

# Global Budget Payment: Proposing the CAP Framework

INQUIRY: The Journal of Health Care Organization, Provision, and Financing  
Volume 53:1–4  
© The Author(s) 2016  
Reprints and permissions:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/0046958016669016  
inq.sagepub.com



Bradley Chen, MD, ScD<sup>1</sup> and Victoria Y. Fan, ScD<sup>2,3</sup>

## Abstract

To control ever-increasing costs, global budget payment has gained attention but has unclear impacts on health care systems. We propose the CAP framework that helps navigate 3 domains of difficult design choices in global budget payment: Constraints in resources (capitation vs facility-based budgeting; hard vs soft budget constraints), Agent-principal in resource allocation (individual vs group providers in resource allocation; single vs multiple pipes), and Price adjustment. We illustrate the framework with empirical examples and draw implications for policy makers.

## Keywords

global budget, cost control, health economics, comparative health systems, provider payment

In the face of continually rising health expenditures, policy makers are confronted with a variety of cost-control strategies. Many have pursued innovations in provider payment methods and specifically, global budget payment. Notable examples include Blue Cross Blue Shield (BCBS) Massachusetts global payment-based “Alternative Quality Contract,”<sup>1-3</sup> the California Public Employees’ Retirement System (CalPERS) with Blue Shield,<sup>4</sup> and efforts by the Maryland government to transform hospital care.<sup>5</sup> Despite its potential, confusion about the impact of global budget payment is rampant.

Not all global budget payment systems are alike. Even the phrase “global budget payment” itself has meant different approaches in various contexts. The confusion presents a challenge in disentangling the empirical effects. While some studies found a negative effect of global budget payment on service utilization, other studies concluded the opposite and attributed the growth in service volume in a number of health systems (including in Germany, Taiwan, and Canadian provinces of Alberta and Nova Scotia) to global budget payment.<sup>6</sup> Policy makers need a framework to identify the key choices involved in designing global budget payment systems and how they would shape health system performance.

We conducted a systematic review of the literature on global budget payment and developed a conceptual framework to help guide policy makers. A search on PubMed and ProQuest database with the terms “global budget” or “global payment” or “global budget payment” on April 15, 2015, yielded 212 articles, of which 75 were excluded for irrelevance based on abstract screening. Of the 137 full-text articles reviewed, 68 qualitative writings and 23 irrelevant studies were further excluded. In the end, 46 studies of

empirical evaluation of global budget payment were included in informing the development of our conceptual framework.

From our review, three key domains of choices in designing global budget emerged as the critical factors that could significantly shape its performance—(1) constraints of resources, (2) agent-principal in resource allocation, and (3) price adjustment—abbreviated as “CAP” framework.

## Constraints of Resources

The resource constraints of a global budget—both in terms of how the amount of resources is determined and how stringent the constraint is—greatly affect provider behavior. The global budget can be set by summing up the risk-adjusted health expenditures per capita (capitation-based), or from the supply side, by totaling the budgets for all provider organizations (facility-based). The latter, similar to traditional hospital budgeting, is administratively easier, but resource use across facilities is not necessarily aligned to population needs, for example, facilities are incentivized to overestimate budgets and spend all regardless of patient loads.<sup>7</sup> In contrast, the

<sup>1</sup>National Yang-Ming University, Taipei, Taiwan

<sup>2</sup>University of Hawai’i at Mānoa, Honolulu, USA

<sup>3</sup>Harvard T.H. Chan School of Public Health, Boston, MA, USA

Received 6 July 2016; revised August 16 2016; revised manuscript accepted 17 August 2016

## Corresponding Author:

Victoria Y. Fan, Department of Public Health Sciences and Epidemiology, University of Hawai’i at Mānoa, 1960 East-West Road, Biomed D204, Honolulu, HI 96822, USA.

Email: vfan@post.harvard.edu



Creative Commons Non Commercial CC-BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 3.0 License (<http://www.creativecommons.org/licenses/by-nc/3.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

**Table 1.** Constraint, Agent-Principal, and Price Adjustment (CAP) Framework for Global Budget Payment: Selected Cases.

Health system	Constraint		Agent and principal		Price adjustment
	Capitation or facility-based	Hard or soft cap	Agent: providers	Principal: payers	Yes or no
CalPERS with Blue Shield <sup>4</sup>	Facility	Soft	Individual	Unitary	No
Maryland All-Payer Model <sup>3,5</sup>	Facility	Hard	Individual	Unitary	No
Alternative Quality Contract with BCBS in Massachusetts: <sup>1-3,22</sup>	Facility	Hard	Individual	Unitary	No
Taiwan <sup>6,21,23-25</sup>	Capitation	Hard	Group	Unitary	Yes
Germany ( <i>ambulatory</i> ) <sup>20</sup>	Capitation	Hard	Group	Multiple	Yes, then replaced with volume cap <sup>b</sup>
Canadian provinces of Alberta, Nova Scotia ( <i>ambulatory</i> ) <sup>26</sup>	Capitation	Hard	Group	Unitary	Yes
Canadian provinces of Quebec, British Columbia ( <i>ambulatory</i> ) <sup>27</sup>	Capitation	Soft	Group	Unitary	No
Canada ( <i>inpatient</i> ) <sup>27</sup>	Facility	Hard	Individual	Unitary	No
France ( <i>inpatient, public</i> ) <sup>c,14,27</sup>	Facility	Hard	Individual	Unitary	No

Note. CalPERS = California Public Employees' Retirement System; BCBS = Blue Cross Blue Shield.

<sup>a</sup>The All-Payer Model in Maryland involves a common rate schedule for all payers.

<sup>b</sup>In German ambulatory sector, the point value dropped significantly after the implementation of the global budget payment system with price adjustment, resulting in a sharp decline in de facto prices and physician income. To stabilize the point value, a limit of maximal number of points per practice, that is, individual volume cap, was introduced at year 5 (year 1997).<sup>5</sup>

<sup>c</sup>France has a multipayer health system with sickness funds, similar to the German system, but operates differently. Rather than paying out to providers using "multiple pipes," each sickness fund in a given hospital's catchment area pays their shares to the "pivot fund" or the dominant fund in the area.

money-follow-patient capitation-based budgeting is believed to enable quality improvement by allowing resource transfers across providers and facilitating integration of care.<sup>8,9</sup> Many recent reforms post-Affordable Care Act, such as Maryland's transition to hospital global budget, are based on such premise.<sup>5,10</sup> Once the budget is set, payers can decide between a "hard" cap where providers are not reimbursed at all for expenditures above the benchmark, and a "soft" target permitting partial reimbursement. Empirically, soft target often fails to contain actual health spending, unless the penalty for exceeding target is substantial.<sup>11</sup> In Quebec, Canada, for example, when physician fees were reduced by 75% when the soft target was reached, physicians would simply cease service provision.<sup>12</sup>

### Agent-Principal in Resource Allocation

Resource allocation involves a contract between the principal (the payers) and the agents (the providers). Whether the entities on either side of the negotiation choose to work independently as individuals or collectively as a group would dictate their bargaining power. Moreover, if budgets are allocated to individual providers, there is little financial uncertainty given the fixed revenues. Hence, without counteracting interventions, providers may focus on cost reduction, leading to compromised access or quality, as experienced by Canadian and French hospitals.<sup>13-15</sup> By contracting as a group, providers collectively preserve professional autonomy in resource use, but would need to define a mechanism

to further distribute funds to individual providers, which determines the financial incentives and provider behavior. For instance, if the intragroup fund allocation is based on relative volume shares as seen in Taiwan and Germany, competition could significantly intensify.

Similarly, in a multipayer system, each payer may have the choice to conduct its respective activities separately (as in Germany and most US states), or alternatively, the payers may consolidate resources and unify rules of engagement with providers through, for instance, enforcing all-payer rates (as in Japan and Maryland).<sup>16,17</sup> With more insured lives collectively, payers could reach more favorable rates with better bargaining power<sup>18</sup> and, more importantly, could contain costs more effectively by minimizing providers shifting costs toward payer schemes where they are better reimbursed.<sup>19</sup>

### Price Adjustment

In several systems, cost containment is achieved through adjusting prices in accordance with volume changes, rather than volume control. Typically, such expenditure cap is superimposed upon a fee-for-service-like scheme, where relative prices of health services remain the same but the actual values are determined ex post, depending on a price conversion factor to equate the monetary value of actual services delivered to the set budget. Consequently, such price adjustment generates "tragedy-of-the-commons" incentives. Specifically, as the provider reimbursement is determined retrospectively contingent on the relative volume shares, providers are

incentivized to engage in volume expansion, which ironically reduces prices for all.<sup>20</sup> Furthermore, it has been observed repeatedly that in addition to volume growth, there are also changes in service mix and practice with grave implications for allocative efficiency and health care quality.<sup>6,21</sup>

We mapped a number of well-known and empirically documented examples of global budget payment systems using our framework (see Table 1). There may be examples which have yet to be empirically evaluated. Given the potential choices across the three domains, there is a large spectrum of different combinations manifesting as a “global budget payment.” Evaluations and assessments of a singular “global budget system” without specifying the constitutive design features may lead to confusion and fail to clarify the trade-offs associated with different policy levers. However confusing and complex global budget payment may be, it is clear that global budget payment is hardly a silver bullet. Moreover, to ensure that quality of care is not compromised by the bluntness of cost containment, concomitant incentives to reward providers to achieve certain quality benchmarks, as is the case in BCBS Massachusetts’ Alternative Quality Contract,<sup>1-3</sup> are also highly advised.

Our literature review and our framework excluded studies that did not impose a strict budget cap. For example, the Medicare Shared Savings Program does not penalize providers for spendings in excess of the targets, though it rewards them if expenditures are below financial targets. Our review also distinguished global budgets from pure quality-based incentives. Recent global budget schemes are frequently complemented with quality incentives given the concerns on quality impact and increasing focus on value of care,<sup>7</sup> but the two are distinct and separate payment methods, with different incentive mechanisms.

Given how much we have yet to know about global budget payment, it is important that policy makers view it not as a single intervention but a set of policy design choices, and design new attempts of global budget payment in a way that is amenable to rigorous evaluations with a framework like the CAP framework proposed here. Only then could we tailor the global budget payment to the unique context and priorities of different health systems, and do so in an evidence-based manner.

### Acknowledgments

The authors gratefully acknowledge the helpful comments by William C. Hsiao.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article:

Bradley Chen was partly supported by the Ministry of Science and Technology of Taiwan (Grant No. 104-2410-H-010-021).

### References

1. Chernew ME, Mechanic RE, Landon BE, Safran DG. Private-payer innovation in Massachusetts: the “alternative quality contract.” *Health Aff.* 2011;30(1):51-61.
2. Song Z, Safran DG, Landon BE, et al. Health care spending and quality in year 1 of the alternative quality contract. *N Engl J Med.* 2011;365(10):909-918.
3. Song Z, Safran DG, Landon BE, et al. The “Alternative Quality Contract,” based on a global budget, lowered medical spending and improved quality. *Health Aff.* 2012;31(8):1885-1894.
4. Markovich P. A global budget pilot project among provider partners and Blue Shield of California led to savings in first two years. *Health Aff.* 2012;31(9):1969-1976.
5. Murray R. Maryland’s bold experiment in reversing fee-for-service incentives. *Health Affairs Blog.* 2014. <http://healthaffairs.org/blog/2014/01/28/marylands-bold-experiment-in-reversing-fee-for-service-incentives/>
6. Chen B, Fan VY. Strategic provider behavior under global budget payment with price adjustment in Taiwan. *Health Econ.* 2015;24(11):1422-1436.
7. Roberts MJ, Hsiao W, Berman P. *Getting Health Reform Right: A Guide to Improving Performance and Equity.* Oxford, UK: Oxford University Press; 2008.
8. Berwick DM. Payment by capitation and the quality of care. *N Engl J Med.* 1996;335(16):1227-1231.
9. Enthoven AC, Vorhaus CB. A vision of quality in health care delivery. *Health Aff.* 1997;16(3):44-57.
10. James BC, Poulsen GP. The case for capitation. *Harv Bus Rev.* 2016. <https://hbr.org/2016/07/the-case-for-capitation>
11. Fan C-P, Chen K-P, Kan K. The design of payment systems for physicians under global budget—an experimental study. *J Econ Behav Organ.* 1998;34(2):295-311.
12. Brown B. How Canada’s health system works. *Bus Health.* 1989;7(7):28-30.
13. Detsky AS, Stacey SR, Bombardier C. The effectiveness of a regulatory strategy in containing hospital costs. *N Engl J Med.* 1983;309(3):151-159.
14. Redmon DP, Yakoboski PJ. The nominal and real effects of hospital global budgets in France. *Inquiry.* 1995;32(2):174-183.
15. Bishop CE, Wallack SS. National health expenditure limits: the case for a global budget process. *Milbank Q.* 1996;74(3):361-376.
16. Ikegami N, Anderson GF. In Japan, all-payer rate setting under tight government control has proved to be an effective approach to containing costs. *Health Aff.* 2012;31(5):1049-1056.
17. Murray R. Setting hospital rates to control costs and boost quality: the Maryland experience. *Health Aff.* 2009;28(5):1395-1405.
18. Reinhardt UE. How do hospitals get paid? A primer. *The New York Times.* January 23, 2009. [http://economix.blogs.nytimes.com/2009/01/23/how-do-hospitals-get-paid-a-primer/?\\_r=2](http://economix.blogs.nytimes.com/2009/01/23/how-do-hospitals-get-paid-a-primer/?_r=2)
19. Yip WC. Physician response to Medicare fee reductions: changes in the volume of coronary artery bypass graft (CABG) surgeries in the Medicare and private sectors. *J Health Econ.* 1998;17(6):675-699.
20. Benstetter F, Wambach A. The treadmill effect in a fixed budget system. *J Health Econ.* 2006;25(1):146-169.

21. Chang R-E, Tsai Y-H, Myrtle RC. Assessing the impact of budget controls on the prescribing behaviours of physicians treating dialysis-dependent patients. *Health Policy Plan.* 2014. <http://heapol.oxfordjournals.org/content/early/2014/10/29/heapol.czul19.abstract>
22. Mechanic RE, Santos P, Landon BE, Chernew ME. Medical group responses to global payment: early lessons from the "Alternative Quality Contract" in Massachusetts. *Health Aff.* 2011;30(9):1734-1742.
23. Cheng S-H, Chen C-C, Chang W-L. Hospital response to a global budget program under universal health insurance in Taiwan. *Health Policy.* 2009;92(2-3):158-164.
24. Hsu P-F. Does a global budget superimposed on fee-for-service payments mitigate hospitals' medical claims in Taiwan? *Int J Health Care Finance Econ.* 2014;14(4):369-384.
25. Chen F-J, Laditka JN, Laditka SB, Xirasagar S. Providers' responses to global budgeting in Taiwan: what were the initial effects? *Health Serv Manage Res.* 2007;20(2): 113-120.
26. Hurley J, Lomas J, Goldsmith LJ. Physician responses to global physician expenditure budgets in Canada: a common property perspective. *Milbank Q.* 1997;75(3):343-364.
27. Wolfe PR, Moran DW. Global budgeting in the OECD countries. *Health Care Financ Rev.* 1992;14(3):55-76.