



Review on basic income (BI): its theories and empirical cases

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Abstract

A basis of fundamental knowledge of different basic income approaches (BI) is essential to be elaborated for enhancing the prevalent debates on BI as an important solution on social transformation. Aiming to contribute to the current knowledge gaps and future research agendas on BI, this paper elaborates on BI theories and BI empirical cases, linkage, and gaps between these two parts. A total of 152 pieces of literature on BI theories and BI empirical cases were intensively reviewed, which includes BI definitions, positive and negative conceptual impacts of BI argued to bring to human society from social, economic, and policy-and-governance perspectives, as well as the implementation and the outcomes of 15 selected BI empirical cases. Our findings indicate that BI definitions remain imprecise, and the BI empirical cases are implemented in diverse ways. We also identified that many conceptual impacts of BI were not achieved in the reviewed BI empirical cases. We further argue that the policy environment for implementing BI has not been entirely created at present, and a key issue is that the ambiguity between the BI theories and BI empirical cases causes difficulties to generate widely agreed principles guiding the implementation of BI. This paper suggests that future studies on BI should focus more on revising existing BI definitions which need to be simplified, detailed, and unified, generating universal principles guiding the implementation of BI, and developing indicators measuring BI's consequences.

Keywords Basic income · Human society · Governance · Development

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Introduction

The concept of basic income (BI) is nothing new; the formation of this idea can be traced back to several centuries ago. However, academic research on this topic was only recently formed in the 1960s (Widerquist et al. 2013), when its potential to lead the welfare system's reform in North America and Europe was realized. The resurgence of widespread attention on BI in recent years coincided with increasing concerns to bring social and economic transformation at the contemporary time; one of the approaches contributing to addressing technological unemployment in a future society shaped by the development of the digital economy (Pulkka 2017; Caputo and Lewis 2016). Meanwhile, in sustainability literature, BI is considered a necessary strategy in adapting to sustainable de-growth (Kallis 2011; Schneider et al. 2010). Until now, many scholars have tried to define BI based on different dimensions, and the various conceptual impact that BI could bring on human society has been being raised continuously in the academic debates.

On the other hand, putting the idea of BI into actual implementation was once conspicuous from the 1960s until the beginning of the 1980s in the United States (U.S.) and Canada, as several negative income tax (NIT) experiments were launched for understanding how a family adjusts their labor supply in response to an NIT (Robins 1985). The efforts on making BI proposals have continuously been witnessed in Europe including, e.g., the United Kingdom (Jordan 2012), Germany (Opielka 2008), Finland (Koistinen and Perkiö 2014) and Spain (Perkiö 2013), since middle the 1980s, despite none of them were implemented as a national-wide policy. Nevertheless, BI empirical cases were occasionally implemented at different times in the past several decades around the world, and these empirical cases have provided limited but valuable empirical evidence to testify those conceptual impacts of BI in the theoretical discussion. Therefore, considering the BI's rapidly changing and increasingly intricate status, it is crucial to comprehensively elaborate the entire picture of BI's field, including the development of BI theories and the implementation of BI empirical cases.

Given the above situation, this paper focuses on reviewing the theories and empirical cases of BI comprehensively. Specifically, we attempt to examine theories of BI, including its definition and its conceptual impacts on the human society discussed in the literature. We would also like to summarize the outcome of BI empirical cases implemented up to the present. A comprehensive and detailed elaboration on BI theories and BI empirical cases would contribute to future researches on BI by providing a robust theoretical ground. It would also provide substantial evidence to other stakeholders, including social activists, public advocacy groups, or policymakers, when debating on whether and how BI should be implemented in the future.

Hence, the rest of this paper is organized as follows. The subsequent section gives a brief explanation of the methodology. The third section reviews the definition of BI and its conceptual impacts BI on the human society identified in the theoretical discussion correspondingly. The fourth section examines the BI empirical cases around the world. In this section, the content, including detailed information on their implementation and the outcomes of 15 BI empirical cases, is reviewed. The fifth and last section discusses the limitations, findings and concludes the paper, respectively.

Materials and methods

The BI theories and the BI empirical cases were reviewed and summarized in this paper. The BI theories refer to the definition of BI and conceptual impacts of BI on human society. This paper has implication of BI in the academic debates, specifically including both positive and negative ones that BI, if implemented, would theoretically bring to human society. Fifteen commonly discussed BI empirical cases are reviewed, and these cases include both pilot projects or experiments and policy-oriented programs run by the government. The former one is designed to be implemented purposively for a while in pre-determined areas.

In contrast, the latter refers to those launched as official policies with features partially following the BI definition. These 15 empirical cases include both completed and ongoing ones. The materials for the review on the BI definition and BI's potential impacts are from academic fields, including journal articles and book chapters. And the 15 empirical cases are reviewed based not only on journal articles and book chapters but also other materials, such as reports and information from websites. We used different keywords, such as "basic income," "universal basic income," and "basic income grant," to search for journal articles and book chapters about BI theories through Web of Science and Google Scholar. Likewise, different keywords including, e.g., "basic income pilot project," "basic income experiment," "implementation of basic income", were also used to search for literature about the implementation and outcomes of the 15 BI empirical cases through Web of Science, Google Scholar, and Google. A total of 152 pieces of literature were reviewed for this paper.

BI theories

Definition of BI

The new endeavor on theorizing BI is linked to the work on addressing distributive justice in the 1980s, such as John Rawls' *Two Principles of Justice* (Rawls 2009). Dworkin's notion of equality of resource emphasized that resource equality is a matter of equality in whatever resources are owned privately by individuals (Dworkin 1981). Explicit versions of the definition of BI started to appear in the 1980s. Van Parijs (1991) first raised a detailed definition of BI in his paper, arguing on the unfairness of John Rawls' point of view on surfers in Malibu. Since then, many scholars have been trying to define BI from diverse perspectives and interpret what BI should be. The definition of BI remains contested.

Out of 152 pieces of literature reviewed in this paper, there are 33 pieces of literature in which BI is defined. Apart from the one raised by Basic Income Earth Network (BIEN), the rest 32 works are from academic journal papers and book chapters. By intensively reviewing the 33 pieces of literature, we identified ten critical attributes included in the BI definition shown in Table 1. The number of all the literature in which each of the facts is mentioned is also elaborated in Table 1.

The most mentioned key attribute is "Universality," which is raised in 31 pieces of literature. The second most said key attribute is "Unconditionality," identified in 27 works of literature. "Individuality" and "Institution" are mentioned in 16 pieces and 12 pieces of literature, respectively. The amount of the literature mentioning "Sufficiency" is the same

Table 1 Key attributes of BI definition extracted from the reviewed literature

Key attributes of BI	Number of pieces of literature in which each attribute is identified
Universality	31
Unconditionality	27
Individuality	16
Institution	12
Sufficiency	12
Uniformity	9
Scale	6
Duration	7
Modality	4
Taxability	2

as “Institution.” The rest of the key attributes, as shown in Table 1, are mentioned in less than ten pieces of literature, respectively. We further summarized different interpretations of each of the ten key attributes of BI definition from the literature (see Table 2).

Universality implies that everyone should be considered as a BI recipient in contrast to selective policies singling out a subset of the population as beneficiaries (De Wispelaere and Stirton 2004). There is no disagreement that BI should be implemented universally in the reviewed literature. However, universality could be divided into two types. The first type illustrates who are recipients of BI in a more abstract sense, and the description includes, e.g., everyone (Baker 1992), all (Clark and Kavanagh 1996; Basic Income Earth Network No date; Van Parijs 2004), or all qualified persons (Davies and Bregman 2017). Altman and Klein (2018) claim that everyone should include children. The second type emphasizes the target population is receiving BI with a relatively more concrete sense. In this type, scholars usually assert that one with citizenship is qualified to be the recipient of BI (Von Gliszczynski 2017; Chen and Quinonez 2018; Van Parijs 1991). In some cases, being an adult is another requirement in a stricter case (Van der Veen 1998; McKay and Vanevery 2000; McKay 2001).

The second most mentioned key attribute is unconditionality. Unconditionality means that there are no conditions attached to exam whether one can be a BI recipient. Out of all the reviewed literature, 27 agree that BI should be given unconditionally. The specific interpretation of what should be included in the conditions which are not attached to restrict recipients’ eligibility to receive BI could be divided into two types. The first type of interpretation commonly states BI should be unconditional because there should be no conditions regarding work requirements (Baker 1992; Clark and Kavanagh 1996; Van Parijs 2004,1992; Basic Income Earth Network No date). It could be understood comprehensively from a temporal dimension that whether a person would receive BI should not be determined by his/her past working history (Baker 1992; Pettit 2008), current working status (De Wispelaere and Stirton 2007), and willingness to work in the future (Basic Income Earth Network No date; Raventós 2007). No means-test is another common interpretation on the unconditionality from the literature categorized into these groups (Maskivker 2010; Koistinen and Perkiö 2014; Van Parijs 1991; Clark and Kavanagh 1996). It also means that the current income level (McKay and Vanevery 2000) or having any other income source (Nooteboom 1987) would have no relevance to receive BI. It is also stated that BI recipients should not be required to participate

Table 2 Summary of different interpretations on key attributes of BI definition

Key attributes of BI definition		References
Universality	Interpretation	
Not specified ¹	All/everyone in society	Tondani (2009), Maskivker (2010), Zwolinski (2011), Standing (2012), and Beck et al. (2015)
	Everyone citizen or resident	Nooteboom (1987), Baker (1992), Clark and Kavanagh (1996), Andersson and Kangas (2002), Cruz-Saco (2002), Pateman (2004), Van Parijs (2004), De Wispelaere and Sturton (2007), Pettit (2008), Raventós (2007), Lovett (2009), Koistinen and Perkiö (2014), Davies and Bregman (2017), Basic Income Earth Network (No date), and Van Parijs (1992)
Unconditionality	Every adult citizen or resident	Bill (1988), Van Parijs (1991), Krozer (2010), Widerquist et al. (2013), Von Gliszczynski (2017), Chen and Quinonez (2018), Ruckert et al. (2018), and Altman and Klein (2018)
	Not specified	Van der Veen (1998), McKay and Vanevery (2000), and McKay (2001)
No any conditions regarding work	Not specified	McKay (2001), Cruz-Saco (2002), Pateman (2004), Tondani (2009), Standing (2012), and Beck et al. (2015)
	No any conditions regarding work	Clark and Kavanagh (1996), Van Parijs (2004), De Wispelaere and Sturton (2004, 2007), Pettit (2008), Lovett (2009), Nooteboom (1987), Van Parijs (1992), Baker (1992), Ruckert et al. (2018), Maskivker (2010), Koistinen and Perkiö (2014), and Basic Income Earth Network (No date)
Individual basis	No any conditions (e.g., social-demographic features)	Bill (1988), Van Parijs (1991), Van der Veen (1998), McKay and Vanevery (2000), Raventós (2007), Krozer (2010), and Widerquist et al. (2013)
	Individual basis	Nooteboom (1987), Bill (1988), Van Parijs (1991), and Clark and Kavanagh (1996), McKay (2001), Andersson and Kangas (2002), Cruz-Saco (2002), Van Parijs (2004), De Wispelaere and Sturton (2007), Krozer (2010), Standing (2012), Beck et al. (2015), Basic Income Earth Network (No date), Van Parijs (1992), and Widerquist et al. (2013)
The individual basis or household basis	The individual basis or household basis	De Wispelaere and Sturton (2004)
	Government	Bill (1988), Achterberg (2002), Cruz-Saco (2002), Van Parijs (2004), Raventós (2007), Lovett (2009), Krozer (2010), Zwolinski (2011), Beck et al. (2015), Chen and Quinonez (2018), Pateman (2004), and Davies and Bregman (2017)
Sufficiency	At the level enough to cover the basic needs	Bill (1988), Baker (1992), McKay (2001), Pettit (2008), and Altman and Klein (2018)
	No need to be sufficient to meet basic needs	Van Parijs (1992), Achterberg (2002), De Wispelaere and Sturton (2004), Widerquist et al. (2013), Clark and Kavanagh (1996), Cruz-Saco (2002), and Van Parijs (2004)

Table 2 (continued)

Key attributes of BI definition	Interpretation	References
Uniformity	It should be the same level for every recipient	Van Parijs (2004), Lovett (2009), Standing (2012), Widerquist et al. (2013), and Von Gliszczynski (2017)
Scale	No need to be the same level for every recipient National level	Nooteboom (1987), Baker (1992), De Wispelaere and Stirton (2004), and Cruz-Saco (2002) Von Gliszczynski (2017), and Davies and Bregman (2017)
Duration	Not specified or not necessarily need to be a national level Periodical	Van Parijs (2004), Krozer (2010), Widerquist et al. (2013), and Altman and Klein (2018) Achterberg (2002), Widerquist et al. (2013), De Wispelaere and Stirton (2004), Altman and Klein (2018), Lovett (2009), and Van Parijs (2004)
Modality	One-time Cash	Tondani (2009) Widerquist et al. (2013) and Van Parijs (2004)
Taxability	Cash and in a combination of kinds in some situation Tax-free	Lovett (2009) and De Wispelaere and Stirton (2004) Nooteboom (1987) and Van der Veen (1998)

¹Not specified means that the interpretation of the attribute is not given in the literature

in certain activities or services contributing to societies (Pettit 2008; Lovett 2009) or change their current behavior (Altman and Klein 2018) about, for example, the living arrangement (McKay and Vanevery 2000). The second type of interpretation defines unconditionality with a broader sense as absolutely no conditions should be attached to determine whether a person can receive BI (Van Parijs 1991; Van der Veen 1998; McKay and Vanevery 2000; Raventós 2007; Pateman 2004). Compared with the former, unconditionality is interpreted in the second type to include not only work requirement but also other social-demographic features such as age, marital status, gender, health status, origins, and social class (Bill 1988; Van Parijs 1991; Van der Veen 1998; McKay and Vanevery 2000; Raventós 2007; Krozer 2010; Widerquist et al. 2013).

The third most mentioned key attribute is individuality, which identifies in 15 pieces of literature that the individual as the unit of the target population, BI should be paid individually or based on an individual basis (Nooteboom 1987; Bill 1988; Van Parijs 1991,2004,1992; Clark and Kavanagh 1996; McKay 2001; Andersson and Kangas 2002; Cruz-Saco 2002; De Wispelaere and Stirton 2007; Krozer 2010; Standing 2012; Beck et al. 2015; Basic Income Earth Network No date; Widerquist et al. 2013). Van Parijs (1992) emphasized that paying BI individually implies that BI's target should not be household-basis. Widerquist et al. (2013) asserted that BI payment for each member of the family should not be made aggregated as a whole and given to the family or to the household head of that family. Regarding this, it is pointed out that considering those traditional approaches in the welfare policies. It is noticeable that some BI advocates also accept BI to be paid on a household basis (De Wispelaere and Stirton 2004).

The institution is the fourth most mentioned vital attribute in the BI definition, and it is relevant to who would be responsible for implementing BI. Twelve pieces of literature commonly describe a government or a political establishment takes the role (Bill 1988; Achterberg 2002; Cruz-Saco 2002; Van Parijs 2004; Raventós 2007; Lovett 2009; Krozer 2010; Zwolinski 2011; Beck et al. 2015; Chen and Quinonez 2018; Pateman 2004; Davies and Bregman 2017). And the level of government is determined by the scale of BI. The scale refers explicitly to a geographic location or administrative boundary where BI is implemented. Von Gliszczynski (2017) and Davies and Bregman (2017) asserted that BI is a national-level policy. The scale of BI in other literature is interpreted in a general sense as a particular defined area (Altman and Klein 2018; Krozer 2010). Van Parijs (2004) further clarified that the scale of implementing BI at the provincial level or community level is also acceptable.

Compared with others, sufficiency is a relatively controversial attribute relevant to the BI level that should be given to each recipient. There are mainly two types of interpretation identified in the literature. The first type insists that BI should be set at a level high enough to cover one's basic needs (Bill 1988; Baker 1992; McKay 2001; Pettit 2008) when he/she faces jobs and wage insecurity (Altman and Klein 2018). The second type considers that the amount of BI is not necessarily fixed at a subsistence level and can both exceed and fall short of that level in a given society (De Wispelaere and Stirton 2004; Achterberg 2002; Van Parijs 1992,2004). Some scholars differentiate between so-called full BI and partial BI (PBI) depending on whether the exact amount of BI is given at more or less than a socially agreed adequate level (Clark and Kavanagh 1996; Widerquist et al. 2013). Criteria for determining an explicit level of BI in a society are considered arbitrary (De Wispelaere and Stirton 2004). Cruz-Saco (2002) reckons legitimate claims are required in setting the level of BI as the conception of the good life or one's idea of occupation vary among people.

Uniformity is mentioned in 9 pieces of literature, and it is about whether every recipient should receive an equal amount of BI. Some scholars argued that BI should be paid equally to recipients (Standing 2012; Von Gliszczynski 2017; Lovett 2009). How much one would be paid is considered irrelevant to the type or the size of the household that this person belongs to (Van Parijs 2004; Widerquist et al. 2013). Others hold a different proposition, asserting that it is not necessary to set the amount of BI at the same level for every recipient (Nootboom 1987; Baker 1992; De Wispelaere and Stirton 2004; Cruz-Saco 2002). Nootboom (1987) considered that the amount of BI given to each recipient might be differentiated corresponding to the size of his/her household. It is also allowed that people receive a different amount of BI depending on the variation in age or their regions (Nootboom 1987; Cruz-Saco 2002; De Wispelaere and Stirton 2004).

The duration of BI refers to how often the payment of BI should be conducted. Apart from Tondani (2009), BI is incontrovertibly considered a regularly conducted payment rather than a one-time endowment (Achterberg 2002; De Wispelaere and Stirton 2004; Altman and Klein 2018; Lovett 2009; Van Parijs 2004), and the duration of BI is negotiable as every month, every week or even every day (Widerquist et al. 2013). Modality implies what form BI should be paid in, while some scholars claimed that BI should be paid in cash and not in kind (Widerquist et al. 2013; Van Parijs 2004). Combining cash and in-kind form in BI's payment is considered acceptable by other scholars (Lovett 2009; De Wispelaere and Stirton 2004). The interpretation of BI's taxability pointed out that BI's payment is tax-free (Nootboom 1987; Van der Veen 1998).

Conceptual impacts of BI on human society

As widely discussed in BI, positive, and negative conceptual impacts generated by BI can be divided into social, economic, and policy-and-governance aspects. In each element, positive conceptual effects were presented first, followed by the negative conceptual impacts, including BI's advocates' response.

Positive conceptual, social impacts of BI

The positive conceptual results of BI in the social aspect can be divided to improve the quality of life, enhance gender equality, and enhance social justice liberty.

Improve the quality of life The first conceptual, social positive impact that BI is argued to make is to improve the quality of life. Sircar and Friedman (2018) argue that BI might have a better impact on the health of beneficiaries compared with other conditional cash transfer programs. BI can provide more financial security, reaching all people who might benefit, and providing a better boon to public health within one or two generations. The theoretical discussion regarding this topic is incredibly widely raised in South Africa. BI is considered one of the necessary solutions to alleviate serious health issues, like HIV issues (Nattrass 2006; Richter et al. 2009). Ferguson (2010) claims that receiving BI would enable poor South Africans to spend more on nutrition and health care. BI is also considered to promote human development through education (Haagh 2015). The investment in human capital from BI would consequently stimulate the occurrence of positive changes in the resident's social attitudes and behavioral norms in the long run due to the spillover effect that BI can make to the community building (Forget et al. 2013).

Enhance gender equality The linkage between BI and addressing gender inequality was first raised by feminists since the British Women's Liberation Movement in the 1970s in the United Kingdom (Yamamori 2014). The traditional gendered division of labor (Elgarte 2008; Baker 2008) raised a gender issue that female engaged in full-time domestic work within a household usually lack autonomy and have low self-esteem, and they have to be materially dependent on their counterparts (Vollenweider 2013) since the domestic work is usually outside of the regular labor market and unpaid (McKay and Vanevery 2000).

Feminists in favor of BI argued that while many means-tested subsidies are implemented on a household basis, BI can improve the economic independence of females living with their partners because of its individuality (Raventós 2007; Cantillon and McLean 2016). As BI is distributed universally and individually, domestic work can be either treated as a paid job (Bill 1988; Baker 2008) or outsourced to care centers or contract cleaners (Bill 1988). Consequently, the power imbalance within the family between care recipients and caregivers, usually female, can be alleviated (Schulz 2017; Zelleke 2011). Financial resource and citizenship status is provided to females even though they do not have paid employment (Zelleke 2011).

It is also asserted that BI can also alleviate the economic difficulties of single-parent families headed by women (Raventós, 2007; Schulz, 2017; Evans 2009). In the context of the United States, "dual welfare states" results that this type of family with the same necessity to be assisted are often treated differently by the policies with similar purposes from "social insurance" and "public assistance (Peterson and Petersen 1994). Therefore, this unfair issue for female-headed single-parent families would be addressed as BI is argued able to eliminate the "dual welfare states" (Clark and Kavanagh 1996).

Besides, BI would hinder the appearance of non-institutionalized outsourcing of domestic work, as they are usually discriminated against in terms of benefits and protection (Vollenweider 2013).

Enhance the liberty for social justice The third social contribution that BI can make is to enhance social justice liberty, and it is justified from the liberal and republican perspectives, respectively, by scholars.

Liberalism views liberty as a condition for social justice ideally enjoyed by everyone, even out of society, without others' interference (Pettit 1993, 2008). Attaching conditions in welfare policies for the receipt of the benefit should be criticized (as stated by Noguera (2005)). It is contradicted to the principles of concern and respect according to liberal egalitarians' point of view (Molander and Torsvik 2015). A well-known liberal justification on BI is from the argument of Van Parijs (1991) on the unfairness of John Rawls' point of view on surfers in Malibu (Rawls 1988). While Rawls (1988) asserted that in a fair society, the leisure time could not be enjoyed by those who are unwilling to work as the list of primary goods is originally stipulated to the least advantaged (Rawls 1988). Van Parijs (1991) argued that BI could eliminate the above ethical controversy and is of necessity in a just and fair society in which everyone is with equal concern for all and does not discriminate against the conceptions of the useful life of others. As an egalitarian and collective redistributive strategy (Mays 2016), BI is considered an integral approach to secure a fair distribution of so-called real freedom based on the real-libertarian conception that everyone can choose their way of a good life (Van Parijs 2004).

From the perspective of republicanism, liberty is viewed as a social status owned equally by all the citizens guided by law, and state control, which is generally expected to be loosened, is needed for a just and fair distribution in specific public fields such as education,

medicine or social security (Pettit 1993, 2008). Hence, BI is considered as a method to ensure social justice by minimizing domination (Pettit 2008; Lovett 2009), and it would greatly expand the personal and civic possibility of vulnerable people so that they will not swap their freedom for meeting basic needs (Raventós 2007; Lovett 2009). In Europe and South Africa's political debates, BI is also raised to address social exclusion (Atkinson 2014; Barchiesi 2007) as those vulnerable minorities such as long-term unemployed and contingent employees, who are usually excluded from the existing social security, will also be BI recipients.

Negative conceptual, social impacts of BI

The negative conceptual, social implications of BI are argued to worsen gender inequality and trigger unfairness.

Worsen gender inequality Some feminists having skeptical attitudes towards BI pointed out the possibility that the traditional gendered division of labor is adversely reinforced rather than changed (Robeyns 2001; Gheaus 2008) if BI was implemented along. BI is argued unable to function as a panacea to all types of gender inequality (O'Reilly 2008). The females' desirability to participate in the labor market might also be possibly worsened by BI (Widerquist et al. 2013; Vollenweider 2013). And for other females participating in the labor market, they have to bear spill-over effects from BI possibly, including, e.g., statistical discrimination, reinforcement of gender roles expectations, and gender hierarchies (Robeyns 2001).

In response to the arguments above, McKay (2001) defense that BI could provide a basis of gender-neutral social citizenship right by decoupling the income from work and ending mutual reinforcement of the institutions of marriage and employment (Pateman 2004). Consequently, citizens' ways to contribute to society are expanded and are not limited merely to productive work for economic growth (McKay and Vanevery 2000). Despite further assessment in the empirical cases on how BI would exactly influence the gender equality is required, combining BI with other supplemented measures including, for example, redefining the demands on caregivers or changing gender norms (Elgarte 2008) would be positive to enhance gender equality (Gheaus 2008; Robeyns 2001).

Trigger unfairness One objection raised by liberals is that BI seems paternalistic, especially with other similar schemes such as basic capital or stakeholder grants (Wright 2004). Wright (2004) argues that BI would ensure the stability of the social process by which power within class relations are shifted rather than preventing individuals from squandering their resources. Furthermore, Fitzpatrick (2011) proposed a weak version of paternalism, which allows prioritizing autonomy while balancing it against the consideration of the good of others. BI enhances independence without risking "stakeblowing" and can reduce self-harm risk to promote the more responsible use of autonomy (Fitzpatrick 2011).

The appearance of free riding in BI from republicanism is considered an objection against BI because of unfairness (Zwolinski 2017; Colin 1999). It is debatable why the wage of hardworking people has to be taken away to support those who live off their life to pursue their hobby, as the latter would take advantage of the leisure time, which is supposed to be a kind of primary social goods for the least advantageous group in society (Rawls 2009). BI is argued incompatible with the idea of reciprocity (Ackerman et al. 2006), as those who finance BI (Fitzpatrick 2013) or who are in favor of an employment-intensive

lifestyle (Simon Birnbaum 2009) would be unfairly treated by BI. In short, this issue is also called “exploitation objection (White 1997, 2006) or parasitism (Williams 1999)”. Regarding this kind of criticism, Fitzpatrick (2005) argued that it’s not a sufficient objection to BI, and it should be addressed by the social effects of an overall policy package within which BI has to be included. He further proposed that BI could be set at a proper level, which is high enough for a basic living standard while not limiting people from engaging in participative schemes (Fitzpatrick 2005). Van Parijs and Vanderborcht (2017) reversely criticized that if reciprocity is an essential political norm, why the only form that a social contribution takes should be paid labor in the market, considering the cases of those artists, parents, homemakers who are financially compensated either poorly or not at all.

Positive conceptual economic impacts of BI

The positive conceptual economic impacts that BI can potentially make are argued from three perspectives: to alleviate the risks of a flexible labor market, enhance the engagement of non-market activities, and promote the development of a local economy.

Alleviate the risks of the flexible labor market The first positive conceptual economic impact of BI is to alleviate the risks of a flexible labor market. The trend on pursuing flexibility of the labor market and declining full employment can be witnessed at the global level (Ackerman et al. 2006) to adapt to the increasingly complex global economy. However, risks including income insecurity, unemployment, and underemployment also occur in a flexible labor market by loosening employment security, intensifying job insecurity, and structurally changing the stable wage system (Standing 2012).

It is argued that BI can contribute to promoting labor market flexibility while possibly offset these risks mentioned above (Bill 1988; Widerquist et al. 2013; Howard 2005; Standing 2013, 2004). This is because BI can enhance the bargaining power, as part of citizenship (Pateman 2004), and the collective strength of workers in the labor market by symmetrizing the power between labor and capital (Wright 2004; Clark and Kavanagh 1996). In doing so, the least advantaged in the society, such as the poor, will be more able to accept labor market flexibility (Widerquist 2001) to select desired work (Van Parijs 2004, 1991; Standing 2013). They will also be capable of refusing work with unsatisfied labor conditions more convincingly and effectively (Widerquist 2001), without worrying about losing the source of income (Raventós 2007). Meanwhile, employers will also be urged to improve work, especially those part-time and insecure ones, to be more attractive by ensuring better working conditions and pay (Standing 2004). Accordingly, workers will be given more incentives to participate in this work (Bill 1988). In such a way, BI is argued to finally facilitate a more desirable form of labor market flexibility (Standing 2004).

Enhance the engagement of non-market activities The second positive conceptual economic impact of BI is to enhance the engagement of non-market activities (Vanderborcht 2004; Birnbaum 2011; Opielka 2008; Wright 2004). Non-market activities refer to those noncommodified activities which are not linked to the market (Wright 2004). BI plays a vital role against the commodification of labor power, which is a common way for people who do not own land or the means of production to permit their existence in the context of the capitalist economy (Raventós 2007). People will be engaged in these noncommodified productive activities not oriented toward the market, and consequently, the sphere of economic practices outside of capitalism will be expanded (Wright 2004). Similarly, Jackson

(2017) argues that an adequate BI will extend the time available for pursuing non-market activities by breaking the tight nexus between the labor market and the well-being inherent in a capitalist economy. Those non-market activities are usually low-waged or even unpaid, including care work at home, culture, recreation (Jackson 2017), or volunteer work (Zelleke 2011). In a society with BI, it is argued that lifeways become diverse, including non-market-activities-centered ones. The possibility of one choosing a way of life according to his/her will is enhanced (Birnbaum 2011).

Promote the development of the local economy Especially at the local level, BI is expected to play a role in development strategy (Lacey 2017) to promote the local economy's development (Krozer 2010) through several approaches. The first approach is that the wealth generated from highly productive but labor-displacing sectors can be transferred, even at a global level, by BI to finance any rural development programs (Li 2011). With the health status and productivity of BI recipients improved, the structure of the rural economy's demand-side would be changed as BI recipients' spending on local goods and services would increase correspondingly (Standing 2004). BI has also been proposed in Australia as part of the discussion on the revision of policies supporting rural development and rural economic security (Altman and Klein 2018), which implies that this conceptual economic impact of BI is not only limited in developing countries but also able to be expanded to developed countries.

Second, BI contributes towards boosting the local economy's growth by facilitating the development of small businesses (Nelson 1999), leading to innovation (Nootboom 1987) in implementation areas. Nootboom (1987) argued that small businesses' products and services are generally local-customized for the local market. He further stated that BI could promote small businesses from four aspects, which are the compensation for diseconomies of small-scale production, stimulation of wage earners to become entrepreneurs, elimination of unequal treatment from the existing complicated but insufficient policies, and addressing of unfair competition in the informal economy (Nootboom 1987).

The third is on the impact of BI on migration. Policies attracting immigration to rural areas are considered functioning as exogenous development strategies for revitalizing the rural areas' economy suffering on-going depopulation (Stockdale 2006). The places where BI is implemented are deemed to attract immigration (Krozer, 2010). Entrepreneurial immigrants who are not born locally would even establish a business without confined by rurality (Kalantaridis and Bika 2006). Meanwhile, a local-level BI is also anticipated to achieve a long-term alleviation of emigration pressure in the implemented areas because of its universality (Krozer 2010).

Negative conceptual economic impacts of BI

The negative conceptual economic impacts of BI argued in the literature are to impede full employment and trigger uncontrol immigration.

Impede full employment While BI proponents tend to admit that full employment cannot be achieved in reality, other scholars in favor of full employment insisted the right to work (Harvey 2005) and contended that job guarantee programs would perform better than BI to address the income insecurity issue, without being threatened by inflation issue (Mitchell and Watts 2005; Tcherneva and Wray 2005).

Standing (2005) counterargued that previous right-to-work advocates neglect the inability to work. They often limited the definition of work into paid ones, while BI could positively promote paid and unpaid work. Moreover, a job guarantee would be faced with denying the right to work if people cannot acquire self-esteem or social identity, while BI would not (Standing 2013). BI is also an essential condition complementary with other public policies to protect the right to work (Harvey 2005). Equal and robust security and a flexible working life pathway are demanded to achieve such a goal (Standing 2005).

Trigger uncontrol immigration One objection against BI is also relevant to migration but at the global level, and is that international immigration should be strictly regulated if BI is implemented in certain developed countries (Zwolinski 2011; Andersson 2009) because the financial burden might result in the collapse of their welfare system (Boso and Vancea 2012). Zwolinski (2011) argued that such concern is improper from a libertarian perspective because it violates the freedom of movement and impedes the migration of those who would make a living without BI. Boso and Vancea (2012) further argued that BI should not be viewed as a necessary cause for the potential increased migration as the neoclassic theory of migration implies the economic inequality among different countries have already been triggering the flow despite the implementation of BI.

Positive conceptual policy-and-governance impacts of BI

BI's positive conceptual policy-and-governance impacts argued in the theoretical discussion can be divided into (1) poverty reduction policy, (2) direction for welfare reform, and (3) policy contributing to sustainability.

Poverty reduction policy It is commonly argued that BI could potentially contribute to addressing poverty issues (Lacey 2017; Davies and Bregman 2017; Chen and Quinonez 2018; Ferguson 2010; Richter et al. 2009; Clark and Kavanagh 1996; Ilcan and Lacey 2015; Berman 2018), more effectively than existing poverty reduction policies (Davies and Bregman 2017). Such discussion is raised within the context of developed countries (Atkinson 2014; Clark and Kavanagh 1996) and has become popular in developing countries (Ferguson 2010; Seekings 2002; Ilcan and Lacey 2015; Van Parijs 2004). Banerjee et al. (2019) considered BI as an incremental antipoverty intervention. They argued that it could boost poor people's income growth by strengthening their linkage to the market, which is currently constrained due to the lack of credit and insurance or any psychological burden. Similarly, Widerquist and Lewis (2006) argued that while the efficiency of other policies such as, for example, the minimum wage or employment guarantee programs, are context-limited. BI would be inclusively effective in reducing poverty with different causes, including the physical inability to work, single parenthood, inadequate demand for labor, insufficient human capital, or a poor work ethic. The poor will not be subjected to scrutiny, and damage to their self-esteem will consequently be alleviated (Wolff 1998), as they are provided with access to paid while meaningful work instead of merely being busy coercively (Van Parijs 2004).

Moreover, existing poverty reduction policies are often implemented on a household basis. Therefore, many low, especially those who should have been economically productive, are a disincentive to work or improve their human capital to purposively make the whole families poor enough to be targeted by the policies. Ferguson (2010) argued that as everyone receives BI, it would alleviate the issue of such "dependency" in poverty reduction, allow the poor to become more productive, and attempt to be risk-takers such

as entrepreneurs. Van der Veen (1998) reckoned BI could reduce poverty by ensuring the poor's continuation in paid work simultaneously. Garfinkel et al. (2006) stated that the result from microsimulation indicates that BI would perform better to reduce the poverty rate and decrease the poverty gap than the existing welfare system in the United States. BI at an adequate level would bring everyone up to the poverty level (Clark and Kavanagh 1996), and unlike stakeholder grants, it would not trigger a one-time blow of all the stakes either through bad luck or waste (Wright 2004).

A potential direction for welfare reform Implementing BI is widely discussed as one of the potential directions for the future reform of the current dysfunctional welfare system (Sessa and Ricci 2014). And there were mainly two fundamental interests based on which the discussion on such a topic is expanded.

The first fundamental interest is its potential to address the poverty trap (Ackerman et al. 2006; Howard, 2005). In many welfare states, means-test welfare policies usually trigger a poverty trap phenomenon that beneficiaries generally become reluctant to work. They will be forced to give up their benefits if they found jobs (White, 1997; Standing, 2008). High marginal tax occurs if one can find a job and stop receiving means-tested benefits, and avoiding a net loss of income is considered the main reason causing the disincentives of beneficiaries to find work, move to a high-paid position, or extend the working time for the same rate of pay (Clark and Kavanagh 1996; Davies and Bregman 2017). The universality (Clark and Kavanagh 1996) and unconditionality of BI allow people to work without losing benefit at a punitively high effective taxation rate (Zelleke 2011). Furthermore, BI can be maintained; even one finds a job (Kangas et al. 2017). Nowadays, the concern about the impact of BI on addressing the poverty trap has expanded to the political debates in the context of developing countries such as South Africa (Makino 2004).

The second fundamental interest is its potential to address the increasing financial burden of the current welfare system. As BI is with no means test, it could lead to a more simplified bureaucracy (Kangas et al. 2017; Pateman 2004) and a loose regulation (Davies and Bregman 2017). Consequently, the government administrative cost could be less than existing social welfare systems since the administration work is assumed to be accomplished via a computerized and efficient tax-collection and transfer-payment technology (De Wispe-laere and Stirton 2011). Such advantages might not always exist in another similar method, such as basic capital (Cunliffe and Erreygers 2003).

Policy contributing to sustainability BI is also increasingly raised as policy contributing to sustainability focusing on two topics. The first topic is about the impact of BI on achieving environmental sustainability. Van Parijs (1992) asserted that the increase of well-being is not always synchronized with economic growth because the environmental component in the inter-generational welfare is often neglected. From an ecological perspective, the damage to the environment could be alleviated by BI, as the well-being of the neediest is concerned together with a morally justified economic expansion (Clark and Kavanagh 1996), which is no longer boosted prominently to achieve full employment for security (Andersson 2009). In line with this opinion, Achterberg (2002) suggested that the introduction of BI should be included in the planning of environmental sustainability, as it contributes to a "green" welfare state where the production and consumption patterns became more sustainable while social security is still provided to enough people at a sufficient level. Groscurth (1998) contended that tolerating a small number of lazy-bones living on BI financed by the interest of their share of the natural capital is more critical for a healthy society than

supporting a large number of dissatisfied unemployed through duties on wages. Moreover, A BI implemented at the global level is considered the outcome for BI's argumentation at the highest level and is advocated corresponding to the vision on achieving global ecological sustainability, allowing equal rights for all to produce ecological footprints (Andersson 2009). The justification for such global-level BI is based on the ethic of common ownership of social wealth such as natural resources or economic and technological inheritance (Fitzpatrick 2013), which is anticipated to lead to the neutralization of the ecological impact of current international migration to developed countries (Andersson 2009).

The second topic is about the linkage between BI and sustainable degrowth. As a proposal of redesigning the money in a degrowth context, BI is considered a local currency distributed to all of the residents in a particular area and merely for its local use (Hornborg 2017). Furthermore, to ensure inevitable degrowth socially sustainable, BI should be included in a broader policy package combining environmental and redistributive policies for a smooth transition of degrowth communities (Schneider et al. 2010). Such a policy package for sustainable degrowth should interlink BI to reduce working hours, environmental and consumption taxes, control on advertising, and other labor policies (Kallis 2011).

Negative conceptual policy-and-governance impacts of BI

The negative conceptual policy-and-governance impacts of BI include the potential financial burden and unintended environmental damage due to unchecked autonomy.

Potential financial burden There is an objection doubting that BI might cost more than other means-tested welfare policies. Especially in the version of a full BI, Jackson (2017) argued it would increase tax rates for below-median income workers up to 70 percent or 80 percent if BI were set at one-half of Canada's median income. In response to this, Van Parijs and Vanderborght (2017) pointed out that it would require costly and intrusive government machinery to distinguish who are unwilling to work, even though it is agreed who cannot work should not be required to do so under the principle of reciprocity.

Nevertheless, one solution to address this potential cost issue is that BI should replace other transfer programs that provide a lower level of comparable benefits (Zwolinski 2017). The other solution is to compromise on BI proposals' unconditionality (Zwolinski 2017; White 2006), as not all the conditions are considered defensible (Cristian 2017). Based on four responses on the exploitation objection: perfectionism, the balance of fairness, the balance of reciprocity, and inherited asset responses, White (2006) argued that BI should be made conditional on behavior. Similarly, Atkinson (1996) proposed an idea of participation income and suggested that BI be paid dependent on participation in the social contribution including, e.g., education or training, caring, or any other approved forms of voluntary work (Atkinson 1996, 2014). The idea of participation income is still criticized by some scholars supporting BI (De Wispelaere and Stirton 2007). Nevertheless, we argue that the calculation of BI's actual cost should be more context-specified to provide convincing evidence to testify to this objection.

Unintended environmental damage due to unchecked autonomy It is commonly doubted that the conflict between the transition to a post-productivist economy and personal autonomy may occur if the activities generating tax to finance BI themselves are not

environmental-friendly (Birnbaum 2009; Calder 2009; Fitzpatrick 2013). In response to this concern, obligation attachment to BI recipient is proposed as one solution to address the conflict (Fitzpatrick 2013).

BI empirical cases around the world

Descriptive analysis

In total, 15 BI empirical cases located worldwide are reviewed in this paper, and these BI empirical cases include both pilot projects and policy-oriented programs. Furthermore, they can be divided into negative income tax (NIT) and ex-ante BI according to implementation. Regarding their geographic location, as shown in Fig. 1, these BI empirical cases are from the United States, Brazil, Canada, Finland, India, Iran, Namibia, Spain, and Uganda.

The timeline of all the 15 BI empirical cases is shown in Fig. 2. The implementation of four NIT experiments in the United States illustrated the movement of practicing BI started. During the 1960s and 1970s, four NIT experiments were implemented in the United States, and one NIT experiment was implemented in Canada. Four NIT experiments in the United States were implemented in New Jersey-Pennsylvania (US (1)), North Carolina-Iowa (US (2)), Seattle-Denver (US (3)), and Gary in Indiana (US (4)), respectively. One NIT experiment in Canada (CAN (1)) was implemented in Manitoba from 1974 to 1978.



Fig. 1 The geographic location of the 15 BI empirical cases reviewed in this paper. For Fig. 1 and the following figures and tables, the abbreviation of the name of each BI empirical case is explained as follows: US (1): the New Jersey graduated work incentive experiment; US (2): the rural income maintenance experiment; US (3): the Seattle and Denver income maintenance experiments; US (4): the Gary, Indiana income maintenance experiment; CAN (1): Manitoba BI experiment (MINCOME); US (5): Alaska permanent fund dividend (APFD); BRA (1): Bolsa Familia program; NAM (1): Namibia BI pilot project; BRA (2): the BI program in Quatinga Velho; IRN (1): Iran BI program; IND (1): India BI pilot project; FIN (1): Finland BI experiment; CAN (2): Ontario BI pilot project; UGA (1): Eight's BI pilot project; ESP (1): Barcelona's B-MICOME

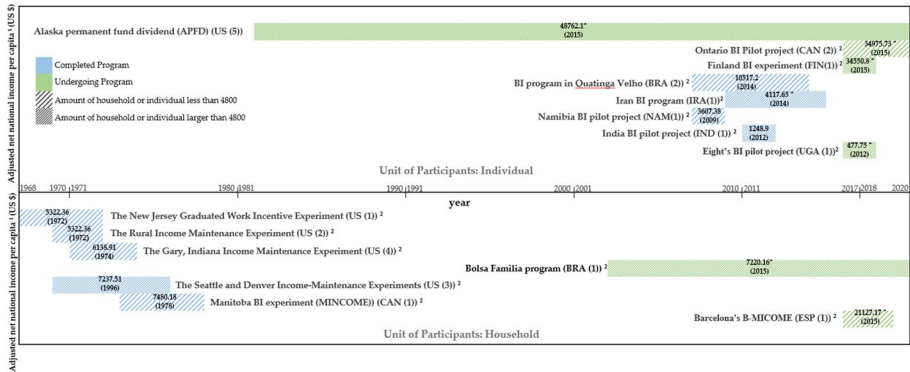


Fig. 2 Timeline of the 15 BI empirical cases ranked by the net national income per capita in the ending year of the BI empirical cases. 1. For each BI empirical case, the data of adjusted national income per capita in the final year of its implementation, or in the latest year if this empirical BI case is still ongoing by the time this paper is written, is retrieved from World Bank Database. The data marked with * are selected from the latest year due to the lack of data. The access date is January 16th, 2018. 2. The abbreviation and the location of each BI empirical case are referred to in Table 3

The Alaska permanent fund dividend (APFD) (US (5)) is the only BI empirical case launched between the 1980s and 1990s, which was initiated by Alaska Permanent Fund from 1982 based on the benefits generated from the oil production (Tabatabai 2012).

After the 2000s, several BI empirical cases were launched in developing countries. Bolsa Familia program (BRA (1)) is initiated in 2003 by the Ministry of Social Development in the Brazil Government. A Namibia BI pilot project NAM (1) started in 2008 and ended in 2009 in the Otivero village, Omitara. It was implemented by Namibian Basic Income Grant (BIG) Coalition, which includes diverse sectors in Namibia Government and NGOs. In the meantime, another small BI pilot project (BRA (2)) was implemented in Brazil by an NGO called Recivitas in Quatinga Velho village in 2008. A national-wide BI program (IRN (1)) is implemented in Iran in 2010. From 2011 to 2012, a BI pilot project (IND (1)) was implemented in Madhya Pradesh, India by the Self-Employed Women’s Association (SEWA) due to the promotion of the United Nations Children’s Fund (UNICEF). There are four BI empirical cases launched in 2017, which are Finland BI experiment (FIN (1)), Ontario BI pilot project (CAN (2)) in Canada, Eight’s BI pilot project (UGA (1)) in Uganda, Barcelona’s B-MINCOME (ESP (1)) in Spain. In general, the period for which all these 15 BI empirical cases last varies from two years to eighteen years.

All the 15 BI empirical cases are further categorized in Fig. 3, depending on their differences in their context, level, unit, implementing institutions, and receivers’ number. There are 8 BI empirical cases in developed countries, while 7 cases in developing countries. Apart from BRA (1), IRA (1), and FIN (1), the rest of the 13 BI empirical cases are implemented at the regional level, both in developed and developing countries. This paper argues that BI empirical cases have been implemented in diverse ways. BI is implemented more at the household basis in a developed country at the regional level while more at the individual basis in a developing country. Meanwhile, governments take the responsibility to implement BI empirical cases in a developed country. At the same time, Non-government institutes were found to take such a role in the context of a developing country.

Regarding the implementation scale, as shown in Table 3, most of the BI empirical cases are implemented at the regional level, except for BRA (1), IRA (1), and FIN (1).

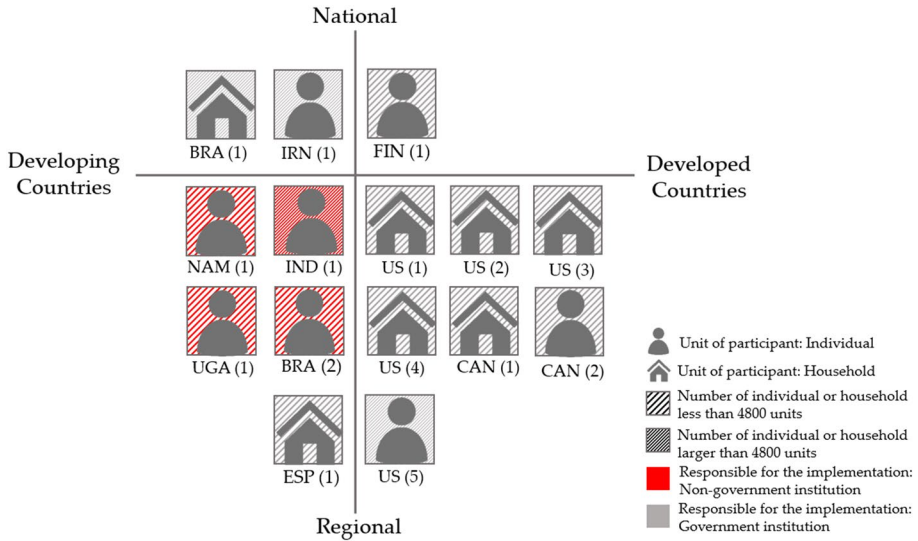


Fig. 3 Categorization of the 15 BI empirical cases reviewed in this paper by the differences in their implementation. There is no meaning for the order of BI empirical cases within each quadrant. All the abbreviations refer to Fig. 1 or Table 3

Two types of receivers are found in all 15 BI empirical cases, which are individual and household. The receivers' unit was separate in seven cases. In other cases, especially those early NIT experiments in the United States and Canada, a household is designed as receivers' unit.

The number of receivers also varies largely. For example, BRA (1) and IRN (1), which are implemented at the national level in the context of developing countries, have reached about 14 million households and 72.5 million people, respectively (See Table 3). Six thousand people in nine villages receive BI in IND (1). All the Alaska residents are the recipients of APFD in the US (5). Nevertheless, the rest of the 11 BI empirical cases, either on an individual basis or household basis, are not more than 4800 units.

Certain conditions required for selecting the receivers were found in most existing BI empirical cases, apart from how the information is lacking. As shown in Table 3, restriction on the current income level is a common requirement in four NIT experiments (US (1), US (2), US (3), and US (4)) in the United States and CAN (1) in Canada. Besides, gender, race, age, and residence are also required in these BI empirical cases mentioned above. The residence is also emphasized in some of the BI empirical cases implemented at the regional level, such as US (5), NAM (1), IND (1), and CAN (2). Age is another condition commonly required for the selection of receivers, which can be seen in NAM (1), FIN (1), CAN (2), and ESP (1). In BRA (1), families with a monthly income less than R\$ 140 (the US \$42, current price) per capita and dependent children under 15 years old and 11 months of age, as well as adolescents from 16 to 18 years old, are qualified to participate in this program (Suplicy 2014). Meanwhile, reports of children's vaccination and school attendance to the government are required for receiving BI (Suplicy 2014).

The amount of BI distributed is also different mainly between the BI empirical cases. The BI empirical cases implemented in developed countries usually provide a higher amount than those in developing countries. During the 1960s to 1970s, US (1), US (2), US (3), and US (4)

Table 3 Summary of the 15 BI empirical cases around the world

Starting time	Ending time	Location ¹	Name of the empirical BI cases ²	Type ³	Scale ⁴	Unit of receiver ⁵	Number of receivers	Condition(s) to select receivers ⁶	Amount of BI per unit (Annually in total) (current US \$)	Payment scheme ⁸	Difference about the amount of BI per capita ⁹	Gross National Income (GNI) per capita around the implementing time (current US\$) ¹⁰	Reference
1968	1972	New Jersey, the United States	The New Jersey graduated work incentive experiment (US (1))	NIT	R	H	1216 households	(a) (b) (c) (d) (f)	1364–3410 (1968) → 1683–4206 (1972)	N	N	4740 (1968) → 6290 (1972)	Chen and Quinonez (2018), Forget (2011), and Widerquist (2005)
1970	1972	North Carolina, Iowa, the United States	The Rural income maintenance experiment (US (2))	NIT	R	H	809 households	(a) (f)	1318–2635 (1970) → 1351–2702 (1972)	N	N	5360 (1970) → 6290 (1972)	Chen and Quinonez (2018) and Widerquist (2005)
1970	1976	Seattle, Denver, the United States	The Seattle and Denver income maintenance experiments (US (3))	NIT	R	H	4800 households	(a) (c) (f)	2335–4607 (1970) → 3351–6613 (1976)	N	N	5360 (1970) → 8980 (1976)	Chen and Quinonez (2018) and Widerquist (2005)
1971	1974	Gary, Indiana, the United States	The Gary, Indiana income maintenance experiment (US (4))	NIT	R	H	1799 households	(b) (c) (d) (f)	2345–3127 (1971) → 2809–3745 (1974)	N	N	5700 (1971) → 8000 (1974)	Chen and Quinonez (2018) and Widerquist (2005)

Table 3 (continued)

Starting time	Ending time	Location ¹	Name of the empirical BI cases ²	Type ³	Scale ⁴	Unit of receiver ⁵	Number of receivers	Condition(s) to select receivers ⁶	Amount of BI per unit of receivers ⁷ (Annually in total) (current US \$)	Payment scheme ⁸	Difference about the amount of BI per capita ⁹	Gross National Income (GNI) per capita around the implementing time (current US\$) ¹⁰	Reference
1974	1978	Manitoba, Canada	Manitoba BI experiment (MINCOME) (CAN (1))	NIT	R	H	1367 households	(f)	3051–4424	N	N	7190 (1974)	Simpson et al. (2017) and Chen and Quinonez (2018)
1982	To date	Alaska, the United States	Alaska permanent fund dividend (APFD) (US (5))	PBI	R	I	All residents in Alaska	(e)	1100 (2017)	N	N	56,810 (2016)	Goldsmith (2002, 2001), Casassas and De Wispe-laere (2012), Permanent Fund Dividend Division, Alaska Department of Revenue (Not date)

Table 3 (continued)

Starting time	Ending time	Location ¹	Name of the empirical BI cases ²	Type ³	Scale ⁴	Unit of receiver ⁵	Number of receivers	Condition(s) to select receivers ⁶	Amount of BI per unit of receivers ⁷ (Annually in total) (current US \$)	Payment scheme ⁸	Difference about the amount of BI per capita ⁹	Gross National Income (GNI) per capita around the implementing time (current US\$) ¹⁰	Reference
2003	To date	Brazil	Bolsa Familia program (BRA (1))	BI	N	H	14,086,199 households	(e) (g)	Maximum up to 754	N	Y	2940 (2003) → 8840 (2016)	Suplicy (2008, 2014), Perkiö (2015), and Soares (2011)
2008	2009	Omitara, Namibia	Namibia BI pilot project (NAM (1))	BI	R	I	930 people	(d) (e)	97	N	Y	4220 (2008) → 4150 (2009)	Haarmann et al. (2009), and Jauch (2015)
2008	2014	Quatinga Velho, Brazil	BI program in Quatinga Velho (BRA (2))	BI	R	I	100 people	NA	112	NA	Y	7400 (2008) → 12,020 (2014)	RecCivitas (2012), McFarland (2016a), and Perkiö (2015)
2010	2015	Iran	Iran BI program (IRN (1))	BI	N	I	72,500,000 people	NA	480–40	N	N	6140 (2010) → 5340 (2015)	Tabatabai (2012)

Table 3 (continued)

Starting time	Ending time	Location ¹	Name of the empirical BI cases ²	Type ³	Scale ⁴	Unit of receiver ⁵	Number of receivers	Condition(s) to select receivers ⁶	Amount of BI per unit of receivers ⁷ (Annually in total) (current US \$)	Payment scheme ⁸	Difference about the amount of BI per capita ⁹	Gross National Income (GNI) per capita around the implementing time (current US\$) ¹⁰	Reference
2011	2012	India	India BI pilot project (IND (1))	BI	R	I	6000 people	(e)	Adult: 38 (2011), 57 (2012) Children: 19(2011), 28 (2012)	N	N	1380 (2011) → 1480 (2012)	Perkiö (2015), Davala et al. (2015) and Beck et al. (2015)
2017	2018	Finland	Finland BI experiment (FIN (1))	PBI	N	I	2000 people	(d) (h)	8200	Y	Y	45,050 (2016)	Perkiö (2012), Kangas et al. (2017,2019) and Kela (2016, 2018)
2017	2020	Ontario, Canada	Ontario BI pilot project (CAN (2))	BI	R	I	4000 people	(d) (e) (f)	Multiple plans: e.g., 13,640 for a single person	Y	N	43,660 (2016)	Ontario Government (2018)
2017	2018	Fort Portal, UGA	Eight's BI pilot project (UGA (1))	BI	R	I	144 people	NA	Adult: 219 Children: 110	NA	N	630 (2016)	McFarland (2016b) and Home page of eight world (No date)

Table 3 (continued)

Starting time	Ending time	Location ¹	Name of the empirical BI cases ²	Type ³	Scale ⁴	Unit of receiver ⁵	Number of receivers	Condition(s) to select receivers ⁶	Amount of BI per unit of receivers ⁷ (Annually in total) (current US \$)	Payment scheme ⁸	Difference about the amount of BI per capita ⁹	Gross National Income (GNI) per capita around the implementing time (current US\$) ¹⁰	Reference
2017	2019	Barcelona, Spain	Barcelona's B-MICOME (ESP (1))	BI	R	H	2000 household	(d) (e) (h)	1390—23,289 N	N	N	27,600 (2016)	Colini (2018)

Please see the appendix for more details of implementing the 15 BI empirical cases reviewed in the paper

¹Location means the implemented areas of each BI empirical case

²The abbreviation of each BI empirical case's name is elaborated in the bracket after their full names

³Type includes negative income tax (NIT), ex-ante basic income (BI), and ex-ante partial basic income (PBI)

⁴The scale includes regional level (R) and national level (N)

⁵Unit of receivers includes household (H) or individuals (I)

⁶There are seven conditions to select the receivers include family structure (a), gender (b), race (c), age (d), residence (e), restriction on the current income level (f), number of children (g) and others (h); NA means not applicable

⁷The amount of BI per unit of the receiver in the first four NIT experiments (US (1)–(4)) was estimated based on the data of US poverty threshold from the United States Bureau Census, available from <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>. The access date is January 14th, 2018. The number in the brackets means the year in which the BI is distributed to each receiver unit

⁸Payment scheme includes direct delivery to each person (Y) and indirectly to each person (N), including collected by the household head or other household members

⁹The difference in the amount of BI per unit of the receiver includes having difference (Y) and having no difference (N). NA means not applicable

¹⁰GNI is the latest year selected instead of the data on the finishing year of an empirical BI case lacking. All of the information is retrieved from the World Bank Database. The access date is January 14th, 2018

offered US\$ 1364 to 3745 to each participated household annually. The amount of BI which each family can receive yearly in CAN (1) in the 1970s reached between the US \$ 3050.98 to 4424. Furthermore, in CAN (2) in 2017, every single receiver is supposed to receive up to Canadian \$ 16,989 (about US \$13,640.07, current price) annually (Ontario Government 2018). Similarly, FIN (1) offers € 6720 (about US \$ 8200, current price) to each receiver. In contrast, every receiver in NAM (1) only receives N \$1200 (approximately US \$96.72, current price) annually. Similarly, the annual amount of BI is merely about the US \$57 for an adult receiver in IND (1) and the US \$112 in BRA (2). The situation is relatively better in the developing-country cases implemented at the national level. Each household can receive about the US \$ 480 annually in BRA (1). IRN (1) can provide about the US \$480 to 540 to every receiver. As shown in Table 3, the amount of BI that each receiver can get annually in the 15 BI empirical cases is commonly mostly less than the contemporary Growth National Income (GNI) per capita of the countries where these cases are implemented, which implies the sufficiency of BI in these cases is doubtful.

Regarding the BI payment scheme, in all the BI empirical cases in which the receivers' unit is household, the money is distributed to the household head. Women are preferred to be the ones responsible for taking care of the payment in the Bolsa Familia Program BRA (1) (Suplicy 2014). Moreover, in the US (5), NAM (1), IRN (1), and IND (1), BI is practically collected by the household head, though it is claimed that money is paid to each member of the family.

Even in a BI empirical case, not all the receivers get the same amount of money, and this phenomenon can be further divided into three types. The first type happens in the NIT experiments as they usually have several different plans designed for counting the payment. The actual amount of money that each receiver can have would be the guarantee levels minus a marginal tax of a private income if that receiver had. For example, in US (1), US (2), and US (4), the amount of money distributed to each receiver depends on the combination of different guarantee levels relative to the poverty line, which ranges from 0.5 to 1.48, and marginal tax rates, which vary from 0.3 to 0.7. Two nonlinear income functions, with marginal tax rates of 0.7 minus 0.025 times personal income and 0.8 minus 0.025 times personal income, were tested in the US (3). In CAN (1), there are nine different plans of the amount of money, which are combined with three guarantee levels (from C\$ 3800 to C\$ 5400) and three tax rates (35, 50, and 75%). The Second type happens in the BI empirical cases in which adult and children receivers are differentiated. In IND (1), an adult can receive about the US\$ 57 per year, while a child can merely receive half of this amount.

Similarly, in UGA (1), adult receivers receive the US\$ 219 annually while children receive the US \$110 annually. The third type exists in the BI empirical cases, where calculating the amount of money is designed based on family members' numbers. In CAN (2), the amount of money that a single person can receive annually is up to about C\$ 16,989 (about US\$ 13,640, current price). Meanwhile, a couple can receive up to C \$24,027 (about US\$ 19,292). It is more complicated in BRA (1) that the final amount of money is summed up depending on the income level per capita, the total number of children, and the age of each child (Soares 2011; Suplicy 2014), which causes the final amount of money largely ranges from R\$ 384 (about US\$ 100, current price) up to R\$ 2,904 (about US\$ 754, current price) annually (Soares 2011).

Outcomes of the BI empirical cases

Although the amount of the literature discussing the outcome of BI empirical cases is relatively fewer than the ones about BI theories, the consequences of some of the BI empirical

cases including US (1), US (2), US (3), US (4), Can (1), US (5), IND (1), BRA (1), BRA (2) and NAM were investigated in the literature. A control experiment is often designed in the BI empirical cases in developed countries. Sampling criteria were determined, and different treatments were designed to control and experiment groups before initiating the BI empirical cases. Sophisticated statistical analysis was often carried out to testify the hypothesis based on the empirical cases' outcomes. Meanwhile, in the BI empirical cases in developing countries, BI receivers are mainly determined by their residency as the purpose of these empirical cases were primarily designed for poverty reduction. While questionnaire and interview were applied, participation of control groups is lacking in the assessment of most of the cases in developing countries.

The response of labor supply change

The response of labor supply change on BI was reported in some literature, of which the purpose was to evaluate the outcomes in the US (1), US (2), US (3), US (4), and Can (1). In the US (1), Hausman and Wise (1976) identified that the working hour of white male household heads increases by 14 percent, corresponding to the increase of 100 percent of wage, while decreases by 2 percent, corresponding to the rise of 100 percent of non-wage income. Through the estimation based on the data from adult married male receivers in the US (4), Burtless and Hausman (1978) found that the high guarantee level and high marginal tax rate set in this experiment would not cause a substantial reduction of labor supply, while modest the level of living standards and minimize the expenditure. The response of the labor supply on NIT experiments is demographically different, and US (1), US (2), US (3), and US (4) found that on an average reduction of labor supply of husbands, wives, and single female heads, as well as youth are about the equivalent of 2 weeks, three weeks and four weeks, respectively (Robins 1985). Meanwhile, young and single-headed households drove the reduction of labor market participation in CAN (1) (Calnitsky and Latner 2017). By using hitherto unanalyzed data in CAN (1), Calnitsky and Latner (2017) observed 11.3 percent of the reduction in the labor market participation, and about 3.1 percent of the decrease can be attributed to "social interaction" or "community context" effects. Unlike the usual assumption, data from a qualitative survey shows that the reasons causing the reduction of labor supply in CAN (1) are the engagement in care work, disability, illness, uneven employment opportunities, and educational investment (Calnitsky and Latner 2017). Widerquist (2005) concludes that the reduction of labor supply in these NIT experiments mentioned above is usually misinterpreted to be "large," as the reduction of work hours identified in some of the experiments fall into the range between 0 and 7%, where the fall depends on the elasticity of demand for labor.

Quality of life

Another significant result commonly identified in the reviewed BI empirical cases is the improvement of quality of life, including health and education.

Health Through the comparison of the data both from experimental and control groups in the US (1), US (2), US (3), and US (4), Salkind and Haskins (1982) concluded that the implementation of NIT experiments improves the quality of nutritional intake of children and reduces the appearance of children with low birth weight, due to the increase of resources available in the family. By reviewing literature relevant to the NIT experiments

in the United States and Canada during the 1960s and 1970s, Forget (2011) found an 8.5 percent reduction in the hospitalization rate for receivers relative to controls, particularly for accidents, injuries, and mental health. Meanwhile, he also identified a decline of receiver contacts with physicians, especially for mental health. Such a positive impact of BI on human health, including child health development and mental health in the NIT experiments in the 1960s and 1970s, has been reviewed again in recent research (Ruckert et al. 2018; Chen and Quinonez 2018).

It is identified that US (5) has a positive impact on new born's health outcomes as an additional US\$ 1,000/person/year increases birth weight by 17.7 g and substantially decreases the likelihood of low birth weight (Chung et al. 2016), which is especially significant for less-educated mothers (Ruckert et al. 2018). Likewise, another research reported an increased birth weight of 38.8 g for receivers (Ruckert et al. 2018). Evans and Moore (2011) identified a similar phenomenon that mortality rises immediately after income receipt in APFD.

In IND (1), Beck et al. (2015) evaluated the health outcome by analyzing the data with multiple imputations, propensity score matching, and weighted logistic regression. They found that the odds of minor illness and injuries, needing treatment but not hospitalization, were 46 percent less in the experimental group than the control group. However, no significant BI effect on more severe illness and injuries, child vaccination coverage was observed (Beck et al. 2015).

A reduction of child malnutrition through the WHO measurement technique is elaborated in the Namibia BI pilot project (NAM (1)), as the rate of underweight children declines from 42 percent in November 2007 to 10% in November 2008 (Haarmann et al. 2009). Meanwhile, together with government enhancement, NAM (1) allows HIV-positive residents to have more access to nutrition and medication. It is reported that residents used the settlement's health clinic much more regularly (Jauch 2015). The revenue of a local clinic was reported to increase from N\$ 250 per month in early 2007 to nearly N\$ 1300 per month in 2008, and a possible reason is considered more residents became able to pay N\$ 4 for each visit to the clinic after the implementation of the BI pilot project (Haarmann et al. 2009).

In BRA (2), it is also reported that 25 percent of the BI distributed to each of the receivers was used for food, which led to an increase in the nutrition of these people (Pasma 2014).

Education The NIT could positively influence the education of children from the families involved in the US (1), US (2), US (3), and US (4) as an experimental group. Salkind and Haskins (1982) identified that the school attendance levels among children in the experimental group are higher than those in the control group in the US (2), US (3), and US (4). A similar result is also identified by Forget (2011) that the grade-11 students in Dauphin Town from the families in the experiment group are more likely to continue to grade 12 than those from the families in the control groups during CAN (1).

A positive effect on school performance without labor force participation was also identified in BRA (1) (Simoes and Sabates 2014; Soares et al. 2010). Glewwe and Kassouf (2012) used school census data to compare enrollment changes, dropping out, and grade promotion across schools that adopted the Bolsa Familia program at different times. They found the rate of school enrollment was increased by 5.5% in grade 1–4 and 6.5% in grade 5–8; the school dropout rate was reduced by 0.5% in grade 1–4, and 0.4% in grades 5–8; the grade promotion rates were raised by 0.9% in grades 1–4 and 0.3% in grades 5–8. By

using longitudinal household data and propensity score weighting method to assess the impact of BRA (1) on schooling outcomes of children aged 6 to 17 years, the school participation and grade progression of girls were found to increase by 8 and 10%, respectively (de Brauw et al. 2015). Such an effect is especially significant on girls in rural areas aged 6–17 years and the urban regions aged 15–17.

In IND (1), it was found that on average, 43% of total expenditure in families receiving BI was for children's schooling, which was higher than control groups (Davala et al. 2015). Furthermore, parent reports and government records elaborated a positive impact of BI on the school enrollment. The school enrollment rate was 76% in the villages receiving BI while merely 51.3% in the control villages (Davala et al. 2015).

The impact of BI on education is also significant in NAM (1). Parents became able to pay school fees and school uniforms for children (Jauch, 2015). Drop-out rates at the school fell from almost 40 percent in November 2007 to 5% in June 2008 and further to nearly 0 percent in November 2008 (Jauch 2015; Haarmann et al. 2009).

Local economy

US (5) is considered to bring macroeconomic and social impact on Alaska (Goldsmith 2002, 2001). The difference in the size of the payment over time and the amount received by families of different sizes showed no evidence proving that Alaskan households react differently in changing their consumption patterns after receiving payment from the US (5). Also, there is no evidence illustrating any changes between Alaska and the other 49 states in the United States regarding the seasonal consumption pattern. However, the consumption of the very same household was found excessively sensitive to their income tax refunds, implying that the anticipated income variations will be considered by families in their consumption decisions when the income changes are extensive, regular, and easy to be predicted (Hsieh 2003). By using data sets from Alaska Long-Form Survey Public Use Micro Samples (PUMS) from 1990 and 2000, and an American Community Survey annual from 2005 through 2015, respectively, Berman evaluated the effect of US (5) to mitigate the poverty rate among the rural indigenous people in Alaska, who are the economically disadvantaged minority with historically stable poverty rates higher than 17 percent since 1990 (Berman 2018). His study found that considering APFD as BI would lead to a further decline of the rural Alaska native poverty rate, which maintains stable between 6.1 and 12.4% from 1990 until 2015 (Berman 2018).

In NAM (1), BI's introduction can effectively assist with community mobilization, as migration towards Otijvero occurred due to needy family members attracted by BI. Furthermore, the number of residents engaged in income-generating activities (above the age of 15 years) increased from 44 to 55%. It is reported that residents receiving BI also gained income by starting small businesses such as brick-making, baking of bread, and dress-making (Jauch 2015; Haarmann et al. 2009). Consequently, the severe poverty and food poverty in Otivero village reduced from 86 to 68 percent and from 76 to 37%, respectively, within one year (Ilcan and Lacey 2015; Jauch 2015).

Although the quantitative data are lacking, BRA (2)'s impact on the village's economy where BI was implemented was also reported. It promoted the development of local small businesses, including local restaurants. Moreover, the micro-credit system managed by the villagers participating in the project also emerged after one and two years of implementing the project (Baulant 2017).

Gender empowerment

The impact of BI on improving the female's economic independence is also investigated in the BI empirical cases. In the context of IND (1), an increase of female farmers was observed in the villages receiving BI from 39.1 to 65.7% and can use BI to buy seeds, fertilizer, and other inputs (Davalá et al. 2015). Similarly, NAM's implementation (1) also contributed to reducing the dependency of local women on men for their survival by releasing their pressure on engaging in transactional sex (Jauch 2015; Haarmann et al. 2009).

Policy paradigms for understanding BI

Policy paradigms refer to interpretive frameworks of ideas and standards within which policies are made (Hall 1993). An overview of the typology of policy paradigms on BI is necessary to understand the different ideas embedded in BI's discussion fundamentally. Referring to previous work (Hall 1993; Schuftan 2013; Van Bueren and De Jong 2007; Palier 2013; Daigneault 2014; Hemerijck 2018), four policy paradigms for understanding social reality were summarized as follows.

The first type is entitlement paradigm. The definition of BI is in line with the policy value emphasized by Daigneault (2014) in this paradigm that welfare is a social right for all individuals. Based on this type of policy paradigm, BI is perceived as universal social protection to address inequality and poverty issues. Correspondingly, BI's potential impacts on improving quality of life, enhancing the liberty for social justice, and the bargaining power in the labor market identified in this review are supposed to take roots in this type of policy paradigm. Assessment of BI empirical cases implemented in the developed countries can be categorized in this type of paradigm. A full BI without any conditions, at least on work requirement, could be considered the BI approach under this paradigm.

The second type of paradigm is the workfare paradigm supporting the value of the individual responsibility for welfare. However, the necessity of targeting welfare recipients underpins BI's criticism about the appearance of free riders (Daigneault 2014). Arguments on whether BI would release or worsen government financial burden also reflect the concerns on the cost of the welfare state (Palier 2013) derived from this paradigm. Participation BI could be categorized as an approach to BI, compromising the working conditions required in this policy paradigm.

The third type of paradigm is the activation paradigm emphasizing the balance between individual rights and responsibility. This paradigm supports BI as a crucial tool to enhance non-market activities' engagement and address the poverty trap in poverty reduction for welfare reform. Lack of work incentives or human capital is a fundamental problem causing unemployment under this paradigm (Daigneault 2014; Palier 2013). The empirical cases in the United States and Canada reviewed in this paper were launched to provide evidence on BI's impact on work incentives through the outcome assessment. Furthermore, a combination of social protection and economic growth (Hemerijck 2018) emphasized in this paradigm lead scholars' attention to the impact of BI on the development of the local economy. In the meantime, this type of paradigm is embedded in the argument on the potential adverse economic effects of BI causing worsening female's participation in the labor market, impeding on full employment, and uncontrol immigration.

Lastly, the sustainable development paradigm featured with systematic thinking on achieving environmental sustainability interconnected with social and economic issues

Table 4 Current status of identification of conceptual impacts of BI based on the outcomes from the 15 BI empirical cases reviewed in this paper

Conceptual impacts of BI summarized in the theoretical discussion		The conceptual impact has been described in the outcomes of the 15 BI empirical cases	The conceptual impact has not been described in the outcomes of the 15 reviewed BI empirical cases
Aspect	Content of conceptual impacts		
Social aspect	Improve the quality of life (+)	Improve health (+) ¹	✓
		Improvement education (+)	✓
		Change the social value (+)	✓
	Enhance the liberty for social justice (+)		✓
	Enhance gender equality (+)	Enhance the economic independence of female (+)	✓
		Alleviation of power imbalance in the family (+)	✓
		Alleviation of economic difficulty of single-parent families headed by women (+)	✓
		Worsen gender equality (-) ²	✓
		Trigger unfairness (-)	✓
		Paternalistic (-)	✓
Economic aspect		Freeriding (-)	✓
	Alleviation on risks of the flexible labor market by enhancing the bargaining power of laborers (+)		✓
	Engagement of non-market activities (+)		✓
	Promote the development of the local economy (+)	Finance development programs at the local level through a global wealth redistribution (+)	✓
		Facilitate the development of small business (+)	✓
		Promotion on migration (+)	✓
	Impede full employment (-)		✓
	Uncontrol immigration (-)		✓

Table 4 (continued)

Conceptual impacts of BI summarized in the theoretical discussion		The conceptual impact has not been described in the outcomes of the 15 reviewed BI empirical cases
Aspect	Content of conceptual impacts	The conceptual impact has been described in the outcomes of the 15 BI empirical cases
Policy-and- Governance	Poverty reduction policy (+)	✓
	Potential direction for welfare reform (+)	✓
	Address poverty trap (+)	✓
	Alleviate the financial burden of government (+)	✓
	Policy contributing to sustainability (+)	✓
	Contribute to environmental sustainability (+)	✓
	Contribute to sustainable degrowth (+)	✓
	Increase the burden of public finance (-)	✓
	Unintended environmental damage due to unchecked autonomy (-)	✓

¹(+) refers to a positive conceptual impact of BI summarized in this paper

²(-) refers to a negative conceptual impact of BI summarized in this paper

(Schuftan 2013; Van Bueren and De Jong 2007) also supports the literature arguing the possibility of BI included in a policy package on environmental sustainability and sustainable degrowth.

Limitations

The limitation of this paper is that only English-language literature was considered. More details about the association among BI and existing social protection measures in countries with well-developed welfare states may be contained in native-language publications.

Discussion and conclusion

By directing the intricate statues of the linkage between BI theories and empirical cases, three key findings are elaborated as follows. First, our paper recognizes that the definitions of BI are remaining imprecision. The descriptions vary in the literature on the definitions' critical attributes, including scale, institution, unit, unconditionality, universality, uniformity, and sufficiency. Similarly, the BI empirical cases reviewed in this paper are also identified to be implemented in diverse ways.

Second, our paper identified a gap between BI's conceptual impacts and BI empirical cases' outcomes. As shown in Table 4, while it is discussed that conceptually BI is supposed to bring various impacts on the human society from the social, economic, and policy-and-governance perspective, many of them have not yet been identified to be achieved in the BI empirical cases. Apart from the conceptual impacts of BI on improving the quality of life, including health and education, enhancing gender inequality, promoting the development of the local economy, and reducing poverty, the rest conceptual impacts, especially the negative ones, are not stated in the outcomes of the BI empirical cases reviewed in this paper. The gap mentioned above implies the necessity of obtaining more solid evidence for identifying BI's conceptual impacts, including both positive and negative ones, by promoting the implementation of more BI empirical cases with assessments on their outcomes in the future.

This review reveals that the focus identified in the literature on BI's role varies in different socio-economic contexts. In a developed country with a well-established welfare state and tax system, BI is considered a redistributive policy at the national level alternative to the current costly and complex welfare system, which is often dysfunctional to pull people out of the poverty trap. BI supporters advocate its potential to release the government's financial burden by integrating various welfare benefits as an essential advantage to implement BI. Change of labor market supply and work incentives accompanying BI's implementation are fundamental in theoretical discussion and empirical cases. Meanwhile, in a developing country with a high level of informality, BI is perceived as an approach that practically addresses absolute poverty in local areas. The impacts of BI on an individual's quality of life and community economy explicitly draw scholars' concerns in BI's debates in the above context.

It is reasonable to doubt that many conceptual impacts of BI are likely unable to be realized when the BI empirical cases are implemented, as they are usually not sustained for the long term. Except for BRA (1) and US (5), which have been lasting until now, all the BI empirical cases initiated before 2017 have been ended, and most of them lasted merely

for from two to six years (See Table 2). Furthermore, the BI empirical cases initiated in 2017 are initially designed for two to three years. Budget constraint (Simpson et al. 2017) is argued to impede BI empirical cases to be sustained in the long term. In some cases, such as US (1), US (2), US (3) and the US (4) (Moffitt 1992), an internal reason for causing the budget constraint is derived from the impatience of the stakeholder providing financial resource, usually the government, on the performance of BI empirical cases (Ilcan and Lacey 2015). Meanwhile, the rising inflation is mentioned as an external cause of ending practical matters such as BRA (2) (Baulant 2017). Given all these reasons above, the 15 BI empirical cases reviewed in this paper have diverse ways of implementation, and they are different from what BI is argued to be. The above reality implies a dilemma on the level of BI. In a given particular context, if BI was set much higher than the level sufficient for making a living (e.g. current welfare benefits), an immense financial burden may occur, leading the BI to be financially infeasible. Positive impacts on the society and economy raised in the theoretical debates are likely to be achieved. A sole PBI scheme seems unable to stimulate enough benefits (De Wispelaere and Stirton, 2011). A PBI with some social services remained is doubted to generate administrative savings (Wispelaere and Stirton 2007, 2011). Both of the scenarios mentioned above would hinder BI to be implemented in reality.

Our paper concludes that BI's current status is complicated, as linkage and gaps exist between BI theories and BI empirical cases, which implies that our society may not have been mature enough yet to accept BI's implementation commonly worldwide. In other words, the policy environment for implementing BI has not been entirely created for the time being both in developed and developing countries. We argue that current nebulous BI definitions also fail to provide precise and specific principles guiding to implementing BI empirical cases. To further address BI's gaps and promote BI to be accepted and implemented globally in different contexts in the future. Therefore, it is necessary to make the current BI definitions simplified, detailed, unified, and required. Besides, neglecting controlling bureaucracy and dismissing the administrative challenges on the policy implementation is considered to mislead BI advocacy to become self-defeating (De Wispelaere and Stirton 2017). Thus, future studies should also focus more on the universal principles for implementing BI from public administration, which is rarely discussed explicitly among BI advocates. It might require a certain amount of "flexibility" in BI definitions, so that inevitable conditions attached to those empirical cases due to compromising the real situation can be better justified.

Compliance with ethical standards

Conflict of interest The author declares that they have no conflict of interest.

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