share of the banking system is perceived to be problematic, confidence could erode and distressed financial conditions in a few institutions could then escalate to a wider problem. While the likelihood of some assumptions is open to question, the very high level of private sector's indebtedness as well as the severity and suddenness of the ongoing crisis suggest that a cautious approach, coupled with continuous close monitoring, is necessary. Indeed, the authorities have taken appropriate measures to assist banks, including with the possibility for capital injections, if this were necessary.

81.   **Needed consolidation in the wide-spread banking system could be facilitated with some policy options**. To foster market-based consolidation, institutional hurdles holding up mergers between savings banks of different autonomous regions as well as their acquisition by commercial banks ought to be removed.

III. THE LONG-RUN FISCAL OUTLOOK AND THE PUBLIC SECTOR BALANCE SHEET[70]

A. Introduction

82.   **Between 1995–2007, Spain's fiscal position improved significantly.** During this time, the authorities turned a deficit of 6.5 percent of GDP into a surplus of 2.2 percent and the public debt was cut nearly in half to 36.2 percent of GDP. A key factor was the sustained economic boom supported by lower interest rates (with euro adoption) and strong immigration. In particular, the combination of rising incomes and access to credit with declining risk premia helped engender a housing and consumption surge. Strong corporate profits further increased tax revenues.
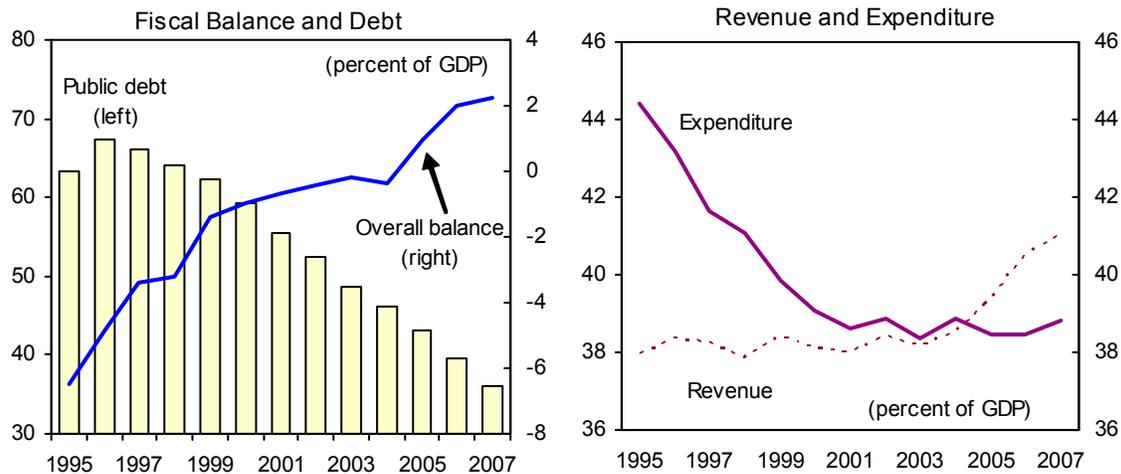
83.   **Going forward, key tax bases are now eroding, led by the cooling housing market; while changing demographics challenge the fiscal outlook further out**. The global financial turmoil has tightened financing conditions and brought the housing boom to a halt. As a result, the fiscal position is deteriorating. What during the boom appeared to be sustainable revenues that allowed strong increases in primary spending is now generating doubt whether the underlying structural fiscal position in fact is as strong as previously thought. Further, Spain faces significant challenges associated with population aging that require major budgetary adjustment over the longer run.

84.   **The objective of this paper is to assess the long-run fiscal outlook in the current challenging context**. Section B presents long-run fiscal projections based on current policies. It examines recent developments in revenue and expenditure, assessing tax bases, and expenditure pressures. Section C presents a preliminary public sector balance sheet that provides a long-run intertemporal view of these fiscal developments to see if current policies are sustainable. Section D concludes.

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[70] Prepared by Keiko Honjo.

B.   Long-run Fiscal Outlook

85.   **Spain is coming off a period with buoyant fiscal indicators**. The large improvement reflects lower interest payments and strong increases in tax revenues on the back of high growth with a housing boom. The interest bill declined by 3½ percentage points of GDP over a decade, while tax revenue increased by 5 percentage points of GDP. Despite some earlier reforms to reduce personal income taxes[71], the revenue elasticity to GDP mostly remained above one, averaging 1.2 for the period. VAT revenues in particular increased steadily on the back of the consumption/housing boom, but more recently, corporate income taxes have also been a key source of revenue.
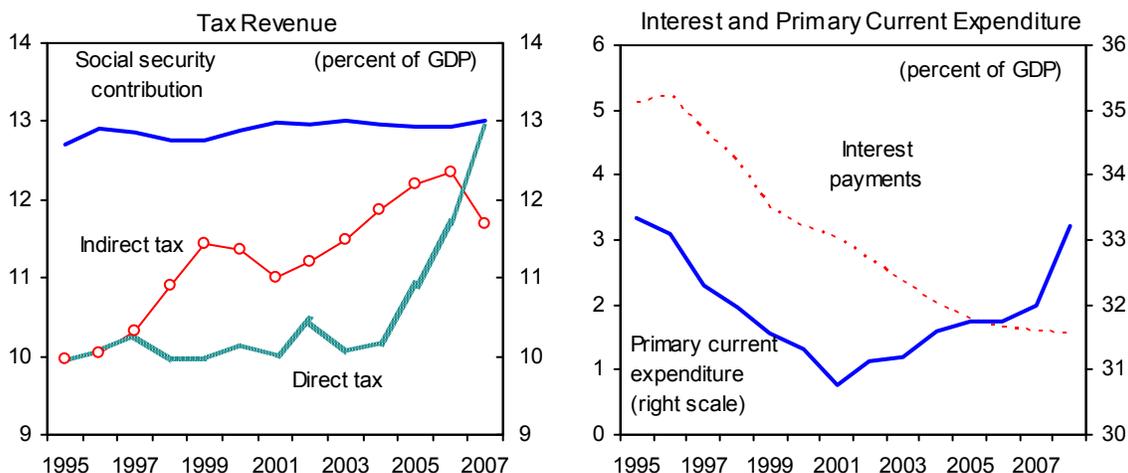
86.   **Part of the revenue upswing is structural.** Better access to credit with EU integration and the adoption of the euro accelerated income convergence to the euro-area. Rising incomes in turn prompted greater demand for consumption and housing, materially increasing the VAT tax base. Corporate profits associated with real estate also soared. While it is difficult to single out the overall impact of housing market activity on tax revenue, a rough calculation that takes into account the evolution of the VAT tax base for new home purchases, taxes on property and property transaction, and higher gross value added from the construction sector suggest that the housing boom increased tax revenues by as much as 2½-3 percent of GDP during 1995–2007. Thus, housing, residential construction, and its ancillary effects are estimated to have accounted for more than half of total tax revenue increases during the period. This tax base is now declining.

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[71] Reforms in 1999 and 2003 cut personal income tax rates.

87.   **The housing collapse that emerged with the global financial turmoil has exposed the unsustainability of the preceding boom**. Lower availability of funding and higher credit costs through risk repricing have led to significant adjustment in domestic demand. With the sudden deflation of this key tax base, overall tax revenue is projected to drop by more than 3 percentage points of GDP in 2008 alone. Together with sizeable trend increases in primary spending this puts pressure on the public finances. Since 2001, real primary current spending has outpaced the rate of trend (potential) growth, offset in part by the unusually low interest rates in recent years. As interest rates may now be seen as normalizing, primary spending needs to moderate to prevent total expenditure from taking off.
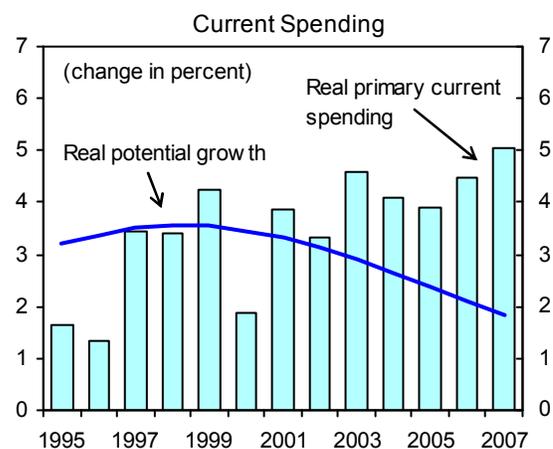
88.   **To identify underlying fiscal trends and opportunities in Spain, it is important to assess what changes to the conditions in the economy are permanent or temporary**. The standard technique calculates the structural fiscal balance as a function of the output gap. However, the cycles of consumption, housing, and labor compensation, the recent main tax bases, can follow somewhat different *timing* than the cycle of headline GDP. In addition, the *amplitude* of the various cycles in each tax base can be different, especially that of consumption, which tends to have smaller amplitude than that of GDP. Against this backdrop, the calculation of the structural position will thus need to take into account the different behaviors of the tax bases relative to GDP.[72] With this in mind, this analysis tries to match each main revenue and expenditure component to its underlying tax or expenditure base. On the spending side, unemployment benefits are assessed relative to the equilibrium unemployment rate (NAIRU), while long-term age-related spending (pensions, health, long-term care and education) follow the path (essentially a demographic base) presented by the Spanish authorities in the 2006 Report by the European Commission's Aging Working Group (AWG).[73] A Hoddrick-Prescott (HP) filter is applied on consumption, GDP, and unemployment to separate the cyclical and trend (structural) components. Both effects from the cyclical conditions and changes in the economic structure are evaluated relative to a base

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[72] For indirect tax revenue, the permanent component is assessed by evaluating private consumption*/Output* relative to that of the base year (* denotes potential). For direct tax revenue, labor income consistent with NAIRU at each point in time is assessed relative to the base year—the base year being a period in which the output gap is zero.

[73] Pension expenditures reflect updated projections from the Ministry of Economy and Finance in the framework of the forthcoming 2009 AWG Report.

year where the output gap is estimated to be zero. Given that actual and trend GDP cross between 1999 and 2000, the average of the two years is used as the base for GDP.

89.   **This analysis suggests that more than half of the fiscal improvement during 1995-2007 owed to extraordinary cyclical and one-off factors**. The total improvement in the headline fiscal position during this period was 8¾ percentage points of GDP. Structural factors contributed 3 percentage points with the structural balance improving from a deficit of 4 percent of GDP in 1995 to a deficit of 1 percent of GDP in 2007. A growing personal income tax base associated with strong employment gains and higher per-capita incomes, and declining interest payments were key contributing factors. The remainder improvement of 5¾ percentage points was broadly transitory, reflecting a cyclical upturn accompanied with the sustained housing boom. In recent years, increasing revenue gains from the buoyant housing asset price and activity had contributed to generating headline fiscal surpluses. But excluding these cyclical and one-off factors, since 1999 the underlying (structural) fiscal position has remained in deficit around 1 percent of GDP.

Decomposition of Fiscal Balance
(percent of GDP)

Legend: Actual, Structural, Transitory
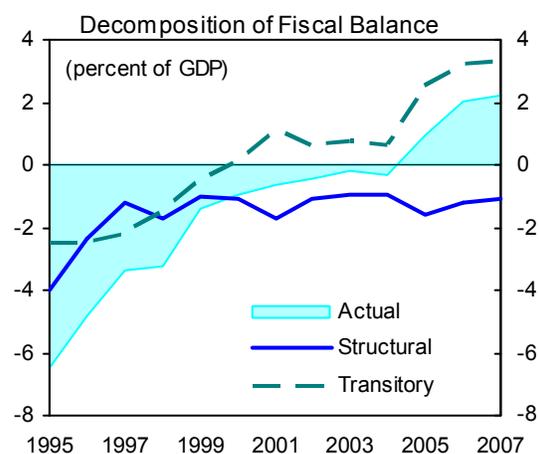
90.   **Fiscal measures to assist the economy through the downturn, combined with structural effects that alter the composition of tax bases, are estimated to have weakened the structural position by 3.1 percentage points of GDP in 2008**. The policy measures include personal and corporate income tax cuts (especially the €400 per person a year tax rebate), family assistance (Cheque bebe), and other stimulus measures. A significant part of the structural drop also reflects the impact of a permanent erosion in the tax base due to the downturn in the housing market (asset revenue base) and the (permanent) slowdown in job creation (the demographic base). Going forward, household debt that was accumulated during the economic boom and the associated increase in debt service burden are likely to constrain consumption for some time, affecting the VAT base. Also, the (permanent) costs of unemployment benefit were likely underestimated and are now projected by staff to put increasing pressures on

Spain: Main Fiscal Measures
(Percent of GDP)

	2008	2009
€400 PIT cut	-0.5	-0.1
Child support (*cheque bebe*)	-0.1	
2007 PIT reform	-0.3	
2007 CIT reform	-0.5	
PIT bracket non-adjustment		0.1
Wealth tax		-0.2
Public works	-0.2	-0.8
ALMPs		-0.1
Primary current spending pressures	-0.6	0.0
Other (incl tax base effects)	-0.9	0.0
Total	-3.1	-1.0

spending (in view of rigidities in the Spanish labor market). These adverse shifts in tax bases and expenditure obligations contribute some 1 percentage point of GDP to the structural drop in the fiscal balance.

91.   **For the medium-term, the staff baseline scenario assumes some fiscal adjustment to cut back the impact of recent measures (the exit strategy of the fiscal stimulus) as the economy regains strength, so that the structural deficit is reduced to about 1¼ percent of GDP by 2014**. The deficits are projected to decline gradually to 3 percent of GDP as the impact of spending measures drops out (the stimulus measures have sun set clauses), and assuming that the government will contain further current spending to bring the deficit back into compliance with the SGP 3-percent limit (Table 1). This corresponds to a small primary surplus of about ¼ percent of GDP in 2014, and a public debt ratio of 56 percent of GDP.

The Long Run

92.   **For the long run, Spain is subject to significant spending pressures due to aging and a slowdown in population growth**. Costs associated with aging are projected to rise by 8½ percent of GDP through 2050. The projected increase is large compared to other European countries.

Spain: Projected Aging Costs in the Fiscal Accounts
(In percent of GDP)

	2005	2020	2030	2040	2050	Change 2005-50
Total	19.8	20.6	22.4	25.3	28.4	8.6
Pension 1/	8.5	9.5	10.8	13.2	15.5	7.0
Health	6.1	6.7	7.3	7.9	8.3	2.2
Long-term care	0.5	0.5	0.5	0.6	0.8	0.3
Education	3.6	3.2	3.0	2.9	3.1	-0.5
Unemployment	1.1	0.7	0.7	0.7	0.7	-0.4

Sources: EU Commission, Special Report No. 1/2006 from the Aging Working Group and Ministry of Finance.
1/ Updated projections from the Ministry of Economy and Finance.

Projected Increase in Total Age-related Spending 2004-2050

Source: Commission 2006
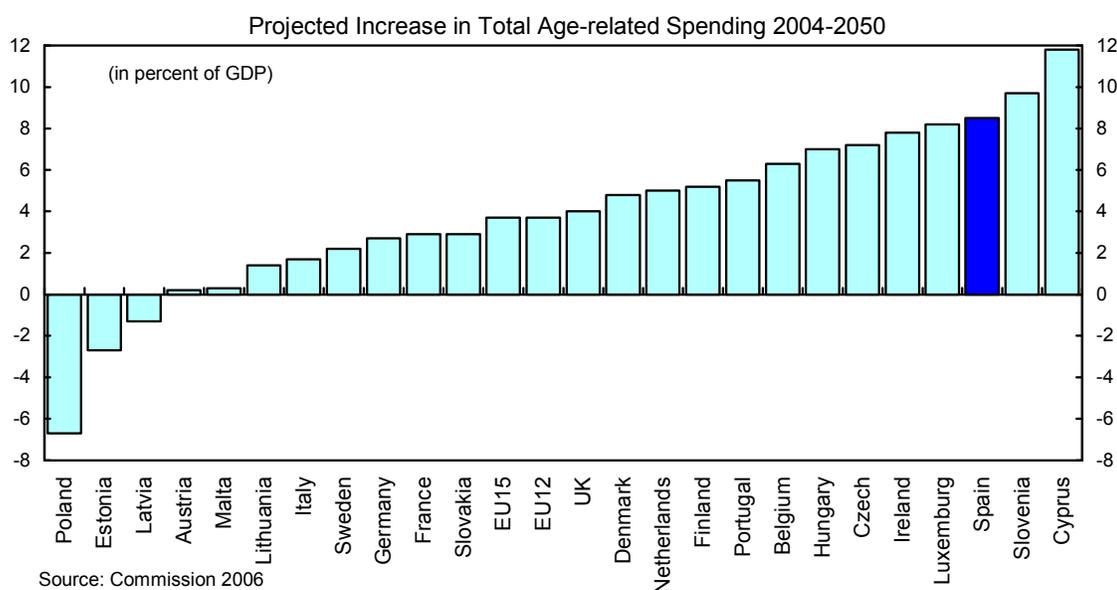
Table 1. Spain: General Government Operations 2005-2060

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2020	2030	2040	2050	2060
														Projections	
															(In billion of euros)
Revenue	**358**	**398**	**431**	**406**	**397**	**403**	**417**	**434**	**455**	**481**	**637**	**954**	**1,345**	**1,844**	**2,663**
Current revenue	351	391	427	401	392	398	411	427	447	473	627	938	1,322	1,813	2,618
Indirect taxes	111	121	123	110	109	111	114	117	123	130	173	258	364	500	721
Direct taxes	99	115	136	114	114	116	120	126	132	139	184	276	389	533	770
Social security contribution	117	127	137	144	137	138	142	148	156	165	219	327	461	632	913
Other current revenue	24	28	31	33	33	33	34	36	37	39	51	77	108	148	214
Capital revenue	7	7	5	5	5	5	6	7	8	8	11	16	23	31	45
Primary expenditure	**333**	**362**	**391**	**422**	**445**	**447**	**450**	**455**	**464**	**478**	**652**	**1,020**	**1,542**	**2,265**	**3,243**
Aging realted expenditure	180	193	205	214	214	217	222	229	237	248	346	563	897	1,381	1,966
Pension	77	83	88	94	95	97	99	102	106	111	160	272	468	754	1,060
Health	55	60	65	68	68	69	72	74	78	82	113	184	280	404	583
Long-term care	5	5	5	5	5	6	6	6	6	6	8	14	21	39	56
Education	33	35	36	37	36	35	36	37	38	39	54	75	103	151	218
Unemployment	10	10	11	11	10	10	10	10	9	9	12	18	25	34	49
Non-aging related expenditure	108	119	131	149	167	171	170	169	168	169	225	336	474	650	938
Capital expenditure	45	50	55	58	64	59	57	57	58	61	81	121	171	235	339
Primary balance	**25**	**36**	**40**	**-17**	**-48**	**-44**	**-33**	**-20**	**-9**	**3**	**-14**	**-66**	**-197**	**-421**	**-580**
Interest payments	16	16	17	17	19	22	24	26	28	30	46	93	196	467	1,051
Overall balance	**9**	**20**	**23**	**-34**	**-67**	**-66**	**-57**	**-47**	**-37**	**-27**	**-60**	**-159**	**-394**	**-888**	**-1,631**
															(In percent of GDP)
Revenue	**39.4**	**40.5**	**41.0**	**37.0**	**36.4**	**36.5**	**36.8**	**37.2**	**37.5**	**37.9**	**37.9**	**37.9**	**37.9**	**37.9**	**37.9**
Current revenue	38.6	39.8	40.6	36.6	36.0	36.0	36.3	36.5	36.9	37.3	37.3	37.3	37.3	37.3	37.3
Indirect taxes	12.2	12.4	11.7	10.1	10.0	10.0	10.1	10.1	10.1	10.3	10.3	10.3	10.3	10.3	10.3
Direct taxes	10.9	11.7	12.9	10.4	10.5	10.5	10.6	10.7	10.9	11.0	11.0	11.0	11.0	11.0	11.0
Social security contribution	12.9	12.9	13.0	13.1	12.5	12.5	12.5	12.7	12.8	13.0	13.0	13.0	13.0	13.0	13.0
Other current revenue	2.6	2.8	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Capital revenue	0.8	0.7	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Primary expenditure	**36.7**	**36.8**	**37.2**	**38.5**	**40.8**	**40.5**	**39.7**	**38.9**	**38.3**	**37.7**	**38.8**	**40.6**	**43.5**	**46.6**	**46.2**
Aging realted expenditure	19.8	19.7	19.5	19.6	19.6	19.7	19.6	19.6	19.6	19.5	20.6	22.4	25.3	28.4	28.0
Pension	8.5	8.5	8.4	8.5	8.7	8.8	8.8	8.8	8.7	8.7	9.5	10.8	13.2	15.5	15.1
Health	6.1	6.1	6.2	6.2	6.2	6.3	6.3	6.4	6.4	6.5	6.7	7.3	7.9	8.3	8.3
Long-term care	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.8	0.8
Education	3.6	3.5	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.0	2.9	3.1	3.1
Unemployment	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Non-aging related expenditure	11.9	12.1	12.5	13.6	15.3	15.5	15.1	14.5	13.9	13.4	13.4	13.4	13.4	13.4	13.4
Capital expenditure	4.9	5.1	5.2	5.3	5.9	5.3	5.0	4.9	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Primary balance	**2.8**	**3.7**	**3.8**	**-1.5**	**-4.4**	**-4.0**	**-2.9**	**-1.8**	**-0.7**	**0.2**	**-0.9**	**-2.6**	**-5.6**	**-8.7**	**-8.3**
Interest payments	1.8	1.6	1.6	1.6	1.7	2.0	2.1	2.3	2.3	2.3	2.7	3.7	5.5	9.6	15.0
Overall balance	**1.0**	**2.0**	**2.2**	**-3.1**	**-6.1**	**-6.0**	**-5.0**	**-4.0**	**-3.0**	**-2.1**	**-3.6**	**-6.3**	**-11.1**	**-18.3**	**-23.2**
Memorandum items:															
Government debt	43.0	39.6	36.2	37.8	44.0	49.4	53.3	55.6	56.6	56.3	58.0	81.6	135.1	227.3	341.8

Sources: Ministry of Finance, Bank of Spain; and staff projections.

93. **In addition, there are several other assumptions that need to be explored to arrive at the underlying long-run baseline scenario**.

- **Potential real GDP growth** is projected by staff to slow from around 2¾ percent in recent years to about 1½ percent by 2060, as demographic changes shrink the labor force. The main impact of aging in Spain kicks in after 2030 when the dependency ratio surges. Until then, growth could still average 2 percent a year or slightly above. Assuming the inflation differential vis-à-vis the euro area dissipates over time, nominal GDP growth is then projected to slow from between 4-5 percent a year in the medium-long run to about 3½ percent a year after 2030. Labor productivity growth is assumed to improve to about 1½ percent.

Spain: Real GDP Growth and Its Composition 1/

	Actual			Projection					
	1970-79	1980-89	1990-99	2000-09	2010-19	2020-29	2030-39	2040-49	2050-60
Real GDP	3.7	2.7	2.7	2.8	2.0	2.2	1.5	1.2	1.7
Labor productivity (per hour worked)	3.7	2.3	1.0	0.3	1.0	1.5	1.5	1.5	1.5
Total hours worked	0.0	0.4	1.7	2.5	0.9	0.7	0.0	-0.4	0.2
Hours worked per employed person	0.0	0.0	0.2	-0.3	0.0	0.0	0.0	0.0	0.0
Employed persons	0.0	0.4	1.6	2.9	0.9	0.7	0.0	-0.4	0.2
Working-age population	1.1	1.0	0.6	1.5	0.4	0.2	-0.3	-0.6	0.0
LF participation rate	-0.4	0.1	0.3	1.1	-0.1	0.1	0.1	0.1	0.1
Employment rate	-0.6	-0.4	0.5	0.8	0.3	0.3	0.2	0.1	0.1
Memorandum items:									
Population	1.0	0.4	0.4	1.5	0.7	0.5	0.3	0.1	-0.1
Employment growth	0.0	0.4	1.6	2.9	0.9	0.7	0.0	-0.4	0.2
Unemployment rate	5.2	17.1	17.9	10.9	13.9	8.2	7.1	6.6	6.6

1/ Percent.

- The average real **interest rate** is assumed to move in line with real GDP growth over the long-run (real interest rate = real GDP growth + 100 basis points). This implies the average nominal interest rate would gradually decline from about 5 percent to 4 percent as potential growth weakens. While Spain has benefited from low real interest rate in the past (averaging 1½ percent since 2000), with risk repricing, *marginal* **interest rates** on newly placed government debt have been increasing. In the long run, it is not possible for Spain to continue with a significant interest or inflation differential from euro partners.

- **Revenue** is projected to stabilize at a structural level of 38 percent of GDP, as projected from 2014 onward—roughly 3 percentage points of GDP lower than the cyclical peak in 2006-07. Non-aging **primary spending** is also kept constant to GDP from 2014 onward, so that the variation in overall primary expenditures is governed

by aging costs. Aging costs are assumed to unfold as in the AWG report through 2050; they are kept constant to GDP thereafter.[74]

94.   **Departing from the current fiscal position and policies, projecting the medium-term path (including some recovery), and then following with the long-run path driven by aging, suggests that the debt to GDP ratio will steadily rise in the long run, and thus current fiscal policies will not be sustainable**. The analysis suggests that the primary balance deteriorates gradually to a deficit of about 2½ percent of GDP by 2030. After that, and reflecting growing pressures from the aging, the primary deficit steadily rises to as much as 8¼ percent of GDP. The corresponding debt ratio would rise to some 340 percent of GDP. Fiscal policies need to avoid this explosive debt path lest markets lose confidence in the long run fiscal outlook and begin to push up interest rates and risk premia.


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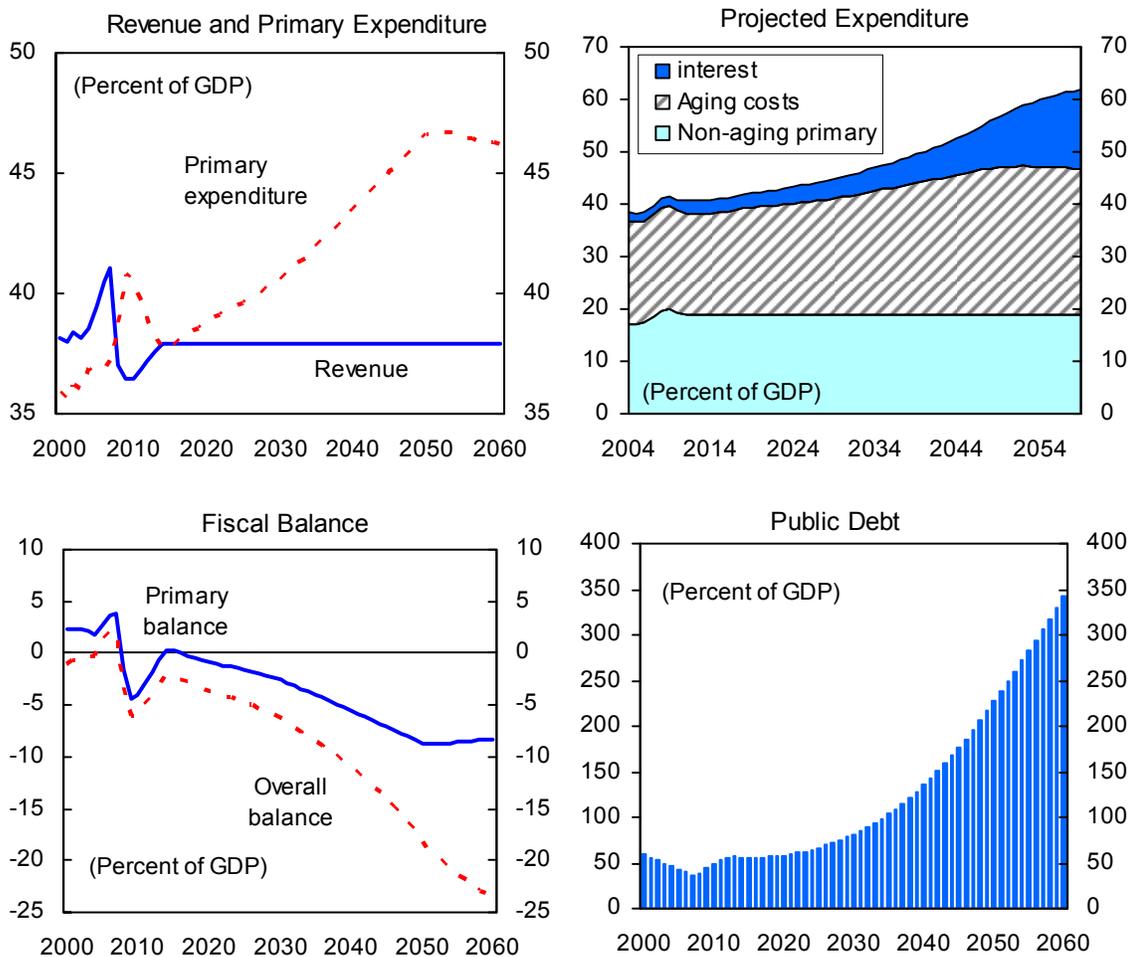
[74] Excluding pension expenditures that are available until 2060.

95.   **The required adjustment to restore fiscal sustainability appears substantial but early adjustments, if sustained permanently, can make a significant difference.** A calculation of the *fiscal gap*, i.e., the immediate and permanent change in the primary balance that would be needed in 2009 to achieve a debt target of 60 percent by 2060 is about 4¼ percentage points of GDP. While the required adjustment is not small, postponing adjustment, perhaps because the problem seems far away, will only lead to much bigger problems down the line. For example, if no action is taken until 2030 when aging pressures start to kick in sharply, the required adjustment amounts to 7¾ percent of GDP, nearly double of what would be required today. Alternatively, simulations show that introducing annual permanent adjustments of 0.2 percent of GDP year after year from 2009 onwards (rather than a one-time once-for-all adjustment of 4¼ percent) also would ensure that the debt ratio does not exceed 60 percent of GDP by 2060.

Required Adjustment to Primary Balance
(Percent of GDP)

Target debt in 2060	60 percent of GDP
One-time permanent adjustment 1/	
2009	4¼
2015	4.8
2020	5½
2030	7¾
2040	12¼
2050	24¼

1/ One-time permanent change to primary balance needed to achieve the target debt ratio in 2060.

Impact of Adjustment in 2009 on Debt
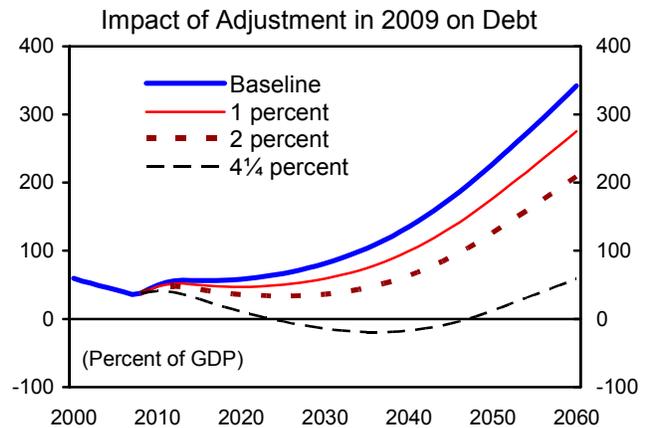
96.   **More generally, long-term fiscal sustainability can also be expressed in terms of intertemporal solvency—whether the public sector meets a long-run budget constraint.** To be solvent over time, the net present value (NPV) of all future primary balances must equal the current level of net debt (net financial wealth), which is about 20 percent of GDP. If the NPV of future primary balances is not sufficient to cover the net debt, the fiscal stance needs to be tightened. Using the long run baseline projections for fiscal policies in place from 2008, the NPV of future primary balances discounted using the average interest rate on the public debt, assuming a 50-year horizon, is estimated to amount to negative €1.7 trillion (158 percent of GDP)—i.e. instead of paying off the existing debt, this path would increase the debt.[75] To meet the intertemporal budget constraint, once-for-all permanent measures of 4¾ percent of GDP would be required in 2009.

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[75] A precise calculation of the NPV of future primary balances involves considering an infinite time horizon. For convenience, a 50 year horizon is used here.

97.   **These long-run calculations are invariably subject to uncertainty**. In particular, the required change to the primary balance depends critically on the initial and desired target debt ratios, the time horizon and the projected primary balance. The baseline projections assume a gradual pick-up in economic activity accompanied by some fiscal tightening—the duration of the recovery is of course uncertain. Moreover, an important assumption relates to the evolution of health care costs as demographic factors will not be the only important driver of future heath expenditures. Technological advance, productivity, and health status also play a crucial role. Further, uncertainty relates to the projected decline in education spending. A decline may be optimistic given that Spain's labor productivity is not high, which suggests that human capital formation remains important for a long while. Indeed, the external environment is also uncertain. Thus, the long-run calculations are not meant as a predictor of what will happen, but rather as a framework that needs to be monitored over time and that provides information about the thrust of policies currently in place.

98.   **To illustrate the sensitivity of the long run scenario, two alternatives are analyzed, one with higher aging costs, and the other with higher productivity growth**.

- **Higher aging costs**: if health care expenditures increase faster, to be 2 percentage points of GDP higher by 2050 than in the baseline, the primary deficit would increase to nearly 10 percent of GDP in 2050. The resulting additional debt buildup would be substantial—more than 100 percent of GDP.

- **Higher productivity:** long-term labor productivity growth is set at 2 percent (instead of 1½ percent in the baseline). With higher growth, wages will be higher, but so will be real interest rates and entitlement benefits so that the elderly or infirm are not left behind in sharing the increase in well-being. As a result, the primary balance path would remain virtually unchanged. While at present pension expenditures are not indexed to wages in Spain but to CPI inflation, over the long-run, aging entitlements are likely become indexed to wages to prevent a sustained income erosion of the
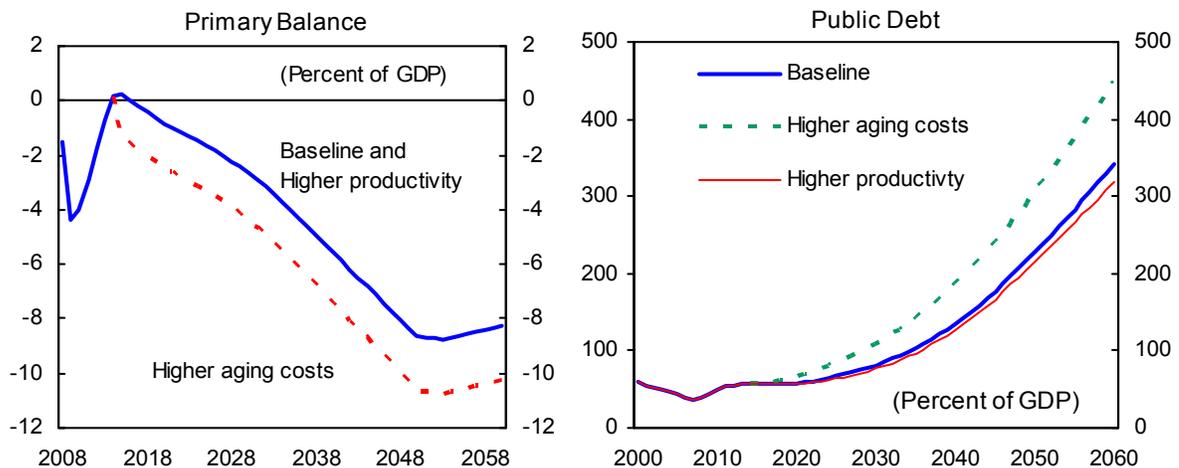
elderly. This is especially relevant in European social-democratic countries where income distribution plays an important role. This suggests that higher growth is not a vehicle to escape from aging costs.[76]

99.   **Despite the large uncertainties, the results suggest that introducing sustained improvements in the primary balance early on is key to ensuring fiscal sustainability**. This emphasizes the importance of running cautious fiscal policies and maintaining a sound primary surplus to provide margins to cope with unexpected shocks. Moreover, it shows that measures that alter the path of the primary balance *on a permanent basis* are most potent to secure the long-term public finances. One-off measures such as asset sales help the debt ratio from rising immediately, but provide little relief from long-term fiscal needs.

C. A Preliminary Public Sector Balance Sheet

100.   **The notion of the long-run budget constraint can be shown in a public sector balance sheet**. A balance sheet can be valuable in offering a summary view of the underlying financial health of the state. One of the balance sheet's advantages is that it shows a wider range of assets and liabilities than just debt, including financial and non-financial assets and liabilities. However, as with debt, conventional balance sheets are mainly backward-looking which limits their use in assessing long-term fiscal sustainability. This can be remedied by including a forward-looking component—the implicit future debt that arises from the stream of projected primary balances, as we have shown above. When including this forward-looking component, the resulting net worth on the public sector balance sheet provides a snapshot of the intertemporal health of the public finances.

101.   **Table 2 summarizes such a preliminary public sector balance sheet for Spain.** There are three components of the balance sheet: financial net worth (the difference between financial assets and liabilities); nonfinancial fixed assets; and the implicit debt calculated as the NPV of the projected future primary balances (discounted at the average interest rate on the public debt, as above). Financial assets include €50 billion of the new FAAF Fund, with its counterpart shown in the government debt on the liability side. Nonfinancial assets refer to the value of the public sector capital stock—public infrastructure, government buildings, and machinery and equipment, net of depreciation. This is included in the balance sheet as the counterpart of the debt incurred to build the public infrastructure. Investments in public infrastructure should enhance the productive capacity of the economy, resulting in a larger tax base in the future. On a preliminary basis, and based on estimates by Kamps (2004), the net capital stock in Spain was about 48 percent of GDP in 2000. For simplicity, this share is used through 2009. The NPV of future primary balances turns out to be one of the largest entries in the balance sheet. It varies year-by-year depending on what structural fiscal

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[76] Increases in aging costs associated with unemployment may be lower but its magnitude is small compared with pressures from health and pension expenditures.

Table 2. Spain: Public Sector Balance Sheet (Preliminary)

	2000	2005	2006	2007	2008	2009
	(Billions of euros)					
Financial assets	169	241	274	302	325	364
Currency and deposits	57	76	89	101	105	105
Securities other than shares	2	31	40	50	52	51
Loans	26	35	37	41	43	43
Shares and other equity	59	71	77	82	85	85
Other accounts receivable	26	29	30	29	30	30
Assets of FAAF	0	0	0	0	10	50
Financial liabilities	448	517	514	505	557	663
Currency and deposits	3	3	3	3	3	3
Securities other than shares	335	382	364	350	395	502
Loans	73	82	82	81	84	84
Other accounts payable	36	50	65	72	75	74
Financial Net worth	-279	-276	-240	-203	-233	-299
Nonfinancial fixed assets (net)	303	436	472	504	526	524
Current net worth	24	161	232	301	293	224
NPV of future primary balances 1/	-73	-392	-478	-717	-1,736	-1,826
Intertemporal net worth	-49	-231	-246	-416	-1,443	-1,602
Intertemporal financial net worth 2/	-352	-668	-718	-920	-1,969	-2,125
	(Percent of GDP)					
Financial net worth	-44	-30	-24	-19	-21	-27
Current net worth	4	18	24	29	27	21
NPV of future primary balances	-12	-43	-49	-68	-158	-167
Intertemporal net worth	-8	-25	-25	-40	-132	-147
Intertemporal financial net worth	-56	-73	-73	-88	-180	-195
Memorandum items:						
Government debt 3/	59	43	40	36	39	49
Government debt and guaranteed debt 4/	62	45	42	39	52	74
GDP	630	909	982	1,051	1,096	1,091

Sources: Bank of Spain; and IMF staff estimates.

1/ Net present value of 50-year future primary balance projections in the baseline scenario of unchanged policies. The discount rate is equal to the average interest rate on the public debt. Over the long-run the real interest rate = real GDP growth + 100 bp.

2/ Excludes fixed assets as these may not be marketable.

3/ Includes the FAAF.

4/ Includes government guarantees and ICO credit lines assuming their full use.

measures that are being introduced. As of 2008, the staff estimates it to be around €1.7 trillion, as was noted above.

102. **Putting together the three blocks for Spain in 2008 suggests a negative net worth of €1.4 trillion (132 percent of GDP)**. This is a sizeable weakening from the €250 billion (25 percent of GDP) shortfall in 2006, which mainly reflects the impact of (thus far uncompensated) policy measures introduced in 2007 and 2008 to combat the slowdown, which significantly weakened the future primary balance path.

Change in the NPV 2007-08
(Percent of GDP)

Projected primary balance 2007

Projected pimary balance 2008
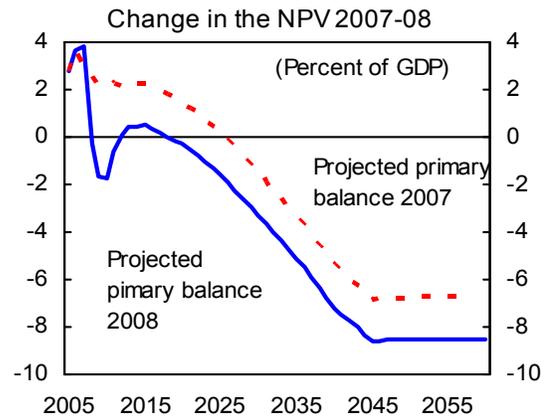
103. **The intertemporal financial position implies that at some point taxes need to increase and/or expenditures need to decrease**. For instance, a 3 percent of GDP permanent improvement in the primary balance in 2009 would return net worth to its position of approximately 2006. A one-time adjustment such as asset sales to cut debt, or expenditure shifts in time, would have no discernable impact on net worth.

Impact of Measure on Net Worth

	Net Worth	
	(€ billion)	(% of GDP)
Baseline (2009)	**-1,602**	**-147**
Adjustment (one-time in 2009)		
1 percent of GDP	-1169	-107
2 percent of GDP	-737	-68
3 percent of GDP	-304	-28
4 percent of GDP	128	12

D. Concluding Remarks

104. **Spain, like most industrialized countries, faces large challenges associated with population aging that have significant budgetary implications.** Despite an improvement in the fiscal position over the past 15 years, the recent collapse of the housing market triggered by the global financial turmoil has exposed that the underlying structural fiscal position is not as strong as was thought to cope with challenges going forward. The analysis of this paper using a long-term baseline scenario and a public sector balance sheet suggests that current fiscal policies are not sustainable. To enhance fiscal transparency and the credibility of policy decisions to tackle these long-term issues, the government should disclose the full extent of risk and uncertainty surrounding its long-term projections.

105. **In particular, as a complement to the Stability and Growth Pact (SGP) which is geared to a medium-term objective (MTO), the public sector balance sheet can offer valuable guidance to long-term fiscal policy**. The SGP sets a clear rule for the short and medium-run fiscal policy—it does not provide a view on the intertemporal position of the public finances. However, this aspect is crucial when considering the impact of structural

reforms and aging on the public finances. Reforms that alter future government liabilities would be captured appropriately in a balance sheet; under the SGP their beneficial effects might not be visible if these occur in the long run. Indeed, some pension reforms with clear NPV benefits actually cost money in the short run and only bring benefits in the long run. The SGP could thus unwittingly discourage such reforms. In this connection, the authorities could publish a long-run fiscal sustainability report which evaluates the intertemporal position—the net worth position—on the balance sheet as a complement to the usual annual budgetary revenue and expenditure accounts. This could help to signal fiscal sustainability problems as an early warning device. If included in the budget, it could be updated annually to reflect the latest fiscal measures.

REFERENCES

Brunner, A., (2004), "Investment Trends and Business Capital Stock in OECD Countries: Long-Term Developments and Future Prospects", IMF Country Report No. 04/340

European Commission, (2006), "The Impact of Ageing on Public Expenditure: Projections for the EU25 Member States on Pensions, Health Care, Long-term Care, Education and Unemployment Transfers (2004–2050)", Special report No.1/2006.

Faruquee, H., (2002), "Population Aging and its Macroeconomic Implications: A Framework for Analysis", IMF Working Paper WP/02/16.

Kamps, C., (2004), "New Estimates of Government Net Capital Stocks for 22 OECD Countries 1960–2001", IMF Working Paper No. 67.

IV. PRODUCTIVITY GROWTH AND STRUCTURAL REFORMS[77]

A. Introduction

106. **Spain's high GDP growth since the mid-1990s has been accompanied by relatively low growth in labor productivity.**
Between 1995 and 2005, Spain's real GDP rose by an average of 3.7 percent a year, underpinned by an impressive increase in labor utilization. Meanwhile, labor productivity grew by a mere 0.3 percent a year (Figure 1) and average total factor productivity (TFP) even declined by 0.8 percent, well below the European Union (EU) and U.S. averages.

Figure 1. Spain: Output and Productivity Growth

Source: EU KLEMS, March 2008.

107. **With the growth model of the last decade all but exhausted, an economic resurgence will likely require substantial productivity improvements.**
Residential construction and private consumption are adjusting rapidly as the factors behind the recent boom—such as low real interest rates, ample credit availability, rising female participation, and immigration—are fading. These developments underline the need for robust productivity gains if the economy is to return to strong growth over the coming years. Implementing an ambitious program of structural reforms, including those delineated in the National Reform Program (Presidencia del Gobierno Español, 2005 and 2008), will be critical to achieve that goal (OECD, 2008).

108. **The purpose of this paper is to identify the sources of Spain's scant productivity performance and explore what policies can do about it.** Section B examines Spain's productivity facts in an international context. Section C presents scenarios of the impact that changes in sectoral trends can have on productivity growth. Section D estimates a productivity model to determine to what extent structural reforms can boost productivity growth, and Section E concludes.

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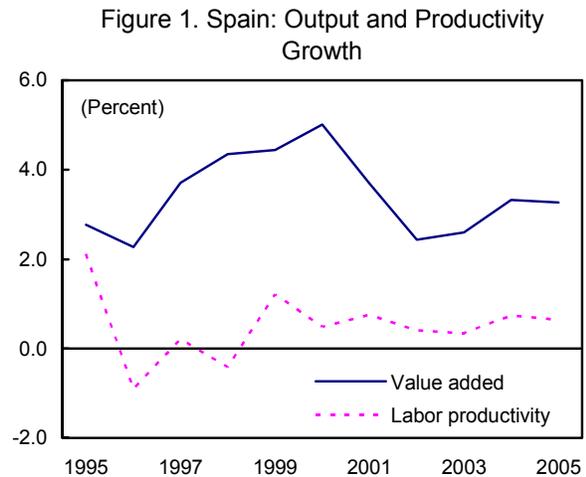
[77] Prepared by Marialuz Moreno-Badia.

B. What Are the Facts?

109. Despite improving somewhat in recent years, Spanish labor productivity growth has lagged behind the EU and the U.S.
(Figure 2).[78] Accordingly, Spain's
productivity level relative to that of the
EU dropped from 93 percent in 1995 to
84 percent in 2005. The corresponding
values relative to the U.S. were 78 and
63 percent. To understand the sources of
aggregate growth differentials with the EU
and the U.S., we analyze the contributions
of various inputs to productivity growth,
and then focus on a sectoral perspective.

Figure 2. Labor Productivity Growth
(Percent)
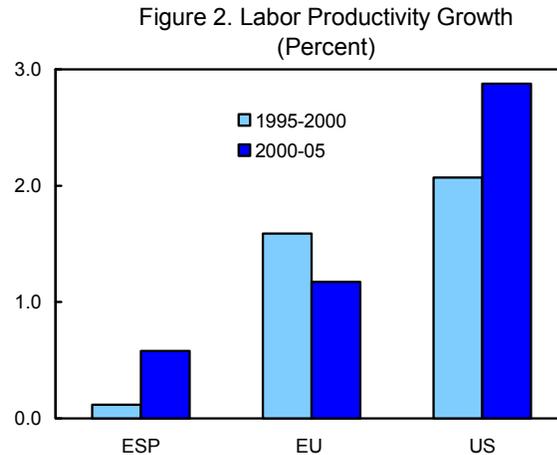
Sources: EU KLEMS, March 2008; and staff calculations.

A growth-accounting exercise

110. Under neoclassical assumptions and constant returns to scale, labor productivity growth can be decomposed into:

$$\Delta \ln\left(\frac{y_t}{h_t}\right) = \alpha\Delta \ln(lc_t) + \beta\Delta \ln\left(\frac{kit_t}{h_t}\right) + \gamma\Delta \ln\left(\frac{knit_t}{h_t}\right) + \Delta \ln(tfp_t), \qquad (1)$$

where $\frac{y_t}{h_t}$ is gross value added per hour worked; lc_t is the labor input (accounting for differences

in skill levels); $\frac{kit_t}{h_t}$ is the information and communications technology (ICT) capital per hour;

$\frac{knit_t}{h_t}$ is the non-ICT capital per hour; tfp_t represents total factor productivity (TFP), a measure
of the efficiency in combining a given amount of capital and labor to produce output; and the
parameters α, β, and γ reflect the output elasticity of each input, adding to one.[79]

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[78] For the remainder of the paper the EU comprises Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, and the United Kingdom.

[79] For a description of the data and definitions, see Appendix I.

111.   **According to this decomposition, TFP explains most of Spain's sluggish productivity growth** (Table 1). In particular, between 1995 and 2005, TFP contributed negatively to labor productivity growth by about 0.8 percentage point per year. By contrast, TFP made a small positive contribution in the EU and more than 1 percentage point in the U.S. Compounding this effect, ICT capital, although positive, made slightly smaller contributions to Spanish labor productivity than in the EU or the U.S. However, this was more than offset by changes in the labor composition that contributed about 0.4 percentage point to labor productivity growth, more than double the impact in the EU and the U.S. This suggests that during the recent past newcomers had more years of schooling than the existing labor force, thereby raising Spain's overall skill level (Figure 3).

Figure 3. Hours Worked by High-Skilled Labor

Sources: EU KLEMS, March 2008; and staff calculations.
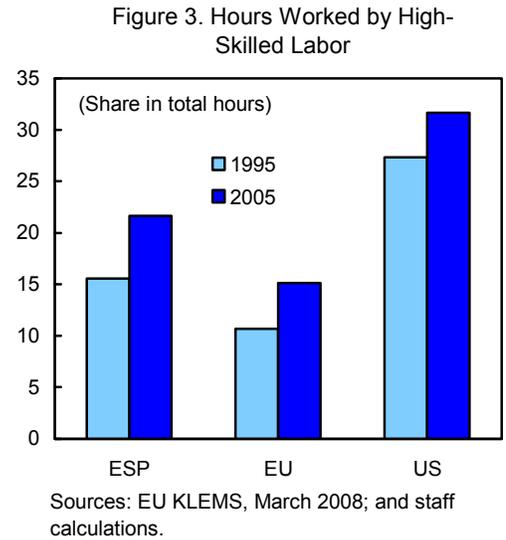
A sectoral perspective

112.   **The poor productivity performance of the Spanish economy has its roots in both the non-ICT and ICT sectors** (Figure 4). In particular, the non-ICT sectors contributed -0.1 percent per year to productivity growth during 1995–2005, compared with sizable contributions in both the EU and the U.S. In addition, the ICT sectors made very small (although positive) contributions to productivity, particularly the ICT-producing industries, highlighting the small share of the high-tech sector in the Spanish economy. This is in contrast with the EU and more so the U.S., where a large proportion of the productivity increase since the mid-1990s originated in the ICT sectors.

Figure 4. Contributions to Labor Productivity Growth by Sectors

Sources: EU KLEMS, March 2008; and staff calculations.
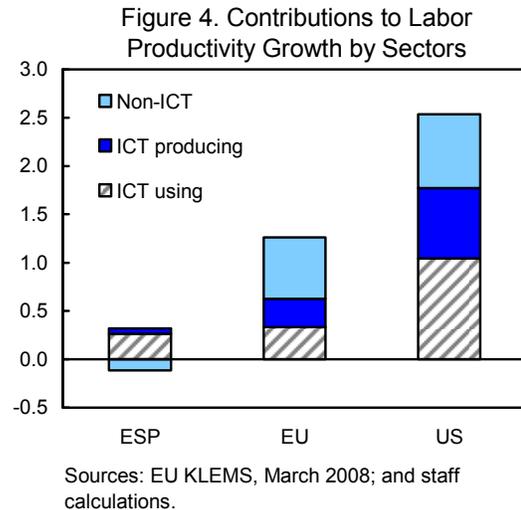
113.   **From an industry perspective, construction and services appear to have been the main drag on productivity** (Table 2). Construction and real estate made the largest negative contribution to productivity growth, -0.4 percent per year, followed by personal and social services. The rest of the industries made positive but almost negligible contributions. This is particularly notable in the case of manufacturing, distribution, and electrical, post, and telecommunications, which together accounted for 0.7 and 1.6 percent of the productivity growth differential with the EU and the U.S., respectively. The only sector where Spain appeared ahead was agriculture, partly reflecting the employment decline in that sector. This evidence raises the question of whether Spain's weak

Table 1. Contributions to Labor Productivity Growth 1/

	Spain	EU	U.S.
Labor composition	0.4	0.2	0.2
ICT capital per hour	0.3	0.4	0.5
Non-Ict capital per hour	0.4	0.4	0.4
TFP	-0.8	0.2	1.2

Sources: EU KLEMS, March 2008; and staff calculations.
1/ Contributions to total economy labor productivity growth
during 1995-2005.

Table 2. Contributions to Labor Productivity Growth, 1995-2005 1/
(Percent)

	Spain			European Union			U.S.		
	Total	Within	Reallocation	Total	Within	Reallocation	Total	Within	Reallocation
Primary	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Agriculture, hunting, forestry, and fishing	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Secondary	**-0.1**	**0.1**	**-0.2**	**0.7**	**0.8**	**-0.1**	**1.2**	**1.5**	**-0.3**
Manufacturing, excl. electrical	0.0	0.1	0.0	0.3	0.3	0.0	0.5	0.6	-0.1
Electrical, post, and communications	0.1	0.1	0.0	0.3	0.3	0.0	0.7	0.9	-0.1
Utilities	0.1	0.1	-0.1	0.1	0.1	-0.1	0.0	0.1	-0.1
Construction	-0.3	-0.2	-0.1	0.0	0.0	0.0	-0.1	-0.1	0.0
Services	**0.1**	**-0.4**	**0.5**	**0.4**	**0.4**	**0.1**	**1.3**	**1.2**	**0.0**
Distribution	0.1	0.1	0.0	0.3	0.2	0.0	0.5	0.5	0.0
Financial and business services	0.1	0.2	-0.1	0.1	0.1	0.0	0.4	0.4	0.0
Personal and social services 2/	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.1
Nonmarket services	0.0	-0.6	0.6	0.2	0.1	0.2	0.3	0.3	0.0
Of which: real estate 3/	-0.1	-0.8	0.6	0.1	0.0	0.2	0.3	0.2	0.1
Total	**0.3**	**-0.2**	**0.5**	**1.2**	**1.2**	**0.0**	**2.3**	**2.8**	**-0.2**

Sources: EU KLEMS, March 2008; and staff calculations.

1/ Numbers may not sum exactly due to approximation.

2/ Personal and social services include hotels and restaurants, other community, social and personal services, and private households.

productivity is explained by insufficient reallocation of resources between sectors (from low to high productivity), or is the result of low dynamism within sectors.

114.   **To assess the contributions of reallocation between, and restructuring of, industries to productivity growth, we follow Baily, Bartelsman, and Haltiwanger (1996)**. Productivity growth is decomposed into three industry-specific components, namely "within" effect, "between" effect, and "cross" effect, as follows:

$$
\frac{LP_t - LP_{t-1}}{LP_{t-1}} = \underbrace{\frac{\sum_j s_{jt-1}(LP_{jt} - LP_{jt-1})}{LP_{t-1}}}_{\text{Within}} + \underbrace{\frac{\sum_j (s_{jt} - s_{jt-1})(LP_{jt-1} - LP_{t-1})}{LP_{t-1}}}_{\text{Between}} +
$$

$$
\underbrace{\frac{\sum_j (s_{jt} - s_{jt-1})[(LP_{jt} - LP_{jt-1}) - (LP_t - LP_{t-1})]}{LP_{t-1}}}_{\text{Cross}},
$$

(2)

where LP_{jt} is the level of labor productivity in industry j (total economy if industry index is missing) and time t; and s_{jt} is the employment share in industry j at time t. The first term in this decomposition represents the within effect, that is, the productivity growth within an industry keeping the employment shares fixed. These productivity gains could be the result of human or physical capital deepening or the introduction of new technological or organizational methods. The second term is the between effect, which reflects productivity growth due to changing employment shares. This term will be positive when employment shares increase for industries with higher-than-average productivity levels in the previous year. The third term represents a cross (i.e., covariance-type) term. This term will be positive when employment shares increase for industries with productivity growth above the average for the economy. The last two terms show the reallocation effect.

115.   **Overall, Spain's lackluster productivity is due more to a lack of dynamism within industries, than to a reallocation of resources between industries** (Table 2). The negative within effect is mainly driven by services (in particular, real estate) and construction, setting Spain apart from the EU and the U.S.[80] A notable exception is financial intermediation, which seems to have been performing well, particularly relative to the EU. On the other hand, the reallocation of employment across sectors had a positive impact on productivity except for construction, utilities, and the financial and business sector.

116.   **A key aspect of this finding is the negative contribution to TFP growth in almost all sectors.** As with labor productivity, both non-ICT and ICT sectors are to be blamed (Figure 5). Foremost among the laggards is construction, in turn followed by all services, with the exception

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[80] Caution should be exercised in interpreting the results for the real estate sector since output in that industry mainly reflects imputed housing rents rather than sales of firms.

of financial intermediation, in which Spain is close to the U.S. and well above the EU (Figure 6). Surprisingly, the high-tech sector (electrical, post, and communications) also made negative contributions to TFP growth, in sharp contrast to the EU and the U.S. This could reflect the smaller size and technology intensity of the Spanish ICT sector (as argued by Mas and Quesada, 2007).

Figure 5. Contributions to TFP Growth by Sectors, 1995-2005

Figure 6. Contributions to TFP Growth, 1995-2005
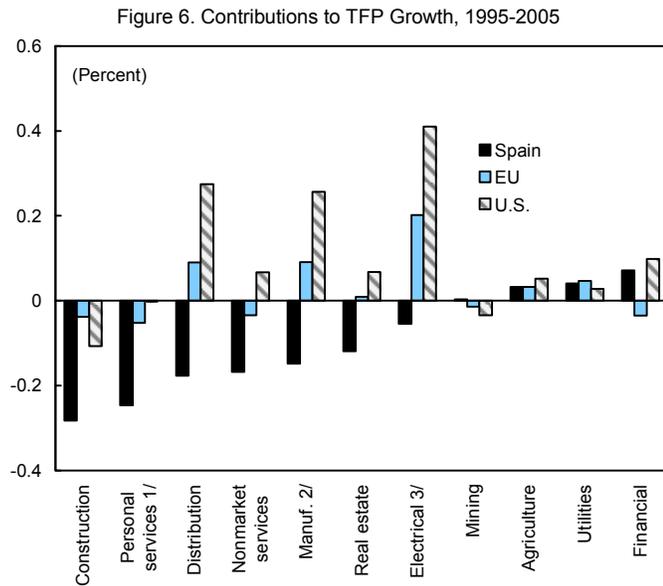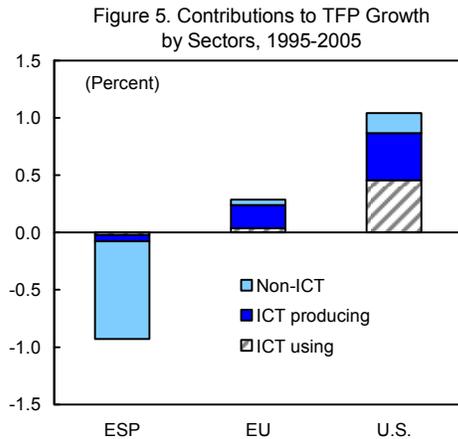
Sources: EU KLEMS, March 2008; and staff calculations.
1/ Hotels and restaurants, personal services, and private households.
2/ Manufacturing, excluding electrical equipment.
3/ Electrical equipment, post, and communications.

C. Productivity Scenarios

117.   **What do these findings suggest about TFP growth prospects?** The previous section has identified construction, ICT, and services as the weakest in Spanish productivity. In this section, we consider three alternative scenarios to analyze the impact that a change in these sectors could have on overall TFP growth. The first scenario assumes a reallocation whereby the share of the construction sector in total value added declines by 30 percent (to about 8 percent of total value added), and that the most dynamic sectors within manufacturing take the place of construction. The second scenario considers that each industry within the ICT sector catches up to the productivity growth of the leader for that industry. The leader is defined as the country (among the EU and U.S.) with the highest productivity level (adjusted for purchasing power parity (PPP)) in the sector. Finally, the third scenario similarly analyzes the impact of each market service sector catching up to the productivity growth of the leader, where the leader is defined as the EU country with the highest productivity level in that sector. In the last two scenarios, we assume that each sector share in total value added is the same as in 2005.

118.   **The scenarios suggest that to close the productivity gap with the EU and U.S., TFP within each sector needs to be improved.** The first scenario shows that by only shifting resources from construction to other sectors, without a change in sectoral TFP itself, TFP growth for the economy as a whole would increase by only 0.1 percent (Table 3). Thus, there is limited

Table 3. Spain: TFP Growth Scenarios 1/
(In percent)

Scenario	TFP
Average 1995-2005	-0.8
Scenario 1: Construction decline in total value added 2/	-0.7
Scenario 2: ICT sectors catching up with the leaders 3/	0.4
Scenario 3: Services catching with the EU 4/	0.4

Source: Staff's calculations.

1/ TFP growth rates for each sector are assumed to be the same as the 2000-05 average unless otherwise indicated. The share of each sector in value added is assumed at the 2005 level unless otherwise indicated.

2/ This scenario assumes that the construction share of value added declines to 8 percent and the most dynamic manufacturing sectors take the place of construction.

3/ This scenario assumes for each ICT sector the same growth rate as the leader (among the U.S. and EU countries) during 2000-05.

4/ This scenario assumes for each market service sector, the same growth rate as the leader among EU countries during 2000-05.

room for productivity gains should there only be a change in sectoral allocation of resources. By contrast, if Spain were to achieve the same TFP growth rate in the ICT sectors as the leaders, overall TFP growth would improve by 1.2 percent. Further, improving the performance in the services sector to that of the best performers in Europe would also yield a 1.2 percent increase in TFP growth. Thus, the key is to make sectoral TFP growth rates to catch up with the leaders. We try to address this question in the next section.

D. Can Policies Help?

119. **Policymakers and academics have long recommended strengthening product market competition to boost productivity growth**. Product market rigidities can impair productivity.[81] First, they dampen productivity growth by reducing incentives to invest, adopt latest technologies, or innovate (Crafts, 2006). This effect could be stronger for industries closer to the technology frontier as they rely on innovation rather than imitation. Second, rigidities raise entry costs and curb competition by hindering resource reallocation. Limited competition among suppliers increases the cost of inputs and makes products supplied less innovative and of poorer quality, thereby lowering productivity in downstream sectors. Following Aghion and Griffith (2005), empirical studies have indeed found that regulatory rigidities curb productivity growth (see, for example, Nicoletti and Scarpetta, 2003; Conway and others, 2006; and Arnold, Nicoletti, and Scarpetta, 2008). However, others find more limited evidence of the impact of regulatory barriers on TFP growth (Inklaar, Timmer and van Ark, 2008) or even a positive effect (Dew-Becker and Gordon, 2008).

120. **Easing labor market rigidities could also enhance productivity**. One of the premises behind this argument is that labor market policies could distort incentives to investment in education, thereby lowering productivity by reducing the stock of human capital. They can also depress productivity by preventing firms from adjusting to changes in technology or product

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[81] For a review of the literature on product market regulation and productivity, see Crafts (2006), and Arnold, Nicoletti, and Scarpetta (2008).

demand that require labor reallocation or downsizing (see, for example, Hopenhayn and Rogerson, 1993; and Saint-Paul, 2002; and Haltiwanger and others, 2008). The empirical evidence on the impact of labor market policies is mixed, however. In particular, while some papers find that employment protection legislation (EPL) can dampen productivity levels and growth (see, for example, Besley and Burgess, 2004; Scarpetta and Tressel, 2004; and Micco and Pagés, 2007), others suggest that some aspects of labor market policy (e.g., minimum wages) can even have a positive effect on productivity (e.g., Bassanini and Venn, 2007).

121. **To assess the effect of product and labor market rigidities on productivity, we estimate a model based on Aghion and Howitt (2005)**. In this model, TFP growth in a given country and sector depends on its ability to keep pace with the growth in the country with the highest productivity level in that sector (the productivity leader). This is, in turn, affected by the policy environment that the sector confronts in the country of operation. The estimated equation is

$$
\Delta \ln TFP_{ijt} = \delta\left(\Delta \ln TFP_{ijt}^{leader}\right) + \sigma\left(TFPgap_{ijt}\right) + \gamma\, Policy_{ijt} + \alpha\left(Policy_{ijt} * TFPgap_{ijt}\right)
$$
$$
+ X_{ijt}\,\beta + C + J + T + \varepsilon_{ijt} \tag{3}
$$
$$
\varepsilon \sim N(0, \Sigma),
$$

where the indices i, j, t denote countries, industries and years, respectively; *TFP* denotes total factor productivity; *TFPgap* is the productivity gap (measured as the log ratio of the level of productivity in each sector relative to that of the productivity leader); *Policy* is an indicator of product market regulation or labor market rigidity; *X* denotes other control variables; *C* represents country dummies; *J,* industry dummies; and *T,* time dummies.[82] In this model, TFP shocks in the leader can have a direct impact on the followers' productivity growth. In addition, the model allows differences in productivity levels between the leader and the follower to have an impact on TFP growth as captured by the coefficient σ. A negative coefficient indicates that the farther a sector is from the technology frontier the greater the scope for productivity improvements arising from technological catch-up. We estimate this model over the period 1976 to 2003 for a sample of 25 industries in 10 EU countries (including Spain) and the U.S.

122. **Barriers to competition are still significant in Spain**. Despite progress in several areas—such as some network industries—and reform of the competition law, improvements are needed in the energy and transport sectors, telecommunications, professional services, and retail trade, where sectoral regulations remain strict and are seen as impeding competition (Figure 7). Increasing competition in these sectors could have spillover effects throughout the economy as they provide intermediate inputs for other sectors. To capture this effect, we use the regulation impact indicators developed by Conway and Nicoletti (2006). For each sector in a particular country, the regulation impact indicator is calculated as a

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[82] This model has been used by Nicoletti and Scarpetta (2003) to study TFP growth and Conway and others (2006) to look at labor productivity growth.

Figure 7. Product Market Regulation
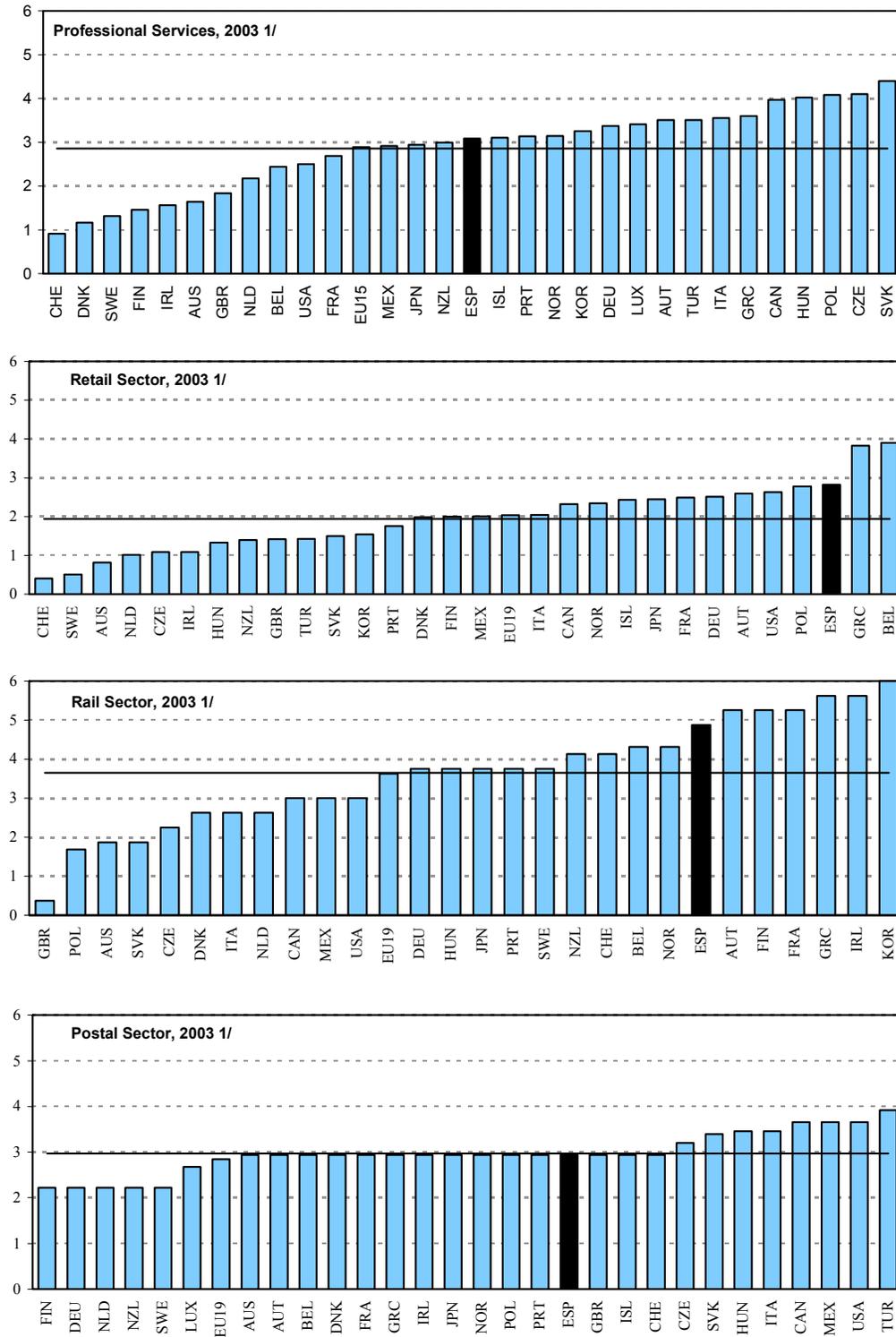
weighted average of indicators in nonmanufacturing sectors covering transport, energy, communications, retail distribution, banking, and business services. The weights used in the calculation are total input coefficients derived from input-output tables that measure the degree to which intermediate inputs from each of the nonmanufacturing sectors are used in the final output of each sector in the economy. In our estimation, we allow product market regulation to influence TFP growth both directly and indirectly by affecting the speed of productivity catch-up (coefficient α). A positive value of α implies that product market regulation hinders technology diffusion.

123.   **Labor market rigidities are also an important factor in Spain**. One key aspect is the duality of the labor market between permanent and temporary (i.e., fixed-term) contracts. The latter accounts for about one-third of wage earners in Spain, the highest in the EU. The incidence of temporary contracts is particularly high among the young. The extensive use of these contracts (with low redundancy costs) is partly due to the uncertainty[83] and rigidity of the EPL for permanent jobs (Figure 8).[84] By inducing the extensive use of temporary contracts among the young and making it costly to fire older (less productive) workers, EPL may contribute to the underutilization of young (skilled) workers. Also, the widespread use of temporary contracts could dampen workers' effort, decreasing TFP.[85] Finally, EPL may slow the reallocation of employment to more innovative, high-productivity sectors since it discourages worker mobility, as those who change jobs voluntarily lose their protection. To capture this effect, we include the OECD index of EPL for permanent workers. To test whether the use of temporary workers may hamper productivity growth, we introduce an

Figure 8. Temporary Employment and Employment Protection Legislation
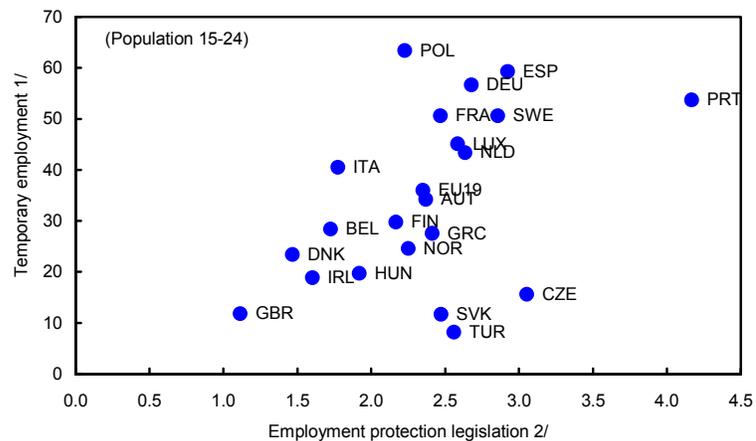
Sources: OECD; and Eurostat.
1/ Temporary employment as percentage of total employees of the group as of the first quarter of 2008.
2/ Employment protection legislation for permanent workers: index scale of 0-6, moving from least to most restrictive, 2006.

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[83] The uncertainty arises because a judge needs to decide whether the redundancies are justified or not.

[84] Severance payments for permanent contracts reach 45 days per year of service up to a maximum of 42 months. Severance payments for temporary contracts are only 8 days of wages per year of service. For a review of the EPL reforms implemented in Spain in the last two decades, see Bentolila, Dolado, and Jimeno (2008).

[85] Dolado and Stucchi (2008) analyze this issue for a sample of Spanish manufacturing firms and find that high conversion rates into permanent contracts increase a firm's TFP, while large shares of temporary contracts decrease it.

interaction term between the share of temporary workers in the sector and EPL. This coefficient would be negative if the use of temporary workers in the presence of strict EPL reduces productivity growth.

124.   **Overall, we find evidence that product market regulation slows TFP growth, but results for labor market rigidities are less conclusive** (Table 4). TFP growth in the leading sector has positive spillover effects on TFP growth in less productive sectors. In addition, the coefficient of the productivity gap is negative, indicating the importance of international technology diffusion. Regarding product market regulation, we find a negative direct effect of the

Table 4. Productivity Growth Model

	(1)	(2)	(3)	(4)
ICT capital share in total capital	0.0*	0.0***	0.0	0.0***
	(0.0)	(0.0)	(0.0)	(0.0)
Change in the productivity in the technology leader	0.14***	0.05	0.05	0.05
	(0.05)	(0.09)	(0.09)	(0.09)
Gap in productivity levels	-0.08***	-0.13***	-0.05	-0.14***
	(0.02)	(0.04)	(0.05)	(0.04)
Product market regulation	0.03	-0.05*	-0.05*	…
	(0.02)	(0.03)	(0.03)	…
Effect of regulation catch-up 1/	0.07**	-0.06	-0.03	-0.05
	(0.03)	(0.08)	(0.08)	(0.07)
EPL	…	0.00	0.00	…
	…	(0.01)	(0.01)	…
EPL* Temporary employment	…	0.03***	0.04***	0.03**
	…	(0.01)	(0.01)	(0.01)
Effect of ELP on catch-up 2/	…	…	-0.04	…
	…	…	(0.02)	…
Product market regulation ICT-intensive sectors	…	…	…	-0.09***
	…	…	…	(0.03)
Product market regulation non-ICT intensive sectors	…	…	…	0.00
	…	…	…	(0.03)
EPL ICT-intensive sectors	…	…	…	0.00
	…	…	…	(0.01)
EPL non-ICT intensive sectors	…	…	…	0.01
	…	…	…	(0.01)
Constant	-0.01	-0.07**	-0.06**	-0.09***
	(0.01)	(0.03)	(0.03)	(0.03)
Observations	6863	2746	2746	2746
R-squared	0.11	0.14	0.14	0.14

Sources: EU KLEMS, March 2008; Eurostat; OECD; Conway and Nicoletti (2006); and staff calculations.

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. All equations include country, industry and time dummies.

1/ Interaction of product market regulation and productivity gap.

2/ Interaction of EPL and productivity gap.

anticompetitive indicator on TFP growth (column 2). This effect appears to be particularly important in the ICT sectors (column 4). The strictness of regulation also affects the speed at which sectors catch up to the leader (column 1), but this result is not robust to the inclusion of the

labor market indicators. EPL does not seem to have a direct effect on TFP growth.[86] Nor does it seem to dampen the speed of productivity convergence with the leader (column 3). However, it appears that productivity growth is boosted by resorting to temporary workers when EPL is strict (column 2). This suggests that temporary contracts give firms a flexibility not present in permanent ones.

125.   **A scenario analysis based on these results suggests that adopting the least restrictive practices could yield productivity gains**. In particular, assuming Spain implements the least restrictive product market regulations within the sample, TFP growth could improve by 0.3 percent. This result is just indicative since we do not take into account policy changes that may affect the underlying relationships. Moreover, we may underestimate the overall effect since we do not consider the potential reallocation of resources toward high-productivity sectors that a change in regulation could spur.

126.   **These findings also have some caveats**. First, the OECD indicators of regulation do not capture well all the complexities of product market regulation and interactions with labor market rigidities. Second, the EPL indicator is country based and, therefore, does not reflect differences across industries. In fact, recent studies have argued that EPL should affect more those industries where, absent regulation, firms would rely more on layoffs (i.e., labor shedding) for organizational purposes than those that rely more on voluntary turnover (see Micco and Pagés, 2007; and Bassanini and Venn, 2007). Third, we do not take into account the skills mismatch that EPL legislation may engender. This effect could be particularly important in Spain since temporary workers are usually young and better-qualified workers than older cohorts. Finally, our productivity data may suffer from measurement problems (for example, in the services sector or input deflators), which could bias the calculation of productivity gaps (see, for example, Inklaar, Timmer, and van Ark, 2008).

E. Conclusions

127.   **Spain's relatively poor productivity performance during the last decade has resulted in a widening gap with the EU and the U.S.** Underlying this weakness are declining TFP, the relatively small share of ICT-producing sectors, and the paucity of productivity growth in construction and services (with the notable exception of the financial sector). Reallocation effects *between* sectors can explain only a small part of the productivity growth gap. Rather, the burden appears to lie more *within* sectors. The scenarios presented in this paper suggest that catching up with the leaders in ICT and services could deliver substantial productivity gains.

128.   **Empirical analysis indicates that reforms could help improve TFP growth.** These reforms are particularly important for the ICT sectors, where Spain stands to get the largest gains from productivity catch-up. Moreover, there is some evidence that product market reforms can increase the speed at which Spain converges to the productivity leaders. Evidence that EPL directly limits productivity growth is more difficult to find, at least in our models, which do not

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[86] In a specification not reported here, we find that EPL has a negative but barely significant impact on TFP growth.

take into account differences across sectors, the interaction with product market policies, or the potential skill mismatches that EPL induces. Finally, there is evidence that fixed-term contracts assist productivity by providing marginal flexibility to firms to adjust to shocks.

129.   **Implementing an ambitious reform program will be important if the economy is to resume strong growth after the current downturn**. Reforms to sharpen competition in transport, postal, and professional services should be priorities given the positive spillover effects on other sectors that use their services as inputs. In particular, consideration should be given to (1) putting the operation of regional passenger rail services out to tender on a compulsory and regular basis; (2) removing restrictions to entry and consolidation in the road transport sector; (3) ensuring appropriate access of competitors to the public postal network; and (4) limiting the range of professional services for which Spanish regulations require specific qualifications requirements and reducing potential regulatory differences across regions. Also, entry barriers in retail should be removed to bolster productivity in this sector. Product market reform is in fact already under way with the transposition of the European Services Directive, reductions in administrative burdens and reforms in network industries, and the more ambitious these efforts are, the more likely their beneficial impact on productivity and confidence will be.[87] In the electricity industry, retail prices should recover costs in contested and unbundled markets to eliminate distortions. Finally, equalizing dismissal costs of temporary and permanent contracts at low levels should help reduce labor market segmentation and broaden the flexibility benefits beyond those provided by temporary contracts. This would also facilitate higher penetration by new cohorts into better jobs and improve the return on human capital formation, where Spain scores below the OECD average.

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[87] The payoff from a full implementation of these reforms is potentially very large. For example, Lopez, Estrada and Thomas (2008) estimate that reducing red tape by 30 percent would increase Spain's annual GDP growth by 0.2 percent during the 10-year period following that reduction. Badinger and others (2008) estimate that the competition effect of the implementation of the European Services Directive would increase Spain's value added by 1.68 percent.

DATA SOURCES AND DEFINITIONS

Data sources

Our *productivity* analysis is based on the March 2008 release of the EU KLEMS database. This database provides harmonized data on economic growth, productivity, employment, and capital formation at a detailed industry level for EU members and for the U.S. and Japan for 1970 to 2005. For the purposes of our analysis, we focus on 10 EU members (Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Spain, and the United Kingdom) and the U.S. For a detail description of the data, see Timmer and others (2007).

Product market regulation indicators come from Conway and Nicoletti (2006). Data are available for all OECD countries for the period 1975–2003.

EPL indicators come from the OECD's *Employment Outlook*. Data are available for all OECD countries for the period 1985–2003.

Temporary employment data come from Eurostat. Data are available for all EU countries for the period 1992–2007.

Variable definitions

All volume measures are based on PPP converted values.

Labor productivity: value added in volume terms divided by the total hours of total persons engaged.

Labor composition: labor input, taking into account differences in terms of educational attainment, gender, and age.

ICT capital: computing equipment, communications equipment, and software.

ICT capital: machinery and equipment, transport equipment, and nonresidential structures.

TFP: residual measure based on value added showing the efficiency with which inputs are used in the production process.

Product market regulation indicator: Indicator of regulatory impact, calculated as the weighted average of indicators of regulation in nonmanufacturing sectors.

EPL indicator: OECD summary indicator of the stringency of EPL on regular contracts.

Temporary employment: Ratio of temporary employees within a sector to total employees in that sector.

Industry classification

Table A.1 Industry Classification

Description	ISIC Rev. 3	ICT Classification 1/
AGRICULTURE, HUNTING, FORESTRY AND FISHING	AtB	N
MINING AND QUARRYING	C	N
MANUFACTURING EXCL. ELECTRICAL		
Manufacturing excl. electrical		
Food, beverages and tobacco	15t16	N
Textiles, textile products, leather and footwear	17t19	N
Wood and wood/cork products	20	N
Pulp, paper and paper products, printing and publishing	21t22	U
Coke, refined petroleum and nuclear fuel	23	N
Chemicals and chemical products	24	N
Rubber and plastics	25	N
Other non-metallic mineral	26	N
Basic metals and fabricated metal	27t28	N
Machinery, nec	29	U
Transport equipment	34t35	N
Manufacturing nec; recycling	36t37	U
ELECTRICAL, POST, AND COMUNICATIONS		
Electrical and optical equipment	30t33	P
Post and telecommunications	64	P
DISTRIBUTION		
Sale, maintenance and repair of motor vehicles	50	U
Wholesale trade and commission trade, ex	51	U
Retail trade, except of motor vehicles a	52	U
Transport and storage	60t63	N
FINANCIAL AND BUSINESS SERVICES		
Financial intermediation	J	U
Renting of machinery and equipment and other business activities	71t74	U
UTILITIES (electricity, gas and water supply)	E	N
CONSTRUCTION	F	N
PERSONAL SERVICES		
Hotels and restaurants	H	N
Other community, social and personal services	O	N
Private households with employed persons	P	N
NONMARKET SERVICES		
Real estate activities	70	N
Public admin. and defense; compulsory social security	L	N
Education	M	N
Health and social work	N	N

Source: EU KLEMS, March 2008.

1/ Classification based on Conway and others (2006). P: ICT producing; U: ICT using; N: Non-ICT.

REFERENCES

Aghion, P., and R. Griffith, 2005, *Competition and Growth: Reconciling Theory and Evidence*, (Cambridge, Massachusetts: MIT Press).

Aghion, P., and P. Howitt, 2005, "Appropriate Growth Policy: A Unifying Framework," 2005 Joseph Schumpeter Lecture, 20th Annual Congress of the European Economic Association, Amsterdam, August 25.

Arnold, J., G. Nicoletti, and S. Scarpetta, 2008, "Regulation, Allocative Efficiency, and Productivity in OECD Countries: Industry and Firm-level Evidence," OECD Economics Department Working Papers No. 616, (Paris: Organization for Economic Cooperation and Development).

Badinger, H., F. Breuss, P. Schuster, and R. Sellner, 2008, "Macroeconomic Effects of the Services Directive," *Services Liberalisation in the Internal Market,* ed. By F. Breuss, G. Fink, and S. Griller (Vienna: Springer Vienna).

Baily, M., E. J. Bartelsman, and J. Haltiwanger, 1996, "Downsizing and Productivity Growth: Myth or Reality?" *Sources of Productivity Growth,* ed. by Mayer, D. G. (Cambridge: Cambridge University Press).

Bassanini, A., and D. Venn, 2007, "Assessing the Impact of Labor Market Policies on Productivity: A Difference-in-Differences Approach," OECD Social, Employment and Migration Working Papers No. 54 (Paris: Organization for Economic Cooperation and Development).

Bentolila, S., J. J. Dolado, and J. F., Jimeno, 2008, "Two-tier Employment Protection Reforms: The Spanish Experience," CESifo DICE Report 4/2008 (Munich: Ifo Institute for Economic Research).

Besley, T., and R. Burgess, 2004,. "Can Labor Regulation Hinder Economic Performance? Evidence from India," *Quarterly Journal of Economics,* Vol. 119, No.1, pp. 91–134.

Conway, P., D. de Rosa, G. Nicoletti, and F. Steiner, 2006, "Regulation, Competition and Productivity Convergence," OECD Economics Department Working Paper No. 509 (Paris: Organization for Economic Cooperation and Development).

Conway, P., and G. Nicoletti, 2006, "Product Market Regulation in the Non-Manufacturing Sectors of OECD Countries: Measurement and Highlights," OECD Economics Department Working Paper No. 530 (Paris: Organization for Economic Cooperation and Development).

Crafts, N., 2006, "Regulation and Productivity Peformance," *Oxford Review of Economic Policy,* Vol. 22, No. 2, pp. 186–202.

Dew-Becker, I., and R. J. Gordon, 2008, "The Role of Labor Market Changes in the Slowdown of European Productivity Growth," CEPR Working Paper, No. 6722 (London: Center for Economic Policy Research).

Dolado, J. J., and R. Stucchi, 2008, "Do Temporary Contracts Affect TFP?: Evidence from Spanish Manufacturing Firms," IZA Discussion Paper No. 3832 (Bonn: Institute for the Study of Labor).

Haltiwanger, J., S. Scarpetta, and H. Schweiger, 2008, "Assessing Job Flows Across Countries: The Role of Industry, Firm Size and Regulations," NBER Working Paper No. 13920 (Cambridge, Massachusetts: National Bureau of Economic Research).

Hopenhayn, H. and R. Rogerson, 1993, "Job Turnover and Policy Evaluation: A General Equilibrium Analysis," *Journal of Political Economy*, Vol. 101, No. 5, pp. 915–38.

Inklaar, R., M. P. Timmer, and V. van Ark, 2008, "Market Services Productitivity across Europea and the U.S.," *Economic Policy*, Vol. 23 (January), pp. 139–94.

López, P., A. Estrada, and C. Thomas, 2008, "Una Primera Estimación del Impacto Económico de una Reducción de las Cargas Adminstrativas en España," *Bank of Spain Economic Bulletin* (July-August).

Mas, M., and J. Quesada, 2007, "Spain: A Success Story Shadowed Only by a Poor Productivity Performance," *National Economic Review,* 2007, Vol. 200, No. 1, pp. 87–95.

Micco, A., and C. Pagés, 2007, "The Economic Effects of Employment Protection: Evidence from International Industry-Level Data," IADB Research Department Working Paper No. 592 (Washington: Inter-American Development Bank)

Nicoletti, G., and S. Scarpetta, 2003, "Regulation, Productivity, and Growth: OECD Evidence," *Economy Policy,* Vol. 18 (April), pp. 9–72.

OECD, 2008, *Economic Survey of Spain* (Paris: Organization for Economic Cooperation and Development).

Presidencia del Gobierno Español, 2005, *Covergencia y Empleo: Programa Nacional de Reformas de España*, Madrid, October 2005 (www.la-moncloa.es).

_____, 2008, *Spain–National Reform Programme: 2008 Progress Report*, Madrid, October 2008 (www.la-moncloa.es).

Saint-Paul, G., 2002, "Employment Protection, International Specialization and Innovation," *European Economic Review*, Vol. 46, No. 2, pp.375–95.

Scarpetta S., and T. Tressel, 2004, "Boosting Productivity via Innovation and Adoption of New Technologies: Any Role for Labor Market Institutions?" World Bank Policy Research Working Paper No. 3273, (Washington: World Bank).

Timmer, M., T. van Moergasterl, E. Stuivenwold, G. Ypma., M. O'Mahony, and M. Kangasniemi, 2007, "EU KLEMS Growth and Productivity Accounts, Version 1.0, Part I Methodology," University of Groningen and National Institute of Economic and Social Research. Available via Internet: http://www.euklems.net/

Timmer, M., M. O'Mahony, and B. van Ark, 2008, "The EU KLEMS Growth and Productivity Accounts: An Overview," University of Groningen and Univerity of Birmingham. Available via Internet: http://www.euklems.net/