How to mitigate incentives for poverty trade-off in Egypt's ageing population under the new bill for older people care rights using means tested benefit cost sharing framework?

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Zahra Salah Eldin
Department of Insurance and Actuarial Science, Faculty of Commerce, Cairo University, Cairo, Egypt
Mohamed Elsheemy
Independent, Warwick, UK, and
Raghda Ali Abdelrahman
Department of Insurance and Actuarial Science, Faculty of Commerce, Cairo University, Cairo, Egypt

Abstract

Purpose – Many countries around the world are facing great challenges from their ageing population with shrinking workforce, this will put more pressure on their financial system and will increase the public spending on care costs provided to older people. Egypt is in the phase of establishing a new law for older people care's rights, a law that will organise how older people in need for care would benefit from access to government financial support and how will families support their older relatives financially and how the care costs will be shared between the older people, their families and the government.

Design/methodology/approach – The paper examines the suitability two cost-sharing methods and applying them to assess the effect on the individuals and families' income strain.

Findings – The preferred approach can be used for sharing costs as it applies a gradual funding withdrawal by the government and provide more fairness and flexibility for application in different regions. Besides, the parameters of this approach can be used by policy makers to control the levels of funding.

Originality/value – The paper will be the first to discuss the intergenerational fairness from a financial perspective in Egypt to avoid forcing older people into poverty or resorting to poverty trade-off.

Keywords Cost-sharing, Government financial support, Income strain, Means-tested benefits, Older people care rights, Poverty trade-off

Paper type Research paper

Introduction

Ageing involves the compounding of various lifetime changes ranging between physical, psychological and social changes (Yousif, 2016). The improved living standards and the

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corresponding gradual increase in life expectancy significantly contribute to the ageing of societies, leading to many challenges and obstacles that must be addressed (Angeli and Novelli, 2019). Therefore, several governments and societies have instigated policies to scale up their financial systems to survive the financial consequences of the challenges that come with ageing society. Particularly, policies that ensure the sustainability of financial solutions supporting the social services and the welfare of the society (Fassouli, 2021).

Egypt ageing population and social care

Ageing population. Egypt, the most populous country in the Middle East and North Africa (MENA), is challenged by the gradual increase in the absolute and relative number of older people over the last few decades, and the trend is anticipated to continue in the future as improvements in life expectancy are expected to continue. Therefore, the development of quality care services that appeal to older people and their families is becoming more important (McNicoll, 2002; Husseni and Hannaa, 2010; Annawafela, 2012; Kane *et al.*, 2021).

The age structure of Egypt population is changing as both fertility and mortality rates are declining, which causes a shift toward a faster-ageing population. In 2022, older people in Egypt make up 6.83% of the population (CAPMAS, 2022), and projections [1] indicate it will quadruple to 16.7% in 2050. The life expectancy at birth was 46.8, 57.9, 68.6 and 70.2 years for Egyptians in 1962, 1982, 2002 and 2021 respectively. This is translated into an increase in life expectancy of 49.9% between 1962 and 2021.

Moreover, Egypt is undergoing a demographic shift driven by the 1980s baby boom (Nassar, 2006) which contributed to a notable increase in the number of working-age adults between 2000 and 2010 (shown in Figure 1). However, decreasing fertility and mortality rates and increasing life expectancy will cause a shift towards a faster-ageing population. The upcoming retirement of the Egyptian baby boomer generation between 2040 and 2050 will lead to a shrinking number of working-age adults and increase in dependency ratio for older people to unprecedented levels. It is also projected, as shown in Figure 1, that the older people dependency ratio using the Spectrum (A computer program for making population projections developed by United Nations Programme on AIDS) impacted by the 1980s baby boom will reach 12.16% in 2050.

Current provision of formal and informal care in Egypt, and its current problems. Older people in Egypt, who are the most in need for formal care, are likely to be the ones who cannot afford it. They usually lack access to informal care and have a high prevalence of limitations in Activities of Daily Living (ADLs) [2].

A series of publications Boggatz *et al.* (2009a, b, c) and Boggatz *et al.* (2010), examined three major factors that influence older people acceptance of informal care: *financial resources, valuing family support and the availability of information about choices of care*, and found that *financial resources* is the main factor influencing older people's acceptance of care.

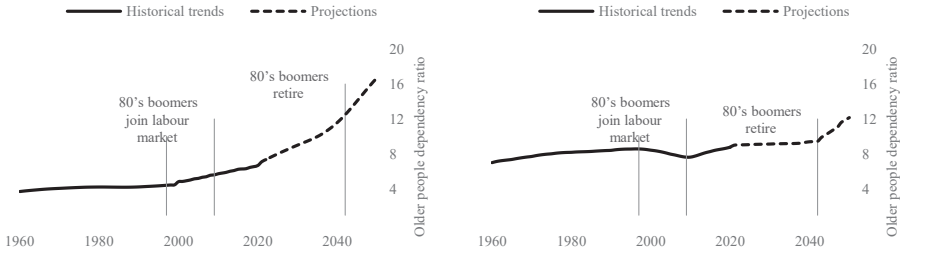


Figure 1.
The percent of older people vs dependency ratio in Egypt (Historic and projections)

Source(s): Figure by authors

The Boggatz *et al.* (2009a) paper found it difficult to identify all nursing care institutions through official sources, as many charitable care organisations were run by churches and mosques without being officially registered. Moreover, they found that most Egyptian older people rejected the idea of moving into residential or nursing care homes, and those who could afford to move into nursing care were motivated by feelings of being neglected at home. In very few instances, families who institutionalised an older person have transferred care responsibilities to the trained professionals but continued to maintain frequent contact and support.

Moreover Boggatz *et al.* (2009b), showed that older people relied on their family in making choices about where and what care they received, regardless of their income levels and that decisions were driven by cultural norms and financial pressures. Nonetheless, the older people feared that they might be a burden on their families or complained about their lack of financial capacity to choose how they received care. This is supported by an older study Nandakumar *et al.* (1998) reported that four out of five older Egyptians live with their families, which might strain and worsen the relationship between the older person and their family and lead to older people abuse. This is exaggerated for older people with chronic illnesses and disabilities, as their care needs involve considerable time, effort and sacrifice from the caregivers (Garre-Olmo *et al.*, 2009).

Additionally, several studies show a high prevalence of older people abuse in poor Egyptian communities (El-Khawaga *et al.*, 2021); reported that 46% of the older persons were being abused (Abdel Rahman *et al.*, 2012); reported 43.7% and 23% in (Farahat *et al.*, 2014). They might desire to maintain traditional family values and provide support and care for their older person, but their economic difficulties stand as a major barrier.

Consequently, caring for older people by their family members is considered very challenging, and dependence on the extended family is declining. This necessitates a need for financial support, specifically among families that still provide informal care support and comply with the social expectations of family provision of care to older people. Those families sacrifice something in return, whether it is income, savings or a career (Diamond-Smith *et al.*, 2015). Therefore, older people and their families in Egypt would benefit from establishing a fair system to finance older people care needs at the time when they need it the most, a financial system that ensures that older people are not a financial burden on their families or the government.

Recent reforms for funding care. In regard to older people rights, Article 83 of the Egyptian Constitutional Charter 2014 assures ageing rights and specifies "appropriate pensions to ensure them a decent standard of living". This constitutional provision reads: "The State shall guarantee the health, economic, social, cultural, and entertainment rights of the older people, provide them with appropriate pensions that ensure a decent life for them, and enable them to participate in public life. In its planning of public facilities, the State shall consider the needs of older people. The State shall encourage civil society organisations to participate in taking care of older people. All the foregoing is to be applied as regulated by Law" (SSCHR, 2014).

A new reform to older people rights in Egypt is taking place. In 2021, the Egyptian Senate prepared a drafted bill for "The Older People Care Rights Law" which was discussed and approved in the Senate, and it is pending approval from the Egyptian Parliament. The bill aims to protect the rights of the older people and their enjoyment of all means of community care, as well as work to enhance their effective and complete integration into society and secure the means for a decent life. The bill proposes to establish a fund called "The older People Care Fund" to support the increased cost in services provided to older people and facilitate the cost-sharing between the government and the beneficiaries (Egyptian Senate, 2021).

The bill recognises the financial burden of the increasing number of older people on the government and of the increase in dependency of the older people on their families. In this

context, the bill includes articles that define a partnership between the government and the families of older people to meet their care needs. The bill sets out a plan for developing multifaceted solutions that consider the burden of care costs to beneficiaries; however, the bill leaves the interpretation of how the partnership should work and how the government financial support should ensure intergenerational fairness and protect the older people and/or their families from being driven into poverty or resorting to a poverty trade-off.

How can the bills support intergenerational fairness?. Historically, families have been known as the primary caregivers, who may have to give up their job or reduce working hours to meet their older people care needs. Additionally, the caregiving period might be extended beyond ten years, potentially leading to a loss of employability skills, which would make it difficult to secure future employment opportunities (Choucair, 2000). This has implications for intergenerational fairness, as families may be unable to plan for their own future care needs because of the financial shortfall caused by a loss of employability and any working adult might potentially become a burden on their own children in the future (Abdel Moneim, 2011).

Middle-income families who support the care costs of their older people are subject to income inequality and facing an economic cliff edge if compared with low-income families, and this group of people will be subject to high risk under the new proposed law where eligibility for governmental support might drive them to take on a "poverty trade-off". The trade-off is their chance to be classified as poor and therefore transfer the care costs to the government. Poverty trading in this case seems like a good idea to protect the family from the uncertainty of the anticipated increase in spending due to the costs of care that the family will not be able to afford sooner or later.

Moreover, as the age structure changes, the financial burden of older people care costs will increase, and a partnership between the government and families is needed to support fairness in financing. By giving the working-age population a stake in the system, the scope for intergenerational conflicts may be reduced. Sharing the costs between older people, their families and the government will lead to a funding system that is less reliant on financing from a diminishing working-age population.

At this point, there are several unresolved issues with the new bill regarding the eligibility criteria, needs assessment and benefits design. To address these issues, the paper attempts to answer the following two questions:

(1) What are the benefit entitlement criteria: age, disability severity, and income level needed to qualify for government funding?

(2) Is there a fairer financial system in which the government and the beneficiaries could share the costs of care?

Based on the articles of the drafted bill, the benefits should be means-tested. This will help in determining whether someone qualifies for financial assistance and how the costs should be shared between different parties. Means-tested benefits are available to people who can demonstrate that their income and capital are below a certain predefined threshold.

Scope and objectives

The paper will be the first to discuss intergenerational fairness from a financial perspective in Egypt to prevent people from being forced into poverty or resorting to poverty trade-off. The paper focuses on how to:

(1) create a clear and concise means-test that can be used both for domiciliary and institutional care similarly,

(2) make the decision on eligibility for financial support fairer and more transparent by removing "cliff-edges" that might include incentives for poverty trade-off,

(3) establishes a framework for cost sharing between the government and older people and their families,

The following sections present the financial systems for care services in some of the developed countries and highlight how Egypt can benefit from their experience for reaching more efficient support. This is then followed by an illustrated description and evaluation of a proposed formula for means-tested benefits and compared with a "cliff-edge" threshold. In doing so, the formula is supported with practical examples.

The financial system of funding social care needs

Most developing countries have no fair systems that protect older people against the high costs of care provision, and many people exhaust most of their resources until the government finds them eligible for financial assistance. Developed countries might have more comprehensive systems to spread the risk of care costs across their population through social insurance and other mechanisms. This section introduces a review of the international models of funding care costs that can be used by the Egyptian government to enhance the bill to meet the challenges of an ageing population.

In 2017, the World Bank proposed several funding mechanisms with financing from taxpayers, contributions or a mixture. The proposed mechanisms are considered useful in international comparisons. The systems are categorised into four types (Weiner *et al.*, 2020):

(1) Means-tested, available to those with lower income threshold, and financed by taxpayers.

(2) Social insurance, available to all residents of the country and is financed by compulsory contributions.

(3) Universal, available to all residents of the country, and financed by taxpayers.

(4) Hybrid systems, which are a mixture of the other types.

The choice of system depends on the eligibility standards, financing and benefit design.

In *England*, the financial assessment for care costs is means tested and based on both assets and income. A new system of state financial support is planned, which includes changes to the means testing limits. Under the current system, if the individuals' assets are over £23,250, they are assessed as being able to meet the full cost of their care, but if they are below £14,250, the individual is eligible for full government financial support. For capital between these two limits, a contribution of £1 per week for every £250 of capital is required. This is termed "tariff income" in the regulations and is meant to represent the amount that individuals should be able to contribute from their own resources aside from their usual income (Mayhew, 2017).

In *Japan,* a mandatory social insurance program was designed in 2000 in response to pressing demographic changes. The program is funded by a combination of income taxes, age-linked premiums for everyone above 40, and central and municipal government funds. The eligibility is designed based on a standardised needs assessment, which categorises needs into seven levels. People in need of social care services are required to contribute 10% of the care costs, and this is capped for low-income individuals. In 2015, the government raised the contribution to 20% for high-income individuals (Fu *et al.*, 2017).

In *Germany*, a social insurance program was enacted in 1995, similar to Japan, to cover a portion of the social care costs. It is financed through income tax of 2.55% as of 2017, and an

additional rate of 0.25% for those without children is imposed. This program is mandatory, but higher-income people can withdraw by purchasing private care insurance. A standardised needs assessment of benefits is designed at five levels and benefits are received either in cash or service (Riedel, 2017). If the users select the options of receiving benefit in cash, there is no regulation about how this cash will be used, and it might be used for funding unpaid informal care.

In the *Netherlands*, the social insurance program began in 1967 and was limited to nursing home and institutional care. It was expanded to cover social assistance and residential care for older people in 1997. The program was mainly financed through social security contributions and general government revenues. The cost sharing was limited to only 8% of its value, with co-payments varying by wealth and capped for the poor, and the benefits were received either in kind or as cash (Tenand, *et al.*, 2020). In 2015, the Netherlands enacted significant reforms because of the ageing population and lower growth in public spending on care. These reforms focus on the beneficiaries who truly need care.

The financial system of some countries for long-term care is based on the universal type, which is funded from general tax revenues, mainly given that the benefits and eligibility design are the same compared to other countries.

Nordic countries (Denmark, Finland and Sweden) are examples of countries that use a universal tax-based financial system for long-term care. Denmark has the most comprehensive program that provides services to older people for free; the services are funded using block grants from the federal government and local taxes (Kvist, 2018).

In 2009, the National Health Insurance (NHI) corporation in *Korea* introduced a universal long term care scheme that is financed through taxes revenue, payroll contributions and cost-sharing. The working-age population is paying a contribution rate of 5.08% of wages, of which 4.78% goes towards long-term care. The benefits are provided either in cash or in kind, and the eligibility of the benefits is for older people aged 65 or older assessed as needing social care, and the system also meets the funding needs of younger people with geriatric diseases (Costa-Font *et al.*, 2011). Now Korea is facing a rapid transformation from one of the countries with the youngest population in the Organisation for Economic Co-operation and Development (OECD) to one of the oldest in record time, and this will put pressure on long-term care expenditures (Syed *et al.*, 2008).

France is an example of a country that uses hybrid approaches to financing long-term care; it relies on a mixture of public funding and means-tested strategies. France has a mandatory social insurance that provides benefits to older people in cash through "Personal Autonomy Allowance". The amounts are adjusted to income and vary according to disability severity. The allowance is ranged, and benefits are means-tested (Le Bihan and Sopadzhiyan, 2017). There are no cost-sharing requirements for poor people, while people with high income levels pay a 90% of their coinsurance. Families, except spouses, can pay from the allowance for personal care services at home, but the government gives tax incentives to those families paying the cost of care.

In general, the universal financial system enjoys a broader tax base than social insurance, as the general tax revenues are levied on wealth as well as income. Most of these programs have expensive benefits and little cost-sharing.

The financial systems for social care costs, as illustrated above, in the majority of developed countries show that there is no ideal system that satisfies all the needs of older people without putting pressure on public funds.

Unlike many developed countries, Egypt has no fair system that protects the residents, specifically the older people, against the high costs of care. Egypt's senate is passing a new bill for older people's rights after discussion of the legislative changes that might be required to the design of the financing structure and benefit eligibility.

The planned older people's care fund will be concerned with:

(1) The care costs are capped at a pre-defined threshold.

(2) Older people have full eligibility for care costs if their family income is below the threshold.

(3) Older people with family incomes above the threshold will share costs with the government.

The paper suggests that to fund the care costs for older people, the government should use the means-tested method since no contribution will be deducted from payroll, and the next section will illustrate how the means-tested method can be used in funding the care costs between the government and older people or with their families.

Means-tested benefits for cost sharing

If social care is delivered free at the point of need, there will be a drastic increase in taxes. On the other hand, a fully privatised care sector leads to sky-high out-of-pocket costs. Therefore, it is important to calibrate the cost-sharing formula to avoid both scenarios (Mayhew, 2017).

A means-test is needed because the actual costs of social care frequently exceed the levels that individuals can typically afford from their income. Means testing exists to limit the cost to the government by targeting public support for those with low incomes and savings, and so means testing can be thought of as a mechanism for calibrating how much support is due and how much the government can afford (Foster, 2021).

Means-testing, as a form of insurance or "safety net", has been used by different governments around the world to provide financial assistance or a financial waiver to people whose income falls below some threshold.

Proposed means-testing formula

The proposed formula is the authors' original work, inspired by two different papers: (Mayhew, 2017) and (IFoA, 2019), establishing a sustainable solidarity system that encourages partnership between the government and beneficiaries in funding care costs.

The paper used two approaches to illustrate the application of the means-testing cost sharing method, to help in determining who will qualify for government financial support, and limit the payment of any social care assistant to those in need.

The two approaches are described using the following parameters:

(1) pt = poverty threshold;

(2) c = care costs, are the costs of formal domiciliary care or institutional care using the published price list of "MisrCare", which is the largest provider of health and social care services in Egypt;

(3) g = the proportion of care costs provided by the government;

(4) s = the proportion of care costs provided by older people = $1-g$;

(5) i = the older people (or household) income;

(6) b = the burden of care costs on income = $\frac{s\times c}{i}\%$, and referred to as income strain;

(7) τ = the taper, i.e. the rate at which government support is withdrawn;

(8) σ = the stepper, i.e. the increments at which government support is withdrawn.

The assumptions used in illustrating the proposed formulae are:

(1) the assessment of eligibility for government funding is carried out every 12 months;

(2) the assessment against the poverty threshold is based on an annually published report by the Egyptian Central Agency for Public Mobilization and Statistics (CAPMAS);

(3) geographical variations in costs and poverty thresholds are ignored but can be implemented in practice;

(4) savings are excluded from the assessment for eligibility for funding.

Fixed threshold approach

Under this approach, the amount an older person or their family pays towards the cost of care depends on their income. If the income is above the poverty threshold, they are assessed as able to afford the full cost of care and receive nothing. If the income is equal to or below the poverty threshold, they are assessed as eligible for benefits, and the government covers the full cost of care.

The cost-sharing formula under this approach is as follows:

(1) when $i \leq pt$, then $g = 100\%$ and $b = \frac{0 \times c}{i} = 0\%$

(2) when $i > pt$, then $g = 0\%$ and $b = \frac{1 \times c}{i} = \frac{c}{i}\%$

Preferred (gradual withdrawal) approach

This approach is referred to in this paper as the "preferred" approach, as there is a gradual withdrawal of government support as income rises above the poverty threshold.

Under this approach, the amount an older person or their family pays towards the cost of care changes smoothly over different income levels. If the income is equal to or below the poverty threshold, then they are assessed as eligible for full financial support. If the income is over the poverty threshold, the government funding is then withdrawn gradually at a predefined taper with an increasing arithmetic progression rate for every increase in the monthly income above the poverty threshold, which means that care costs are shared between the government and the beneficiaries.

The tapper (τ) and stepper (σ) are used to control government funding levels; the taper varies between 0 and σ, such that the lower the value of the taper, the more state support is provided. Note that the taper value is a policy issue and not a statistical artifact of the formula.

The formula for this approach is as follows:

(1) when $i \leq pt$, then $g = 100\%$ and $b = \frac{0 \times c}{i} = 0\%$

(2) when $i > pt$, then

- $n = round\ up\ to\ integer\left(\frac{i-pt}{\sigma}\right)$ = number of steps
  - if $n \leq \frac{\sigma}{\tau}$, *then* $s = \frac{min\left(\frac{n(n+1)\tau}{2}, c\right)}{c}\%$
  - if $n > \frac{\sigma}{\tau}$, *then* $m = round\ down\ integer\left(\frac{\sigma}{\tau}\right)$ and $s = \frac{min\left[\left(\frac{m(m+1)}{2}.\tau + (n-m).\sigma\right), c\right]}{c}\%$

(3) $g = 1 - s$, and

(4) $b = \frac{s \times c}{i}\%$

Using $\tau = 5$EGP and $\sigma = 100$EGP, means the government support is reduced by an arithmetic multiple of 5 EGP for every additional 100 EGP of the income. Given $i = 1{,}290$ EGP and $pt = 857$ EGP means that earning is above the poverty threshold by 433 EGP, and this person should have 4 steps ($n = \frac{433}{100}$) of government funding withdrawal, and therefore they should contribute 50 EGP per month to the funding of their long-term care, and the remaining cost is funded by the government.

A cliff edge exists when government funding is completely withdrawn as the income is higher than the poverty threshold, and this approach removes the cliff edge on income strain, which gradually increases and reaches a peak before gradually decreasing. This peak can be controlled by the two parameters (τ and σ) that have different impacts on income strain curves, as given below:

(1) a larger stepper σ results in a slower withdrawal of government support, and a higher income level at the peak changes the slope of the curve.

(2) when $0 \leq \tau < 1$, the curve becomes concave,

(3) a larger taper $1 \leq \tau < \sigma$ causes the income strain curve to flatten then becomes more convex.

(4) if $\tau = \sigma$, the formula reverts to a fixed government funding level.

Next, examples of the previously illustrated approaches to the cost-sharing formula are presented. It is implicitly assumed that older people who are in need of government financial support do not have any savings, investment or any physical or non-physical wealth. However, the formula can be changed to consider wealth as well.

Worked examples for the fixed threshold vs the "preferred" approach

The poverty threshold used in the examples based on CAPMAS is 875*EGP* monthly per person, but the example uses different family sizes and types of care services to demonstrate who will pay the care costs and if they will be shared.

Also, for the application of the preferred approach, a taper = 5*EGP* and a stepper = 100*EGP* are assumed; these are the control parameters that will show how the government will withdraw gradually from sharing the costs of care.

Table 1 shows that:

(1) At the first 100 EGP of monthly income above the poverty threshold, the government withdraws 5 EGP per month from the spending on care, and it is paid by the beneficiary.

(2) At the second 100 EGP (i.e. 200 EGP above the poverty threshold), the government withdraws an additional 10 EGP from the spending on care, bringing the total contribution of the beneficiary to 15 EGP per month.

Increments of income above poverty threshold	Total income above poverty threshold	Increment of government funding withdrawn at this level	Total withdrawn government funding
1st EGP 100	EGP 100	EGP 5	EGP 5
2nd EGP 100	EGP 200	EGP 10	EGP 15
3rd EGP 100	EGP 300	EGP 15	EGP 30
4th EGP 100	EGP 400	EGP 20	EGP 50
...			
...			
19th EGP 100	EGP 1,900	EGP 95	EGP 950
20th EGP 100	EGP 2,000	EGP 100	EGP 1,050
21st EGP 100	EGP 2,100	EGP 100	EGP 1,150
22nd EGP 100	EGP 2,200	EGP 100	EGP 1,250
...			

Source(s): Table by authors

Table 1. The gradual withdrawal of Governmental funding, preferred approach

(3) The amount withdrawn from government funding increases at an arithmetic rate until it reaches a value equivalent to the stepper, until the total withdrawn funds equal the total costs of care, at which point any additional increase in income after that level will not be supported financially.

(4) The gradual withdrawal of government funding increases directly with income until the government contribution to care costs reaches zero.

Table 2 shows that cost-sharing at different levels of income depends on the amount of domiciliary care received. For example, an older person earning 5,000 EGP and in need of 6 h of domiciliary care per day would pay care costs in full. If the same person was in need of 12 h of domiciliary care per day, they would pay only two-thirds of the care costs, and the government would pay the remaining balance.

To assess the effect of parameter choice on the shares in care cost funding and how the care costs might incentivise older people to barter poverty, two examples are explored below:

Example (1)

An older person lives alone, with no children, grandchildren or siblings, in need of care for at least 24 h daily and chooses to receive care at home with value $c = 4,000 EGP$ and $pt = 875 EGP$

The income strain, which is the percentage of income spent on care, will act differently under the two approaches. Figure 2 shows that under the *fixed threshold approach*, the strain (b) is at its peak when the income is just below the poverty threshold and starts to decrease gradually, and if income is higher than the threshold by even an additional 1 EGP, the government support is withdrawn completely even if the income strain rate is too high. The

Individual monthly income	Increments above poverty threshold	Individual share in cost of domiciliary care			Government share in cost of domiciliary care		
		6 h daily	12 h daily	24 h daily	6 h daily	12 h daily	24 h daily
EGP 1,000	EGP 200	EGP 15	EGP 15	EGP 15	EGP 1,985	EGP 3,285	EGP 3,985
EGP 2,000	EGP 1,200	EGP 390	EGP 390	EGP 390	EGP 1,610	EGP 2,910	EGP 3,610
EGP 3,000	EGP 2,200	EGP 1,155	EGP 1,155	EGP 1,155	EGP 845	EGP 2,145	EGP 2,845
EGP 4,000	EGP 3,200	EGP 1,680	EGP 1,680	EGP 1,680	EGP 320	EGP 1,620	EGP 2,320
EGP 5,000	EGP 4,200	EGP 2,000*	EGP 2,205	EGP 2,205	–	EGP 1,095	EGP 1,795
EGP 6,000	EGP 5,200	EGP 2,000*	EGP 2,730	EGP 2,730	–	EGP 570	EGP 1,270
EGP 7,000	EGP 6,200	EGP 2,000*	EGP 3,255	EGP 3,255	–	EGP 45	EGP 745
EGP 8,000	EGP 7,200	EGP 2,000*	EGP 3,300*	EGP 3,780	–	–	EGP 220
EGP 9,000	EGP 8,200	EGP 2,000*	EGP 3,300*	EGP 4,000*	–	–	–
EGP 10,000	EGP 9,200	EGP 2,000*	EGP 3,300*	EGP 4,000*	–	–	–

Note(s): * the share of care costs covered by the older person totally
Source(s): Table by authors

Table 2. Cost-sharing between government and older persons living alone receiving domiciliary care

cliff edge exists here, where older people will be incentivised to barter poverty to be eligible for any financial support.

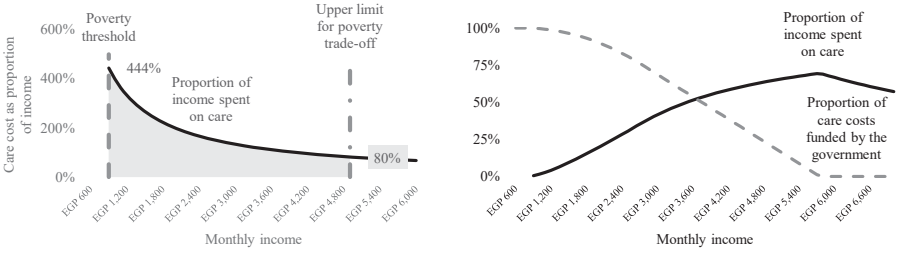
Under the *preferred approach*, the income strain begins at very low levels, just above the poverty line and reaches its peak at the income level when government funding stops. However, the income strain stays below 80% compared to the fixed threshold approach, as it is controlled by the stepper and taper parameters. The cliff edge would not exist as government funding is not completely withdrawn until income is sufficiently higher.

This raises an interesting question: for what level of income can a person apply for a poverty trade-off? Figure 3 helps in answering this question by showing that the incentives for the poverty trade-off are limited to the level at which income lost equals the total annual care costs.

Under the *fixed threshold approach*, all income levels below 4,900 EGP create a great incentive for poverty trade-off as the total annual lost income is always below that of the total annual care costs; above that limit, no incentive is created.

Under the *preferred approach*, the total annual care costs will never cross the amount of income traded in bartering poverty for care support, as it is always higher than the total spending on care.

Do levels of lost income and incentives for poverty trade-offs change with different circumstances?. The poverty threshold depends on household size. Care needs could vary from a few hours per day of domiciliary care to institutional care (e.g. residential or nursing care). Therefore, example (2) shows how the formula is applied to different circumstances and how this affects the shape of the income strain and the upper limit for the poverty trade-off.

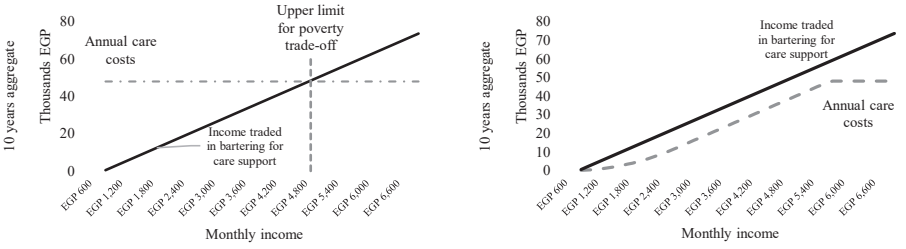


Fixed threshold approach

Preferred (gradual withdrawal) approach

Source(s): Figure by authors

Figure 2.
Income strain if income is on or below the poverty threshold, example (1)



Fixed threshold approach

Preferred (gradual withdrawal) approach

Source(s): Figure by authors

Figure 3.
The upper limit for the poverty trade-off, example (1)

Example (2)

Older person, living with his daughter and her spouse with two grandchildren, is in need of care for at least 24 h daily and chooses to receive care at home with the same care costs as in example (1). The difference here is that the poverty threshold based on the family size changes to be $pt = 3,218 EGP$.

In example (2), using the *fixed threshold approach*, the income strain at the poverty threshold is reduced to 121% compared to the 444% in example (1), but still unreasonable for a family whose income just crossed the poverty threshold and the incentive for poverty trade-off is still high (see Figure 4). Additionally, there is a fall in the upper limit of income traded in bartering poverty for care support, which supports the idea that if families shared the care costs, they would reduce the strain on government funding.

The income strain behaves similarly when targeted by a gradual withdrawal of government funding. In example (2), the care costs percent from the family income is lower at all income levels compared to example (1), and this is a very useful feature of the *preferred approach*, as families would benefit from the lower income strain.

Regardless of the cost share of individual or family income, the poverty trade-off incentive is reduced and individuals who would like to avoid catastrophic costs would find it costly to lose their income to be eligible for more funds from the government. Those individuals might choose other means of risk mitigation methods, e.g. insurance.

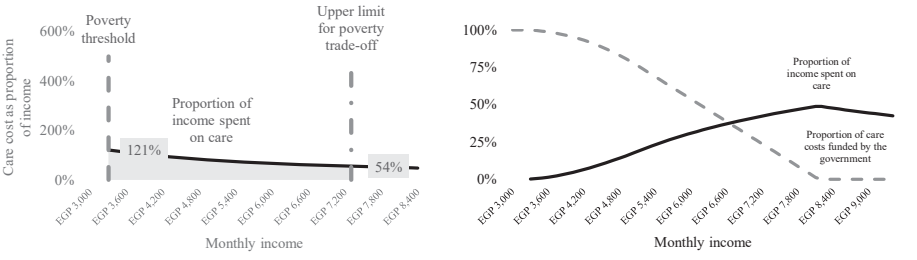
Both examples demonstrate that designing eligibility for government funding using the fixed threshold approach might create inequality for a large group of older people and their families, and this will act as a catalyst for the older people and their families to lose their income intentionally in order to be eligible for the government's financial assistance. However, designing eligibility for government support using a gradual withdrawal of funding with increased income would discourage poverty trade-offs to gain access to more government funding.

Discussion and implication

Comparing the two approaches for testing the level of government support for care costs, the preferred approach formula proven to be much better than the formula of the fixed threshold approach. The formula of the gradual withdrawal approach is preferred because:

(1) flexibility and adaptability at regional and local geographies with different parameter values;

(2) it introduces more transparency and fairness in the funding of social care for older people;



Source(s): Figure by authors

Figure 4.
Income strain if income is on or below the poverty threshold, example (2)

(3) it smooths the transition from full costs paid by the government to full out-of-pocket payments; and

(4) it enables the government to monitor the level of care needed by the population, and design plans that meet the demand for care.

The formula for the preferred approach includes two fine-tuning parameters, the stepper and the tapper, that can be used by policy makers to control the levels of funding, and the speed of withdrawal of government funding. Where accurate data on household incomes would be available, it might be possible to estimate the amount of funding required at the national level and the number of people who would benefit from the funding. It would also be possible to tweak the stepper and the tapper to identify the optimal value for government funding.

Should the benefits provided under the new bill should be means-tested, then there will be some theoretical implications of using the preferred approach formula. The theoretical framework of the preferred formula would require extension to include geographical variation. A new revised formula can incorporate both income and wealth together.

To conclude, the formula of the preferred approach is a crucial step that needs to be taken to remove incentives to poverty trade-off and hence save the government from escalating costs. Hence, it is suggested that the government, the care industry and the insurance industry set up a regular review of how best to meet the care costs of older people.

There are practical considerations for the government when implementing the older people care bill. Such as the need to boost research into innovative ways of providing social care funding that meet the needs of ageing populations. The government should establish an independent public entity that aims to supervise public and private spending on social care and collect data and make it available to researchers. Such data will enable understanding the economics of social care and market dynamics in response to different population interventions.

The "Older People Care Fund" that will be established under the new law can facilitate and encourage savings for older people and seek tax incentives for families to provide care for their older relatives. It can facilitate the application of means-tested methods in regional geographies.

The government should encourage and support innovative financial and insurance products and incentivise individuals to buy such products (e.g. through tax relief on insurance premiums).

Notes

1. Estimated using the Spectrum projection package
2. ADLs as defined by (Katz *et al.*, 1976): bathing, dressing, grooming, toileting, transferring or ambulating and self-feeding

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Corresponding author
Zahra Salah Eldin can be contacted at: z.saladdin@foc.cu.edu.eg