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European Department

Who Bore the Brunt of the Pandemic in Europe?

Shifting Private Stress to the Public Sector

Prepared by an IMF staff team comprised of Marco Arena, Ruo Chen, Alfredo Cuevas, Karim Foda, Borja Gracia, Estelle Xue Liu, Alex Pienkowski, Christiane Roehler, Yu Shi, Shituo Sun, Sebastian Weber, and Xin Cindy Xu

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Contents

Tables

Executive Summary

In Europe, the severe human toll of the COVID-19 pandemic was compounded by the deepest fall in economic activity in modern history. Yet this huge decline in output did surprisingly little damage to the aggregate financial balance sheets of firms and households. This paper discusses how unprecedented policy support transferred private sector income losses to the public sector's balance sheet and contrasts this experience to that of the global financial crisis.

Aggregate financial balance sheet and income accounts data from Eurostat and the European Central Bank for the main institutional sectors of the economy through end-2020 reveal some key insights about the observed resilience of firms and households in Europe so far:

- Most firms and households entered the crisis on a strong footing after a process of deleveraging following the global financial crisis.

- The recovery in equity prices after the first quarter of 2020 meant that negative valuation effects were short lived. This was in sharp contrast to the global financial crisis when firms' leverage and households' financial wealth were negatively affected by a collapse in equity valuations.

- The unprecedented level of policy support in 2020 has been a key contributor to the resilience of the balance sheets of the private sector. Ultimately, the support granted to firms and households helped preserve their equity positions and increase their liquidity, in some cases above pre-pandemic levels, without accumulating exceedingly large amounts of debt.

- Preventing a major deterioration of the financial position of nonfinancial private agents has, in turn, helped avoid a significant deterioration of banks assets' quality in Europe so far.

- Private sector losses from the COVID-19 shock were largely transferred to the public sector. Governments increased their borrowing to finance a slew of support programs—in fact, some of the main scars of the pandemic are in the form of increased public debt ratios. Concurrently, central banks expanded their balance sheets, ultimately absorbing much of this new public debt and supporting the continued provision of bank credit.

Preventing the pandemic crisis from becoming a balance sheet recession is key to laying the foundations for a successful and quick recovery in the years ahead. The data examined in this paper indicates that this was accomplished to a significant degree for a large group of European countries in the acute phase of the crisis in 2020, and has continued into the first half of 2021. Thus, the extraordinary policy response has been the right thing to do to preserve the productive capacity of the private sector in the face of an unprecedented exogenous shock.

These gains need to be maintained in the next phase of the recovery as the pandemic is not yet over. Risks to economic activity and thus to private sector balance sheets remain active as long as the pandemic is not fully controlled. Thus, continued support to prevent a deterioration of private sector balance sheets is still required for some time. This is especially important given the pockets of acute vulnerability within industries or household groups, which are apparent from firm or household-level studies but lay outside the scope of the present study. The path ahead presents a delicate balancing act. As vaccinations advance and the economic recovery gathers pace, broad emergency policy support should give way to policy interventions increasingly targeted at the most affected household groups and firms in hard-hit industries.

After COVID-19 is under control, uncertainty falls and the recovery is firmly underway (which, in the case of Europe, is expected to happen in the second half of 2021), it will be possible to roll back emergency support measures—a process which may present challenges of its own, as some hidden economic damage may become visible only then. Gradually, policy support should shift from providing lifelines toward facilitating the mobility of factors of production away from contracting industries in the post-pandemic environment.

Introduction

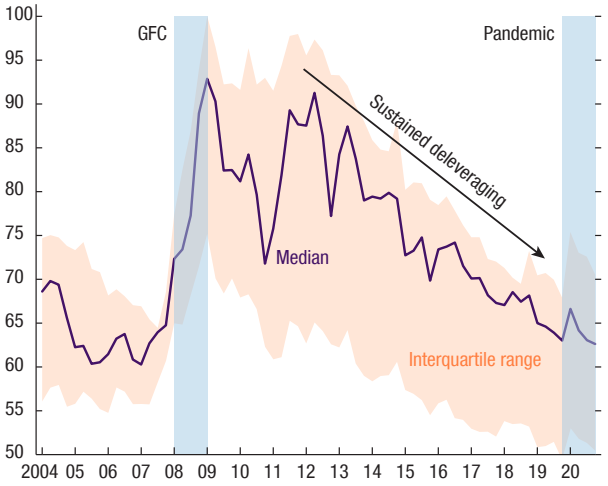
Financial balance sheets provide information on the resilience of key institutional sectors of the economy. They not only show the financial wealth of a sector, but also provide information on leverage (the ability to absorb losses) and liquidity (the ability to meet payment obligations). The strength of balance sheets is key, therefore, to determining how well firms and households can weather the pandemic and how vigorously an economy can bounce back after the crisis has ended.

In Europe, as elsewhere, the severe human toll of the COVID-19 pandemic was compounded by the deepest fall in economic activity in modern history. Yet this huge fall in output did surprisingly little to damage the *aggregate* financial balance sheets of nonfinancial corporations (NFCs) (Figure 1) and households (Figure 2), which had been undergoing repair in Europe for the better part of a decade. In fact, aggregate net financial assets increased in both sectors. Drawing extensively from sectoral financial balance sheet and income accounts from Eurostat and the European Central Bank (ECB) for a large sample of European economies,[1] this departmental paper explores this remarkable resilience and evaluates the role policies have played in this regard.

Should this apparent resilience be a surprise? A comparison with the global financial crisis (GFC) provides some insight. During the GFC, firm liquidity dried up and leverage jumped as (inflated) asset valuations collapsed, losses eroded equity, and insolvencies interrupted contractual payments. The shock to NFCs ultimately led to a fall in household income, through job losses and lower profits. This, along with a collapse in the value of real and

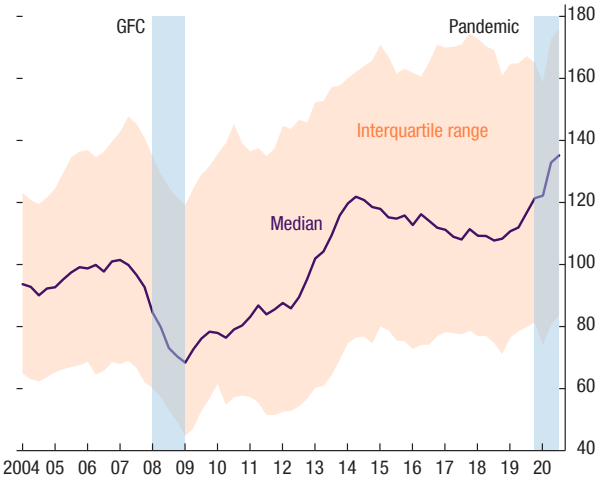
[1]Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Figure 1. NFC Leverage*
(Percent)



Sources: ECB; and IMF staff calculations.
*Leverage = Debt as a share of equity liabilities.

Figure 2. Household Financial Net Worth*
(Percent of GDP)



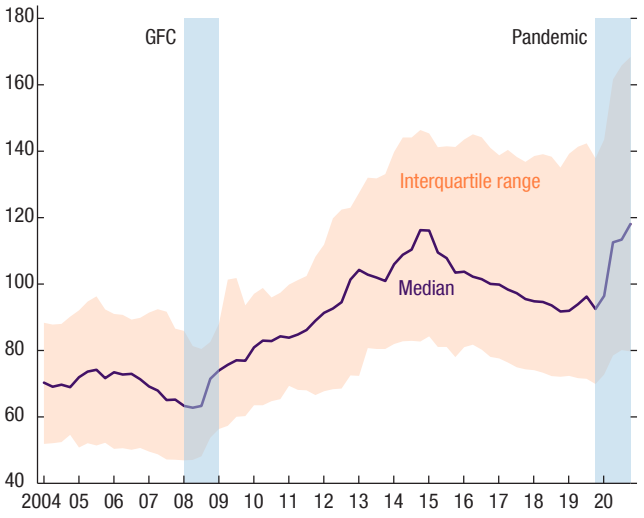
Sources: ECB, and IMF staff calculations.
*Net worth = financial assets – financial liabilities.

financial assets, in turn weakened household balance sheets. This damage took years to repair, holding back consumption and investment and leading to weak growth in much of Europe (Berkmen and others 2012). Clearly the nature of the shock that precipitated the GFC differs from that of the pandemic. But concerns emerged, especially early in the pandemic, that the same scarring effects could hold back growth in the post-pandemic recovery (Benassy-Quere and others 2020, Cerra, Fatas, and Saxena 2020). The evidence in this paper suggests that these risks may be overstated, at least so far.

A central factor behind the resilience of firm and household balance sheets has been the unprecedented level of policy support provided by the public sector. In 2020, general government balance sheets deteriorated substantially, with debt-to-GDP spiking in many countries (Figure 3). Central bank balance sheets also expanded considerably, absorbing much of this public debt. This unprecedented policy support also cushioned the damage to financial institutions' balance sheets (Figure 4) (Aiyar and others 2021). This, in turn, helped to support credit to NFCs and households during the crisis. To help explain these dynamics, this paper proposes the concept of the "**balance sheet trilemma**":[2] an aggregate shock must ultimately manifest itself in at

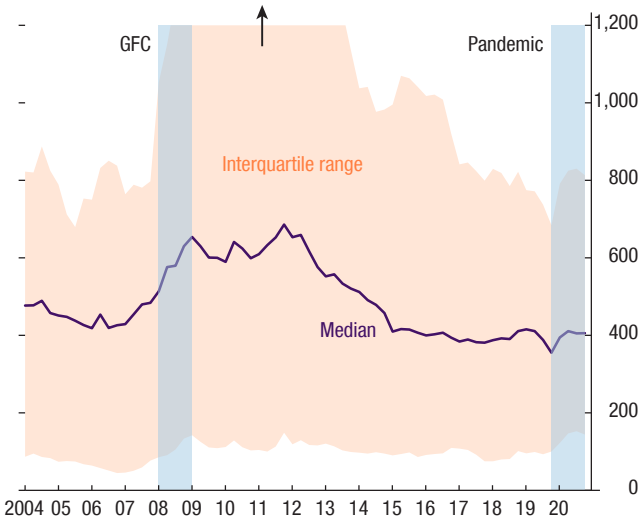
[2]Here, the term trilemma refers to the need to make a choice between unfavorable alternatives and the impossibility to fully shield all sectors' balance sheets from a shock. This differs from the trilemma in international monetary theory, where a choice among three mutually exclusive options must be made. In the balance sheet trilemma, the policy trade-off is about how to distribute the risk of losses across the three main sectors of the economy.

Figure 3. General Government Liabilities
(Percent of GDP)



Sources: ECB; and IMF staff calculations.

Figure 4. Financial Sector Leverage*
(Percent)



Sources: ECB; and IMF staff calculations.
*Leverage = debt as a share of equity liabilities.

least one of the three major institutional sectors of the economy—(1) the public sector, (2) the financial sector, or (3) the private nonfinancial sector (NFCs and households)—but not necessarily in the sector where the shock first materialized.

Preventing the pandemic from becoming a balance sheet recession is key for a quick and strong recovery. So far, this has been largely accomplished for the group of European countries analyzed in this paper, in great part due to the support provided by the public sector. Such resilience is likely to have persisted through the first half of this year, as public support measures have largely remained in place. But the pandemic is not over, making it hard to rule out new risks. While it continues, the case for continued policy interventions remains strong. Once vaccination reaches a critical mass and uncertainty falls, policies will need to gradually change focus, including by supporting the reallocation of resources between firms and industries, post-pandemic. The policy debate will then also turn to the appropriate pace of public sector deleveraging.

The analysis in this paper provides a panoramic view of financial balance sheet health, but the data used do not permit the identification of pockets of weakness within each institutional sector. Quarterly sectoral data provides the timeliest picture of the health of balance sheets, as well as detail on the financial connections among sectors. But because these data represent an

entire sector in *aggregate*, they do not reveal pockets of comparative strength or weakness, including in specific industries or certain household groups. Studies based on firm-level data, such as Ebeke and others (2021) or Díez and others (2021) or that use household micro data (Almeida and others 2020), show that some groups are suffering disproportionately from the crisis. For example, with the accommodation and food industry experiencing a severe contraction, or with poorer households being hit disproportionally hard (Adams-Prassl and others 2020, Barrot, Grassi, and Sauvagnat 2020, Osotimehin and Popov 2020, Maliszewska, Mattoo, and van der Mensbrugghe 2020). Such considerations—although critically important when considering the targeting of policy as discussed in more detail by Kammer and Papi (2021)—are outside the scope of this paper. That said, the aggregate magnitude of the solvency gaps reported there are broadly consistent with the findings in this paper.

The remainder of this paper is structured as follows. Section II sets out in detail how firms and households have been affected by the pandemic, tracing the shock to income flows to the financial balance sheet. It also explores some of the cross-country differences within Europe. Section III discusses how the *balance sheet trilemma* affects not only the "flow of funds" between sectors, but also the *value* of financial instruments. It also seeks to explain some of the cross-country heterogeneity within Europe. Section IV considers the fundamentally different nature of the GFC and pandemic shocks, in terms of how they not only affected balance sheet outcomes, but also constrained policy differently. Section V concludes and explores policy implications, including for the aftermath of the pandemic.

CHAPTER

1 Firms and Households during the Pandemic

This section presents how the significant shocks to NFC[1] and household income flows were absorbed. It also considers some of the differences within Europe and compares developments during the pandemic to the GFC.

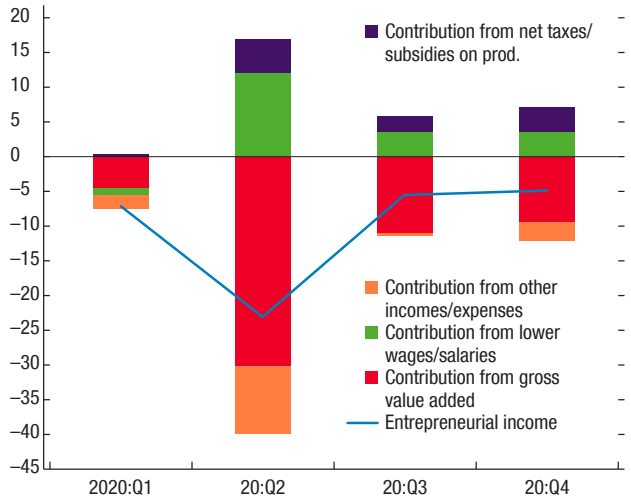
Nonfinancial Corporations in the Euro Area[2]

Firms' revenues were hit hard in 2020, as mobility restrictions forced a large reduction in production and spending (Figure 5). In the second quarter of 2020, gross valued added—the difference between sales and the cost of intermediate goods—collapsed by 16 percent year over year, more than double the peak decline in the GFC. However, a large share of the corresponding decline in firms' sales was mitigated by a steep fall in payments of wages and salaries, which to a large extent was enabled by public-funded "short-time work schemes" (Dias da Silva and others 2020). This significantly reduced the impact on firms' "gross profits" (entrepreneurial income). Mapping profits to saving is more complicated given the seasonality of dividend payments. However, in the second quarter of 2020, dividend payments fell by 30 percent year over year, which meant that gross saving fell by only 10 percent year over year (Figure 6). Essentially lower profit distribution cushioned the shock from gross profits to saving. Availability of loan repayment moratoria in several European countries (see Aiyar and others 2021) provided an additional (temporary) cushion to income and balance sheets, by bolstering liquidity.

[1]The NFC sector includes part of state-owned enterprises. Based on the European System of Accounts (2010), a unit that covers the 50 percent of its costs by its sales over a sustained multiyear period is considered as a market producer and thus classified outside the general government sector.

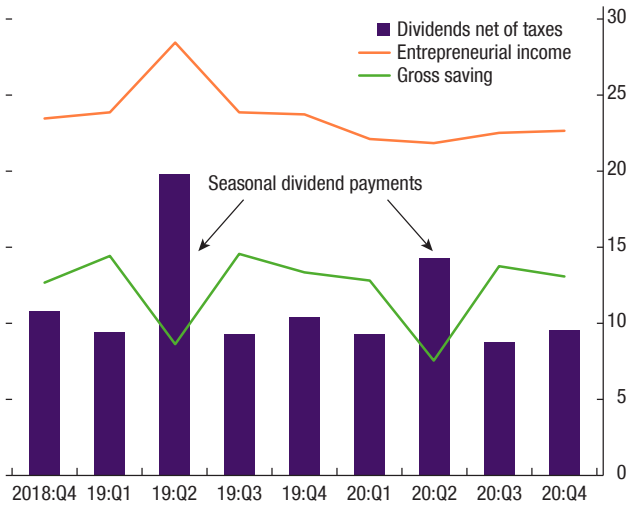
[2]In order to align national accounts income statements with financial balance sheet data for the most representative sample of countries, this section focuses on the euro area.

Figure 5. Change in Gross Profits
(Percent change, year over year)



Sources: Eurostat; and IMF staff calculations.

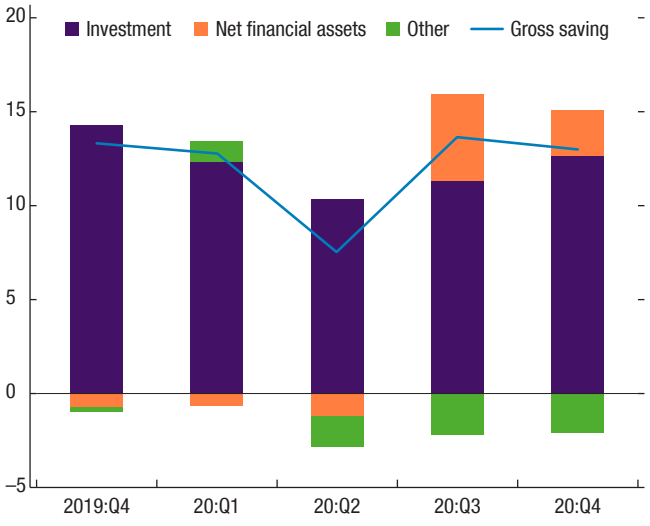
Figure 6. From Profits to Savings (Levels)
(Percent of 2019:Q4 GDP)



Sources: Eurostat; and IMF staff calculations.

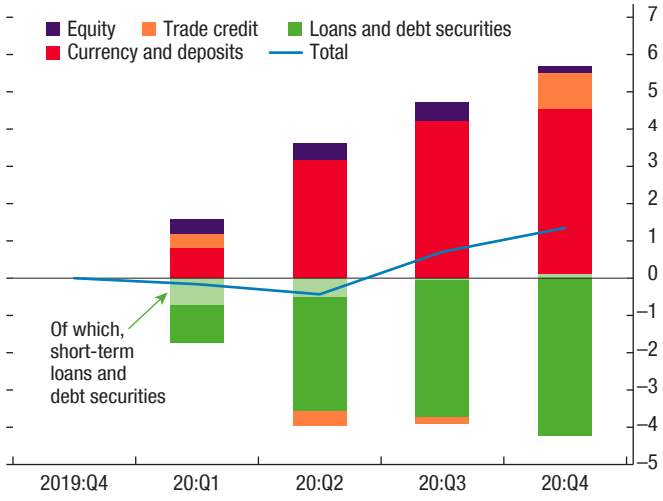
Liquidity risks appear to have been contained. Most gross savings are typically used for real investment, which dipped significantly in the second quarter of 2020 (Figure 7). And as saving recovered in the next two quarters, firms used much of this to increase their holdings of net financial assets (Figure 8). On the liability side, most of the increase came in the form of

Figure 7. Net Saving/Borrowing
(Percent of 2019:Q4 GDP)



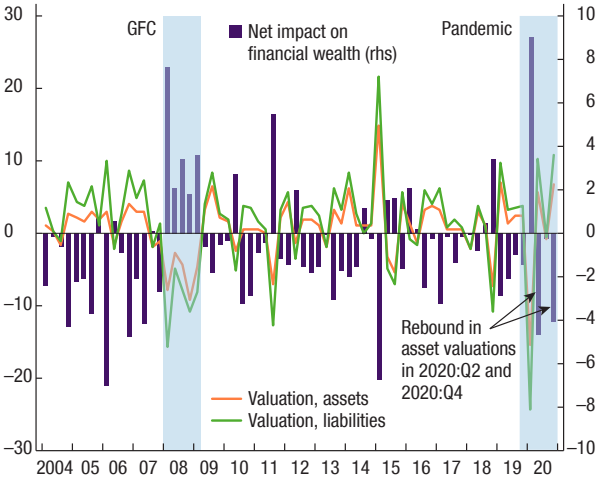
Sources: Eurostat; and IMF staff calculations.

Figure 8. Net Financial Transactions by Instrument, Cumulative Change since 2019:Q4
(Percent of 2019 GDP)



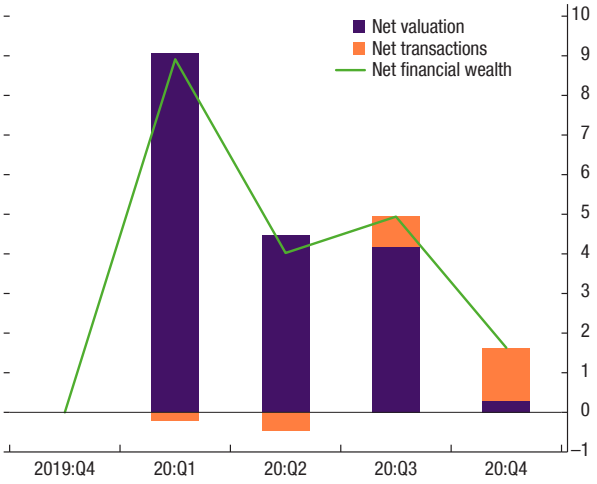
Sources: ECB; and IMF staff calculations.

Figure 9. Valuation Effects
(Percent of GDP)



Sources: ECB; and IMF staff calculations.

Figure 10. Change in Net Financial Assets Relative to 2019:Q4
(Percent of 2019 GDP)

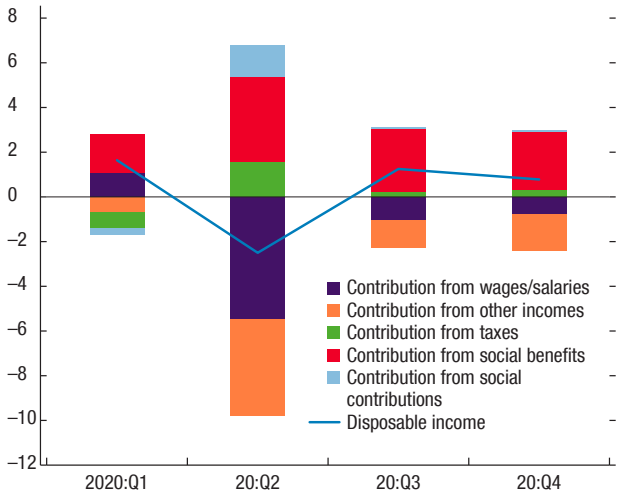


Sources: ECB; and IMF staff calculations.

long-term debt (loans and debt securities). But this relatively modest purchase of net assets (1.3 percent of GDP) was accompanied by a much larger increase in holdings of currency and deposits (4.5 percent of GDP). Indeed, with median NFC cash buffers at historic highs, and only a negligible increase in short-term debt, liquidity risks from the pandemic seem to have been significantly mitigated.

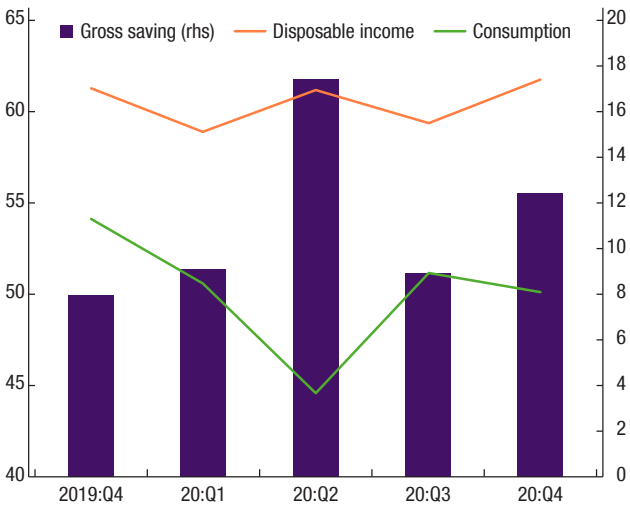
Valuation effects also had a significant effect on NFC balance sheets. Mainly driven by equity price fluctuations, valuation effects hit both assets and liabilities—with a particularly large fall in the first quarter of 2020 (Figure 9). But because NFC equity liabilities are much larger than equity assets, the net effect was a large *increase* in net financial assets (Box 1). However, this observation needs to be carefully interpreted. The steep fall in equity liabilities reflects a perception that the value of firm's nonfinancial assets, including intangibles, fell significantly. The improvement of net *financial* assets, understood as the difference between all financial assets and liabilities, equity included, just reflects the cushioning effect of equity in absorbing shocks experienced by a firm. At any rate, the recovery in equity prices meant that these valuation effects were short lived. By the fourth quarter of 2020, valuations had rebounded to pre-pandemic levels, and with transactions, net financial assets of NFCs is nearly 2 percent of GDP higher than end-2019 levels (Figure 10).

Figure 11. Change in Disposable Income
(Percent change, year over year)



Sources: Eurostat; and IMF staff calculations.

Figure 12. Gross Savings (Level)
(Percent of 2019:Q4 GDP)



Sources: Eurostat; and IMF staff calculations.

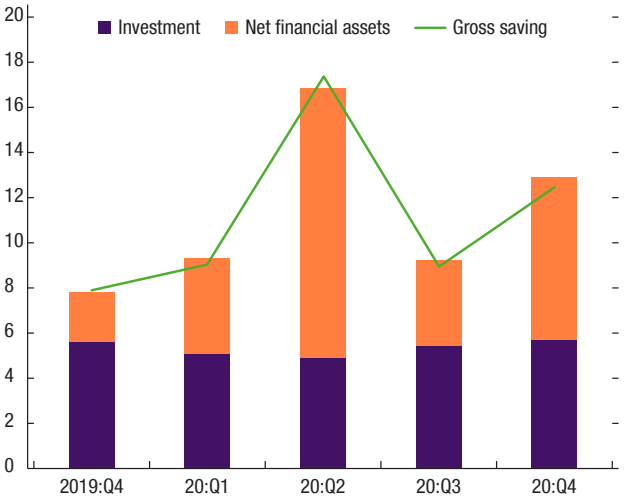
Households in the Euro Area

The counterpart to the fall in employment costs for firms was, of course, a steep decline in wages and salaries for households (Figure 11), which fell by 7 percent year over year in the second quarter of 2020 (the peak year-over-year fall during the GFC was 1 percent). This loss was lower than it could have been, because firms could adjust more easily along the intensive margin (that is, hours) than the extensive margin (that is, employment) with the extended availability of "short-time work schemes." But large-scale support from the government, including lower taxes and increased social benefits (including automatic stabilizers), meant that disposable income only fell by 2.5 percent. Meanwhile, household consumption collapsed through a combination of precautionary and forced savings stemming from the virus-related mobility restrictions, both mandated and voluntary (Figure 12). As a result, gross savings nearly doubled in the second quarter of 2020.

Household investment remained flat in recent quarters, so all "excess" saving went into accumulating net financial assets (Figure 13). Most of this came in the form a sizeable increase in household cash holdings (Figure 14), with the cash-to-loan ratio increasing to a 20-year high. As with firms, liquidity risks were substantially mitigated by this build-up of cash buffers. Households also increased holdings of equity and pension/insurance schemes, suggesting some appetite for taking on risky assets.

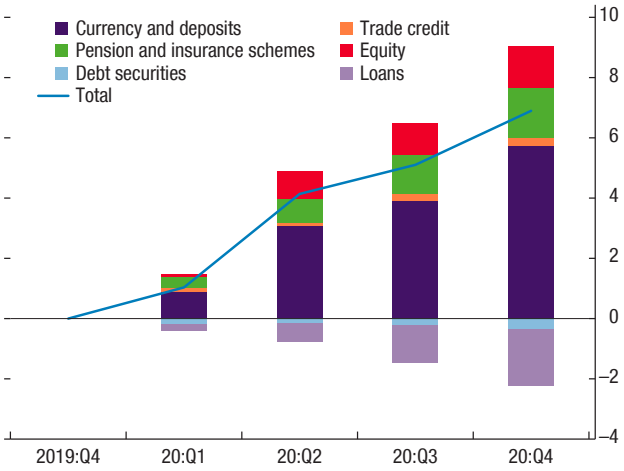
Households balance sheets mirrored some of the changes, especially valuation changes, on firms' balance sheets. Valuation effects on household bal-

Figure 13. Net Saving/Borrowing
(Percent of 2019:Q4 GDP)



Sources: Eurostat; and IMF staff calculations.

Figure 14. Net Financial Transactions by Instrument, Cumulative Change since 2019:Q4
(Percent of GDP)



Sources: ECB; and IMF staff calculations.

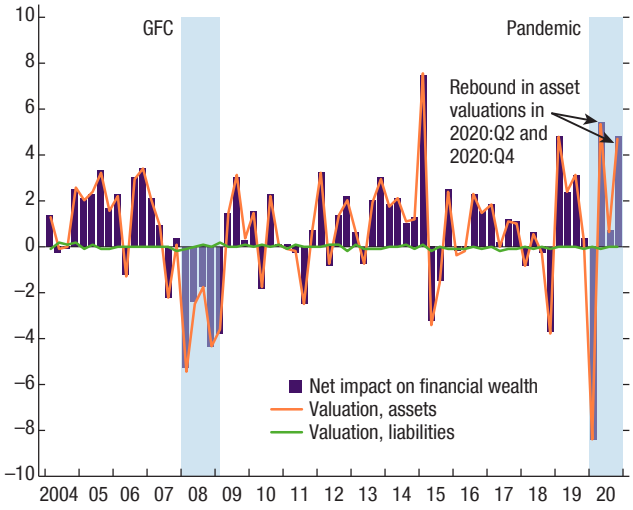
ance sheets are primarily the *counterpart* of the net changes in NFCs' equity and largely reflect equity price movements. Because households do not issue equity liabilities, these valuation effects concern only the asset side of the balance sheet. Therefore, any fall in asset valuation leads directly to an equivalent decline in households' gross and net financial assets (Figure 15). The buffer effect that NFCs have from issuing equity is primarily borne by households (Box 1). In the first quarter of 2020, valuation effects reduced household net assets by 8 percent of GDP, although much of this was recovered in the subsequent rebound in equity prices in sharp contrast to the experience during the GFC. In addition, the sizable accumulation of net financial assets meant that by the fourth quarter of 2020, net financial assets had increased by 9 percent of GDP relative to end-2019 (Figure 16).

Heterogeneity within Europe

While firm leverage in the *median* European country was little changed during the pandemic, there was some heterogeneity among countries (Figure 17).[3] In a few countries—including Cyprus, Latvia, and Lithuania—

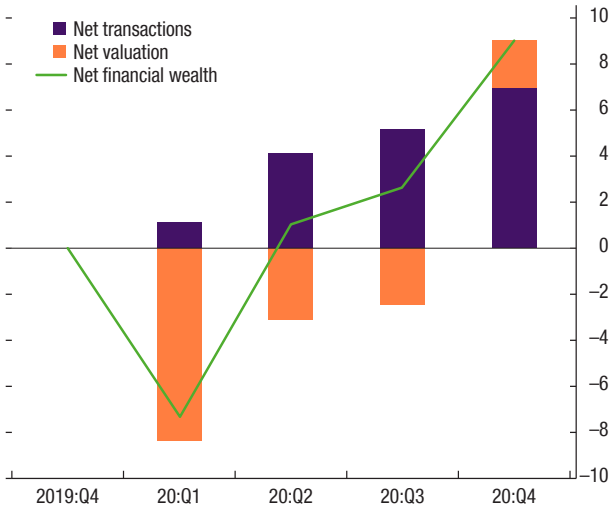
[3]Leverage is defined as debt over equity throughout this paper. Alternative measures are employed in the literature. For instance, debt to GDP, debt less deposits over equity, or debt over the sum of debt and equity. While the former two could imply some change to the relative ranking, they include important denominator effects in the case of debt to GDP and ignore potential mismatches between firms with high deposits and those with high debt in the case of the debt less deposit to equity measure. The third measures would imply no change in ranking compared to our measure.

Figure 15. Valuation Effects
(Percent of GDP)



Sources: ECB; and IMF staff calculations.

Figure 16. Change in Net Financial Assets Relative to 2019:Q4
(Percent of 2019 GDP)



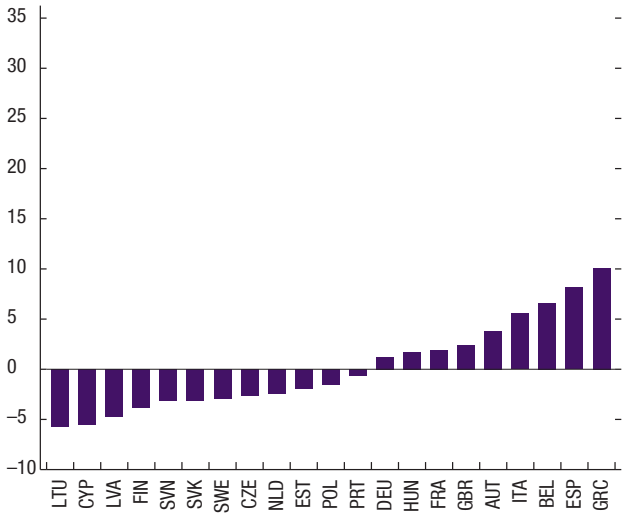
Sources: ECB; and IMF staff calculations.

leverage actually fell, driven by strong growth in equity. In other countries, notably Belgium, Greece, and Italy, leverage increased substantially, driven by a combination of higher debt and falling equity (Table 1). Leverage increased also in Spain but from a lower initial level. Interestingly, precrisis leverage in the NFC sector (2019) is not correlated with the *change* in leverage during the pandemic. This suggests that the policy support focused on offsetting ongoing income losses (which were absorbed by the public sector) more than targeting NFCs according to their initial financial strength. These figures abstract from other possible cushioning effects (for example, ratio of short-term to total financial debt and deposit build up) that could affect the relative risk assessment beyond what is implied by the debt-to-equity measure of leverage (see for instance Bank of Italy 2021).

The comparison with the GFC is striking (Figure 18). During that crisis, leverage increased substantially in every country, driven primarily by a collapse in equity valuations but also through higher nominal debt. Section III explores in more detail what lies behind the current differences among countries and why the deterioration was so much worse during the GFC than in 2020.

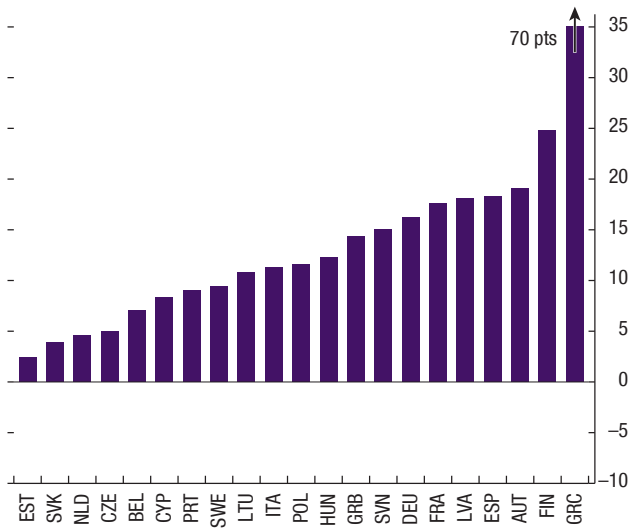
During the pandemic, household net financial assets increased in every country in our sample (Figure 19). In all countries, households increased holdings of financial assets, which were only partially offset by an increase in liabilities (Table 2). This curiously consistent finding is also in almost complete contrast to the experience of the GFC (Figure 20). Here household net financial assets declined in most countries, primarily because assets declined substantially. The next section explores the drivers of this in more detail.

Figure 17. Change in NFC Leverage, Pandemic
(Percentage points)



Sources: ECB; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 18. Change in NFC Leverage, GFC
(Percentage points)



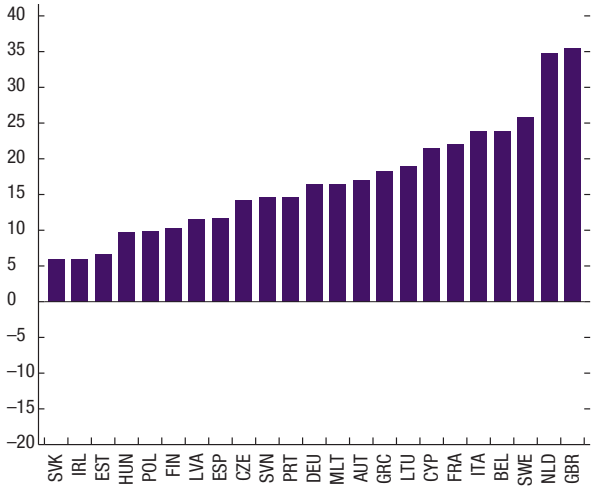
Sources: ECB; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Table 1. NFC Leverage

	Leverage (Debt/Equity, %)			Debt (% GDP)			Equity (% GDP)		
	2019Q4	2020Q4	Change	2019Q4	2020Q4	Change	2019Q4	2020Q4	Change
LT	41	35	25.8	39	38	21.2	96	108	12.4
CY	81	76	25.7	171	177	6.0	211	235	23.8
LV	59	55	24.7	55	55	0.7	92	101	9.3
FI	67	64	23.9	117	123	5.5	174	193	19.4
SI	48	45	23.1	48	49	1.0	99	109	9.2
SK	87	84	23.1	54	55	1.6	61	66	4.1
SE	40	37	23.0	167	175	8.6	415	472	56.9
CZ	52	50	22.7	57	57	0.6	108	115	6.9
NL	56	54	22.5	154	152	22.0	274	284	9.2
EE	41	39	21.9	76	78	1.9	184	198	13.6
PL	64	63	21.5	44	46	1.6	69	73	4.3
PT	67	66	20.8	97	103	6.4	145	157	11.4
DE	75	76	1.2	68	73	5.8	90	96	6.2
HU	47	49	1.6	64	68	4.5	135	140	4.6
FR	45	47	1.9	150	171	21.1	333	365	31.8
GB	51	53	2.4	72	80	8.0	142	151	8.6
AT	84	87	3.8	91	100	9.0	109	114	5.6
IT	63	69	5.6	68	77	8.5	109	112	3.5
BE	70	77	6.6	147	166	19.1	209	215	6.9
ES	43	51	8.2	93	108	14.8	216	210	25.9
GR	70	81	10.2	55	66	11.3	78	82	4.2

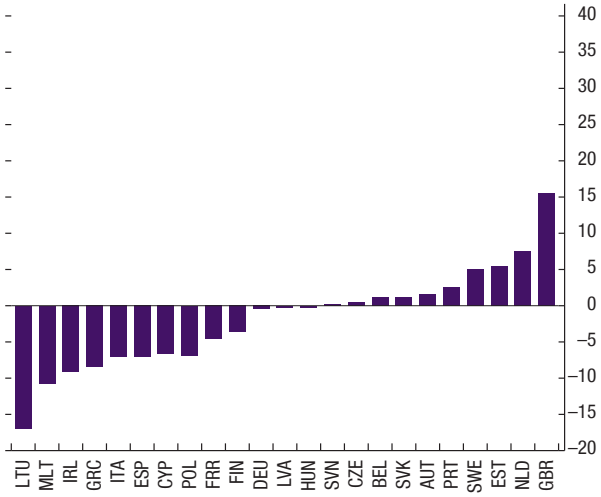
Larger deterioration in leverage

Figure 19. Change in Household Net Financial Assets, Pandemic
(Percent of GDP)



Sources: ECB; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 20. Change in Household Net Financial Assets, GFC
(Percent of GDP)



Sources: ECB; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Table 2. Household Net Financial Assets

	Net Financial Assets (% GDP)			Assets (% GDP)			Liabilities (% GDP)		
	2019Q4	2020Q4	Change	2019Q4	2020Q4	Change	2019Q4	2020Q4	Change
SK	39	45	5.8	86	96	10.2	46	51	4.3
IE	75	81	6.0	116	120	3.9	41	39	(2.1)
EE	90	96	6.5	132	142	10.4	42	46	3.9
HU	109	119	9.6	131	143	12.1	22	25	2.5
PL	64	74	9.8	99	109	10.5	35	36	0.7
FI	71	82	10.2	150	162	12.2	78	80	2.0
LV	69	80	11.3	91	103	11.8	23	23	0.5
ES	130	142	11.6	192	209	17.4	62	67	5.9
CZ	95	109	14.2	133	151	17.2	38	41	3.1
SI	89	104	14.5	120	136	16.2	30	32	1.7
PT	126	141	14.6	204	225	20.1	78	84	5.5
DE	139	156	16.3	194	215	20.9	55	59	4.6
MT	161	177	16.5	218	241	23.5	57	64	7.0
AT	136	153	16.9	186	208	21.7	50	55	4.8
GR	88	106	18.3	150	172	22.4	62	66	4.1
LT	71	90	19.0	98	117	19.0	27	27	(0.0)
CY	121	143	21.4	229	257	27.6	108	114	6.2
FR	169	191	21.8	242	272	30.6	73	81	8.8
IT	206	230	23.6	261	289	28.5	54	59	4.9
BE	231	255	23.6	296	326	29.8	65	71	6.2
SE	230	256	25.8	322	355	32.9	92	99	7.1
NL	241	276	34.7	348	387	38.7	107	111	4.0
GB	224	259	35.4	313	356	42.9	89	97	7.5

Larger improvement in net worth

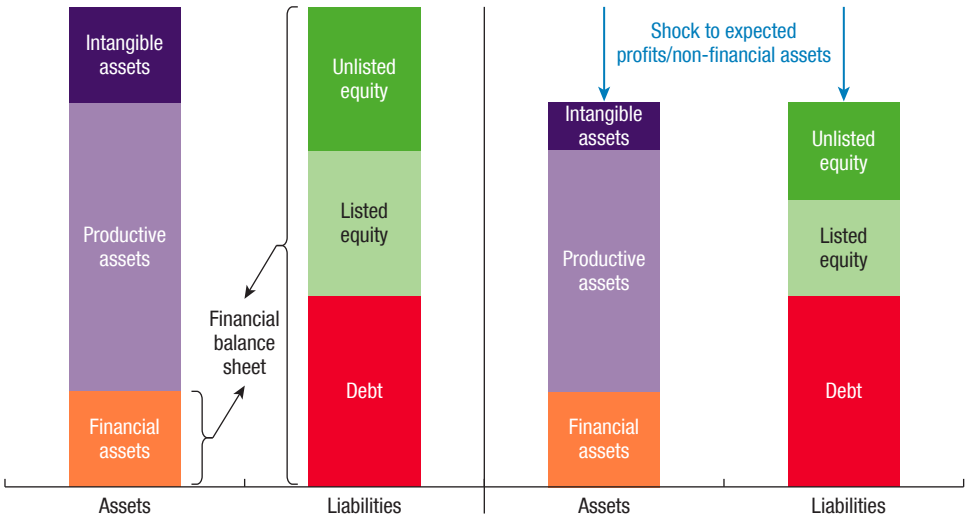
Box 1. Stylized Balance Sheets

As the name suggests, the financial balance sheet data presented in this paper include only *financial* assets and liabilities. For households, these data exclude the homes and land, which are an important component of wealth. For NFCs, productive assets (such as machinery or buildings) and intangible assets (such as intellectual property and brand recognition) are missing. For firms in particular, nonfinancial assets are typically large, which implies that the net position on the *financial* balance sheet tends to be negative.

For firms, conceptually, the value of these nonfinancial assets is determined by the future profits that they are expected to generate. Following a negative shock, future utilization and thus expected profits will decline, reducing the value of these assets. While this change is not observable on the asset side of the *financial* balance sheet, it will be reflected on the liability side. Here, a fall in the value of equity liabilities—which are recorded in macroeconomic statistics at market value—will be indicative of the decline in the economic value of nonfinancial assets: this is derived from the accounting identity. So, while the value of these nonfinancial assets is not directly observable in these data, it can be inferred by changes in the value of equity liabilities (see Box Figure 1.1).

While straightforward in theory, measuring these equity valuation effects is more complicated in practice. For listed equity, the market value of shares gives a good high-frequency measure. But for unlisted shares, the "book value" is largely

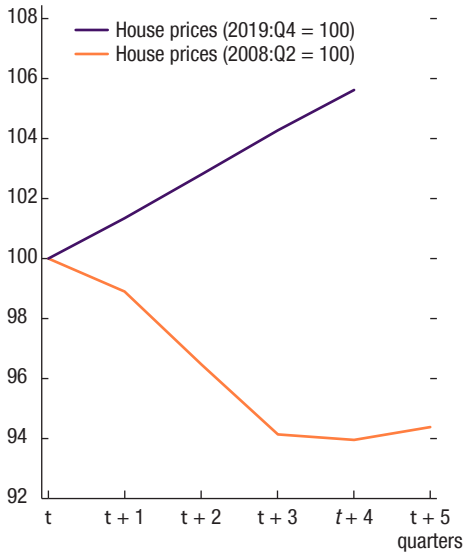
Box Figure 1.1. Stylized NFC Balance Sheet



Source: Authors.
Note: NFC = Nonfinancial corporations.

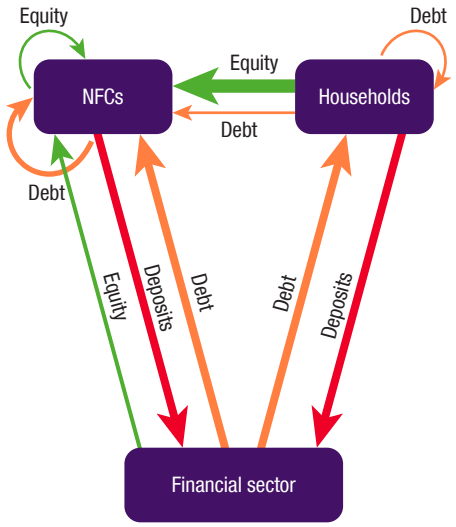
Box 1. Stylized Balance Sheets *(continued)*

Box Figure 1.2. House Prices, EU
(Index)



Sources: Haver Analytics; and IMF staff calculations.

Box Figure 1.3. Financial Interconnectedness



Source: Authors.
Note: NFC = Nonfinancial corporations.

based on historic acquisition values and is only periodically adjusted for impairment, and so tends not to vary significantly with economic conditions within the year. Thus, the valuation effects on unlisted equity may not be a good proxy for the change in value of nonfinancial assets. This problem is less severe at year-end reporting dates.

Does this fundamentally alter the conclusions of this paper? Importantly, fourth-quarter reported data for unlisted shares are typically subject to less imputation than within-year data. Also, given that the value of listed shares essentially returned to precrisis levels in the fourth quarter of 2020, one could infer the same rebound for unlisted shares. This would ignore the fact that many smaller firms, for example in the accommodation and food industry, will not be proportionately reflected in the major equity indices (Díez and others 2021). Yet as a first-order approximation, this assumption seems valid.

For households, as mentioned before, housing wealth is not recorded in financial balance sheet data. Yet unlike firm's nonfinancial assets, data on house prices are readily available. Indeed, house prices have grown steadily during the pandemic, in sharp contrast to the GFC, where they fell significantly (Box Figure 1.2). Including housing wealth in the balance sheet, therefore, would only increase household net worth further, strengthening the conclusions of this paper.

Box 1. Stylized Balance Sheets *(continued)*

Sectoral financial balance sheets are also highly interconnected (Box Figure 1.3). Vulnerabilities in one sector can migrate to other sectors through a network of credit and ownership relationships. For example, while NFC equity acts as a buffer against shocks, the consequent valuation effects will be felt by households—the ultimate holders of these assets. Also worth noting: firms are often financed by other firms, either through equity or debt. Thus, shocks can easily migrate between firms. And of course, the financial sector plays an important intermediary role between firms and household but can act as a potential amplifier of shocks, as in the GFC.

CHAPTER

2 Migration of Losses

The apparent disconnect between economic activity and balance sheets of NFCs and households is particularly stark when compared to the GFC. During that crisis, leverage and liquidity stress, captured by a "z-score" vulnerability index,[1] significantly deteriorated in lock-step with the collapse in economic activity (Figures 21 and 22). During the pandemic, however, this index actually improved in third quarter of 2020 after an initial moderate deterioration in the first half of 2020 when real output plummeted. In other words, the historical link between GDP growth and balance sheet vulnerability did not appear during the pandemic, at least so far.

Ultimately, firm and household losses generated during the pandemic were borne by the public sector. Here, the idea of the "**balance sheet trilemma**" is informative: an aggregate shock must manifest itself in at least one of the three major sectors of the economy—(1) the public sector (the general government and central bank),[2] (2) the financial sector, or (3) the private nonfinancial sector (NFCs and households)—but not necessarily in sector where the shock first materialized (Figure 23).[3]

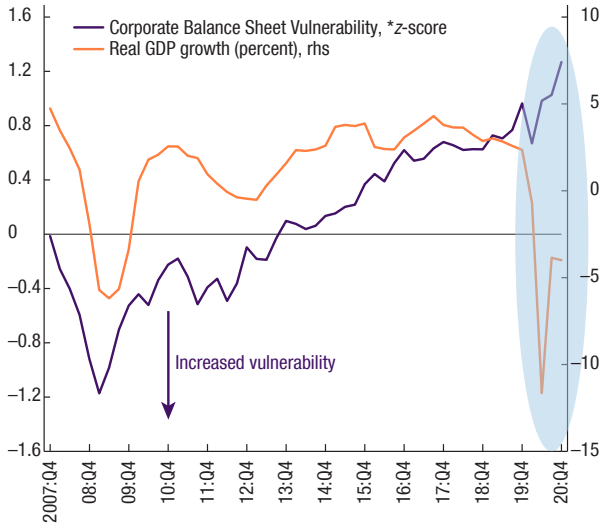
During the pandemic, it is clear that the public sector provided unprecedented levels of support, effectively bringing much of the losses onto their

[1]The z-score measures the number of standard deviations from the historical mean. Here, it includes the simple average for leverage (NFCs)/net financial assets (households) and liquidity, similar to Gardó and others (2020). The index excludes corporate sales and profitability: the decline of corporate sales during the crisis was largely mitigated by substantial policy supports and corporate profits are already reflected in leverage.

[2]The public sector includes part of state-owned enterprises that are not included as part of NFCs. Please refer to footnote 3 for more details.

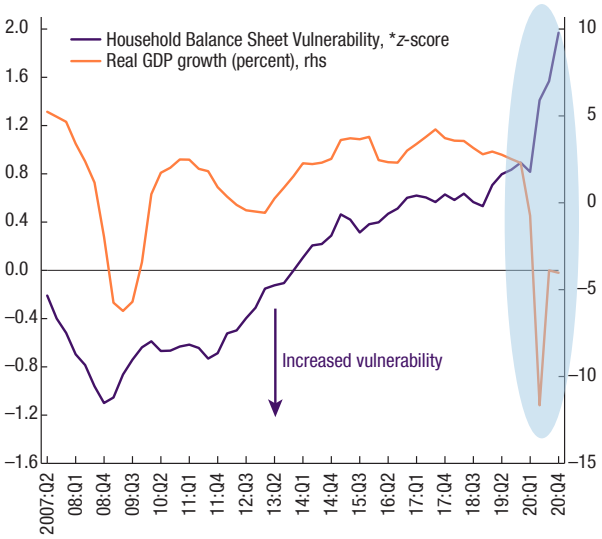
[3]The trilemma is in reality a "tetralemma" if we consider that the rest of the world can also absorb part of the hit, or the domestic economy can take the hit for the rest of the world. In 2020, however, flows with the rest of the world were small for most countries analyzed in this paper, so for simplicity this paper focuses on the domestic economy.

Figure 21. NFC Balance Sheet Stress and Growth



Sources: ECB; IMF, *World Economic Outlook*; and IMF staff calculations.
*Average *z*-score of leverage (debt/equity) and liquidity (short-term assets/short-term liabilities).

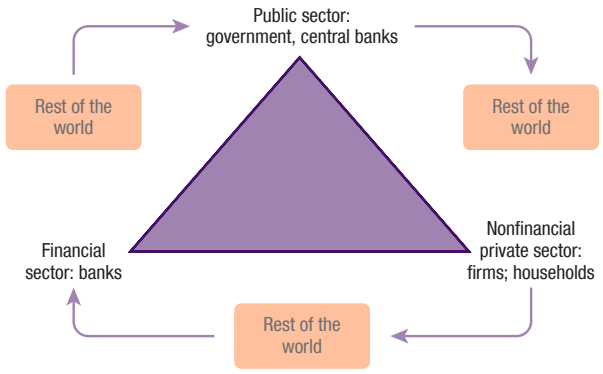
Figure 22. Household Balance Sheet Stress and Growth



Sources: ECB; IMF *World Economic Outlook*; and IMF staff calculations.
*Average *z*-score of net-worth and liquidity (cash/total liabilities).

Figure 23. Trilemma of Balance Sheets: Impossible Triangle

You cannot defend all three balance sheets during a crisis:



Source: ???.

balance sheets (see Box 2 for a case study on Lithuania). Public sector support measures included the following:[4]

- Government-financed short-term work schemes allowed firms to reduce labor costs without causing a reduction in household income. Other forms of grants, although more limited, also strengthened firms' solvency position.
- Enhanced unemployment benefits and other forms of social assistance strengthened household finances.
- Tax deferrals provided much needed liquidity support to households and NFCs but did little to enhance solvency. This policy reduced available cash resources of the public sector, postponing tax revenue to the future.
- Off-balance sheet operations supported various sectors. For instance, loan guarantees and other policy measures to address funding needs such as flexibility in banks' capital ratio calculations and central banks' loan programs

[4]For a more encompassing list, see for instance IMF (2020a, 2020b).

have allowed continued supply of liquidity to the private sector, without a steep increase in the cost of borrowing.[5] Loan moratoria also bolstered private nonfinancial sector liquidity to cope with temporary declines in sales revenues. These off-balance sheet operations do not increase debt or other balance sheet items immediately, but most of the risk is ultimately borne by the counterparty, primarily the public sector for state-guarantees on loans and the banking sector for loan moratoria.

- Asset purchase programs and, interest rate cuts, off-balance sheet supports by the central banks and loan repayment moratorium not only helped to prevent a deeper recession, but also supported financial asset valuations and may have prevented a steep increase in sovereign yields, retaining fiscal space for other measures.[6]

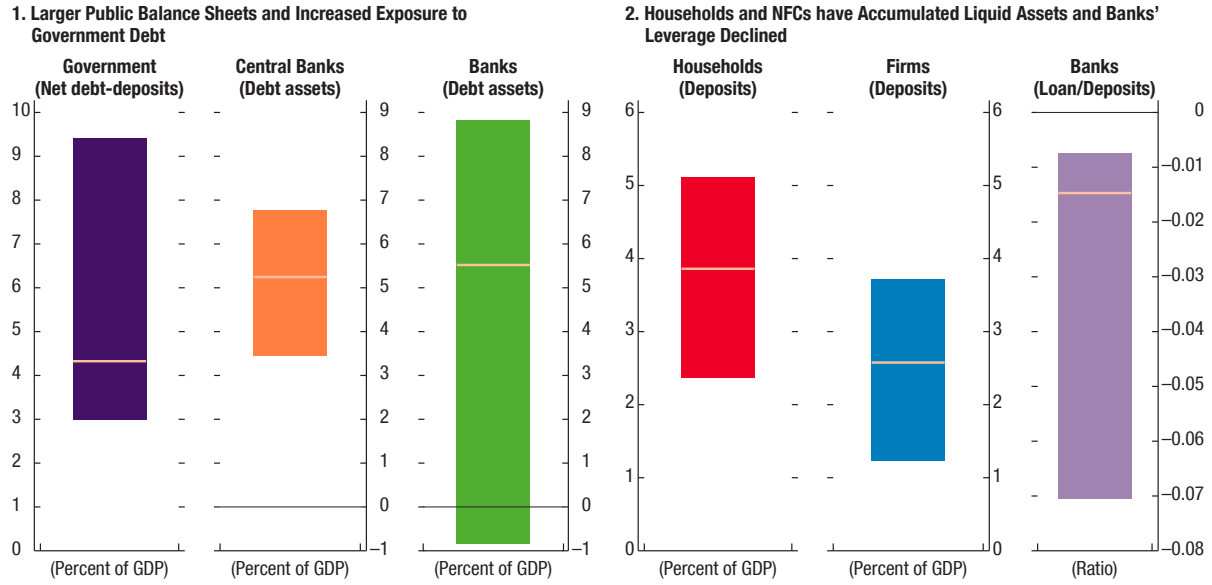
As a result of these support measures, public sector liabilities expanded across the region. Through the fourth quarter of 2020, median government debt (net of deposits) increased by about 4.3 percent of GDP (Figure 24), with four countries seeing an increase of more than 9.5 percent of GDP. And this excludes potential future liabilities associated with guarantees and possible losses from deferred taxes. The magnitude and timing of these potential losses are uncertain and will depend in part on the ability of firms to remain viable. Nevertheless, the "true" burden shifted toward the public sector may be underestimated by the immediate observed shifts in financial accounts.

The "balance sheet trilemma" can also be a useful prism for understanding the resilience of asset valuations during the COVID-19 pandemic. Central banks—pursuing their price and financial stability mandates—undertook significant asset purchases and interest rate cuts. In particular, they bought substantial amounts of government debt in secondary markets. This had the effect of supporting financial asset valuations. But private banks also financed government spending to a significant degree (Figure 24). Effectively, the government stood between bank lending and private sector entities needing liquidity and between workers and firms, providing the necessary degree of certainty required for resources to flow where they were ultimately needed. Large-scale fiscal spending, which arguably was facilitated by monetary policy, also bolstered economic activity and asset valuations. This support helped to avoid the scale of "fire-sale externalities" and subsequent negative wealth effects experienced during the GFC (Shleifer and Visney 2011) and prevented further real economy losses.

[5]See IMF (2020b) Chapter 3 and 4 for a more detailed discussion of these policy measures and funding stresses of private firms. As suggested in Chapter 4, in addition to these policy measures, banks entered the COVID-19 crisis with higher levels of capital than before the GFC, which have supported their ability to lend.

[6]For example, the swap line arrangement between the US Federal Reserve and other major central banks such as the ECB and the Bank of England helped to ease US dollar funding stress.

Figure 24. Balance Sheet Developments, 2019:Q4 and 2020:Q4
(Median and interquartile range)



Sources: ECB; and IMF staff calculations.

Cross-Country Differences

The impact of the "pandemic shock" was not uniform within Europe. Some countries had stricter and/or longer mobility restrictions than others, or witnessed stronger self-imposed mobility restrictions in response to the virus dynamics, associated with different short-term economic losses.[7] Using the Google mobility index[8] as a proxy for the scale of the economic shock experienced by each country, it appears that about one-third of the change in firm leverage can be associated with this factor (Figure 25).[9] Perhaps not surprisingly, the greater the decline in mobility the larger the initial shocks to firms, and the greater the increase in leverage.

Yet there remain large "unexplained" drivers of firm leverage between countries. One notable correlation, consistent with the idea that the public balance sheet matters, is found with the change in public debt (Figure 26).[10]

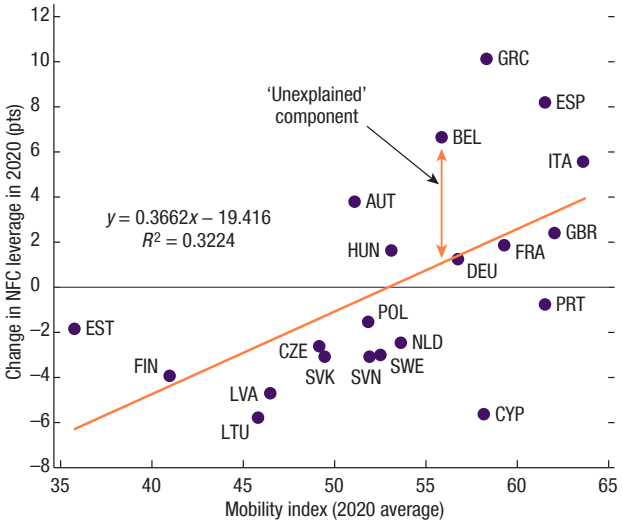
[7]It is also true that the structure of the economy, for example, the importance of tourism, is also important.

[8]Google mobility index captures a simple average of six mobility indices for retail, groceries, transit, parks, residential, and workplaces. A higher value indicates lower mobility.

[9]It is beyond the scope of this paper to look deeply at the causal relationship among shocks, policy, and balance sheet variables. The paper simply attempts to present some stylized facts, which can be evaluated more thoroughly in future work.

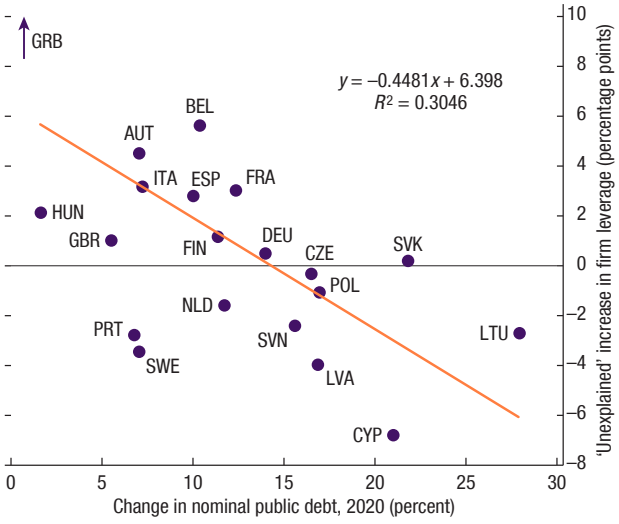
[10]Figure 26 depicts on the *y*-axis the unexplained component of the change in NFC leverage since the fourth quarter of 2019, implied by the regression line in Figure 25 and plots it against the corresponding change in nominal public debt on the *x*-axis.

Figure 25. Mobility and Firm Leverage



Sources: ECB; Google; and IMF staff caculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 26. Public Debt and Firm Leverage

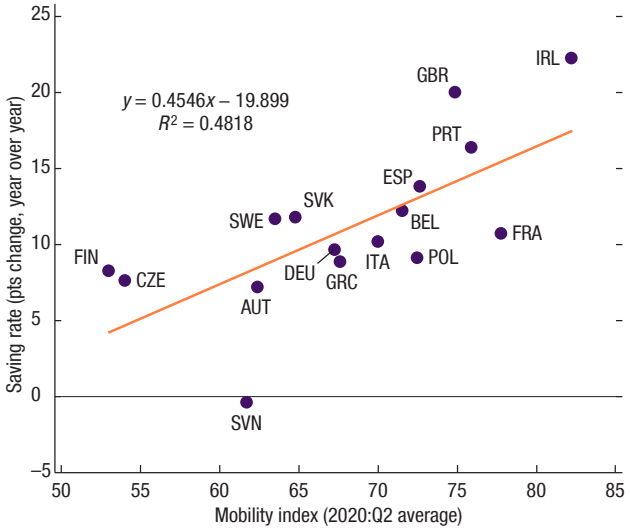


Sources: ECB; and IMF staff caculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

The larger the increase in nominal public debt—consistent with greater fiscal support—the smaller the increase in firm leverage (adjusted for the economic shock). This suggests that some governments absorbed greater losses onto their balance sheet than others. Part of this difference might be explained by concerns of some governments over the increase in their own debt, that is, the ability to absorb losses from the private sector. In other countries, a more limited fiscal response may be because other policies (monetary, financial, off-balance sheet fiscal) took a relatively more prominent role in the economic response, which imply different policy trade-offs. Either way, it is clear that fiscal policy played a key role in supporting firms during the pandemic, although the size of this intervention differed greatly among countries.

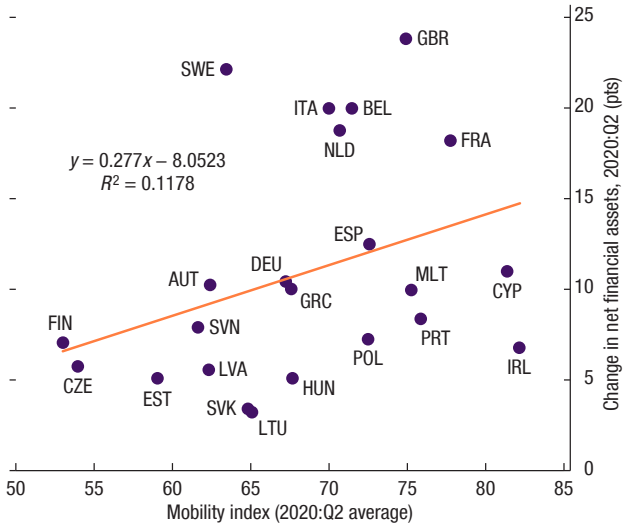
For households, the size of the economic shock is an important driver determining the *flow* of funds to the balance sheet. There is a strong correlation between mobility and the savings rate: lower mobility and higher economic uncertainty associated with the virus dynamics led to an increase in forced and precautionary and forced savings (Figure 27). This is consistent with the aggregated data in Chapter 1. However, this correlation breaks down when the change in household net financial assets is considered: there does not seem to be such a tight correlation between the size of the economic shock and the impact on household net financial assets (Figure 28). What causes the break in this relationship?

Figure 27. Mobility and Household Savings, 2020:Q2



Sources: Eurostat; Google; and IMF staff caculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 28. Mobility and Household Net Financial Assets

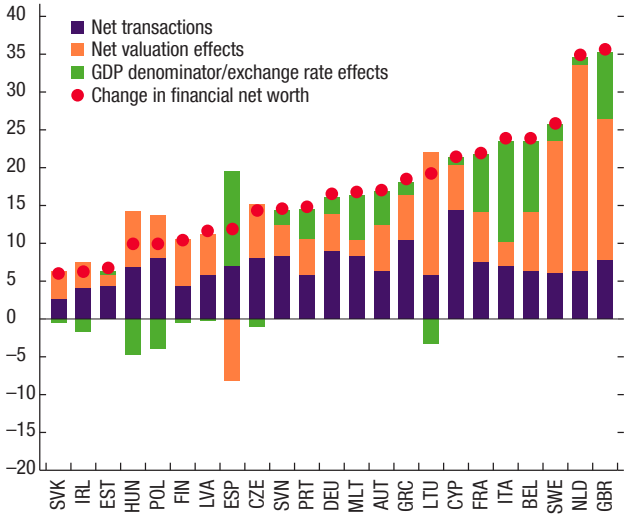


Sources: ECB; Google; and IMF staff caculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Variations in income flows played a limited role in driving changes of some key ratios characterizing household financial balance sheets, as other effects dominated. Given the size of household balance sheets, the GDP denominator effect plays a significant role—in most cases the fall in GDP increases the relative size of the household stock position (Figure 29). But it is also clear that valuation effects played an important role in some countries. Higher restrictions, as measured by the mobility index, give rise to two opposite effects: valuation losses, which tend to reduce households' assets as holders of corporate equity, while higher saving rates rise with mobility restrictions as observed above, which tend to increase assets. This duality of effects can explain in part the weak relationship found in Figure 28.

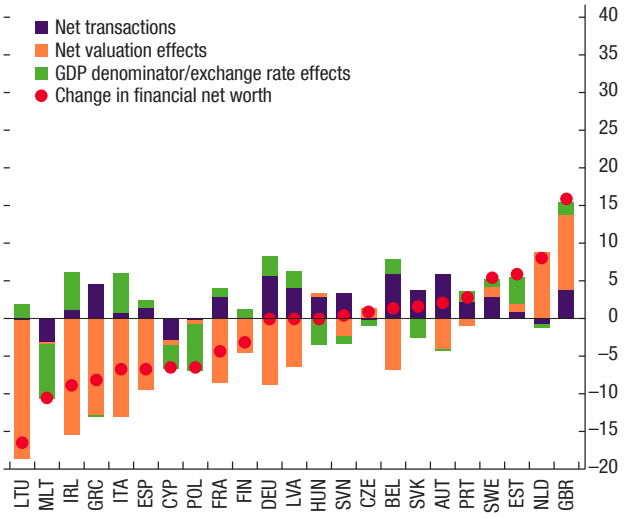
Given the highly interconnected nature of financial markets, it is difficult to attribute valuation effects directly to country-specific policies. For example, ECB asset purchases will impact not only asset prices throughout the euro area; there will also be spillovers to countries outside of the currency union. Similarly, actions by the US Federal Reserve-supported asset valuations in Europe. In any case, it is clear that the public sector has played an important role in supporting asset prices, which held up better than in the GFC (Figure 30). It should be said, moreover, that much of the collapse in valuations in the GFC is likely driven by the repricing of risk, once markets woke up to the fact that economic agents had overextended themselves. By contrast, there were no similar fundamental misalignments in asset prices entering the pandemic.

Figure 29. Change in Household Net Financial Assets, Pandemic
(Percent of GDP)



Sources: ECB; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

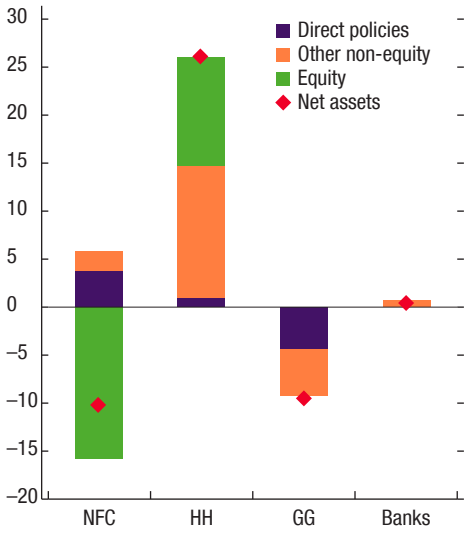
Figure 30. Change in Household Net Financial Assets, GFC
(Percent of GDP)



Sources: ECB; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes.

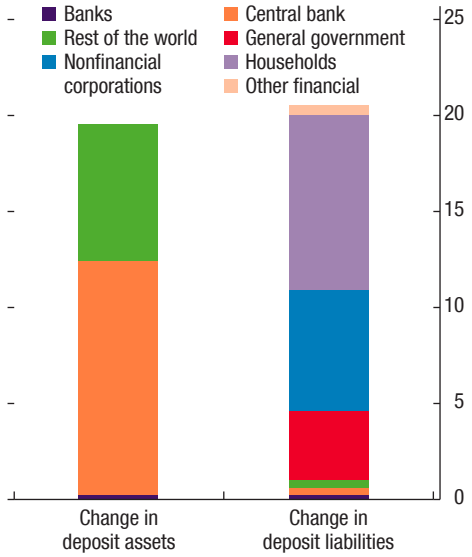
Box 2. Lithuania: Linking Fiscal Policy to Balance Sheets

Box Figure 2.1. Lithuania: Change in Net Assets: 2019:Q4–2020:Q4
(Percent of GDP)



Sources: Bank of Lithuania; national ministries; and IMF staff estimates.
Note: Data directly from central banks may temporarily have more recent coverage for end-of-year financial accounts than ECB data. GG = general government; HH = household; and NFC = nonfinancial corporations.

Box Figure 2.2. Lithuania: Banks' Deposit Assets and Liabilities: 2019:Q4–2020:Q4
(Percent of GDP)



Sources: Bank of Lithuania; and IMF staff calculations.

Sectoral balance sheet data provide a good indication of flows between the general government and the private sector but provide little detail on the specific policies behind them. For example, some measures could be a one-way transfer (grants, subsidies, or allowances) or transactions that generate financial obligations (direct loans, equity injection) or contingent liabilities (loan guarantees). This box focuses on Lithuania as a case study and links announced policy measures to the direct impact on balance sheets.[1]

In Lithuania, the largest measures came in the form of transfers to NFCs through wage subsidies. While NFC net total assets declined by about 15 percent of GDP due to higher equity liabilities that reduced NFC leverage, non-equity flows had a positive impact on net assets by more than 5 percent of GDP. In comparison, policy support to NFCs amounted to almost 4 percent of GDP, thus helping to bolster NFCs non-equity net asset position and support the decline in NFC leverage (see Figure 17). The increase in household net assets was larger in magnitude than the direct impact of policies,

[1]Due to the challenges involved in assessing the ultimate beneficiary of a particular program, only the direct flow from the government or bank to the first recipient is recorded.

Box 2. Lithuania: Linking Fiscal Policy to Balance Sheets *(continued)*

mainly due to valuation effects in equity (see Figure 29) and other benefits related to measures that supported NFCs and in turn employment. Notably, a surge in liquidity in the banking system was partly driven by an increase in NFC and household deposits at more than 15 percent of GDP, reflecting increased liquidity from policy support and forced savings from containment measures.

CHAPTER

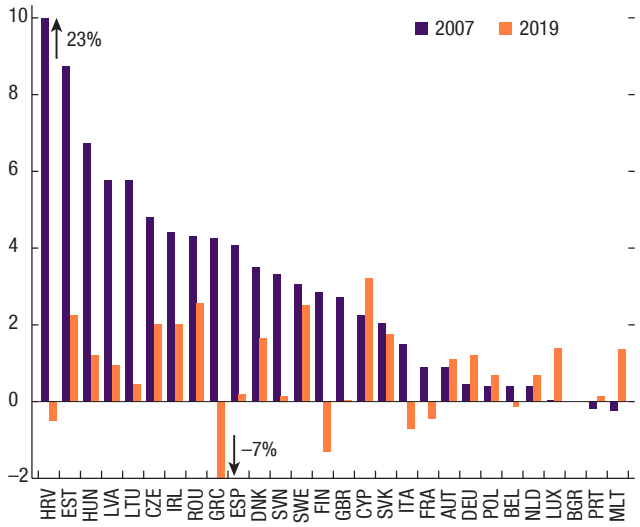
3 Different Shock, Different Crisis

The exogenous nature of the pandemic shock is important for understanding the policy response and the eventual effects of the shock. So far, when comparing the pandemic with the GFC, the focus has mainly been on the policy response; but the nature of the two shocks is very different, with implications for not only the impact on financial balance sheets, but also the constraints on policy. The pandemic can reasonably be categorized as an *exogenous* economic shock. And broadly speaking, the initial severity and timing of the shock across countries was unrelated to domestic economic conditions, such as the place in the business or financial cycles.

In contrast to the COVID crisis, the GFC was not caused by exogenous factors but a "balance sheet recession," driven by the endogenous build-up of risk within the real economy and financial system (Brunnermeier 2009, Papanikolaou and Wolff 2014). And while cross-country spillovers were undoubtedly important, those countries with the greatest imbalances and weaknesses were typically hit hardest (Claessens, Kose, and Terrones 2010, Kapan and Minoiu 2018). For example, pre-GFC, many European countries are estimated to have had significant positive output gaps (Figure 31), and current account imbalances were correspondingly large. This was not the case in 2019. Similarly, in 2007, relative asset valuations and leverage were much higher than in 2019 (Figure 32), illustrating the pre-GFC "boom" in financial markets.[1] Indeed, those countries with the greatest increase in NFC leverage prior to the GFC (largely driven by increased debt) experienced the greatest deterioration in balance sheet in the aftermath of the GFC (largely driven by a collapse in equity valuations). Given this backdrop, the relatively large valuation effects during the GFC are not surprising. Indeed, they were partly caused by a needed rebalancing of real and financial markets.

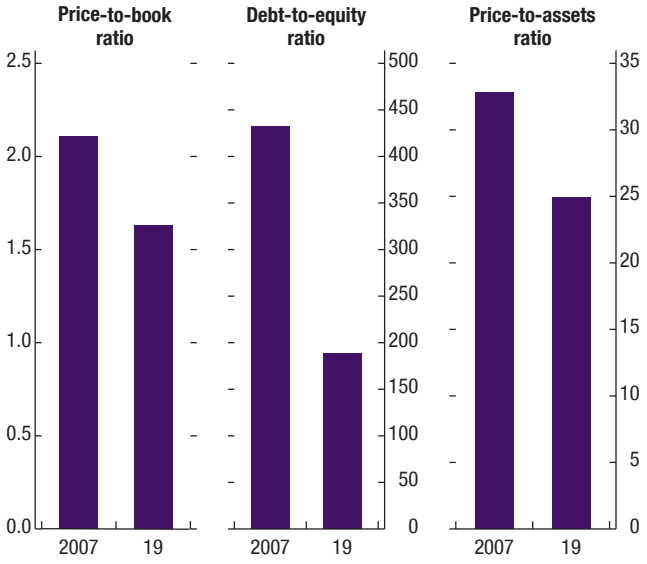
[1]Other imbalances and risks derived not necessarily only from the extent of leverage but also its composition, with sometimes large mismatches in foreign exchange liabilities and assets and reliance on external funding.

Figure 31. Output Gap
(Percent of potential GDP)



Source: IMF, *World Economic Outlook*.
Note: Data labels use International Organization for Standardization (ISO) country codes.

Figure 32. Key Equity Market Ratios

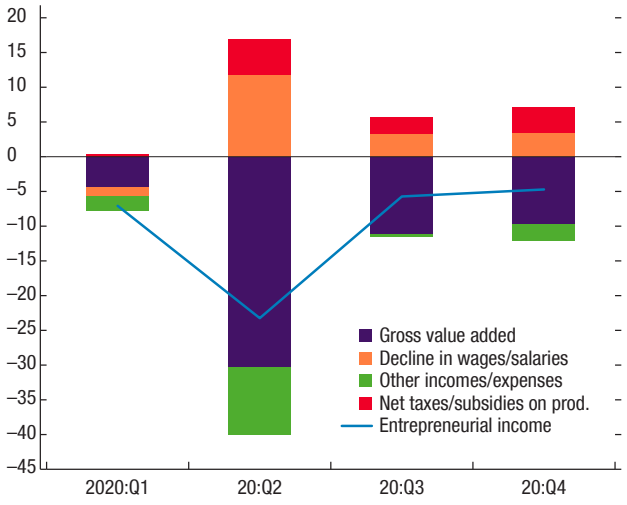


Source: Bloomberg Finance L.P.
Note: Ratios based on EURO STOXX 50 Index.

This difference in the nature of the shocks also had implications for policy. During the pandemic, short-time work schemes provided important grant-like support to firms, which helped to absorb the shock to revenues without substantially eroding equity buffers (Figure 33). But similar support would have been much more difficult and contentious in the GFC (Figure 34). Given the pre-GFC imbalances, adjustment was required in the real economy. Blanket support for firms and households would have impeded or delayed this necessary rebalancing, making it hard to justify on economic and perhaps political grounds too.

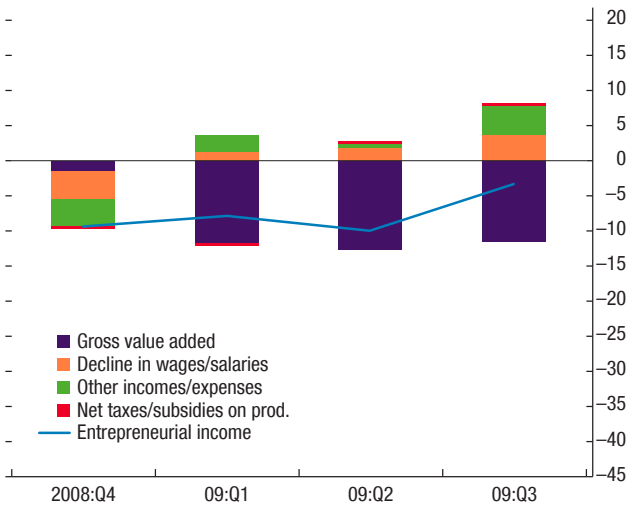
The role of dividend payments has also been different in the two crises. During the GFC, a major driver in the decline of household income was a fall in dividend payments and property incomes ("other income" in Figure 36). There was significant uncertainty over how permanent this decline might be, making blanket support expensive and inefficient. And compensating the owners of capital for losses could also have given rise to moral hazard problems in the future. These types of considerations have been somewhat different in the pandemic, when, on the one hand, there has been a perception that dividend declines would be temporary, while on the other, the suspension of dividend payments has been embedded in the design of some policy interventions, notably in the relief offered to banks.

Figure 33. Change in NFC Gross Profits, Pandemic
(Percent change, year over year)



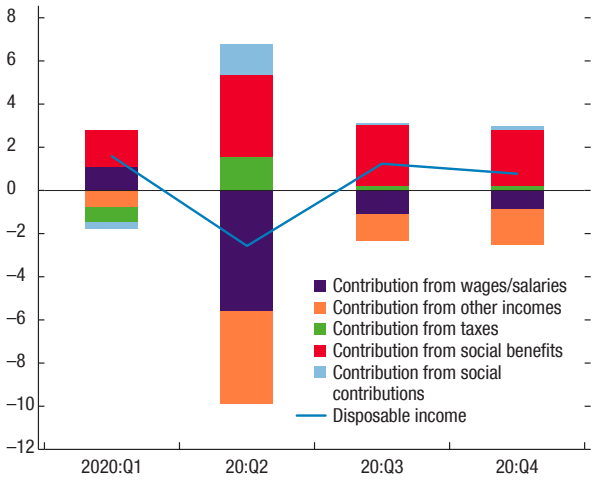
Sources: Eurostat; and IMF staff calculations.

Figure 34. Change in NFC Gross Profits, GFC
(Percent change, year over year)



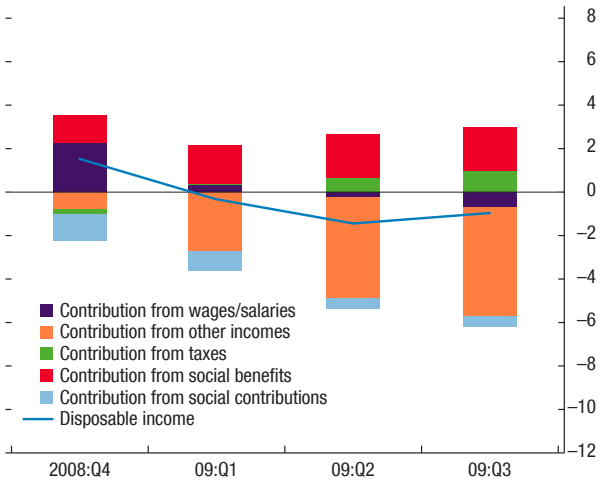
Sources: Eurostat; and IMF staff calculations.

Figure 35. Change in Household Disposable Income, Pandemic
(Percent change, year over year)



Sources: Eurostat; and IMF staff calculations.

Figure 36. Change in Household Disposable Income, GFC
(Percent change, year over year)



Sources: Eurostat; and IMF staff calculations.

CHAPTER

4 The Path Ahead

European households and NFCs were in a relatively strong financial position when the pandemic hit. Nearly a decade of deleveraging and growth in most of the region resulted in healthier balance sheets and stronger banking systems than had been observed prior to the GFC. However, the disruption in activity caused by the pandemic was unprecedented.

Declines in real production and hours worked in Europe far exceeded those observed in the GFC. In past crises, such violent changes to the flow of income and transactions would have caused severe damage to balance sheets. Liquidity and eventually equity would be severely eroded by drops in sales and income, and those firms able to borrow to stay in business would see debt climb. All of this did happen in 2020—but to a surprisingly moderate degree. By the close of the year, the footprint of the pandemic visible in the household and NFC aggregate balance sheets was much shallower than one might have anticipated in the spring of 2020.

The aftermath of a crisis may depend on whether the recession was caused by exogenous forces or the result of the unraveling of accumulated imbalances. Recoveries can be easier in the first type of crisis, once the exogenous influence is lifted. They are typically harder and slower during "balance sheet recessions," as painful deleveraging is a necessary component of the recovery. The pandemic crisis had, crucially, the potential to fall in either class. Detonated by an exogenous factor, it was deep and swift enough that firms and households caught in the middle were at risk of developing balance sheet imbalances at a very fast rate.

Preventing the pandemic crisis becoming a balance sheet recession is key to laying the foundations for a successful recovery in the years ahead. The data examined in this paper indicates that so far this has been accomplished to a significant degree in the large group of European countries examined in

this paper. These findings are consistent with estimates from studies based on firm-level data, such as those in Ebeke at. al. (2021), which suggests that remaining "solvency gaps" in the European nonfinancial corporate sector are moderate (that said, they also note that some industries have been badly affected and addressing solvency needs is essential to protect many vulnerable but viable firms).

A main reason why damage to private balance sheets has been contained so far has been the variety of policy interventions deployed by the public sector in the acute phase of the crisis in 2020, and which have been extended this year, helping large numbers of firms and households preserve their equity and liquidity without accumulating exceedingly large amounts of debt. The extensive use of fiscal and monetary policy space for the purpose of supporting firms and households is evident in the changes in the balance sheets of the general government and central banks. Income losses have translated into balance sheet changes not where they were first hit, but in the public sector. Government debt levels, in particular, show the scars of this crisis. Limited fiscal space in some countries might risk limiting this transfer of losses to the public sector going forward and result in larger private sector leverage and a more protracted recovery.

Importantly, public policy actions have largely prevented the migration of flow losses from the nonfinancial sector to the financial sector in the countries under analysis. Preventing major problems in the banking systems of these countries is another key outcome of the various policy actions in 2020. If banking system health can be reasonably preserved going forward, this too will help set the stage for a stronger and quicker recovery in the years ahead.

While progress with the vaccination campaigns suggests that mobility restrictions will be gradually lifted, the pandemic is not over yet. Risks to private sector balance sheets remain active as long as infections continue to prevent a full normalization of economic activity. The case for continued policy intervention in such circumstances is still strong to prevent a deterioration of private sector balance sheets during this initial phase of the recovery. The countries studied in this paper—supported by decisive monetary accommodation and, in the case of EU members, also by structural and "Next Generation" funds—retain policy space to continue providing support to firms and households while mobility restrictions remain necessary—that is, until a sufficiently high share of their populations is vaccinated.

The path ahead presents a delicate balancing act. As economic recoveries gradually take shape throughout Europe, policies will need to prioritize quality over quantity through more targeted support to the most affected sectors This is especially important given the pockets of acute vulnerability

within industries or household groups, which are apparent from firm or household-level studies.[1]

After COVID-19 is under control, uncertainty falls and the recovery is firmly underway, it will be possible to roll back emergency support measures. This process needs to be managed carefully, though, because hidden weaknesses may be uncovered as various support schemes, including debt service or tax moratoria, are phased out. Later, gradually, policy support should shift from providing lifelines toward facilitating the mobility of factors of production away from contracting industries in the post-pandemic environment.

Across Europe, the public sector has managed to absorb much of the pandemic-related economic losses, although with some variation reflecting the size of the shock to economic activity, the diversity of institutional frameworks and the heterogeneity in available policy space.[2] The decision to use public sector balance sheets in this crisis largely reflects the public sector's superior capacity to smooth the impact of the shock and manage its burden over time compared to the private sector. Heightened uncertainty and available fiscal space suggest that continued public support is still needed and can still be afforded. But public balance sheets are not without limits—the policy interventions during the pandemic represent significant additions to public debt, which in some counties came on top of already high debt ratios, raising some concerns for the medium term. The policy debate will in due course need to turn to the appropriate pace of public sector deleveraging. In some cases, this will just require the natural rollback of emergency support measures, without any need for deliberate consolidation efforts. In other cases, some fiscal effort will be needed. The post-pandemic policy debate will need to address both the pace of any potential fiscal consolidation and the appropriate evolution of central bank balance sheets. If policy remains focused, a painful restoration of private sector balance sheets—similar to the one needed post-GFC that held back consumption, investment, credit, and ultimately growth during much of the recovery—may not be needed in the years ahead.

[1]For example, estimates in Ebeke at. al. (2021) show that only a quarter of equity shortfalls (the extent to which firms' debt exceeds their assets) for micro and small businesses have been covered by policy support, compared to over two fifths for larger firms.

[2]The main institutional divide within our sample is membership in the eurozone. In addition, some countries simply apply the fiscal rules in the Stability and Growth Pact (for example, Portugal), which were relaxed during the pandemic, whereas other countries had less-flexible rules, such as the constitutional debt ceiling in Poland, which influenced the operational design of the policy support programs.

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