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Speaking notes for EC/OECD GDP-linked bonds workshop
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There have already been a lot of EU-centered quantitative presentations, so I will focus my remarks on some broader considerations. There is, however, some data on EU countries in the Annex that was circulated, as well as information on three possible designs of GDP-indexed bonds to consider: the linker, the floater and the extendible. To EU sovereigns interested in simulating the impacts of shocks under these three designs, I would recommend exploring the Fund's Excel-based toolkit which is available on our [external website](#).

I have three points to make that will hopefully complement the fruitful discussion thus far.

My **first point** is regarding some of the **less-discussed/internalized benefits and costs of GDP-indexed bonds**. On benefits, I wish to talk about three:

1. *Expanded diversification opportunities for domestic and international investors.* Domestic pension funds with wage-linked obligations may welcome the exposure to average earnings offered by GDP (Uruguay is a current example of this). Retail savers seeking to preserve both absolute and relative purchasing power over long horizons may also find these instruments more attractive than vanilla bonds. In the European context, the large euro area investor base provides ample opportunity for cross-border risk sharing and fits naturally within the EU's existing Capital Markets Union agenda.
2. *Improved pricing of sovereign risk.* Fixed income investors often do not pay sufficient attention to sovereign default risk in normal times, and this results in an underpricing of sovereign risk. We believe that if fixed income investors bought instruments like GDP-indexed bonds where the returns vary with the economic out-turn, they are likely to look more closely at individual country fundamentals and better discriminate between countries.
3. *Discovery of market-based macroeconomic expectations on nominal or real GDP growth, depending on design.* This is akin to the benefit of being able to infer inflation expectations from inflation-indexed swaps. A market-based measure for GDP growth expectations could be very helpful for planning and risk management by agents whose fortunes are tied to GDP. These agents could include private businesses, local and municipal governments with hard budget constraints and the like.

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On **costs**, I want to mention the danger of excessive risk migration to the private sector, particularly the domestic financial sector. This risk could be exacerbated to the extent that investor demand for GDP-indexed bonds is pro-cyclical. For instance, if investors accumulate these bonds at the peak of the cycle, they would likely suffer losses in the downturn, and these could have systemic consequences. There is also the concern that markets will strip the GDP risk from the bonds and trade it separately, making it difficult to track which entity's balance sheet ultimately bears the GDP risk. Regulators would need to remain alert to avoiding a situation akin to that faced in the aftermath of the Global Financial Crisis.

My **second point** relates to the **institutional pre-requisites for the issuance GDP-indexed bonds**.

1. First, because GDP-indexed bonds are complex, technical capacity at debt management offices would need to be high, both to explain the instruments to investors; and to formulate credible issuance plans in the face of the more pro-cyclical investor demand. This condition is likely satisfied for most of Europe's sophisticated debt management offices. However, this may not be a sufficient condition. Debt managers will likely need clear mandates from their governments to issue these instruments. This includes understandings on how to handle/share the higher cost of these instruments, and integrate the issuance of these instruments within the overall portfolio (to avoid any adverse impact on the liquidity of established benchmarks).
2. The second institutional requirement relates to data integrity. Independent statistical agencies will be indispensable for the success of GDP-indexed instruments. In the European context, the pre-existence of a trans-national statistical agency, Eurostat, should generally limit concerns about data quality and manipulation. And the London termsheet provides a good way to deal with these issues as well. Still, in countries where GDP data is subject to large revisions or there are concerns about manipulation, consideration could be given to using exogenous proxies for GDP, such as trading partner GDP. Our analysis has shown that this variable is fairly highly correlated with own-country GDP for most major economies and could help attenuate concerns about GDP data.

Finally, my **third point** is about *optimal design of a GDP-indexed bond in a currency union*.

- In our 2017 paper, we identify three possible benchmark designs: linker, floater and extendible, and we have an excel tool on our website that can be used to study the impact of GDP shocks on debt and GFN under each of these designs. Our contacts with markets revealed stronger support for the floater design, where the principal is

fixed and the coupon varies with the GDP growth rates. This design also appears most amenable to favorable treatment by sovereign rating agencies.

- Second, most papers, thus far, have assumed that the state variable should be the country's own GDP or GDP growth. In a currency union, where monetary policy can respond to *common* shocks, a case could also be made to use the idiosyncratic part of a country's growth rate as state variable. Thus, say if country X issues these bonds, the payout could be linked to the difference between country X's GDP growth rate and the currency union GDP growth rate. This will provide country X with more direct insurance against *country-specific* shocks. Also, it may be possible to issue these as lower risk premia since the correlation between the return on these instruments and economic conditions in other member countries would generally be lower, or even negative, providing greater diversification to investors. Finally, as my ESM colleague Aitor Erce kindly noted, if all currency union members issue such bonds, it should gradually help align the member countries' cycles, as each country would be making countercyclical payments on these bonds that have the effect of attenuating the idiosyncratic part of the cycle.

Annex: Characteristics of EU sovereigns and benchmark SCDI designs

Table 1. Characteristics of EU economies¹

Country groups	Debt/GDP (Total Debt in € bn) ²	Gross Financing Needs (% of GDP) ³	Standard deviations ⁴				memo: debt in foreign currency (%) ⁵
			Change in debt/GDP (pp)	Real interest rate-growth differential	Primary Balance (% of GDP)	Exchange rate depreciation (%, vs USD)	
EU average	72 (12,624)	11	4.6	4.2	2.6	...	13
Euro-area members	79 (9,823)	11	5.0	4.4	2.7	...	4
Austria	84 (295)	9	3.3	1.8	1.4	...	0
Belgium	106 (447)	18	3.6	1.7	2.8	...	0
Cyprus	107 (19)	5	7.8	4.3	2.8	...	5
Estonia	9 (02)	1	1.2	7.8	1.5	...	0
Finland	63 (136)	11	3.5	3.0	3.6	...	0
France	97 (2,151)	9	3.1	1.7	1.7	...	3
Germany	68 (2,140)	14	3.6	2.6	1.7	...	0
Greece	181 (315)	17	10.2	5.3	3.1	...	3
Ireland	73 (201)	8	12.3	7.1	8.7	...	5
Italy	132 (2,218)	19	3.8	2.0	1.3	...	0
Latvia	41 (10)	6	5.3	12.2	2.1	...	16
Lithuania	40 (16)	7	4.3	8.8	2.8	...	27
Luxembourg	21 (11)	5	2.2	4.3	1.9	...	0
Malta	58 (06)	8	3.7	3.0	1.8	...	0
Netherlands	62 (434)	6	4.2	2.1	2.4	...	1
Portugal	130 (241)	18	5.6	2.7	2.4	...	9
Slovakia	52 (42)	8	4.2	4.4	2.5	...	6
Slovenia	79 (32)	25	6.0	4.5	3.2	...	0
Spain	99 (1,107)	17	6.7	4.0	4.6	...	0
Non-Euro area AEs	51 (2,386)	8	3.7	2.5	2.5	...	19
Czech Republic	37 (65)	6	2.5	3.1	1.9	...	45
Denmark	38 (105)	8	4.0	2.6	3.1	...	2
Sweden	42 (195)	10	3.6	2.6	2.1	...	29
United Kingdom	88 (2,022)	10	4.6	1.7	3.1	...	0
Non-Euro area EMs	62 (414)	13	3.5	5.3	1.8	67.0	48
Croatia	83 (38)	16	4.0	6.4	1.2	230.0	76
Hungary	74 (84)	19	3.2	3.3	2.5	12.4	29
Poland	54 (228)	9	2.8	2.9	1.5	11.8	35
Romania	38 (63)	7	4.1	8.7	2.1	13.8	52

Sources: World Economic Outlook database; Eurostat and Fund staff calculations.

¹ Figures for each group are simple averages.

² End-2016 debt.

³ Average of 2016 data and projections for 2017.

⁴ Standard deviations calculated using annual data for 2000-15.

⁵ Based on end-2016 General Gov debt (where available), otherwise end-2016 CG debt.

Table 2. Three possible benchmark designs for SCDIs

Benchmark / Features	(i) "Linker"	(ii) "Floater"	(iii) "Extendible"
Currency	Local currency	Local or foreign currency	Local or foreign currency
Example of state/trigger variable	Level of nominal GDP, level of a commodity price index	Real GDP growth rate, commodity price change, or a 'proxy' variable such as trading partners' real GDP growth	Discrete triggers linked to: large adverse movements in external demand, commodity prices, goods exports, financial market indices, to natural or public health disasters, or 'proxy'
Adjustment mechanism	Principal linked to GDP. Coupon varies somewhat, as it is a fixed percentage of this principal. Principal may also have to be floored to suit the preferences of some investors.	Coupon linked to the growth of GDP, but with a floor of zero. Principal is fixed. Coupon may vary a lot, but could be capped.	Pre-defined extension of the principal payment by 1-3 years. Possible increase in coupon if triggered
Tenor	> = 5 years, including perpetuity bond	> = 5 years	Varies depending on the trigger and extension period
Main purpose	Stabilizes debt/GDP over the economic cycle and in tail events. Supports counter-cyclical policies and reduces default risk	Provides debt service relief during recessions, but solvency relief is limited by coupon floors	Provides substantial liquidity support during times of distress. No direct impact on the debt level
Target issuers	Primarily AEs and EMs with established local currency markets	All economies, but especially EMs with limited access to capital markets	EMs with limited access to capital markets; countries vulnerable to natural disasters; commodity exporters
Target investors	Domestic pension funds and long-term investors; foreign investors	Mainly foreign investors seeking yield	Investors with little liquidity risk; yield and diversification investors; insurers and reinsurers (esp. for disaster insurance)
Example			

Further information, and a link to the Fund's SCDI calculator, is available at:
<https://www.imf.org/en/About/Key-Issues/state-contingent-debt-instruments>