



The Case for More Pull Financing

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To meet many of today's most pressing challenges, we need to find new solutions. But the fastest, cheapest, and most effective way to encourage high-impact innovation isn't always obvious. Governments, philanthropists, and the private sector typically invest in research and development (R&D) by betting on specific innovators and research teams, giving them money to pursue a specified goal. This is known as “push” financing.

In contrast, “pull” financing *incentivizes* new innovations that can help solve hard-to-tackle social problems. In this policy brief, we explain **what pull financing is, when it should be used, where it has delivered**, and how to use it more.

What is pull financing?

Pull financing mechanisms promise to reward successful solutions that meet predetermined criteria. Pull financing can take several forms, including prize challenges, subscription models, milestone payments, and advance market commitments (the table at the end of this brief summarises different kinds of pull financing). Across the board, the approach incentivizes the private sector to tackle a given problem without picking “winners” in advance.

When to use pull financing

While it won't be the right approach to address every problem, pull financing will be the optimal policy lever under certain scenarios. It is particularly well-suited to tackle poorly understood but potentially high social impact innovation, and to address circumstances where the existing private market is difficult or unattractive for private investors and innovators.

Sometimes, policymakers and industry don't know exactly what innovation(s) will fix a problem—but they are sure that fixing the problem will have high social returns. In such cases, pull financing can offer an open reward or monetary commitment to anyone who finds a solution. This incentive encourages many innovators with different ideas to try and solve the problem.

In other cases, innovators may have a good idea about how to fix a problem—but they have no commercial incentive to do so. In such cases, a government or philanthropic funder can help “pull” innovation with an advance purchase agreement or advance market commitment that offers a path to profitability with the promise of future sales or other revenues. This can be particularly important for innovations that would primarily benefit lower-income countries, where existing markets may be small and fragmented.

Where pull financing has delivered

Pull financing has helped drive two spectacularly successful innovations in recent years. First, the development of the pneumococcal vaccine for developing countries saved an estimated half-a-million lives. Second, Operation Warp Speed—which made use of both traditional push investments and more novel purchasing commitments—accelerated the availability of COVID vaccines, saving an estimated 140,000 lives. Total economic benefits from these accelerations certainly total many billions of dollars.

Future applications for pull financing

There are many problems for which **solutions either do not yet exist or are too expensive or too small-scale** at present. Pull financing should form part of the public policy response to them. Potential high-impact applications include:

- ▶ Developing new antibiotics to reduce the risks of antimicrobial resistance
- ▶ Developing new, climate-resilient seeds for use in African agriculture
- ▶ Generating or scaling up alternatives to crop residue burning, a major emitter of greenhouse gases
- ▶ Developing a pan-sarbecovirus or pan-influenza vaccine
- ▶ Developing new, lower-cost, and more durable road sealant materials for use in Africa
- ▶ Improving diagnostics for tuberculosis

Many applications have already been detailed in work by the Center for Global Development and other institutions. Some are already in the early stages of development; all can be significantly scaled up and accelerated.

Why aren't we doing more already?

There are three broad but surmountable constraints to the widespread adoption of pull financing mechanisms:

1. **Cashflow management:** pull financing mechanisms pay out if and when specific outcomes are achieved. This can be challenging from a budgeting and cashflow management perspective, as the budget holder is uncertain when and whether disbursements will occur.
2. **Risk aversion:** pull financing tries to accelerate or generate innovation that otherwise may not occur. There is always a risk that the desired innovation may not materialize (though in these cases no “pull” payments would be made).
3. **Funding:** in most cases, pull mechanisms require a large, firm, upfront commitment—often involving cross-organization coordination to pool resources.

Each of these constraints can be overcome. Innovation in budgeting, accounting, and coordination can ameliorate the first; the second will decline over time after first movers make initial progress; and the third may require the establishment of a large, multifunder pull financing vehicle.

A typology of pull mechanisms

MECHANISM	WHAT IS IT?	HOW DOES IT WORK?	WHEN TO USE IT?	EXAMPLES
Prizes	One-off payments for the solution to specified problems	A challenge is defined, along with the characteristics of an acceptable solution and the size of the prize. Anyone may claim the prize on successful resolution.	We know how to tell if a problem has been solved, but no technology to solve is yet publicly disclosed; incentives for completing a solution or disclosing characteristics is required. Prizes are credible: that is, the offering agency can commit to paying out, and claimants have recourse in the case of renegotiation.	Longitude prize (1714, 2014) X-prize on cooling DOE's L-Prize (2011) to spur development of LED light replacements for 60W incandescent lamps X-Prize \$100 million carbon capture
Advance Market or Purchase Commitments	Commitments to purchase, or to subsidize purchase, a certain volume of a product at a fixed price if the product meets predefined characteristics	AMCs create a credible market of sufficient size to induce private innovators to enter. The credible conditional commitment to buy makes it rational for any actor which believes it can meet the conditions for a cost less than the promised (price x quantity) floor to exert effort and enter the market.	AMCs make sense when the technological capacity to develop a solution and producing it at scale exists, but the market returns for doing so are either insufficient or too costly to realise to induce private action at sufficient speed.	Pneumococcal vaccine Aspects of Operation Warp Speed
Buyers clubs	An organization which aggregates buyers to maximise their purchasing power.	While typically used to negotiate lower prices, Buyers Clubs can also work to incentivize investments in production capacity by suppliers (thus driving down production costs and not just squeezing margins) or market entry by signalling easy-to-access and large buyers.	A buyer's club can be effective if the market for a product is atomized but collectively large, if private providers are uncertain of the size and reliability of the market, and if producers can install production capacity (and drive down cost) with more reliable demand.	Clean cooling in Brazil—a buyer's club of institutional purchasers (mainly hospitals) helped secure substantially lower prices via increased local production.

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Public procurement rules	Rules and procedures for public sector purchasing of goods, works, and services	Public procurement rules work by setting out a transparent and competitive process for the public sector to obtain goods and services. Public sector procurements tend to be large, and reliable and thus highly desirable contracts to bid for. By including specific requirements for bidding success, you can incentivize efforts to innovate to invest in capacity to meet the requirements.	When public procurements is sufficiently large to be market moving. If a public entity is the major purchaser of a product or service, its standards act as a pull mechanism to change private provider behaviour. The behaviour or innovation desired must also be achievable at a cost below the value of the public contract.	Safeguarding requirements imposed by DFID/FCDO on all aid contractors impelled them to take specific actions to improve processes and outcomes on safeguarding— incentivised costly action to address organizational weakness (analogous to developing missing technology).
Payment-by-results with open access.	Per unit rewards for the delivery and verification of agreed-on results	A desired target/ result is defined and payments are agreed when these targets are met. With open access, no exclusive contract need be signed with a provider; instead, any provider that verifiably meets requirements can access payments.	With sufficiently high per-unit payments, such contracts can crowd in suppliers. Its main application will be to induce market entry to increase production scale and market depth.	No precise implementations, but the structure is reminiscent of Net Metering, which credits back to you the energy produced by your solar panelst that you don't use.
Quantity-linked open subsidy or payment	Subsidies or payments that are linked to the amount of a specific product that is produced or consumed	This is essentially payment-by-results with both open access and a minimum marketing volume to trigger payment. By making subsidy conditional on minimum take-up, it incentivizes investments in usability, novel payment mechanisms and so on.	When the key problem is end-user take-up and use. By incentivizing a minimum scale of take-up, this approach may be suitable when there are threshold effects in the social returns to a specific technology or practice, which are not yet met.	No examples yet

MECHANISM	WHAT IS IT?	HOW DOES IT WORK?	WHEN TO USE IT?	EXAMPLES
Pigouvian Taxes	Taxes imposed on activities that generate negative externalities to discourage those activities and promote socially beneficial outcomes.	Pigouvian taxes increase the cost of activities that have negative effects on society, making them less desirable and encouraging alternatives that are more socially beneficial	Pigouvian taxes are useful when negative externalities exist and market prices do not reflect the full social costs of an activity; we need to be able to accurately price the externality, and the tax needs to be politically viable and enforceable.	Carbon taxes are Pigouvian taxes. Their structure rewards the development of low-carbon alternatives to any carbon intensive technologies or processes, and rewards earlier adoption.
Contract-for-differences	The CfD aims to support low-carbon electricity generation by providing long-term contracts to renewable energy projects, such as wind and solar.	The scheme pays the difference between the market price and a pre-agreed “strike price”. The strike price is set higher than the market price, reducing investors’ exposure to market volatility and making the projects more financially viable.	In the UK, the scheme is used to incentivize low-carbon electricity generation, reduce greenhouse gas emissions, and increase the share of low-carbon electricity in the energy mix. It has characteristics in common with a Pigouvian tax, but operates as a subsidy, and more in a more specific domain. It is attractive when domain specific applications are feasible and can be accurately priced, and where volatility and market returns constrain rollout of a new technology.	The Contracts for Difference scheme is the UK government mechanism for supporting low-carbon electricity generation
Prospective or phased-in regulation	Rules or laws that govern certain aspects of behavior or activities, backed by enforcement capacity, credibly signalled for the future.	Prospective regulation works by setting standards, specifications or guidelines which will need to be adhered to in the future, and imposing costs of non-adherence. It can bring forward technological take-up or behaviour change by creating a market for alternatives by a specific date.	Where there is political or organizational will to mandate and enforce change, and private capacity to respond (and a willingness to allow private costs to be incurred). Most pull financing is a carrot. Regulation and enforcement is the stick, and stimulates a market to meet the required regulatory change.	EU legislation requiring all new vehicles be electric by 2035

Note: We are grateful to Alex Tabarrok for helpful comments on this table. Any errors or omissions are ours.

Further reading

Previous applications of pull financing

- ▶ AMC Working Group: Making Markets for Vaccines: Ideas to Action
- ▶ Advanced Market Commitments: Insights from Theory and Experience
- ▶ Operation Warp Speed, Encore: A Case for US Leadership to Drive Market-Based Global Health Innovation

Potential new applications

- ▶ An Ambitious USG Advanced Commitment for Subscription-Based Purchasing of Novel Antimicrobials and Its Expected Return on Investment
- ▶ Building a Portfolio of Pull Financing Mechanisms for Climate and Development

- ▶ Catalyzing Climate Results with Pull Finance
- ▶ What We're Hearing: Potential Pull Mechanism Use Cases for High-Value Global Health Innovation
- ▶ Designing Roads for Africa's Future

Institutional arrangements for pull financing

- ▶ Institutional arrangements for pull financing
- ▶ Pull Financing for Climate Technologies Makes Sense. Who Should Run It?
- ▶ Enabling US Government Participation in Pull Mechanisms for Social Impact Innovation: A Survey of Federal Authorities, Budgetary Barriers, and Potential Solutions

Thanks to Erin Collinson, Rachel Silverman Bonnifield, and Amanda Glassman for their helpful comments and feedback.

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