Credit Policy as Fiscal Policy: Evaluating the Effects of International Credit Support Programs During COVID-19

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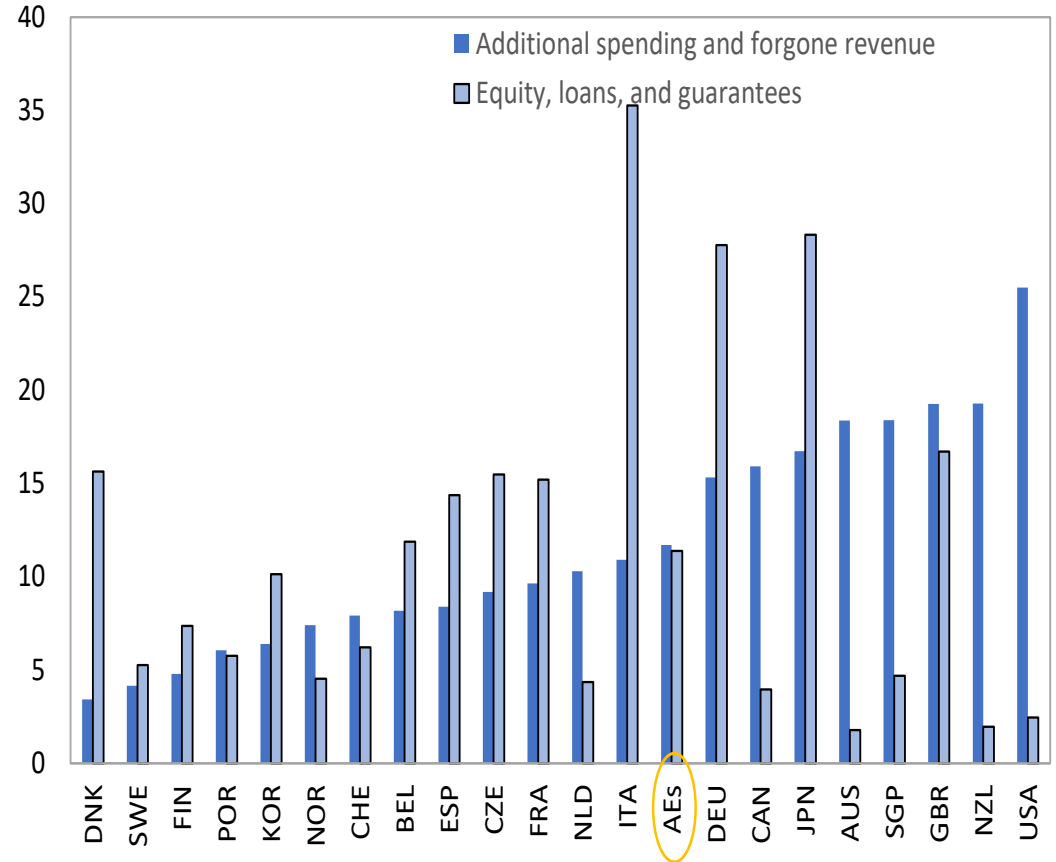
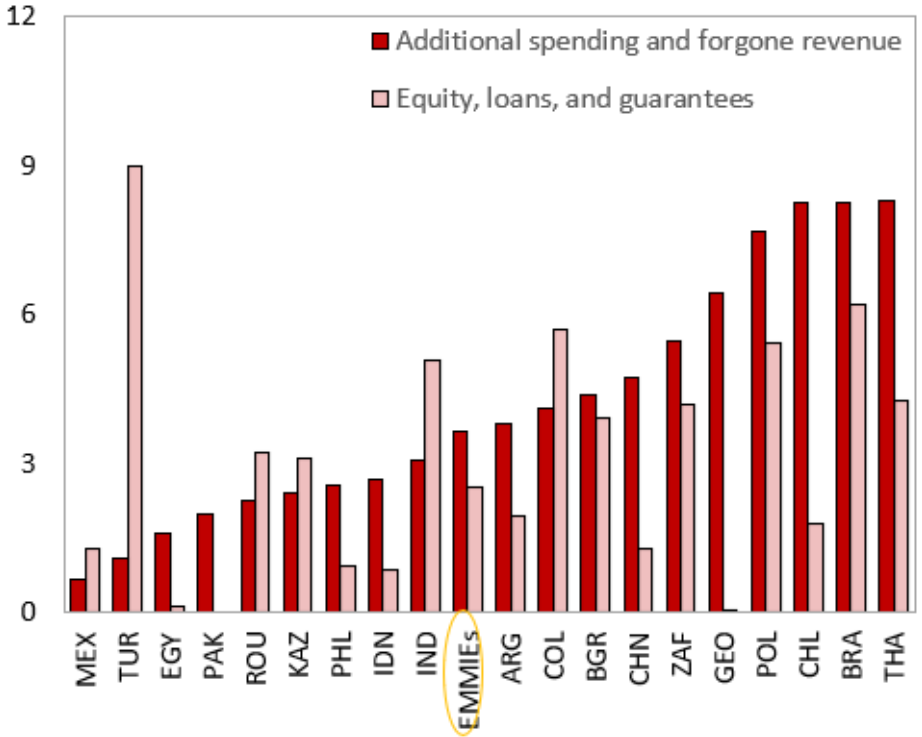
Motivation

- Advanced economies instituted large-scale credit support programs to ensure a continued flow of credit to businesses during COVID-19. (Emerging countries did this also, but to a more limited extent.)
- When viewed in terms of the total "***credit envelope***" of support made available, the envelope exceeds the magnitude of traditional fiscal support in some countries (IMF Fiscal Monitor, April 2020).

Announced Fiscal Measures during COVID-19 in Advanced Economies (as of October 2021, as a share of 2020 GDP)



Announced Fiscal Measures during COVID-19 in Emerging Economies (as of October 2021, as a share of 2020 GDP)



Source: Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic (IMF) updated October 2021.

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- When viewed in terms of the total "***credit envelope***" of support made available, the envelope exceeds the magnitude of traditional fiscal support in some countries (IMF Fiscal Monitor, April 2020).

- An in-depth study of costs and benefits relative to other fiscal measures and a cross-country comparison of structures and outcomes are missing.
  - When is credit support effective?
  - How do countries' credit programs compare in terms of generosity, take-up and size?
  - How to evaluate costs of credit and non-credit assistance so they are most comparable? What were those costs?
    - Ex ante and long-run risk exposure
  - How to assess the fiscal stimulus and fiscal multiplier effects of credit?

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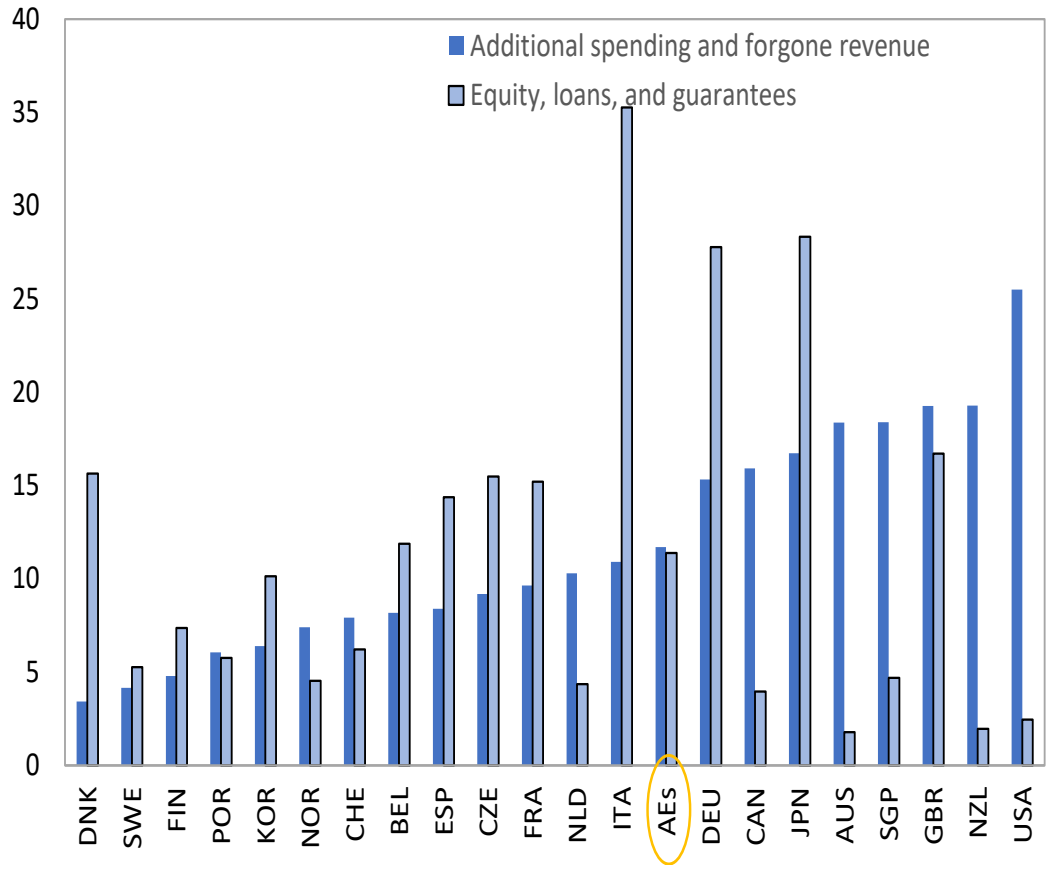

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In this project, we suggest some answers to these questions by:

(1) Applying a fair-value approach to measuring **the cost of credit support**, and using it to assess the size and drivers of **credit subsidies**.

(2) Apply fiscal multipliers to estimates of incremental borrowing in order to **estimate stimulus** and **cost-effectiveness**, following Lucas (2016)

Country coverage: credit guarantee schemes in five largest countries in Europe (France, Germany, Spain, Italy, United Kingdom), Japan, and USA.

Data: Collect details of each loan program from the official sources, cross-checked with country desks, country authorities and IMF Fiscal Policies Database, complemented by the Bruegel report (2021) and other public information

Take-aways

1. There was **wide variation in the terms and generosity** of different programs
   - Relatively generous terms for SMEs
   - Programs aimed at larger firms less attractive by design
   - Significant subsidies accrued to originating banks as well as to borrowers

2. .**Take-up was often much smaller than the announced envelope** and varied widely across programs even within a single country, reflecting significant variation in program parameters.

3. There were **sizable cross-country differences** in the subsidy component of credit programs, even among EU countries sharing a common "Temporary Framework."
   - **Average subsidy element across countries is 42 percent** (or 36 percent excluding the US Paycheck Protection Program) of principal.
   - Take-up is not strongly correlated with subsidy element, although positively related. Many factors seem to matter.

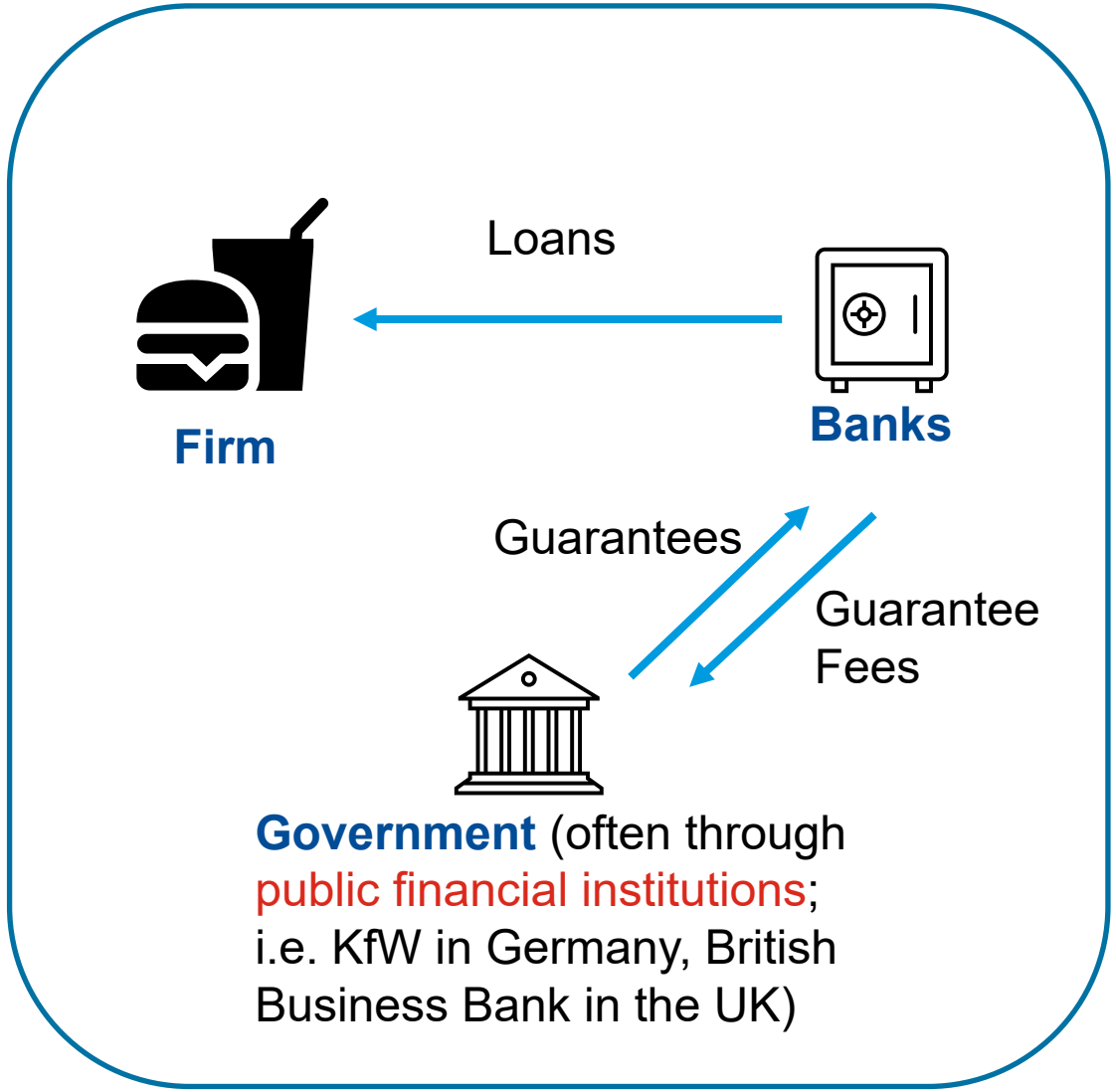
4. Estimates of **stimulus effects and fiscal multipliers show wide variation**, and are tricky to assess
   - **Low fiscal multipliers for programs** like U.S. PPP **with low or no expected recoveries and likely low MPC** by borrowers
   - Fiscal multipliers in excess of traditional fiscal policy for more disciplined programs (e.g., meaningful screening) that improved access to credit

5. **Significant long-run fiscal risk at program inception**, but *ex post* economic recovery suggests remaining balances outstanding pose limited risk to government solvency

Major Credit Support Programs

Country	Scheme	Envelope (LCD)	Envelope (USD)	Borrower Types
US	US Paycheck Protection Program (PPP)	799 Billion USD	799 Billion USD	Small Enterprises
	Main Street Lending Program	600 Billion USD	600 Billion USD	SMEs
	Credit Support for Airlines and Critical Industries	46 Billion USD	46 Billion USD	Airlines and Critical Industries
Japan	Special Interest Program (実質無利子・無担保融資等)	99 Trillion Yen	937 Billion USD	SMEs
	Safety Nets for Financing Guarantees No.4 and No. 5			SMEs
Germany	KfW Instant Loans	357 Billion euro	407 Billion USD	SMEs
	KfW Entrepreneur loans			Firms older than 5 years
	KfW Direct Participation Syndicated Loans			Medium-sized and large firms
	KfW ERP Start-up Loan			Firms younger than 5 years
	WSF	400 Billion euro	457 Billion USD	Large firms
UK	Coronavirus Business Interruption Loan Scheme (CBILS)	330 Billion pound	424 Billion USD	SMEs
	Coronavirus Large Business Interruption Loan Scheme (CLBILS)			Large firms
	Bounce-Back Loan Scheme (BBL)			SMEs
	Covid Corporate Financing Facility (CCFF)			Large investment grade firms
France	PGE	300 Billion euro	342 Billion USD	All firms affected by COVID-19
Italy	Fondo Centrale di Garanzia PMI	>100 Billion euro		Self-Employed, SMEs
	Public Guarantee for Debt Moratorium	No limit (155 Billion Euro maximum take-up in March 2020)		
	SACE Garanzia Italia	200 Billion Euro	228 Billion USD	Medium and large companies
Spain	ICO loan guarantees	140 Billion Euro	160 Billion USD	SMEs

A Typical Credit Guarantee Program introduced during COVID-19

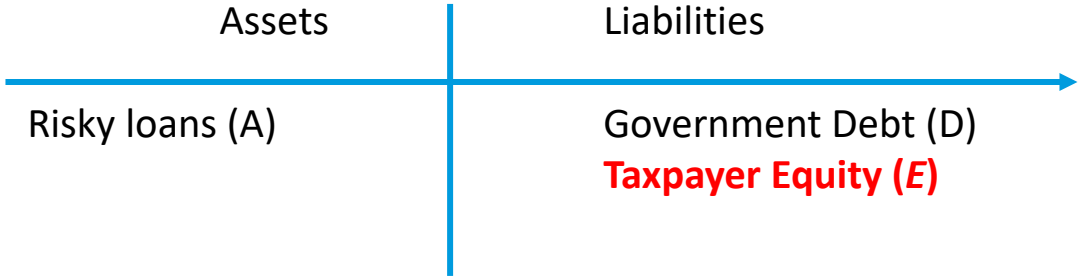


Gov’t cost of capital and the valuation of credit support

- **Main points:**
  - **Market prices** should be the basis for estimating the **cost of capital** and **discount rates** for both the gov’t and private sectors
    - A **fair value** framework can be used to evaluate subsidies for gov’t direct loans, loan guarantees, and other gov’t credit support
    - Fair value provides **grant-equivalent** subsidy estimates that create a level playing field between cost estimates for credit and non-credit assistance
      - An accrual estimate; accounts or effects of time and risk on present value
      - Distinction between “fair value” and “market value” under distressed market conditions
  - **Governments systematically understate their cost of capital** because they treat market risk as costless ⇔ discounting at own borrowing rate
  - This causes **official cost statistics (budget estimates)** to **understate subsidies**
    - Problems are exacerbated by **cash** accounting and/or **off-balance sheet** accounting
  - Proposed solution is to harmonize government valuation methods with fair value accounting principles
  - It is feasible to adopt a fair value approach, although some challenges
    - See, e.g, D. Lucas, “Valuation of Government Policies and Projects,” *Annual Review of Financial Economics*, 2012 and references therein

Why a government's cost of capital is not its borrowing rate

- Market value gov't balance sheet for **risky loans** with required return "r_A"



- Debt earns gov't rate "r_f". Rate is low because of taxpayer backing; it is unrelated to the risk of loans made.
- **Taxpayers & public are *de facto* equity holders in risky gov't investments**—they absorb any gains or losses. If they earn less than fair return on the risk capital that is provided, there is a subsidy
- Hence, the government's cost of capital is logically a weighted average of the cost of debt and equity (as for a private sector firm).
- As for a firm, the cost of capital is specific to the risk of what is being funded

- Key relations in finance:

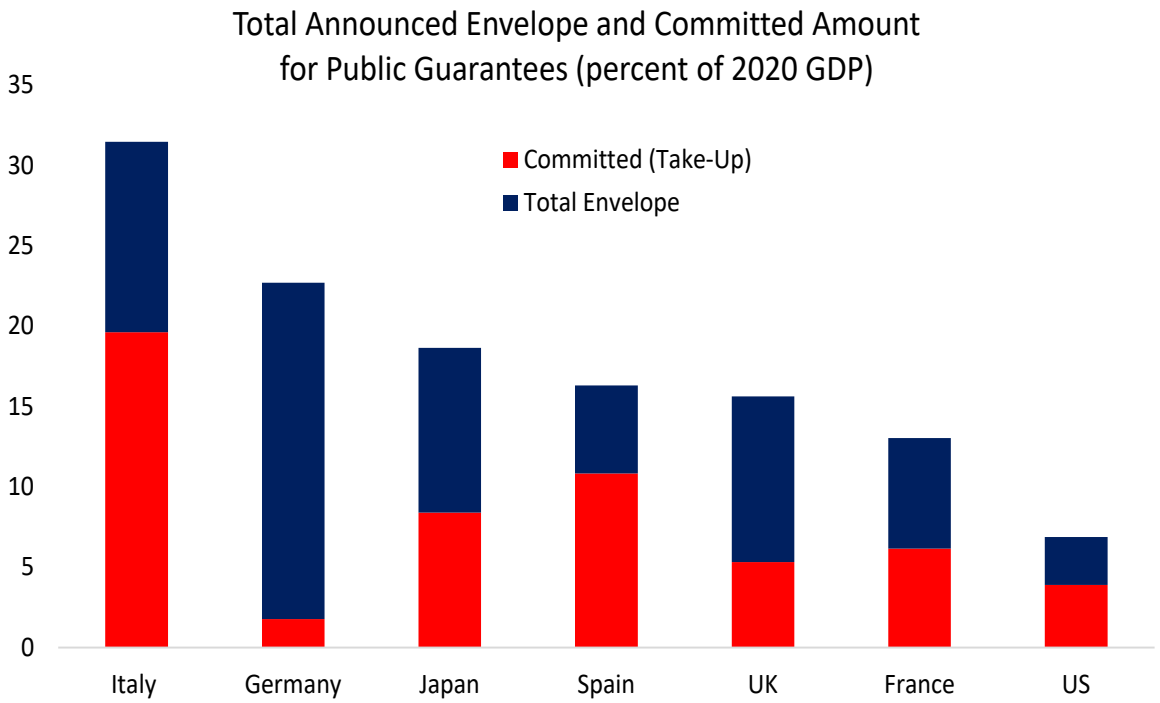
$$E(r_A) = r_f + \beta_A(E(r_m) - r_f)$$
$$= \frac{D}{V}E(r_D) + \frac{E}{V}E(r_E)$$

Common Program Features

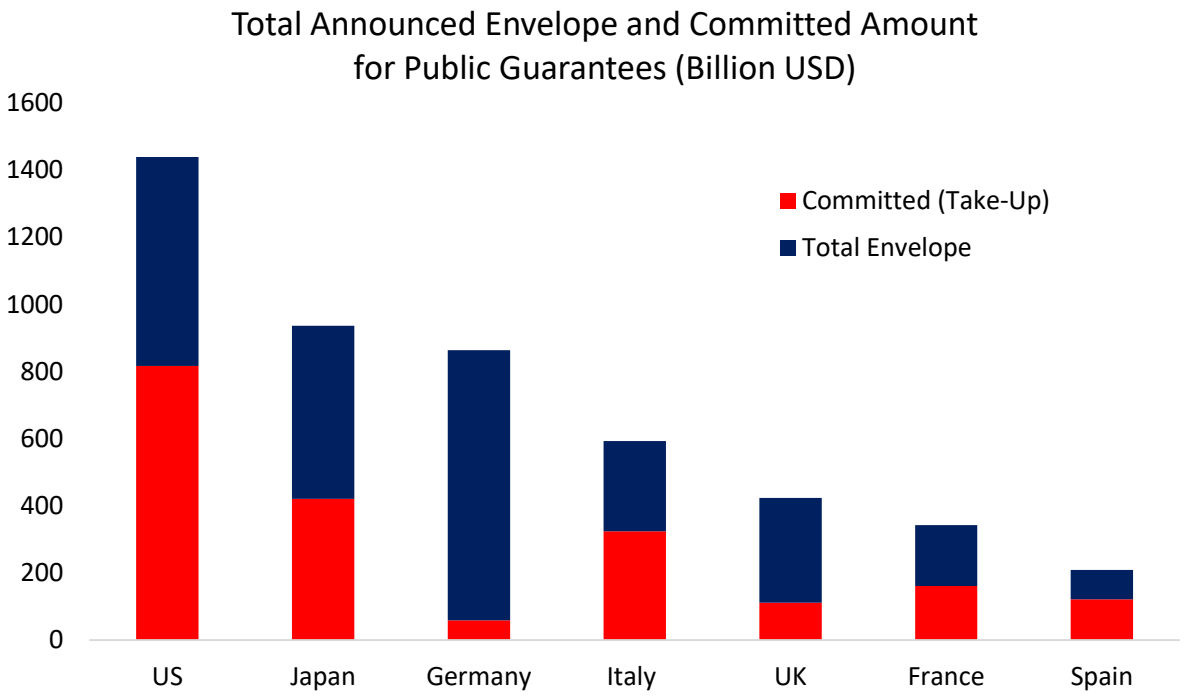
- Tiering of government guarantee coverage by firm size
  - Guarantee coverage of SMEs highest
    - Some very generous programs for small businesses offered full (100%) guarantees, long maturity, no principal payment for first years, little or no screening
  - Large and mid-cap enterprises – credit risk assessment required by banks
  - Maximum loan amount is generally capped

- Various concessions added to the subsidies; may not be comparable private sector loans
  - Pre-amortization or grace period
    - Pre-amortization period: 1-year is common. France later extended to 2 years; 3-year pre-amortization Italy SACE; 5-year grace period for Japan Safety Net Guarantee
  - Guarantee fee waivers
  - Long maturities relative to typical bank lending commitments
  - No collateral; limited screening
  - Lenders were paid to participate

Envelope and Take-Up



Note: Italy includes public debt moratorium, with the take-up in March 2020. The outstanding public moratorium is one fifth of the March 2020 level. Take-ups are updated on January 11, 2022.

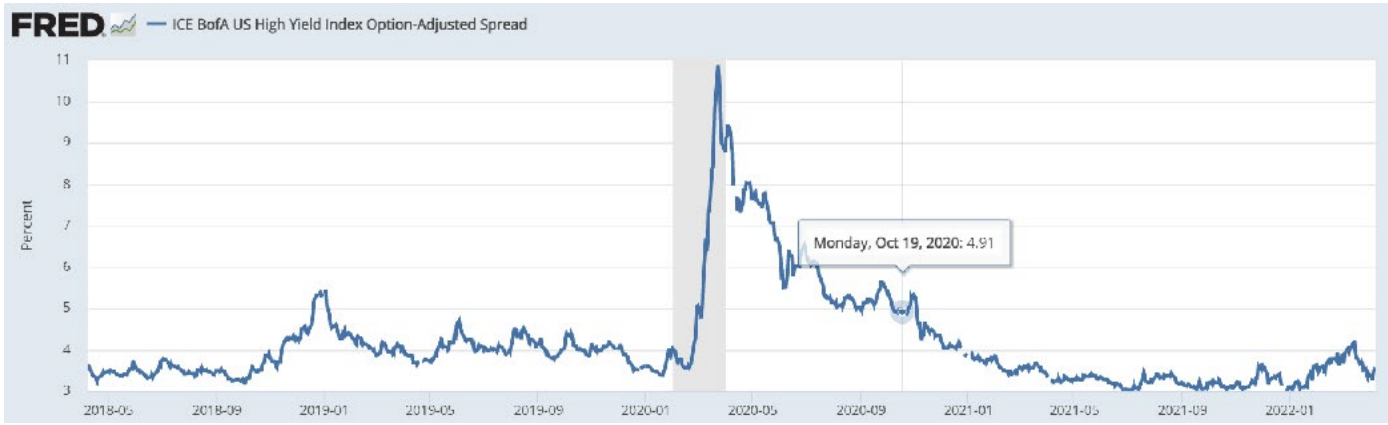


Note: Italy includes public debt moratorium, with the take-up in March 2020. The outstanding public moratorium is one fifth of the March 2020 level. Take-ups are updated on January 11, 2022.

- Average take-up ratio (% of envelope) is 42 percent, with the highest take-up in Spain and US (58% and 57%) and lowest in Germany (7%).

Subsidy estimation

- Subsidy is difference between PV of cash flows from and to government
- Loan guarantee is equivalent to being short risk-free loan and long risky loan
  - True for full or partial guarantees, as long as *pari passu*
- Fair value estimates implemented by discounting *promised* cash flows at *rates charged by banks*
  - Depends on fewer assumptions than alternative of discounting expected cash flows at expected risk-adjusted return
    - Reduces data requirements
    - Easier to implement for non-specialist government analysts
  - Captures some of the transactions costs that are rolled into bank rates => more complete cost measure
  - Includes guarantee fees, amortization schedule details, …
- Comparison rates
  - Reported/offered by lenders
  - Credit card rates used as reference for some SME loans when no other information
  - Credit rating spread data also a reference point
  - Did not use rates during March-May 2020
  - Cash *from* gov't discounted at Treasury rates
  - Consistent assumptions across similar programs



Two spread-based approaches to valuing credit sensitive securities

- **Alternative 1: Discount expected cash flows at risk-adjusted discount rates:**
  - Default rate d
  - Recovery rate g
  - Expected return r
  - Coupon rate c
  - Maturity T
  - face value 1;

$$P = \sum_{i=1}^{T} \left((1-d)^{i-1} \frac{(dg(1+c)+(1-d)c)}{(1+r)^i} \right) + \frac{(1-d)^T}{(1+r)^T}$$

P = price per $1 face value

- $(1-d)^{i-1}$ is the probability that the bond is still outstanding at time i

$\frac{(dg(1+c)+(1-d)c)}{(1+r)^i}$ is the pv of the expected coupon plus recovery at time i

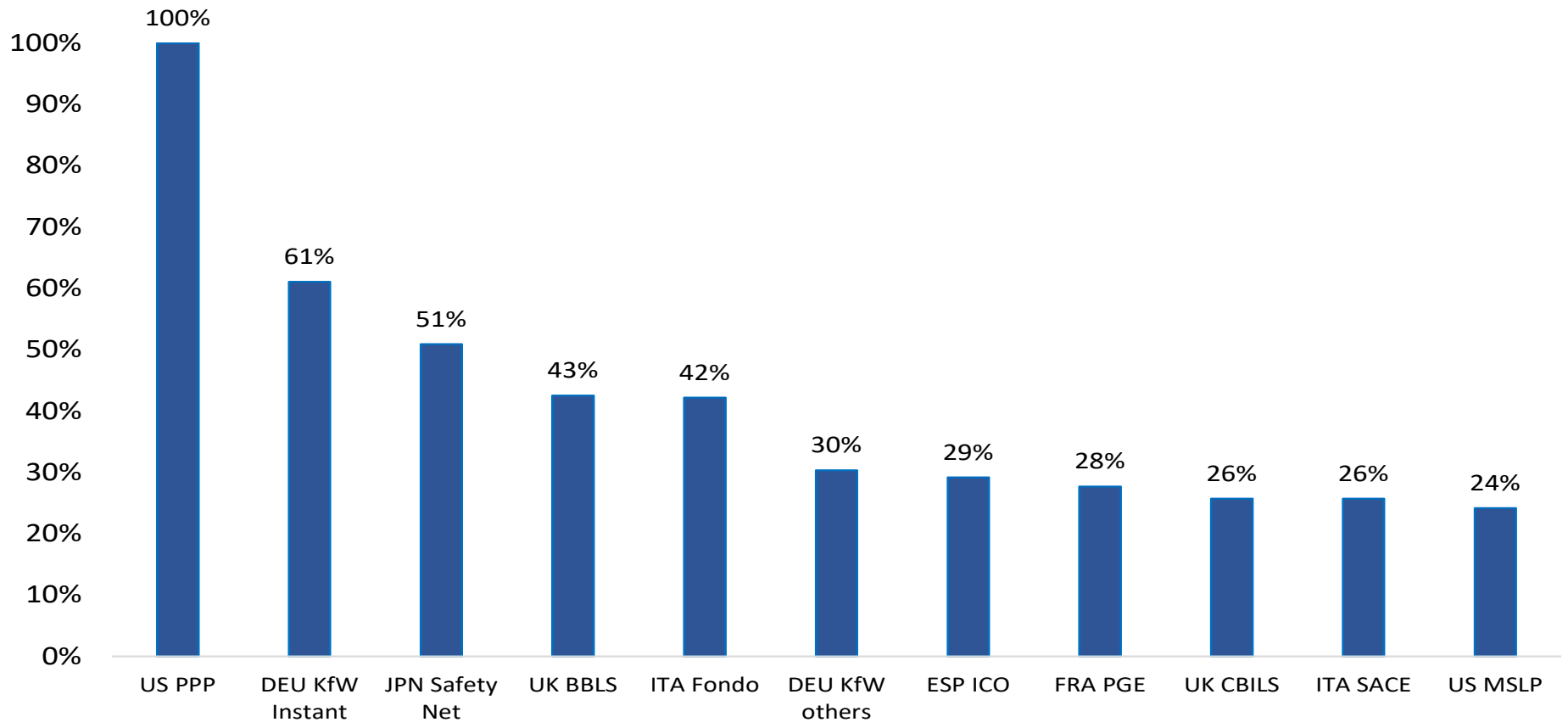
- $\frac{(1-d)^T}{(1+r)^T}$ is the pv of the expected principal payment at time T

- **Alternative 2: Discount promised cash flows at quoted yields:**

$$P = \sum_{i=1}^{T} \left(\frac{c}{(1+y)^i} \right) + \frac{1}{(1+y)^T}$$

Estimated Total Subsidy

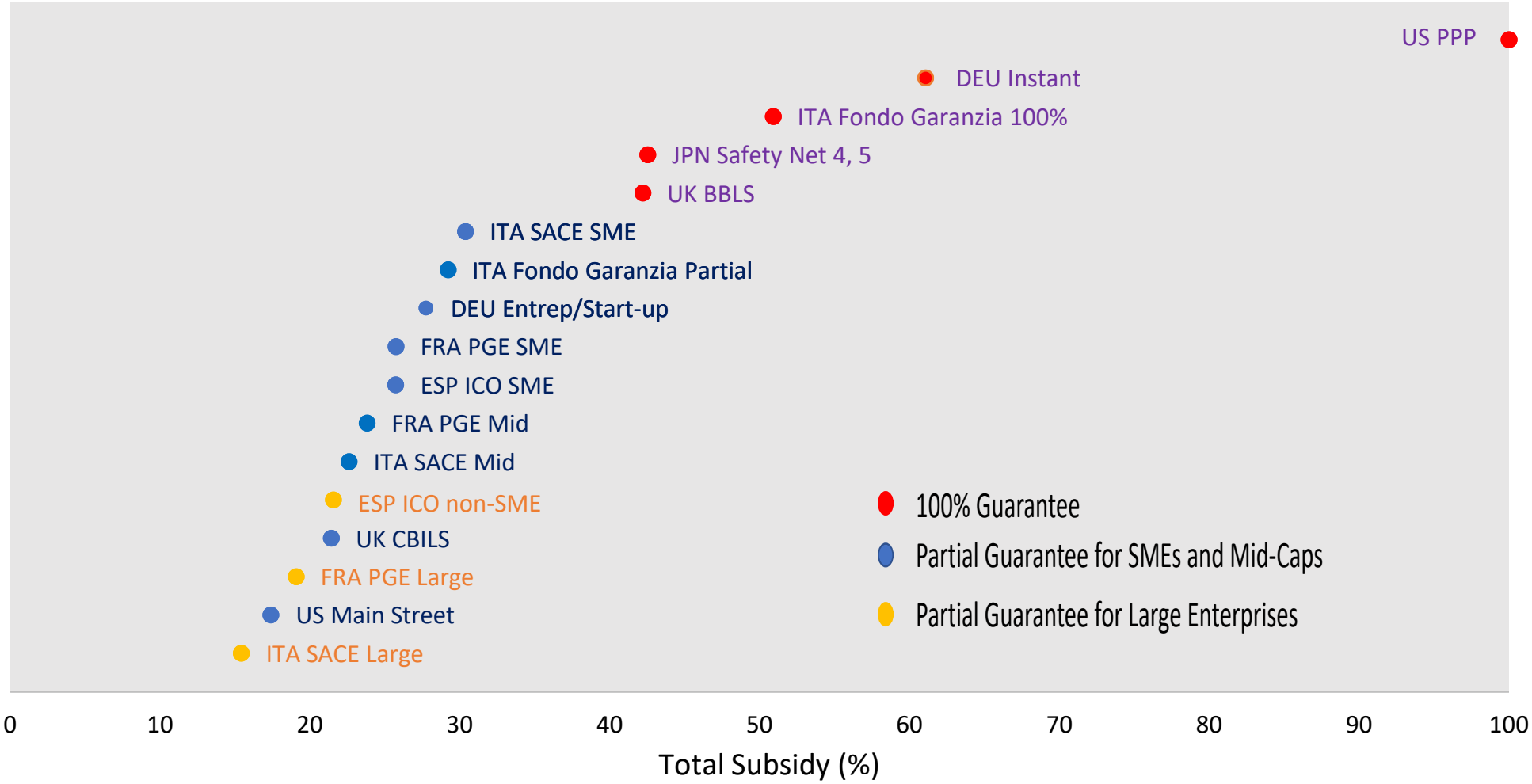
(present value of subsidies over life of loan)/(loan principal at origination)



- Average subsidy element: 42 percent (36 percent excluding US PPP)

Estimated Total Subsidy

- Schemes with full guarantee have the highest subsidy element, from 40 to 100 percent.
- Schemes with partial guarantee for large enterprises have the lowest subsidy element, from 12-20 percent.
- As a corollary, government credit guarantee programs were more generous for smaller firms.

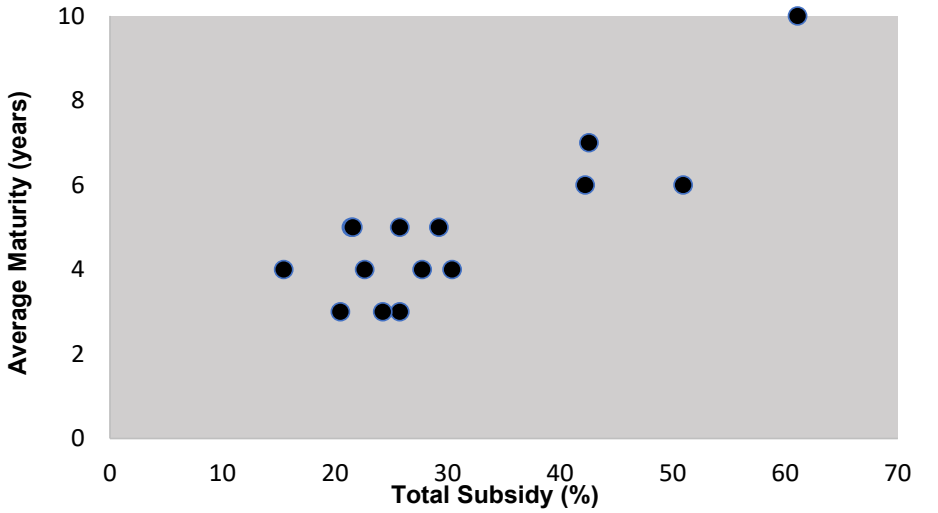


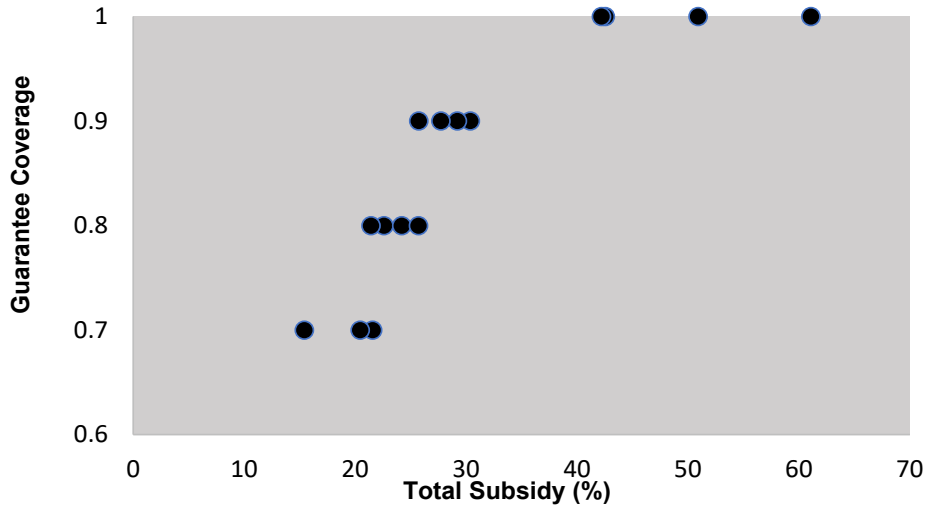
Subsidy elements had different drivers for borrows and lenders

- Borrower subsidy is strongly correlated with guarantee coverage, maturity, and rate concessions.
  - Borrow subsidies account for > 85% of total subsidies

- Lender subsidy, depends on guarantee fees, borrower rates (mandated vs. zero-profit), maturity, responsibilities, etc.
  - Reimbursements for normal lending costs (origination, servicing, …) were not treated as subsidies

Program parameters and subsidy element





	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Totalsubsidy	Totalsubsidy	Totalsubsidy	Totalsubsidy	Totalsubsidy	Totalsubsidy
average maturity	0.0591***					0.0373***
	(0.0102)					(0.00793)
years of pre-amortization allowed		0.0413				0.00664
		(0.0282)				(0.0141)
Share of guarantee coverage			0.979***			0.721***
			(0.161)			(0.151)
Government borrowing rate				-3.308		-2.849
				(6.689)		(2.235)
Fully guaranteed borrwer rate					-7.623**	2.800
					(3.261)	(2.164)
Constant	0.0159	0.236***	-0.535***	0.311***	0.539***	-0.590***
	(0.0537)	(0.0582)	(0.139)	(0.0346)	(0.103)	(0.170)
Observations	15	15	15	15	15	15
R-squared	0.719	0.142	0.740	0.018	0.296	0.929

Note: Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Stimulus and "bang for buck" estimates for credit support

- **How much macro-impact did credit guarantee schemes have, and are they cost-effective?**
  - See also, D. Lucas "Credit Policy as Fiscal Policy," Brookings Papers on Economic Activity, Spring 2016

- Logic of stimulus estimates:
  - Credit subsidies cause incremental borrowing
    - Increase due to intensive margin (cheaper funds => more demand, an elasticity effect)
    - Increase due to extensive margin (reduced credit rationing with gov't guarantees)
  - Incremental borrowing leads to incremental spending
  - But some borrowed funds are saved rather than spent
  - As for traditional fiscal stimulus, higher marginal propensity to consume (MPC) for some cash recipients than for others

Table 3. Ranges for U.S. Fiscal Multipliers

	Estimated Multiplier	
Type of Activity	Low estimate	High estimate
Purchaess of goods and services by the federal government	0.5	2.5
Transfer payments to state and localgovernments for infrastructure	0.4	2.2
Transfer payments to state and local governments for other purposes	0.4	1.8
Transfer payments to individuals	0.4	2.1
One-time payments to retirees	0.2	1
Two-year tax cuts for lower- and middle-income people	0.3	1.5
One-year tax cut for higher-income people	0.1	0.6
Extension of the first-time homebuyer credit	0.2	0.8
Corporate tax provisions primiarly affecting cash flow	0	0.4

Source: CBO (2011b)

Estimating stimulus and bang-for-buck

- $\Delta B = dA + S(dB/dS) - C$
  - ΔB = incremental borrowing
  - dA = incremental borrowing on extensive margin
  - $S(dB/dS)$ = incremental borrowing on intensive margin
  - C = crowding out of other private lending
- A fiscal multiplier approach translates ΔB into ΔY

$$\Delta Y = \sum_i \Delta b_i \mu_i - C\mu_C$$

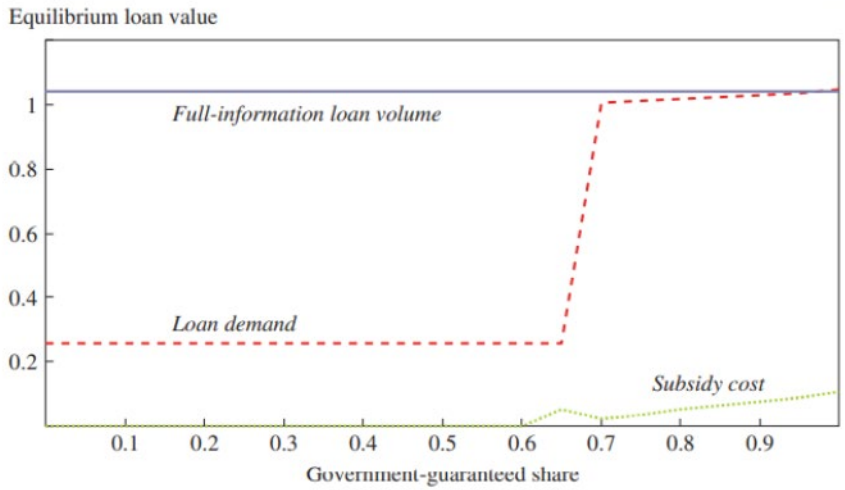
  - ΔY is the change in aggregate output
  - Δb_i is total incremental loan volume in program *i*
  - μ_i is the corresponding output multiplier

Bang-for-buck = ΔY/(fiscal cost)

Stimulus and bang-for-buck estimates for credit support

- How much macro-impact did credit guarantee schemes have?
- Potential for higher impact than traditional fiscal policy when modest subsidies greatly expand extensive margin and borrowers likely to spend and not save (e.g., some EU programs)
- But low multiplier when high subsidy element and well-off recipients with low MPC (e.g., U.S. PPP)

Figure 1. Loan Demand and Subsidy Cost as a Function of the Government-Guaranteed Share



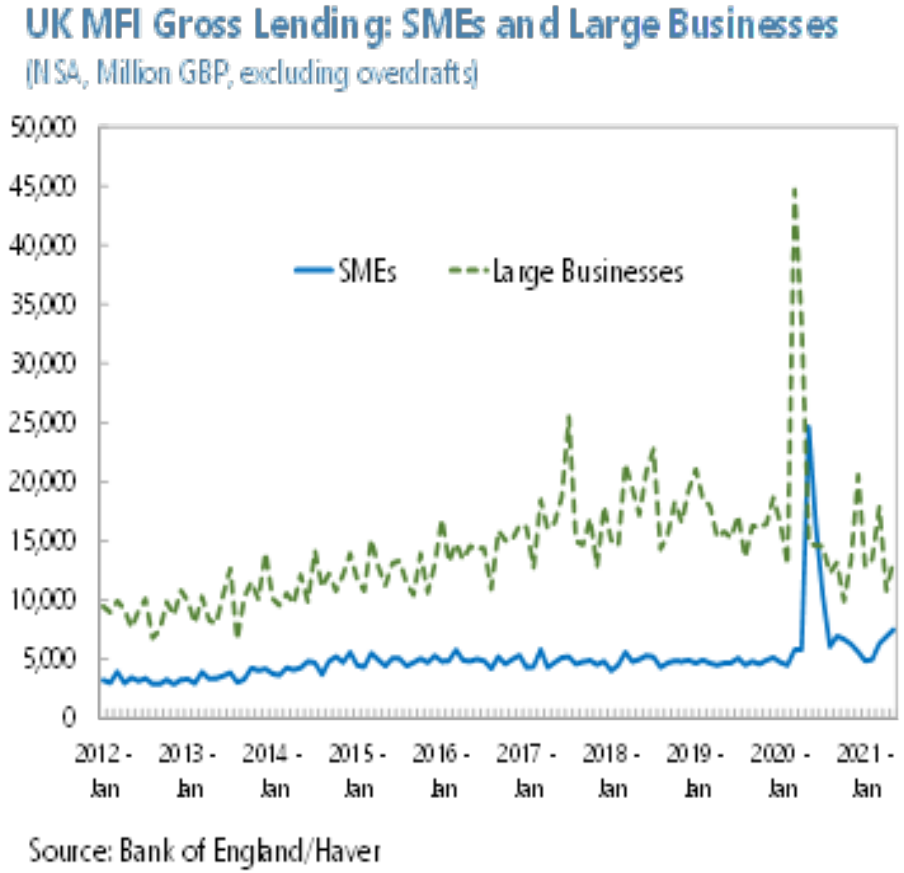
Source: Author's calculations.

Stimulus and bang-for-buck (fiscal multiplier) estimates for credit support

- How much macro-impact did credit guarantee schemes have?
- Example of UK program for SMEs

EX) UK Bounce Back Loan Scheme

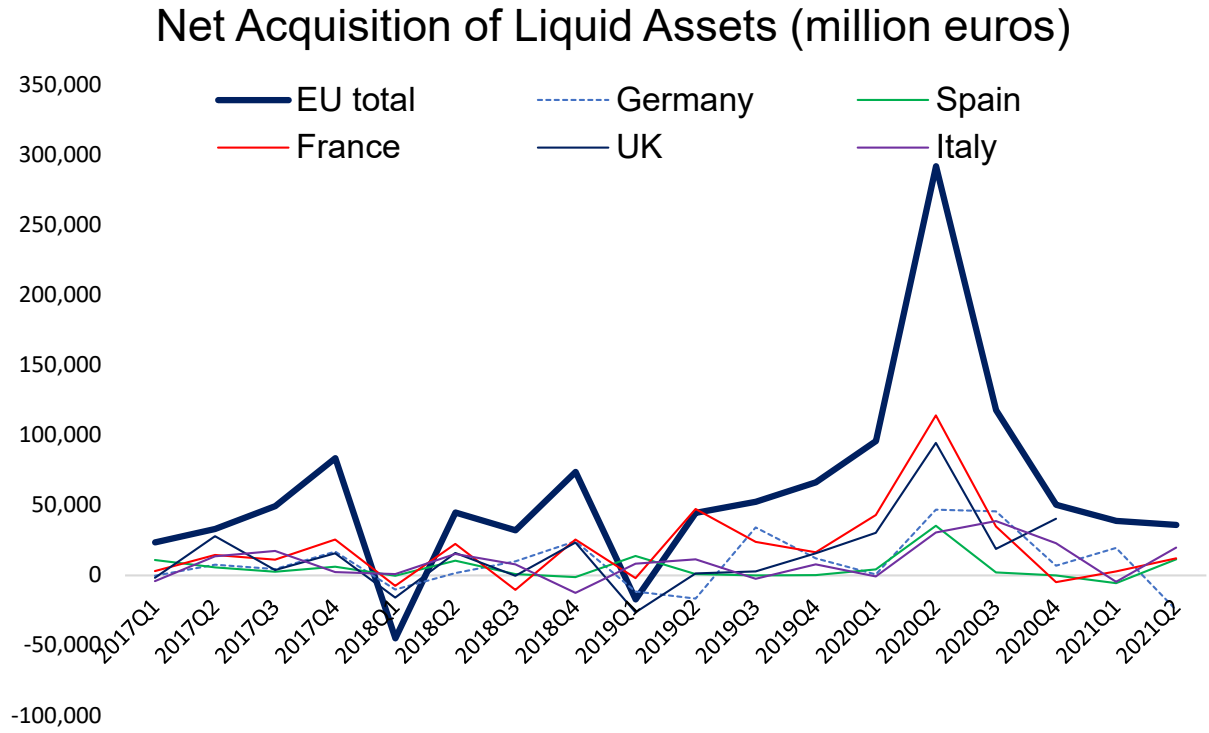
Take-up	GBP 46.53 billion
Subsidy	GBP 19.62 billion total; 17.34 to borrower, to 2.30 lender
Incremental borrowing range:	GBP 34 to 45 billion
Multiplier range borrowers:	.5 to .9
Multiplier lenders:	.3
Stimulus range:	GBP 18.6 to 41.9 billion
Fiscal multiplier range:	0.9 to 2.1



Source: Bank of England/Haver

More broadly, what did firms do with loans?

- Surveys and financial stability reports by central banks suggest that liquid asset holdings of NFCs have increased in 2020, implying that a large proportion of bank loans was saved.



Source: ECB sectoral accounts

- According to the British Business Bank, 23 percent of SMEs have spent all their facilities, and 19 percent have not spent any by 2020Q3

Final remarks and open questions

Do higher take-ups imply higher effectiveness?

Not necessarily…

Take-up can be low for many reasons:

- Caps on loan amounts
- Availability of other fiscal support measures
- Overestimation of the potential need
  - Financial markets functioned relatively well (e.g., compared to 2008)
- Designed more as a backstop

What are the longer-term fiscal risks?

- Credit support has long-term fiscal implications because there is uncertainty about future cash flows

- The range of possible fiscal outcomes is wide
  - The entire envelope is potentially at risk at program start-up. There is considerable uncertainty about take-up and future default losses.
  - Consideration of these obligations would deepen puzzle about gov't debt pricing and policy sustainability
  - After a program closes, actual take-up plus accrued interest is an upper bound on future fiscal effects.
  - Expected default losses are much less than 100% of take-up.

- Although future losses appear to be manageable, averages understate the full cost of the risk
  - Take-up rates and eventual losses would have been higher had the economic damages been greater.
  - Higher than expected default losses will occur during future downturns when fiscal capacity is already strained and the cost to the government of reduced revenues is high

A speculative addendum:
Revisiting potential connection between inflation and fiscal policy

- Some have suggested connection between current inflation and expansionary fiscal policy accommodated by central banks
- Some rough calculations for the U.S. show that a more comprehensive measure of fiscal policy that includes credit suggests its importance as a source of additional funds available to households

Table 2: Some components of fiscal and credit helicopter drop				
FISCAL		**Cash to pockets**	**per capita or per loan**	
	Stimulus payments to households			
		Total $867 billion		
			$3,200 per adult	
			$2,500 per child	
	Federal unemployment benefit supplement			
		Total $268 billion (CARES Act 2020)	$23,400	$600/week up to 39 weeks
CREDIT				
	Paycheck protection program forgivable loans to businesses			
		Total $800 billion	$100,000	avg principal
	Gov't mortgage forbearance			
		Total $25.6 billion	$12,000	avg annual pmt reduction
	Student loan moratoria	**Total $181.5 billion**	$4,100	avg annual pmt reduction

Conclusions

- Developed countries made available about $5 trillion in credit support to firms during Covid19, but less than half of that was used
- Credit support had the potential to help firms survive the downtown and may speed recovery
- But costs can be high and programs often lack transparency
- The potentially large fiscal effects of credit programs are typically not included in macroeconomists stimulus and other estimates
- Incorporating the effects of credit support is essential for understanding the totality of the effects of fiscal policy on the real economy, fiscal sustainability, and inflation