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Silver economy: opportunities and challenges to Brazil adopt the European Union's strategy

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This paper deals with the construction of the silver economy (or the longevity economy) strategy in Brazil and its contribution to the economic development. The first and second parts of the paper summarize the international debate on the concept, mainly in the countries of the European Union. The third part approaches the focus on the ageing population in Brazil, still dominated by a pessimistic view. In the next section of the paper, the action opportunities for the longevity saving strategy in Brazil are exposed with summaries of some key sectors, according to the international literature on the silver economy. The income of the older people and the purchasing power of families with older adults are analysed in the following sections. In the conclusion, some recommended actions for building the silver economy strategy in Brazil is discussed.

Keywords: Brazil; ageing population; ageing policy; silver economy; longevity economy

Cet article traite de la construction de la stratégie de la silver économie (ou l'économie de la longévité) au Brésil et sa contribution au développement économique. Les deux premières parties font un résumé du débat international sur le concept, principalement dans les pays de l'Union Européenne (UE). Ensuite, il s'agit de la mise au point sur le vieillissement de la population au Brésil, toujours dominé par une vision pessimiste. Dans une quatrième partie du document, les possibilités d'action pour la stratégie de la silver économie au Brésil sont exposées avec des résumés de certains secteurs clés, selon la littérature internationale sur ce sujet. Le revenu des personnes âgées et le pouvoir d'achat des familles avec des adultes plus âgés sont analysés dans la cinquième section. Dans les considérations finales sont examinées certaines actions recommandées pour la construction de la stratégie de la silver économie au Brésil.

Mots-clés: Brésil; vieillissement de la population; politique de vieillissement; silver économie; développement économique

1. Introduction

The concept of silver economy in Brazil is a little different from the understanding in some countries in Europe, the United States and Japan. While in these places its definition is something like "a set of economic activities linked to the production of goods and services targeting the elderly" (Beblavý et al. 2015, 10), in Brazil, it is understood more as an academic discipline (called "Economia da Longevidade" in Portuguese or "Longevity Economy" as Americans are used to say). It includes not only the potential of the

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market, but also public policy tasks (Felix 2007).[1] It is understood that the "silver economy" is more related to the terms of "silver marketing" or "silver demand".

There is no consensus on the definition of the silver economy in the available literature. The European Commission adopted the Oxford Economics definition of the Longevity Economy: "the sum of all economic activity serving the needs of over 50 and including both the products and services they purchase directly and the further economic activity this spending generates" (2014, 4). It is argued here that the: *silver economy is a set of strategic measures proposed by the state to stimulate the private sector and researchers to explore the opportunities emerging from an ageing society, through innovation, adapting thus the economy to the new demographic dynamics, and promoting economic development.*[2] The debate over concept is beyond the scope of this text. However, in this paper, the term will be used in designing a business niche, because the main goal of the paper is to discuss the business opportunities in Brazil and, as throughout the world, its strength to contribute to the economic development of the ageing society.

The important thing is to make clear that the silver economy as a central concept for marketing ignores the state's role. It is restricted to the marketing issue. For social sciences, the concept of longevity economy (even if accepted as a synonymous of silver economy) considers it essential that the state acts as the inducing agent that provides investments in R & D, tax incentives for key sectors, and dissemination of knowledge about ageing … This complex view of the concept makes it a subject of study in economic sociology.

The silver economy in Brazil is a work in progress. As in most of the world, the ageing population phenomenon has encouraged investment from small entrepreneurs to big companies in the segment. But it is not seen as a strategy yet, an "ecosystem" or one of the tools for economic growth, as the silver economy is understood in France and Germany, for example. Therefore, this market is expected to increase to the extent of the country age. Brazil has about 26 million elderly people (60 years and over), equivalent to 13.7% of the total population.[3] According to the projections, the population will begin to fall in 2035 and from 2010 to 2050, the number of elderly will triple, meaning an increase of 47 million seniors (Camarano 2014, 195).

Thanks to the public social security system (health, pension system and social assistance), established by the 1988 Constitution, the Brazilian elderly ensured a level of income well above the poverty line (1.90 US dollars per capita per day). The performance of the economy between 2004 and 2014 allowed an expansion of the median income per capita of 66.7% in real terms. More than half of the households have a median income per capita above the minimum wage.[4] The social security coverage reaches 76.8% of the elderly. Although the heterogeneity of the elderly segment is always considered, the Brazilian economy has a strength in the purchasing power of Brazilians over 60 years.

Before exploring the opportunities of the silver economy in Brazil, it is required to report how this vein has been built in other countries, which will be in the next section taking as an example the European Union. The silver economy in Brazil will be analysed further, starting by the role of the government. The main sectors of business opportunities and the necessity of networking incentives, clusters and funding for research, innovation and development to leverage the silver economy in the country will also be highlighted. The article concludes with some considerations to stimulate the silver economy in Brazil.

2. The silver economy in the European Union: a short review

The concept of silver economy is currently quite widespread in the academic literature, in private entrepreneurships, events and government initiatives around the world. Klimczuk

(2012, 52/53) helps to summarize a history of the concept, which originated in Japan in the 1970s, close to the concern in offering services and goods for older people. In 2006, in order to stimulate research in technology, the Japanese government releases the report "Challenges for Building the Future Society – the Role of Science and Technology in Ageing Society with Fewer Children". Until then, the silver economy was tied to what is called "social gerontechnology". Not as an economic development strategy – as it is currently perceived, but mainly as an industrial policy focused on export (Bernard, Hallal, and Nicolaï 2013, 11).

It is important to point out that the design of the silver economy as an economic strategy, never reached the United Nations plans on ageing. The Plan of Viena in 1982 only recognizes the largest financial independence of the elderly gained after almost 40 years of the welfare state. This point of view was not included even in the Plan of Madrid, which was considered a landmark in the new demographic transition discussion, with significant progress on respect of abandoning the idea of ageing as a "time bomb", although partnerships with civil society and the private sector were stated in its 35 goals and 239 recommendations to the policy-makers (Felix 2010, 55). It is assumed that this has spurred the studies on the impact of ageing on the aggregate demand in the OECD.

Although pin-point spots that are currently important for the construction of silver economy, such as reverse mortgage model, these posts of OECD yet saw ageing as a delay to economic growth and neglected for the economic potential, as for example the long-term care. This sector was seen by some authors as having low productivity in relation to manufacturing (Oliveira Martins et al. 2005) regardless of the strength of gerontechnology, I.T. and, recently, internet of things.

Heinze and Naegele (2009) drew attention to the lack of a new economic perspective on ageing. According to these authors, so far, studies on ageing added little more than a fiscalist vision of aspects of the demographic change. They enhance that the ageing on speech was serving only as a weapon to destroy the social security without realizing or exploring the demographic dynamic as a possibility of development and the silver economy as an "important constructive counter message to the macroeconomic threat scenarios" and an "area of growth" (41).[5]

The closest concept of silver economy, they said, would have appeared in 2006 in the German government's fifth report on the elderly in which it highlighted the "potentials of the elderly for business and society" (37).[6] Before that, according to the authors, silver economy was seen as a "seniors' products" sector or a "seniors' services" in connection with the geriatric market. But these days "are long gone" (41). This view was held in the formation of the SEN@ER – Silver Economy Network of European Regions, in Germany, in 2005. Nowadays, silver economy is an important strategy for Europe to create employment (Beblavý et al. 2015) and, includes the fight against unemployment for people over 50 years age and the so called "weakening of the second half of career phenomenon" (Guillemard 2010).

Heinze and Naegele (2009, 42) enhance housing in old age as an important issue for silver economy in view of the market potential of gerontechnology, telecare and innovation to meet demand of mechanization of everyday life. The trend of gerontechnology is to grow with the fact that more people dwell alone and demand it for all kinds of facilitation in everyday tasks. On the other hand, we must be alert to what researchers warn about the ecological impact of the single person domicile, which tends to increase in the ageing population, with regard to the consumption of electric power and its macroeconomic consequences (Féres 2014). In environmental economic risk, this

impact would threaten cancel the gain from the technology sector if we analyse an aggregate perspective.[7]

That's why French authors warn that the technology is only a "gateway to the silver economy". After Germany, France adopted silver economy as a development strategy. In December 2013,[8] the Commissariat Général à La Stratégie et à La Prospective, at the request of the Minister of Productive Recovery and Minister for Seniors and Autonomy, released the report "La Silver Économie: une opportunité de croissance pour la France" (The Silver Economy: a growth opportunity for France). For the first time a country joined a ministry of the economic area and the social area to meet the challenge of population ageing. The report has six proposals in public polices to stimulate demand for certain markets without having to subsidize it more effectively.

The first one is to beget an "emergency strategy" target focused on seniors with greater purchasing power. This task must support the development of an infrastructure that will be, in a second step, the transition to mass market and provide medical and social development. This would allow, in their opinion, a great opportunity in industrial policy. Sectors such as robotics, ITC, telecare would be at the centre of this strategy with stimulus to innovation from state actions. The recommendation is to start the process with communication tools, integration platforms of the various actors. Then the definition of standards and certifications (*labelling*) to goods and services.

Three key strategies are indicated: (1) Mobilization of savings of older people, often in the form of cash, to economic growth, either by consumption or by more productive savings. (2) Funding of start-ups. The development of innovative companies in the sector with funds partly financed by the public sector and large companies. (3) The specific support for the development and export of home care projects or collective habitats for the elderly. Therefore, it is essential, continues the report, that the state plays a role in infrastructure development and regularization.

The second proposal is streamlining the supply of services, considering telecare as pivot. By promoting the standardization of exchanges through the use of a "bus" (a big cluster). The state encourages players to multiply services and products packages. Given the importance of this market – especially with the advancement of robotics,[9] automation and internet of things – and the risk of formation of monopolies, the report recommends the creation of a regulatory agency for the telecare sector.

The third proposal is to adopt measures to diversify savings from the elderly, allowing greater liquidity in this segment of the population, given that its assets are almost all in real estate. The fourth proposal complements the third with specific measures to the French financial market reality. Fifth, it adds the creation of a sector fund to stimulate industrial policy and, the last one, to encourage the international development of a range of homes equipped with home automation and the most innovative services devices.

Along with the British report "Long-Term Care Revolution in the United Kingdom",[10] the French report serves as the basis for the European Union to develop its regional strategy for building the Longevity Economy (European Commission 2015b, 17). Since 2014, the EU has increased its awareness of the impact of ageing on all sectors of the economy and sought to develop partnerships between public and private actors aiming to innovation and entrepreneurship. This is a turning point of demographic dynamic as seen – and interpreted – by the world. In that new point of view, the technology sector plays a major role.[11] This does not mean that technology will replace human dimension of care, as highlighted by the EU report (2015b, 18). But access to technology becomes a form of care and affection or "an instrument of social innovation".

3. A public–private task

The Longevity Economy began to take its first steps in Brazil in the academic environment in 2007 (Felix 2007). The concept, however, has spread very timidly without being yet a topic of public or business policy. Any state action – whether federal, state or municipal – is absent to build a strategy, as which has developed in the European Union, the United States or Japan. As discussed in the previous section, this strategy would depend on efforts coordinated in research, innovation, entrepreneurship. Thus, it would be able to motivate investments aimed to meet the new demands arising from the change in the structure of household consumption of an ageing society. Similarly, it would help the sustainability of the public expenditure related to the ageing population, as is the goal of the Longevity Economy in Europe (European Commission 2015a, 04).

In the public debate, a negative view of the demographic dynamics prevails with a strong monitoring tone focused on repetitive speech of increased spending of social security (health, pension systems and social assistance).[12] The concept of Economy Longevity is still confusing with its most simplistic definition as mentioned earlier in this article, that is, as just a niche market raised by the increase in the percentage of people over 60 in the total population. That is the idea prevailing in the media and it stimulates greater concern from the private sector to search for that consumer.

These goods and services, however, are restricted to segments closely related to the ageing process, such as health, pharmaceutical, care and beauty (cosmetics). The Brazilian ICT sector (Information, Communication & Technology), ignores the silver economy potential except for few telecare companies. Even multinational companies, whose headquarters are involved with theme of ageing around the world, while in Brazil its branch offices are far from this discussion. Much of this ignorance can be attributed to the absence of the public sector in a debate and the high level of ignorance of global actions in the Longevity Economy. This leads the country to discuss the ageing population in a narrow perspective.

In 2013, the Brazilian government established an inter-ministerial committee named "National Commitment for Active Ageing"[13] without the participation of the ministries of the economic area, such as the Finance and Development, Industry and Trade offices. This leads us to believe that the government excludes the hypothesis that the ageing population may offer any possibility of generating wealth. In the minutes of the committee meeting, it is evident that the purpose of the group was to discuss public policies "aimed at the *care* of the elderly", thus revealing a sole welfare role.

The policies and actions directed to the elderly segment are in the federal level, spread over 10 ministries with no strategic articulation, although the Instituto de Estudos de Pesquisa Econômica Aplicada (Ipea) which is an autarchy linked to the Ministry of Strategic Affairs,[14] is the *think tank* with the highest data production and a high-level studies on the process of population ageing. In the minutes of the government committee meetings, the Longevity Economy issue was never mentioned by the members. Thus, the actions of the central government, states and municipalities are undertaken without coordination and without any dialogue with the private sector.

From the civil society and organizations for citizenship participation, ahead of a huge social demand in a country with noted inequality of income and wealth, the debate focuses on the claim of the elderly rights established by the Federal Constitution of 1988 by the Política Nacional do Idoso de 1994 (Lei 8.842) e pelo Estatuto do Idoso (Lei 10.741) de

2003 ((National Elderly Policy 1994 (Law 8842) and the Statute of the Elderly (Law 10.741) 2003).[15] All this normative framework moves in the social field of the public policy (pension system, welfare, health, education, culture, labour, rural development, racial equality and gender equality) with little reference to the obligations and opportunities in the private sector field.

Although it was considered a breakthrough in the emancipation aspect of the elderly citizen, the normative text delegates to the private sector complete freedom in relation to population ageing, without requiring obligations or encouraging it to seek opportunities and innovation in the face of demographic change. In the 118 items of the Elderly Statute, none refers to companies or to investments that could improve services or products that benefit and/or promote the welfare of the elderly. This means that no legal incentive for this purpose was considered by legislators.

Despite of this picture in the public sector, Brazil views some actions aimed to the elderly segment at state level in line with the Longevity Economy. The point is that these initiatives are fully disjointed, short-sighted from the overview. It is difficult to answer the question: How does Brazil intend to meet its challenge of the ageing population by the end of the century? Which sectors were elected as strategic? What is the potential that it foresees for the ageing of its population? In the private sector, there is also a great drive in search of the elderly consumer, developing new services and products. But it is still very restricted to the south and southeast regions of the country and, again, without a state, non-governmental or private conductor to lead an economic harmony. This is the scenario that will be presented in the next section.

4. Challenges, actions and opportunities in the next 20 years

The international literature indicates as the most promising sectors of the Longevity Economy to be the telecommunications, telecare, financial, housing and/or construction, transport, tourism, energy, culture, education, infrastructure, health (healthcare), local services, cosmetic and beauty, and long-term care (Beblavý et al. 2015, 11; Bernard, Hallal, and Nicolaï 2013; Heinze and Naegele 2009, 41; Klimczuk 2012, 52). The dynamism of each of these sectors combined with the demographic transformation, however, depends on the characteristics of each society, that is, the specifics of each economy (comparative advantages). It also depends on how partnerships between public, private and social organizations (non-governmental) are established from a network capable to promote the role of innovation (competitive advantages) as a development factor.

It is possible to mention actions in all those sectors in Brazil, seeking the advantage of the ageing as an economic factor. However, these initiatives are scattered without interaction with universities, research centres, laboratories, project financers, thus failing to establish itself as industrial policy strategy or lever to stimulate economic growth. In this respect, Longevity Economy meets a barrier, the lack of a national development project capable to double the current level of per capita income by 2034, from the current US$ 10,300 to US$ 20,000 and raise its Human Development Index (HDI) from the current 0.718 (84th position) to 0.809, considered as minimum standards by the World Bank for an economy set to be developed. This would require a GDP growth of 4% per year over the next 20 years (Lacerda and Loures 2015, 163) or the implementation of redistribution policies. The Longevity Economy's ability to help the country achieve these goals from the generation of wealth of its own demographic dynamics is also ignored. Then it briefly presents an analysis of these possibilities in some key sectors.

4.1. *Health*

The health sector is the most important for the creation of a silver economy strategy. Nevertheless, it has been dismissed as an economic growth factor in the development of macroeconomic policies. With regard to the ageing population, health is examined only on the side of government expenditure, without the adoption of potential prospects for the revenue side, that is, as a lever for tax revenue and job creation. This is the biggest sign of a policy disarticulation with the demographic dynamics that hinders the development of new economic strategies.

In the 2007/2008 financial crisis, the government adopted a series of countercyclical measures, making exoneration target and giving Keynesian stimulus to the traditional sectors of industries, such as the automobile mainly (Marques and Nakatani 2015).[16] No action was taken under the logics of a society for the accelerated process of ageing population, for example, as it could have been done in the healthcare industry. Evident signs in their potential were ignored. As observed in Europe (Beblavý et al. 2015, 8), the health sector in Brazil remained dynamic even during the economic crisis (Afonso 2015), maintaining its ability to generate jobs.

The 1988 Brazilian Constitution created the Sistema Únido de Saúde (SUS, Unified Health System), a universal and free public system. The majority of the population only have this kind of health care coverage offered by public hospitals and institutions associated with the government. Although, the share of private spending in total health spending is 52.5% of total spending, against 47.5% of the public spending (or 4.5% of GDP). From the private spending, 30.35% is *out of pocket*, with the largest share with medication. The complementary health insurance (plans and insurance) represented, in 2014, 2.5% of GDP.[17] In other words, despite the existence of a free system, the household spending is high and public spending is lower than similar-sized economies (WHO 2012). Some authors interpret this as a health privatization trend, covertly, either through the implementation of the budget (political will to define priorities) or the imposition of fiscal austerity policy to limit resources (Marques 2015).

The fact is that this socioeconomic framework drives the private sector and expands the capacity of a *multiplier factor* of the health sector neglected hitherto. The only action of relevance in this direction was the approval of the law that allows the entry of foreign capital in the hospital sector.[18] Still, without a vision of "cross-section market" view, as recommended by Heinze and Naegele (2009). This failure could further undermine the public system rather than promoting a joint and fruitful coexistence.

Even for this deficiency, beneficial to the private sector, the expectation of market analysts is that the law will attract foreign investors in the coming years attentive to ageing population in Brazil. The analysis of the epidemiological profile of the Brazilian elderly has the outline size of the health market in Brazil. From the approximately 26 million elderly Brazilians (60 and over), it is estimated that more than half have some type of chronic disease.[19] The relationship between spending increase and ageing in the coming years is proven, especially for Rio de Janeiro, where the health policy is still directed towards children and youth segments, in the first case because of the heritage of high decades of infant mortality and the second under the justification of death of young (mostly poor and black) due to chronic violence. This is a reality across all the country, but much more pronounced in Rio de Janeiro (Marinho, de Cardoso, and Almeida 2014).[20]

4.2. *Long-term care and gerontechnology*[21]

As in the healthcare industry, the long-term care area in Brazil tends to be mostly private in the near future, because the Brazilian Constitution assigns this task to the family and the

state's role has been residual. As stated by Debert (1999), we live a process of "old age re-privatization" of contemporary capitalism. The actions from the Brazilian public sector in the area of long-term care have been shy and slow compared to the pace of ageing. There is only a federal public institution in the country, located in the city of Rio de Janeiro.

The federal government transferred this responsibility to the municipalities, however, the budgets are limited by the Lei de Responsabilidade Fiscal[22] (Fiscal Responsibility Law). From the existing 3548 long-term care facilities for the elderly (ILPIs) in the country, 65.2% are philanthropic (religious and lay), 28.2% are private and only 6.6% are public or mixed. There are no institutions for the elderly in about 70% of Brazilian cities. Most are concentrated in the southeast region of the country. Only 1% of elderly Brazilians live in institutions.

The debate about new forms of housing for seniors is currently wide-ranging. Brazil has great resistance for the institutionalization of the elderly due to the tradition of abuse and serious problems monitoring the public sector (Giacomin and Couto 2014). However, the radical change in the family profile, with reduced supply of family caregivers, and a higher incidence of chronic diseases has increased the need and demand for homes for the elderly. Although the feeling of "ageing at home" through a variety of family arrangements still prevails, much of the future elderly will likely depend on institutions, cohabitation, smart homes among, other innovations. Currently, ILPIs supply in the country is saturated. Brazilian institutions are small, with about 30 openings, and most have worked with almost 100% capacity.

It is important to emphasize that whether in the health areas as in the long-term care area, *gerontechnology* (Fukuda 2011; Tinker 2011) is almost non-existent in Brazil. For now, the high technology is restricted to a network of reference private hospitals. In the institutions for long stay the caregivers personal care prevails, who are increasingly rare to find in the labour market, with traditional working practices, almost without any assistance of information communication technology. Meanwhile this is written the Brazilian Congress discusses the recognition of the profession of the elderly caregiver and when the law (Project 4702/2012) is approved, the families will face budget constraints to keep its professional under the Brazilian labour regulations.

This change will certainly expand the demand for institutions, day-centres, assistive technology, alternative homes and all form of assistance to families in the care task. Camarano estimates that there are 1.4 million women as caregivers without contributing to the Social Security in the country. If they were working, according to the author, they could receive about R$1 billion monthly, which, annualized, is equivalent to 3.7% of GDP. The average cost of elderly taken care of in long stay facilities would be about R$2.4 billion monthly, or annualized to 11% of GDP (2014, 38).

4.3. *Real estate and alternative homes*

With this perspective, large construction companies are beginning to express interest in Longevity Economy. Major players in the real estate sector announce their intention to investments in intelligent building projects, specially adapted for seniors, with architecture, technology and provision of specific services. For now, these private initiatives are restricted to São Paulo,[23] the richest city in the country, where presently live 1.3 million people aged 60 or more, 15% of those aged 80 or more and 21.8% with more than three types of illnesses reported in studies (Estudo SABE).[24] The market potential at the national level, therefore, is growing.

In Brazil, the number of elderly living alone increased from 1.1 million in 1992 to 3.7 million in 2012, an increase of 215% (IBGE 2015b). In the coming decades, according to estimates (Féres 2014, 341), the housing model which will grow in Brazil is that of people living alone and the ageing population has an important role in this forecast. Currently, 15% of elderly people live alone. The need to ensure autonomy and independence opens tremendous possibilities in real estate sector whether in renovation of homes or construction of new units.

The concern over friendly environments, adaptations, urban mobility, accessibility, has been pointed out in public policy discussions. These adaptations, many required by law now, gradually become large business opportunities for products that meet the needs of elderly and disabled. For example, all hotels in Brazil are being obliged to adapt 5% of their rooms for people with restricted mobility. However, many products (e.g. specific shower seats to prevent falls, approved by international standardization rules) are still imported, and mostly technology and monitoring equipment.

The transfer of foreign technology is slow and an obstacle for the emergence of the new national telecare companies. This outlook should, however, be radically changed in the short term. Initially due to the technological considerable advances in the sector and mainly because the public sector and health care plans start to be the main customers of telecare. Some monitoring and telecare companies already have annual growth of up to 50% even during the financial crisis. So far, the *smart homes* market in Brazil has been directed more to safety due to violence and urbanization.[25]

4.4. *Innovation and robotics*

One of the biggest challenges for the Longevity Economy in Brazil is the investment and regulation in favour of research and development (R&D). The first hindrance to encourage innovation is cultural. Analysing the country's economic development since the nineteenth century, Bresser-Pereira (2015, 62) notes that the Brazilian business elite has a historical "disinterest for technical progress", passively and comfortably accepting – the role of exporter of commodities in the international division of labour. The same author also highlights the issue of chronically overvalued exchange rate in the last 20 years, the greatest imposition for investment and industry. The macroeconomic scenario restricts any Brazilian boldness in the technology area directed to the ageing population.

Brazil invests (public and private sector) only 1.24% of GDP in R&D per year. In 2012, this percentage represented only something around US$ 25 billion. The public sector on average invests US$ 10 billion annually. A survey from the newspaper *Valor Econômico* (2015a), with 136 companies with revenues exceeding US$ 250 million, found that only 19% invest in R&D over the world average of 3.5% of revenues. Despite the federal and state governments to maintain funding agencies for research,[26] the level of resources is still very low to consider a promising industry such as robotics, for example, a key in the Longevity Economy in the coming decades (European Commission 2015).

The country has at least seven universities conducting research in robotics with researchers of good technical level. However, it is still far from a prototype itself. The aim of these researches has been, for the time being, to improve foreign models and to seek advances in gaps or demands of robots built by other research centres or, which is more advanced, to develop mechanical limbs and prosthesis whose customers are mostly elderly.

One of the main restrictions of research in the Brazilian robotics, further to the meagre financing is the legislation that surcharges the import of robot models even for scientific

purposes, limiting the exchange of knowledge. This scenario places Brazil as a robot import market for long-term care in the near future, when this industry to reach worldwide mass consumption stage.[27]

4.5. *ICT, mobile and "internet of things"*

Brazil is already an important consumer market for some products related to the elderly public. In 2013 the country had 130 million mobile phone users, about 75.2% of the population (increase of 131% compared to 2005), according to official data.[28] One of the main items is the *smartphone*, showing great potential for mobile applications and ICT area start-ups. From 2005 to 2013, the highest growth group with mobile phone was the 55–59 age, with 43.5 percentage points increase (IBGE 2015a). This means we can state that 73.6% of Brazilians in this age group have a mobile. This behaviour allows considering that in the short term, the percentage of elderly users will have major growth and may nearly reach the total. In 2005, only 16.8% of people aged 60 or older used mobile and, in 2013, more than half, 51.6% had a device, being for the first time, ahead of the group of 10–14 years (49.9%).

Internet use by the elderly (12.6% were connected in 2013) also expands quickly. Although finding the wall of the few years schooling in the population over 60 years (on average with only four years of schooling), the Internet in Brazil is increasingly including those with lower educational level (IBGE 2015). On the other hand, the population increases their number of years of study. This means that, soon, this barrier will fall, leading to a significant expansion of internet access by the elderly and their participation among the 85.6 million Brazilian users. This trend opens up unimaginable prospects for the use of the "internet of things", "internet of you" or "internet of everything" to guarantee autonomy and independence of the future elderly.

4.6. *Insurance and financial sector*

The insurance industry also appears as promising in the coming decades due to the absence, incapacity or state policy decisions in the long-term care. A sector which will probably be delegated to the private sector is the *care insurance*. It is the type of insurance to cover long-term care, fully paid by workers throughout their working phase or divided with the state or the employer. Whether it is the compulsory model, as in countries like Austria, Germany, Israel, Japan, Netherlands, Republic of Korea, Ukraine, Luxembourg, among others (Camarano and Mello 2010, 22) or on the market and voluntary model, this is a new product to be established in the Brazilian insurance market. This product begins to be seen as an option for the old age of youth without children.[29] This market arises because of the impossibility – or refusal – of the state to take care of the long-term care as the fourth pillar of its social security system[30] overwhelmed by fiscal austerity. The insurance industry in Brazil recorded in 2014 a turnover of about US$ 65 billion.[31]

4.7. *Tourism*

One of the few government actions within a logic of Longevity Economy, although, again, without a broader strategy, was the creation of a specific line of credit in the tourism sector. The *Programa Viaja Mais – Melhor Idade* (Travel More Program – Golden Age) was started in 2007 and consists of the credit supply to buy tour packages with lower interest rates than the market, through the Banco do Brasil e da Caixa Econômica Federal.[32] The

programme was expanded to companies in the sector and travel agencies to publish their offers and advantages as extra daily hotel fees, free entrance to museums, free transport for excursions, among other, in the Ministry of Tourism website, thereby enabling benefits to seniors. Tourists over 60 years of age now account for 8.9% of the Brazilian tourism market with 18 million trips in 2014, up 11% compared to 2010.

4.8. *Retail and specific products*

In a country with continental dimensions as Brazil, with 8.5 million square kilometres and 202 million inhabitants, the distribution of goods is a challenge. This task is even more difficult when the products have specific use or are assigned to specific segments. This barrier, however, is an opportunity within the market aimed at the elderly public. Although e-commerce is the most promising tool with numerous successful examples, there is a huge opportunity to be explored in the retail sector. Families have very difficult to acquire more sophisticated products, whether in health care, for patients with chronic diseases or specific needs, or in the home care area – full of innovations, tools, household items to facilitate basic daily activities.

One of the most common examples is trade of diapers for adults. The Brazil emerges as the third largest market for products for urinary incontinence. After a growth of 35.9% between 2013 and 2014, the Swedish manufacturer SCA (Svenska Cellulosa AB), as this article is written, today announced an investment of about US$100 million in a new plant in Jarinu (São Paulo state) intended exclusively for diapers for the adult segment. The baby diaper was taken from their portfolio (Valor Econômico 2015b). One of the major problem for this type of product, however, is the retail bottleneck and sales options only in pharmacies and supermarkets. As in Europe, with numerous chain stores for products aimed at seniors, there is room in Brazil for specific physical stores for geriatric products.

4.9. *Beauty and cosmetics*

From 1996 to 2013, the Brazilian industry of toiletries, perfumes and cosmetics had a compound growth deflated average close to 10% per year, moving from an ex-factory sales, net tax over sales, of US$4.7 billion to US$17.6 billion. Among the factors identified as responsible for this sector growth are, firstly, the reduction of social inequality seen in the last two decades allowing access from D and E classes to beauty products due to income increase, and new members of the class C also began to consume products with higher added value.

Other factors are the increasing participation of Brazilian women in the labour market, the use of cutting edge technology and the resulted increase in productivity, favouring the prices charged by the industry, which has smaller increases than the economy price indexes in general. But one of the foremost factors pointed out by analysts is the life expectancy increase (Abihpec 2014, 2). This industry boom, which looks set to continue in the coming years, is explained by the look of infinite youth elixirs typical for women – and now men – postmodern.

Debert (1999) points out that, unusually, the elderly consumer market was built from a gerontologyc speech which denied its own object of study when stimulating the media's tendency to deny ageing, promoting it from stereotypes, "seeing it for exceptions" or even blaming the ageing for refusing to use the weapons for the battle for eternal youth offered by the market. This behaviour is well shown in the sector's growth even in

times of crisis in the economy and the shrinking of the Brazilian industry. From 1996 to 2013, while the sector recorded average growth of 9.8% per year, Brazil's GDP grew on average at a rate of only 3.0% per year and Brazilian industry in general only 2.2%

4.10. *Segmented and specialized food*

With a greater number of older people living alone, Brazil observes a growth in the segmented food sector, that is, services and products for individual and fast consumption, especially those with customized diet and home delivery. But the strongest market has been the specialized food, where three major international players compete for a R$1 billion annual market.[33] Brazil is already the fourth largest world market and has been the country chosen for the launch of several products targeted for rehabilitation, patients with chronic diseases and food supplementation.

4.11. *Continuing education*

A number of changes in the Brazilian legislation in the last 20 years have been improving the level of education in Brazil, especially with regard to the average years of study and universal primary education.[34] In 1992, the Brazilian labour force[35] had only 5.7 years of schooling versus 8.8 years in 2012 (Ipea 2013, 14). The illiteracy rate (people aged 15 or more) fell from 11.5% in 2004 to 8.5% in 2013.[36] However, Brazil still has a huge challenge in improving the quality of education and reduce school dropout rates between 15 and 17 years, that is, maintain continuity throughout the school career. This allows us to state that in the next 20 years, the country will still have a significant number of young people and adults in search of educational correspondent to the age, or continuing education to reduce the knowledge gap due to a low quality of education in the formal schooling period.[37]

One of the most promising trends in the Longevity Economy, therefore, is the continuing education (lifelong learning). The projections of the population with different educational levels at two different times, in 2025 and 2050, determine that the percentage of Brazilians with higher level is still small, less than 15%, mainly among men (Beltrão and Duchiade 2014), although the historical analysis allows to state that the late study in the country is common to both sexes.

5. Income, consumption and elderly population labour market in Brazil

From 1992 to 2012, the activity rate of elderly Brazilians of both sexes fell 12% and researches concluded a downward trend of the participation of senior individuals in the labour market (Santos e Barbosa 2014). In spite of this, which reflects a global trend of the weakening of the career after 45 years of age, with impact on the elderly stage (Guillemard 2010), one in three elderly Brazilians (exactly 27%) keeps some sort of labour activity. Therefore the Brazilian reality follows the behaviour observed in rich countries with a detachment between ageing and dependency resulting in a greater supply of the workforce for elderly, although the primary cause of this phenomenon is the need for additional income (Camarano, Kanso, and Fernandes 2012, 28).

In the analysis of the income ability of the elderly population, the group of workers over 65 years is which represents the highest rate of informality in the labour market, reaching 82% from 1992 to 2012 (Holanda Barbosa 2014, 298). This finding suggests an explanation for the fact that 64.4% of the elderly being the reference person in the

household. That is, the family member with the highest income, either from work or retirement. The Social Security system provides some kind of coverage to 76% of elderly Brazilians (IBGE 2015). Almost half (48.4%) have higher income from all sources to a minimum wage (about $300).[38]

However, one must take into account the family arrangements, with a view that the economy longevity intends to rise under in a new consumption pattern of households with a greater number of elderly. In 2013, 58.4% of elderly Brazilians lived in households with monthly income *per capita* over than the minimum wage. Family arrangements that had at least one person 60 years or older accounted for 29% of total family arrangements of the country and for family arrangements with elderly the family monthly income average per capita was 25% higher than the income of family arrangements without seniors and 16.6% higher than the income of all family arrangements.

This means that, regarding the purchasing power, there is a two-way relation between the transfer of income from elderly to dependents and from other family members for the elderly, thus forming for the vast majority of people over 60, a family safety net. Thus there was an expansion of welfare for all Brazilians between the years 1992–2012 with an evolution of the real average income of 60.77%, and for workers over 65 years, this percentage was of 163.14% (IBGE 2015).

In the literature one of the most consensual explanations to increase the power of income of the population is the minimum wage readjustment, a policy adopted by the government since 2003, which meant a real correction (or deflationed) of 263% in the period from 1994 to 2014 (Dieese). The readjustment of the minimum wage impacts directly and mainly the value of the benefits paid by the social security system which uses it as a reference for annual adjustments. The income of pensions and other benefits from the public system explain the 20% the reduction of social inequality in Brazil seen between 2001 and 2011 against 58% of labour income, 13% of direct income transfer programmes such as Bolsa Família, 4% of the Continuous Cash Benefit and 6% of financial investments and home rental (NERI 2012, 7).

These factors place the elderly segment with advantage regarding the position of poverty in comparison to other cohorts of the population.[39] The relevant question for the Longevity Economy strategy is the expenditure profile of this segment and families. Research on the breakdown of expenses of families formed by at least 50% of seniors found the item health consumes 15% of the budget compared to 10.4% of all households regardless of the participation of older people (60 years old as reference). In comparison to the Americans, for example, this cost percentage is reached only in families with elderly aged 75 or more (Neri, Carvalho, and Corsi 2004). The same survey found that 50% of families with elderly spend secondly on food (30.2% of the budget), miscellaneous expenses (5.79%) and housing (32%). In families in general, spending on transport, clothing, education and recreation are larger than those of families with 50% of seniors.

6. Final considerations

The concept of Longevity Economy as set out in this text, is currently incorporated into the discussion of ageing population, particularly within the European Union, the United States and Japan. However, Brazil still discusses the demographic dynamics alien to this economic development strategy, although in a disjointed manner it develops in the government sector and the private sector, actions that are compatible with those prospects. These actions, however, given the potential of various sectors and the changes in the Brazilian

economy in the last 20 years, are under-employed due to the lack of a coordinated policy, especially in the industrial field.

This initiative depends, as in other countries mentioned above, on an organization, from the State, of an economic *ecosystem* capable to anticipate future opportunities. This means to adapt the economy to the ageing population process, rather than requiring the ageing population growing sacrifices to fit an economy predetermined or unprepared for the demographic configuration of the twenty-first century.

This strategy, as highlighted by Klimczuk (2012), should be built at the federal level but also at the regional level, that is, in the states and municipalities, exploring their local potential in all key sectors of the Longevity Economy. In one of these sectors, as noted here, Brazil has urgency to move forward: the *gerontechnology*. It concerns all technological devices that are being developed in OECD countries in order to meet the long-term care demands of the elderly.

Thus, the Longevity Economy presents itself as an innovation strategy, an industrial policy that meets, from an economic point of view, not only the elderly but all generations, promoting the wellness for those who care and who is cared, generating jobs and growth in the GDP. In the macroeconomic view, the *gerontechnology* will have direct impact on the balance of trade in case Brazil passively accepts the role of importer for high added-value products (robots, for example), as it does in the commercial balance of Health.

According to Klimczuk, the policy-makers should adopt four priority actions in the task of building this strategy: (1) promote knowledge about population ageing, Longevity Economy, gerontechnology, taking into account the heterogeneity of the elderly segment; (2) prevent discrimination by encouraging campaigns thus the universal design, the creative economy, gerontechnology and innovation to promote the well-being of the elderly; (3) building of specialized scientific and educational institutions, such as "agelabs" and include in university curricula (i.e. various faculties such as engineering, business administration, economics, medicine etc.) a specific discipline with such knowledge; (4) popularization of cultural institutions such as medialabs, working in co-management, in an interdisciplinary manner, open to public activities in order to establish links between business, science (universities) and social activities taking into account the digital culture, integration intergenerational, thus promoting gerontechnology.

The construction of Longevity Economy in Brazil demand also stimulus for the development of *clusters* dedicated to research, innovation, development of exchange with companies at all levels, mainly developing a network with official label, as in the European Union. This task would require specific research to establish its operation to ensure effective economic results for the benefit of the elderly population.

Notes

1. The design of a Brazilian Longevity Economy is closer to the French term "silver économie" (Bernard, Hallal, and Nicolaï 2013) as French government has adopted it. According to the "background paper" European Commission, no generally accepted definition of silver economy has been established. In footnote 12, this paper mentions: "Under the term Silver Economy we understand adaptation of economy to future needs of growing population of those over 50 years" [Apud Marek Radvanský, Viliam Pálenik, "Silver Economy" as possible export direction at ageing Europe – case of Slovakia]. That's a pretty close to the definition that I used in my paper on Longevity Economy in 2007.
2. In the same paper, the authors defined the silver economy

> as the economic opportunities arising from the public and consumer expenditure related to population ageing and specific needs of the population over 50. The ageing population can be divided into 3 groups, each with their need-patterns: active, fragile and dependent. Thus, the Silver Economy comprises a large part of the general consumer economy, but with considerable differences in spending priorities and patterns. The Silver economy is driven both by the emergence of new consumer markets and by the need to improve the sustainability of public expenditure linked to ageing (European Commission 2015a, 4).

For the Oxford Economics, is "the sum of all economic activity serving the needs of those aged 50 and over including both the products and services they purchase directly and the further economic activity this spending generates" (European Commission 2015a, 9).

3. All data in this section are taken from Brazilian Institute of Geography and Statistics, IBGE, National Survey of Households (Pesquisa Nacional por Amostra de Domicílios, Pnad), 2014. www.ibge.gov.br
4. The median income in Brazil was R$ 732.00 in 2014 (about 332 dollars), according to official data (IBGE 2015), while in 2004 it was R$ 439.00 (around 150 dollars).
5. This view coincides with what was being developed in Brazil, including drawing attention to the obsession of some economists in just discuss the issue of the deficit of the social security system. Heinze and Naegele stress this "too narrow economistic approach" (p. 38). For Brazil, see Felix, 2007, 2009 and 2010.
6. The sixth report followed the same line and the seventh (Rethinking Aging) was being prepared during the writing of this article in the first quarter 2015.
7. Heinze and Naegele also cite the need to stimulate cohabitation, but without regard to environmental issues.
8. The official launch of the strategy was on 24 April 2013.
9. See Roberts (2015).
10. The Long-Term Care Revolution is a programme developed by Innovative UK to stimulate innovation to create alternatives to the institutional model of long-term care in the UK, turning long-term care from an economic liability to one with significant wealth creation potential.
11. See Carrero (2015).
12. In the 1990s, former president of Brazil, Fernando Henrique Cardoso, made a famous speech, calling the retired "bums" ("vagabundos" in Portuguese) to defend the reform of the pension system. Mainstream economists also refer pejoratively to the elderly in extensive bibliography to justify, for example, the adoption of the minimum retirement age. Proponents of the end of the public healthcare system (totally free) refer to an "unsustainability" of this service in the future due to an aging population. All these references, widely publicized by the media, increased the perception in society that the increase in the elderly segment of the population is a burden, something negative to all the Brazilians.
13. Decree of the President of the Republic No. 8114/October 1, 2013.
14. Applied Economic Research Studies Institute in English. This ministry was extinguished in October, 2015. Ipea returned to the Ministry of Planning.
15. This procedure is through the local, state and federal councils. See Giacomin (2012).
16. The share of automobile industry in GDP increased from 13% in 1999 to 19.8% in 2009, while the manufacturing industry fell from 17.2% to 13% in this period. (FIESP 2015; Rolnik 2015, 272)
17. ANS data available on the Cnseg website www.cnseg.org.br
18. Brazil had 6396 hospitals in 2009 and fell to 6312 in 2014. The number of beds in the same period dropped from 455,867 to 445,390. According to Ministry of Health data.
19. The number of Alzheimer's patients is estimated at 1.2 million by Alzheimer's Brazilian Association (Abraz).
20. For epidemiological profile and health systems not adapted, see WHO (2015b).
21. In this section, we deal only with long-term care and adoption of technology from the view of elderly dependent and services to users offered by nursing homes as well as those in need of family care in their homes. In the next section, we will focus on the construction of buildings sector, condominiums, cohousing that can be as independent elderly customers.
22. Lei Complementar n° 101/2000, Complementary Law No. 101/2000, according to its justification, establishes in the national scheme, parameters to be followed for the public spending of

each federal entity (states and municipalities) Brazilian. Budget constraints aimed at preserving the fiscal situation of the federal entities, according to its annual balance sheets, in order to ensure the financial health of states and municipalities, the investment of funds in the appropriate balls and a good administrative heritage for future managers.

23. There is a public experience of housing for seniors, called Condomínio Cidade Madura (Mature Condominium City) inaugurated by the state government of Paraíba, in 2014. The group consists of about 40 single-story houses and 3 condominiums have been built in three cities (Campinha Grande, João Pessoa and Cajazeiras). However, these houses do not have high-tech equipment.
24. Saúde, bem-estar e envelhecimento (Health, welfare and ageing) (SABE) is a longitudinal study of multiple cohorts on the living conditions and health of the elderly in the city of São Paulo conducted by Departamento de Epidemiologia da Faculdade de Saúde Pública da Universidade de São Paulo. See www.fsp.usp.br/sabe
25. In the last four decades, the urbanization process has increased the number of the slums (*favelas)* in the rich neighborhoods of the cities and towns, including inside the country. This phenomenon is called the "geography of inequality" and is caused "by the power of global finance to take ownership of urban land and housing" (Rolnik 2015, 368). This "favelization process" boosted the private security sector, especially to guard condominiums and luxury buildings. These companies are the major consumers of security products for smart homes, as devices with biometrics, cameras, automatic gates, sensors of all kinds.
26. The federal government maintains the Financiadora de Estudos e Projetos (Finep) (Financier of Studies and Projects) (Finep) and state governments maintain their own foundations, with grants, funding projects and prizes for innovation. See: www.finep.gov.br
27. To robotics and ageing, see Felix (2015).
28. The number of lines is greater than the population, amounting to 272.2 million in 2014, according to the National Regulatory Agency for Telecommunications (Anatel).
29. Currently the fertility rate is 1.7 child per woman.
30. The first is the universal health, free and non-contributory, the second, pension system (pay-as-you-go or division-participation) and the third, social assistance. (Article 194 of the Federal Constitution).
31. See official website of Susep www.susep.gov.br
32. Both are state-owned banks.
33. Estimation of a major brand of the market in 2014.
34. With the creation of the Fund for the Development of Basic Education and Enhancement of Education Professionals (FUNDEB, institutionalized by Law 11,494/2007) has extended the Fund for Maintenance and Development of Fundamental Education and Teacher Enhancement (FUNDEF, established by Law 9424/1996), which lasted until 2006. The FUNDEB started to allocate resources for basic education in both regular mode and in integrated vocational education and adult education. In 2006, compulsory basic education was extended from 8 to 9 years, through Law 11.274/2006, and the following year, the Education Development Plan (EDP), the Ministry of Education, emphasized the elementary school and set targets for improving quality from the Basic Education Development Index. Noteworthy is the Constitutional Amendment No. 59, 2009, which increased progressively, mandatory basic education for the range 4–17 years of age by 2016. The Law 12,796/2013, formalized this change by changing the original text Law of Directives and Bases of Education – LDB instituted by Law 9.394/1996. Basic education became mandatory from 4 to 17 years of age and organized into three stages: pre-school (required level of early childhood education), primary and secondary education. There was a substantial increase in access to early childhood education according to 2013 official data (PNAD). From 2004 to 2013, the age of the children enrollment rates 0–3 years and 4–5 years rose from 13.4% to 61.5% to 23.2% and 81.4%, respectively. The gross school enrollment rate for persons 6–14 years of age remained close to universal. In turn, the proportion of young people 15–17 years of age attending school increased by only 2.5 percentage points, from 81.8% in 2004 to 84.3% in 2013. In view of Goal 1 of the Plan National Education (PNE), established in the bill in 8035/2010, despite the observed breakthrough remains challenging expand by 50% school attendance of children up to 3 years old by 2020 and universal until 2016, school attendance of the population of 4–5 years. In turn, these age groups suffer significant population decrease by 2060, which represents an

opportunity to expand the supply and quality of education in the early years of a child's education (IBGE 2015).

35. The IBGE defines as a labor force to the working population, that is, occupied and unoccupied 10–65 years.
36. The highest incidence of illiteracy is among men (8.8%), black or brown (11.5%) and aged over 65 (27.7%). Among the s 15–29 years or 20–24 years Brazilian illiteracy is practically eradicated with rates of 1.0% and 1.6%, respectively (IBGE 2015, 111).
37. Pisa in the report, the OECD, Brazil ranks 55th in reading with an improvement of only 1.2 point per year over the last 10 years. At this rate, Brazil would take over 71 years to reach the 496 points of the OECD average. Currently, the national average is 410 points. A similar situation occurs in math and science.
38. The data source of this section is the Summary survey of IBGE Social Indicators for the year 2013. The minimum wage was R$ 678.00 and the exchange rate that year closed at R$ 2.35 (December/2013).
39. According to the criteria of FAO and WHO, 15.09% of the population (28,698,598 Brazilians) lived in poverty in 2013 and 5.5% (10,452,383 Brazilians) below the poverty line (IPEA). The poverty criteria is two dollars per capita per day or monthly household income per capita less than half the minimum wage.

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