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in the Philippines: Do Local Housing Boards Matter?

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Participatory Governance Institutions for Social Housing in the Philippines: Do Local Housing Boards Matter?

Marife M. Ballesteros and Jenica A. Ancheta¹

ABSTRACT

This study documents the application of participatory governance for social housing in the Philippines through the local housing boards (LHBs). The interest to institutionalize LHBs in local government units (LGUs) has grown mostly in the country's highly urbanized cities. LHBs are seen to involve communities in the decisionmaking process to bring about inclusive welfare and enhance social housing outcomes. Thus, they have an important role in the adoption of effective social housing policies and programs for the poor. This study shows that LGUs vary in their implementation of LHBs. Many cities created their LHBs only in compliance with the law while some LGUs established their own mainly on paper. These LHBs either become inactive or fail to follow the appropriate representation of people's organizations and the communities. Other LGUs activate their LHBs only when there is a need to hasten the process of eviction and demolition in informal settlements. The LHBs in these LGUs have a limited role as an institution for participatory governance. On the other hand, social housing policies and projects that cater to the poor are evident among LGUs with functioning LHBs. There are representativeness, transparency, and openness in the local government for the housing needs of the vulnerable sector, resulting in the national government's provision of budget for the development of inclusive local housing policies and projects. This is why LHBs should be strengthened as a participatory governance institution, which can be done through a legislative act that will empower them

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in the planning and budgeting process of social housing projects at the local level. Moreover, the role of LHB should be expanded beyond concerns on informal settlements. They should be involved as well in the decisionmaking process for city-wide shelter projects and land use planning.

INTRODUCTION

Participatory governance is an approach whereby citizens are given authority to be directly engaged in decisionmaking on public matters, such as management of community resources and delivery of public services. The concept became popular among development scholars in the 1970s as a strategy to facilitate pro-poor policies and programs by providing an avenue for greater representation of the citizenry (Khwaja 2004; Papadopoulos and Warin 2007). Studies showed that participatory governance had led to outcomes beneficial for the poor and also quicker government responses to emerging issues in communities (Donaghy 2011; Silvestre et al. 2016; Fischer 2018). Moreover, the approach is relevant in countries where the delivery of services by the public sector is often constrained by scarce manpower and budget and partisan politics (Ostrom 1996; Silvestre et al. 2016). To this end, formal institutions for participatory governance were created in different socioeconomic settings.

In the Philippines, the legal foundations to institutionalize participatory governance started in 1987 with the change in the political system that provided for reforms in the public sector's delivery of services. The 1987 Constitution emphasized the conduct of a democratic process with the private sector's greater participation in public sector affairs.² This was further strengthened by the enactment of the Local Government Code (LGC) of 1991, which devolved to LGUs the provision of basic services and facilities and the establishment of participatory governance structures for the delivery of public goods.

These laws created new avenues for greater citizen participation at the national and local levels and the basis to transform government bureaucracy into agencies that work in solidarity with societies and communities. One of the national government's major programs that promotes citizen engagement is the Grassroots Participatory Budgeting (GPB).³ Introduced in 2012, the GPB aims to involve local civil society organizations (CSOs) and grassroots communities in the national budget process through LGUs and make the process more responsive to the needs of citizens. The strategy's projects were reported to have improved the lives of people in communities especially the poor (Manasan et al. 2017). It also increased social capital (defined as level of trust) between communities and local officials (Manasan et al. 2017).

At the subnational level, LGUs were encouraged to form participatory structures for sectors that promote ecological balance and enhance the economic and social wellbeing of people (LGC 1991, Section 35). Thus, local special bodies for public service in areas of education, health, housing, waste management, and peace and order, among others, were organized. The LGC vested upon LGUs the primary responsibility of delivering housing services to their constituents. As such, the active participation of their stakeholders is considered as an important element for LGUs to effectively carry out this role (HUDCC 2001). While local special bodies provide a platform for citizen participation, implementation varies across LGUs and many questions remain as to the benefits of participatory governance for the marginalized sector and the context in which these institutions are relevant.

² Includes representatives of civil society, urban poor groups, nongovernment organizations (NGOs), people's organizations (POs), and community-based organizations.

³ Formerly named Bottom-up Budgeting or BUB, which is similar to *Porto Alegre* Program of Brazil that involves the participation of communities in the budget process (World Bank 1994).

This paper examines the role of LHB as a participatory governance institution in the provision of social housing in key cities in the Philippines. The LHB is a local special body tasked to formulate, develop, implement, and monitor policies for social housing especially those pertaining to resettlement and demolition. The creation of LHBs in many cities in the Philippines became relevant because of the increasing population of informal settlers and the deteriorating conditions of informal settlements. Thus, LHBs have an important role in the adoption of pro-poor and effective social housing policies and programs.

THEORY AND PRACTICE OF PARTICIPATORY GOVERNANCE

The theory and practice of participatory governance have grown over the years. It should be emphasized that participatory governance encompasses practices beyond the democratic rights to vote or the right to transparency (Fischer 2018). It includes collaborative and consensus-building activities through “public deliberation”, which is defined as “a debate and discussion aimed at producing reasonable, well-informed opinions in which participants are willing to revise preferences in light of discussion, new information, and claims made by fellow participants” (Chambers 2003, p.309). These bodies tend to involve the public in governance, for instance, as arbitrators or representatives of advisory committees (Rowe and Frewer 2004; Silvestre et al. 2016). Public deliberation, especially broad-based participation, is perceived to enable the growth of social capital, which is useful in combatting conflicts in material interests, moral values, and social exclusion in communities, and also to promote good governance (Osmani 2007).

Citizen involvement may also be direct in their engagement and the transformation of the state’s role in the delivery of public services (Papadopoulos and Warin 2007, p.448). This practice is based on the theory of coproduction developed by economists in the 1990s, which relates public participation to a production function whereby the “inputs used to produce goods or services are contributed by individuals who are not ‘in’ the same organization” (Ostrom 1996, p.1073). Ostrom (1996) argued that in many cases, public goods and services are not undertaken solely by the government but also through complementary inputs from citizens. Coproduction is exemplified in the following cases: the parent and community volunteer work for school maintenance and learning adaptation for primary education in Nigeria (Ostrom 1996); the management of common property resources by users themselves in Nepal (Ostrom et al. 1994); and the citizen participation in the administrative arbitration in Portugal (Silvestre et al. 2016).

While the benefits of coproduction are well established, the effects of participatory governance in the form of public deliberation are less defined. Studies noted how public deliberation had facilitated or improved traditional public administration models. It can also lead to the government’s quicker response to emerging issues and a higher level of motivation and commitment to programs and projects by the government and communities (Silvestre et al. 2016; Fischer 2018). Moreover, community participation, especially in decentralized regimes, has improved government transparency and accountability in policymaking and boosted the legitimacy of local institutions (Postigo 2011; Donaghy 2011). In social housing, incorporating civil society in participatory governance institutions has led to a broad range of social programs for the poor (Donaghy 2011).

However, studies also found failures among institutions that encouraged or allowed local participation in their decisionmaking process. Some countries that implemented the concept did so in a negligent manner that, in effect, reinforced existing power relations (Pieterse 2008). Governments tend to build up participation in governance matters by prescribing formats with rigid rules, exclusive selection, and unequal balance of power (Miraftab 2004; Cornwall 2008). There were instances when local authorities utilized participatory governance structures to depoliticize local

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bottom-up movements or create spaces for groups loyal to local political leadership (also discussed in the case of the Philippines) (Porio 2012; Basurto 2013). It was possible that the representation and leadership positions belonged to those who had long-standing connections with the government or influential groups (Basurto 2013). Participation may also fail when the interest of community representatives does not reflect the true preference of the majority (Platteau and Abraham 2002). Similarly, even the most acknowledged achievements of participatory governance, such as budgeting, may not be conducive to all contexts. The experience of Costa Rica showed that legal reforms were not enough for community involvement to succeed (Basurto 2013). Basurto (2013) noted the need to pay attention to class-based relations within the bureaucracy and the incentives created to link citizens with public administration. Participation outcomes are affected by “initial levels of empowerment and social capital” whereby groups with lower levels of social capital are expected to achieve less (Osmani 2007, p.7). Funding from the national government also affects the policies and programs supported and implemented by local governments (Donaghy 2011).

It is a challenge to understand the effectiveness of institutions for public deliberation. Rowe and Frewer (2004) attributed this to the complex nature of public deliberation, which has many schemes, levels, and scopes of citizen participation. As shown in earlier studies, several factors facilitate effective public deliberation. The extensive review of Rowe and Frewer (2004) summarized these factors as follows: (1) representativeness and access; (2) openness and transparency; (3) speed at which a group comes to a solution; (4) quality of discussions; (5) extent to which final solutions represent group consensus; (6) capacity and skills of a community or group to work in a team; (7) incentives defined as a situation where potential benefits from participation outweigh costs (i.e., there is a specific tangible concern); and (8) absence of a dominant group especially in societies that are highly unequal or have a culture of political dominance. The literature further notes that the outputs or outcomes of public deliberations are observed in the decisionmaking process. For instance, coproduction can be considered as a byproduct of public deliberations as parties agree to involve communities in the management and delivery of basic services. Thus, public deliberation and the institutions that support this process can make policies and programs more inclusive and people-centered.

Local housing boards and social housing policy

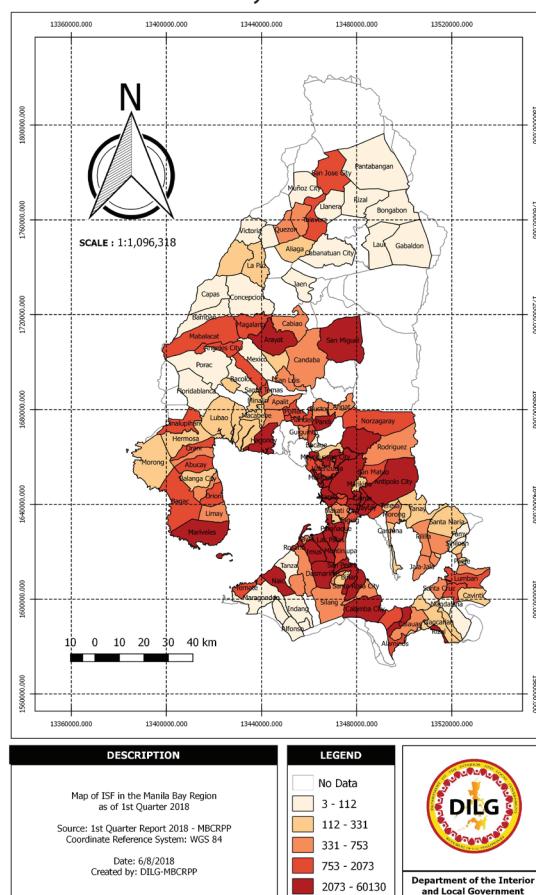
Social housing is one of the sectors whereby civil society has been most active as the Philippines moved to a new political system. This can be traced to rising urbanization and the proliferation and worsening conditions of informal settlements in the country's urban and urbanizing areas. Social movements on housing have consolidated at the national and city or municipal levels with strong networks throughout the Philippines. Their members' concerns usually involve housing policy and program reforms and spending priorities at the national and local levels. The Urban Development and Housing Act (UDHA) of 1992 or the LGC does not require the creation of LHB but encourages the establishment of institutions that promotes active participation from civil societies and other stakeholders (HUDCC 2001). Thus, many cities and municipalities created LHBs through their local leaders' initiatives. With the issuance of Executive Order (EO) 708 series of 2008, the LHB was recognized as a platform for participatory governance at the national level.

The EO ordered to transfer the clearinghouse function for the eviction and demolition of informal settlements from the Presidential Commission on the Urban Poor (PCUP) to the LGUs. As an initial step, LGUs were ordered to create their LHBs or similar bodies in charge of the task. The EO was a clear signal to institutionalize LHBs across different cities and municipalities, giving them a uniform and legitimate function. It is important to note that this was a result of public deliberations led by urban poor coalitions, particularly the Urban Poor Alliance, which

positioned PO representation and the activation of LHBs as a crucial point in their advocacy agenda (Karaos and Porio 2015).

The second legal basis for the creation of LHBs at the national level was introduced in 2008 by the Department of the Interior and Local Government (DILG) through the issuance of Memorandum Circular 2008-143. The memorandum was prompted by the Supreme Court Mandamus ruling on the Manila Bay clean up (GR No. 171947-48). The Supreme Court, in its decision dated December 18, 2008 and resolution dated February 15, 2011, ordered 13 national government agencies (NGAs) to clean up, rehabilitate, and preserve Manila Bay based on a basic policy of the state as contained in the 1987 Philippine Constitution and the LGC “to protect the right of the people to health and to a balanced and healthful ecology” (DILG 2015b, p.4). The DILG, one of the 13 NGAs, was tasked to monitor all LGUs within the Manila Bay watershed area in terms of key performance indicators especially the removal of 100 percent of the illegal structures built along the coastal areas, shorelines, and other waterways of Manila Bay. This includes clearing of informal settlements and relocation of informal settler families (ISFs), which is a source of pollutants in the area. The Manila Bay watershed covers 178 cities and municipalities comprising of 17 cities and municipalities in the National Capital Region (NCR), 94 in Region 3, and 67 in Region 4A (Figure 1).

Figure 1. Informal settlements in the Manila Bay watershed



ISFs = informal settler families; MBCRPP = Manila Bay Clean-up, Rehabilitation and Preservation Program
Source: DILG (2018)

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The Supreme Court directive put pressure on identified cities and municipalities to facilitate the relocation of ISFs. The DILG directed LGUs to achieve the desired outputs of the Manila Bay Rehabilitation Program and issued Memorandum Circular 2008-143, mandating cities and municipalities, particularly the first to third class ones, to create and institutionalize their LHBs to engage communities in the clearing and resettlement activities.

Memorandum Circular 2008-143 provides detailed aspect of LHBs, such as their composition and main functions. The functions of LHBs, as specified in the DILG circular, include monitoring of evictions and demolitions, consultation with affected families, and regulation (i.e., compliance with demolition or prerelocation guidelines specified in the law). Ultimately, the LHB is the only institution in a municipality or city legitimate to issue a Certificate of Compliance (CoC), which is necessary to facilitate the relocation of informal settlers in public lands and those owned by the government.⁴ In the past, eviction and relocation on public lands required the PCUP's approval under the Office of the President. However, the presence of LHBs brought consultation and approval processes for demolition and resettlement to the local level. The issuance of CoC by LHBs, in effect, satisfies the UDHA requirement, reducing workload and preventing delays at the national level.

The passage of the Department of Housing and Urban Development Act (Republic Act [RA] 11201) further supported earlier laws that encouraged or directed the creation of participatory governance institutions for housing at the local level. RA 11201 emphasized the promotion of partnerships among the government, private sector, and civil society and the conduct of a genuine and inclusive participatory consultation between the government and its stakeholders (RA 11201, Section 7). The planning environment needs to establish the LHB in every city and municipality aside from the legislative basis for its creation. Both the *Philippine Development Plan* (PDP) 2011–2016 and the PDP 2017–2021 urged LGUs to establish LHBs as a mechanism to accelerate their decisionmaking and the delivery of housing services. Likewise, the Local Shelter Planning Manual of the Housing and Urban Development Coordinating Council (HUDCC) indicated the establishment of LHBs as a necessary step in developing their local plans. This kind of documents extended the nominal functions of LHB as outlined in Memorandum Circular 2008-143 although these functions were not imposed legally. The DILG in its recent shelter programs enforced the establishment of LHB as a prerequisite for specific LGUs to access funds or programmatic support. Such was the case of the micro-medium-rise buildings modality of the department, which required LHBs to bring to the PO project proponents at least 50 percent of voting membership (DILG 2015a). Overall, LGUs received numerous impulses that incentivized them to move forward with the development of LHBs.

There are efforts by the Senate to legislate the institutionalization of LHBs and give them greater powers. In particular, Senate Bill 893 proposes the following additional functions:

- To recommend directives, rules, and regulations to the *Sanggunian* on the preparation of local shelter plans;
- To approve preliminary and final subdivision schemes and the development plans for subdivisions and condominiums;
- To approve subdivision schemes and plans for all economic and socialized housing projects as well as building occupancy permits;
- To evaluate and resolve opposition to the issuance of development permits;
- To designate one representative to the Local Development Council;
- To recommend sites for socialized housing;
- To advise the *Sanggunian* on matters of local taxation in socialized housing programs;

⁴ In the case of private lands occupied by informal settlers, owners have to go through court process.

- To recommend for approval of local chief executives (LCEs) schemes for acquisition and dispossession of lands for socialized housing purposes;
- To recommend to LCEs partnership arrangements concerning delivery of affordable shelter; and
- To report the delivery of other LGU functions as prescribed by the UDHA.

The proposed ordinance also includes the creation or conversion of responsible existing offices into the Local Housing Office to serve as an implementing arm of the LHB. Additionally, it provides financial mechanism and the division of responsibilities of various shelter and urban poor affairs agencies concerned with the functions of LHB. Once approved, these changes will give greater powers to the LHB especially in land use and local shelter planning.

Table 1. Relevant national laws, legislations, and circulars on the creation and strengthening of LHB

National laws and basis for the creation of LHBs
<ul style="list-style-type: none">• 1987 Constitution, Article XIII, Sections 9 and 10• Local Government Code of 1991, Sections 2, 3(b), 17(a), and 18• Urban Housing and Development Act of 1992, Sections 2(e) and 39• Executive Order 708 series of 2008• DILG Memorandum Circular 2008-143 (Creation of Local Housing Boards)• DILG Memorandum Circular 2009-05 (Amending Memorandum Circular 2009-143)• Department of Housing and Urban Development Act (RA 11201 series of 2018)
Selected documents strengthening LHBs
<ul style="list-style-type: none">• LGU Guidebook for Local Housing Projects and Programs, 2001• <i>Philippine Development Plan 2011–2016</i> Chapter 8 or the Philippine Development Plan Mid-Term Review• DILG Memorandum Circular 2015-56 (Guidelines for the implementation of DILG micro-medium-rise buildings projects by LGUs)• <i>Philippine Development Plan 2017-2021</i>, Chapter 12, Building Safe and Secure Communities• Local Shelter Planning Manual of the Housing and Urban Development Coordination Council, 2016
Pending legislation
<ul style="list-style-type: none">• Senate Bill 893 (Local Housing Board Act of 2016) - creating a local housing board in all cities and first to third class municipalities, providing for its powers and functions and for other purposes

LHB = local housing board; DILG = Department of the Interior and Local Government; RA = Republic Act;

LGU = local government units

Source: Authors' compilation

Functionality of LHBs in LGUs

The creation of LHBs, as mandated by the DILG memoranda, covers cities and first to third class municipalities having informal settlers. The focus on urbanized areas was due to the observed association between the level of urbanization and the magnitude of informal settlements. Official data on the number of informal settlements do not reflect the current pervasiveness of informal settlements but the pattern of distribution show that the bulk of ISFs are in highly urbanizing cities, particularly Metro Manila.⁵ Based on the 2015 housing census, 41.12 percent of the total population of ISFs in the Philippines resided in

⁵ In 2011, the National Housing Authority (NHA) reported a total of 1.5 million ISFs in the Philippines. Of this number, more than 500,000 ISFs were found in Metro Manila. The difference in the count with the official statistics was due to the definition of ISFs it adopted, which considered ISFs mainly in terms of "consent" to the occupancy of a property. The official statistics did not consider whether consent was given by the legitimate owners.

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highly urbanized cities (HUCs) and about 57 percent of ISFs in HUCs lived in Metro Manila (Table 2). Of the 33 HUCs, the majority (25 cities) established their LHBs through a local ordinance.

Table 2. Highly urbanized cities with Local Housing Boards (LHBs)

	Number of ISFs*	% ISF to total no. of HHs	With LHB**
National Capital Region (NCR) (excluding Pateros)	123,782	3.98	Y
Baguio City	1,436	1.60	N
Angeles City	3,313	3.44	Y
Olongapo City	323	0.57	N
Lucena City	2,694	4.50	N
Puerto Princesa City	3,876	6.23	Y
Iloilo City	6,581	6.92	Y
Bacolod City	12,543	9.72	N
Cebu City	9,776	4.57	Y
Lapu-Lapu City	4,627	4.65	N
Mandaue City	4,670	4.94	N
Tacloban city	2,261	4.47	N
Zamboanga City	6,053	3.12	Y
Iligan City	1,937	2.53	Y
Cagayan de Oro City	8,825	5.41	Y
Davao City	15,670	3.82	Y
General Santos City	6,112	4.23	Y
Butuan City	3,347	4.39	N
Total ISFs in HUCs	217,826	4.17	
Total ISFs in HUCs (excluding NCR)	94,044	4.45	
Total ISFs in the Philippines	529,751	2.31	
% of ISFs in HUCs to total ISFs in the Philippines	= 41.12%		
% of ISFs in NCR to total ISFs in HUCs	= 56.83%		

ISFs = informal settler families; HH = household; Y = yes; N = no; HUCs = highly urbanized cities; LGU = local government unit

* Informal settlers refer to the number of households owning house rent-free lots without consent of the owner and those in rent-free house and lots without consent of the owner.

** Information on the presence of LHB was individually checked on the websites of LGUs. Institutionalized LHBs are those LGUs with approved Sanggunian Ordinance creating the LHB. NCR consists of 16 HUCs.

Source: PSA (2015)

Currently, no government agency monitors the LHB compliance of LGUs. The DILG, however, monitors mainly the 178 cities and municipalities around the Manila Bay watershed to ensure compliance with the Supreme Court Mandamus on Manila Bay. Among the 178 LGUs, 123 complied with the DILG directive to institutionalize LHBs (Table 3).

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Table 3. LHB compliance of cities and municipalities covered in the MBCRPP as of 2016

Location	Number of ISFs	% ISF to total population	No. of cities/municipalities	With LHB			Total no. with LHB	No LHB**
				1	3	5		
Metro Manila								
Cities	63,694	2.1	16	6	10	16	0	
Municipality	2,029	14.3	1	1			1	0
Region 3**								
Cities	5,710	0.9	12		5	5	7	
Municipalities	9,540	7.0	82	19	15	34	48	
Region 4								
Cities	26,515	2.1	12	2	10	12		
Municipalities	19,790	1.9	55	1	12	41	54	1*

Note: The number of ISFs reflects only those that occupied danger areas or were along rivers, creeks, and other bodies of water. The proportion of ISFs was computed using the number of households from the 2015 Census of Population.

LHB = local housing board; ISFs = informal settler families; DILG = Department of the Interior and Local Government; MBCRPP = Manila Bay Clean-up, Rehabilitation and Preservation Program; LSP = Local Shelter Plan; RRAP = Relocation and Resettlement Action Plan

*The municipality of Rizal was given a rating of N/A for category 3 (ISFs and the development of LSP and RRAP)

**No LHB or no report given

***Type refers to rating based on the MBCRPP LGU compliance reports

Meaning of rating:

1 = There is an LHB created through an ordinance but lacks the required number of officers and does not conduct regular board performance tasks

3 = There is an LHB created through an ordinance with complete required officers but does not conduct regular board performance tasks

5 = There is an LHB created through an ordinance with complete required officers and conducts regular board performance tasks

Source: Authors' summary and computation based on DILG (2015b) and PSA (2015)

Those that did not comply had not considered the establishment of LHBs as urgent because the ISFs situation was not a pressing concern in their localities. The ISFs in these municipalities are usually contained in small areas and the consultative process is often ad hoc.⁶ On the other hand, in the case of Metro Manila where ISFs proliferate, all cities and the municipality of Pateros complied with the DILG directive to institutionalize LHBs.

However, compliance does not necessarily mean a functioning LHB. Some LHBs are established mainly on paper and are either inactive or do not conduct regular meetings. There are LHBs that lack the required number of members while others do not have regular representatives from the civil society or communities.

⁶ Consultative process can still be undertaken by LGUs even in the absence of LHB since they have the Urban Poor Affairs Office (UPAO), which implements housing programs and projects. The UPAO does not issue CoCs and usually serves as the secretariat of LHB.

A closer look at the LHBs of three HUCs

Metro Manila is an important case study area for LHBs because of the magnitude of ISFs and the limited relocation sites for socialized housing in this region. Relocation often involves off-city resettlements, resulting in major displacement of families, which makes the resistance among ISFs high. The LHB provides the mechanism to engage communities and develop resettlement projects and policies to lessen the adverse effects of displacing affected families and also gives them better opportunities.

This study examined the LHB processes of participatory governance in three cities of Metro Manila: (1) Quezon City, (2) Manila, and (3) Pasig City. These cities represent areas that have institutionalized LHBs with ratings of either 3 or 5 (see Table 3) and are also key cities representing different parts of the region (i.e., north, east, and west of Metro Manila).

Organization and composition of LHB

All three cities institutionalized their LHB through the issuance of a Sanggunian resolution or city ordinance. Quezon City's LHB ordinance was issued in 2002 while those of Pasig City and Manila were issued in 2009. Organizing the LHBs took some time for the three cities. In Quezon City, records of regular meetings were reported only in 2011. For Manila and Pasig, the LHBs were convened in 2013 and 2012, respectively. The main objective for the creation of LHBs in the cities of Pasig and Manila was to have a clearinghouse for the eviction and demolition activities of ISFs, consistent with DILG Memorandum 2008-143. The functions of LHBs, as stated in their respective ordinances are: (1) monitor all evictions and demolitions in cooperation with other concerned agencies; (2) issue CoCs; and (3) ensure all requirements for eviction and demolition under the UDHA are met.

As for Quezon City, the role of LHB was expanded to other aspects of shelter development. In addition to being the demolition clearinghouse, the Quezon City Housing Board (QCHB) was tasked to formulate, develop, and ensure the implementation of policies on the provision of housing and resettlement areas for the underprivileged and marginalized households.

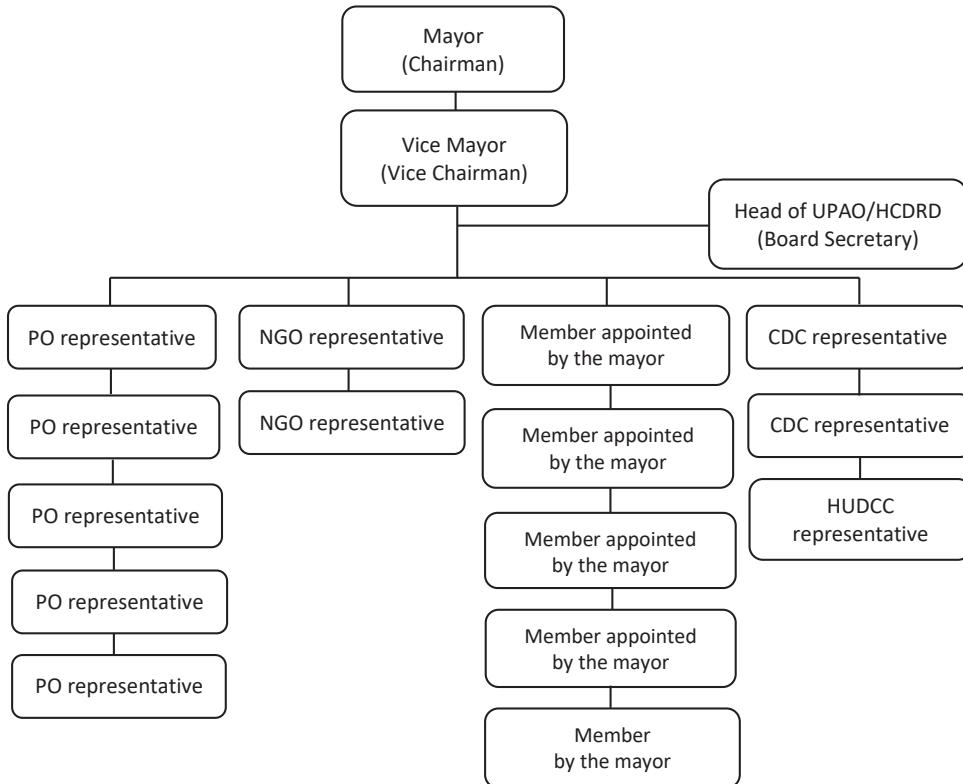
The functions of the QCHB as explicitly stated in the ordinance are to: (1) recommend local shelter plans; (2) assist in the formulation of amendments to the Quezon City land use plan; (3) monitor the progress of land developments projects approved by the Sanggunian; (4) ensure compliance with the balanced housing requirement; (5) identify lands for socialized housing; (6) advise the Sanggunian on matters of local taxation and allocation that affect the local government socialized housing program; (7) recommend for the acquisition and disposition of funds within Quezon City for socialized housing purposes; (8) recommend for approval of the LCEs partnership arrangements with the NHA; (9) coordinate with national government housing agencies; (10) ensure the registration of underprivileged and homeless families as beneficiaries; (11) coordinate with national government entities involved in housing and urban development; and (12) submit to the President and the Congress an annual report on the implementation of the UDHA.

There are also some variations in the structure, composition, and powers of LHBs in the three cities. All three cities have their mayors as the chair of the LHBs as stated in the national legislation. However, other members of the board and their representations vary.

The housing board in Quezon City is composed of the vice mayor as vice chairman of the board, the head of the Urban Poor Affairs Office as board secretary, six representatives of duly accredited POs, two representatives of duly accredited NGO, five members appointed by the mayor, two representatives of the city development council, and a representative from the HUDCC and PCUP appointed by their respective chairs (Figure 2).

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Figure 2. Composition of the Quezon City Housing Board



UPAO = Urban Poor Affairs Office; HCDRD = Housing Community Development and Resettlement Department; PO = people's organization; NGO = nongovernment organization; CDC = City Development Council; HUDCC = Housing and Urban Development Coordinating Council

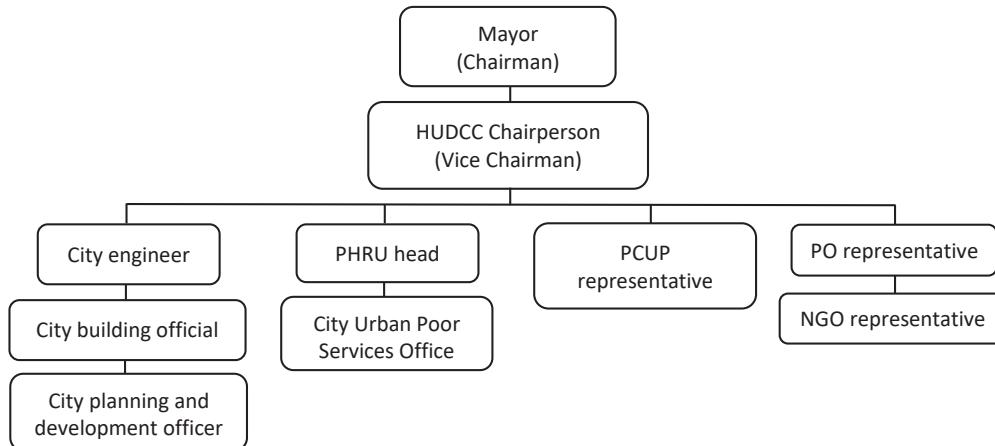
Source: Quezon City Local Government (2002)

For the representatives of POs and NGOs, the Quezon City mayor chooses among the accredited POs and NGOs in the city, which are selected by the civil society during the internal assembly. POs or NGOs that are already members of the City Development Council are not qualified for membership in the LHB. PO representatives are taken from each of the districts of Quezon City. There is one representative for every district except for District II, which has two representatives due to its size. The membership of the board shows that of the 17 members, 8 are from the civil society (6 POs and 2 NGOs). While the majority of members are public officials, not everyone from the board can vote. In particular, representatives of national shelter agencies (e.g., HUDCC and NHA) serve as observers and are nonvoting members.

In Pasig City, the vice-chair is the *Sangguniang Panglungsod* chairperson of the Housing and Urban Development Committee. Among other government representatives are the city engineer, city building official, city planning and development officer, head of the Pasig Housing Regulatory Unit (PHRU), head of the City Urban Poor Services Office, one representative from the NHA, and one from the PCUP (Figure 3).

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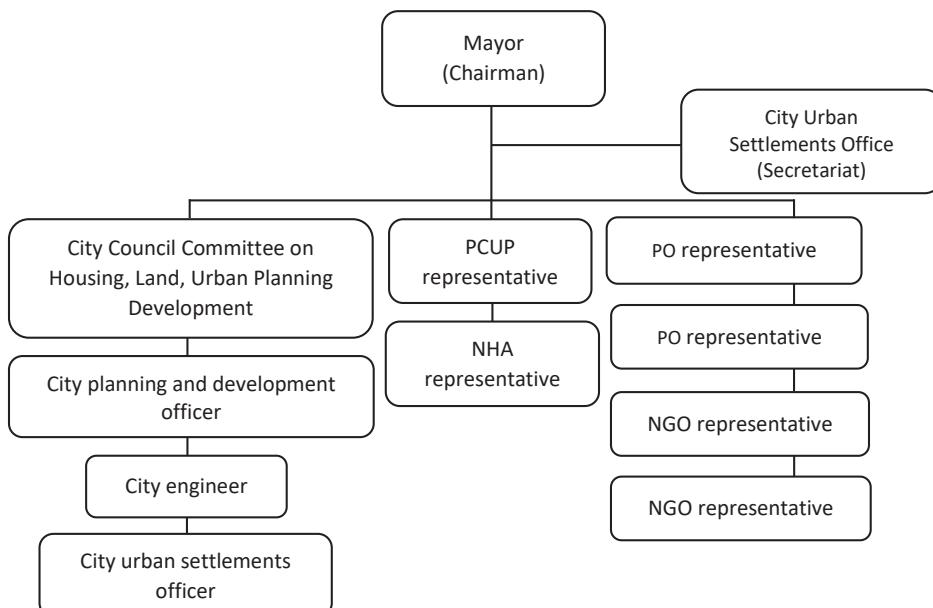
Figure 3. Composition of the Pasig City Housing Board



HUDCC = Housing and Urban Development Coordinating Council; PHRU = Pasig Housing Regulatory Unit;
PCUP = Presidential Commission on the Urban Poor; PO = people's organization; NGO = nongovernment organization
Source: Pasig City Local Government (2009)

In the case of Manila City Housing Board, the vice-chair is the chairman of the City Council Committee on Housing, Land, Urban Planning Development and Resettlement (Figure 4).

Figure 4. Composition of the Manila City Housing Board



PCUP = Presidential Commission on the Urban Poor; NHA = National Housing Authority; PO = people's organization; NGO = nongovernment organization

Source: Manila City Local Government (2009)

Other members are the city planning and development officer, city engineer, city urban settlements officer, one representative from the PCUP and one from the NHA, representatives from POs not less than one-fourth of the members of the fully organized board, and representatives from NGOs not less than one-fourth of the members of the fully organized board. The City Urban Settlements Office serves as the secretariat of the board. In particular, the PO and NGO representatives are selected from the POs and Securities and Exchange Commission-registered NGOs operating in the city, respectively. The City Urban Settlements Office gathers all eligible representatives of POs and NGOS to choose among themselves the board members. The PO and NGO representatives in the City Development Council can also be the PO and NGO representatives of the LHB.

Process of public consultations and deliberations

The effectiveness of LHB can be observed in the decisionmaking process. As provided in the previous section, LGUs applied the prescribed legislative frameworks of DILG Memorandum 2008-143 differently. For instance, the functions of the QCHB are broader than those of the Pasig and Manila housing boards. Moreover, Quezon City also expanded the prescribed composition of the board by including more representatives from NGOs and POs, such that they were of equal number with public officials who have voting rights. The inclusion and acceptance of PO representatives in the decisionmaking process are reflected in the approved board resolutions that have the signatures of all PO representatives. Also, a premeeting of LHB presided by the vice-chair is conducted especially when the approval of CoCs for eviction and resettlement has to be decided upon. The premeeting provides an opportunity for other members of affected communities to participate in the discussions and hear the issues raised by key stakeholders. It also allows for detailed discussions of the affected community's issues and concerns before the recommendations are decided upon in regular or main LHB meetings.

The process of deliberation shows that there is a good relationship between the Quezon City government and the PO representatives and the discussions in their meetings become inputs to policy decisions. For instance, the POs noted that this relationship resulted in more voluntary relocations (i.e., violent demolitions have declined) because people are consulted and PO representatives themselves are trusted in their respective districts. The PO representatives are elected by the community and current representatives who reside in that community and have remained in their positions for several years. The communities also believed that their concerns are discussed, having witnessed the pre-LHB meetings and seen the records of those meetings and the board resolutions.

In the case of Pasig and Manila housing boards, the participation of POs and NGOs in the decisionmaking process is minimal. All board members are voting members while the POs and NGOs are underrepresented because they are given only one or two seats each. On the other hand, local and national government officials comprise the majority of the board members. Decisions are approved and board resolutions are drafted even without the signature of PO and/or NGO representatives as long as the majority of members have signed the resolutions. There is also no available documentation on LHB meetings that took place. The POs and/or NGOs in both cities saw the LHB process mainly as compliance with the requirement of consultation with no real participation from the communities. Interviews with NGO and PO officers in both cities showed that there had been only a few meetings with the LHBs. They were also no longer invited to attend the meetings from 2017 to 2018. In cases when they were called to a meeting, they discussed mainly matters on livelihood support and relocation assistance. The POs in Manila housing board were inclined to approach directly the City Housing Office and the Office of the Mayor to get support for housing plan instead of airing their needs in the LHB. Having very limited influence on the works of

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the LHB, they consider the direct approach as a more effective mechanism than the LHB itself. The low importance given to the process of participatory governance in LHB was also reflected in the meetings undertaken to discuss housing issues. While the QCHB conducts preconference meetings in addition to regular LHB meetings, the Pasig and Manila housing boards did not have regular meetings. The meetings are dependent on the “need” or when eviction and relocation have to be implemented. In particular, Pasig City prefers to course the consultative process through the Local Interagency Action Committee (LIAC), an ad hoc committee created at the national level, when there is a need for eviction and relocation.

The LHB is considered as an alternative option when the LIAC fails. The LHB is then convened for the issuance of CoCs so that the eviction and demolition can be executed. The CoC signifies that a consultative process with affected communities has been undertaken and adequate relocation options have been provided. A similar process is done in Manila. The LHB is merely an avenue to comply with the provision of UDHA, which requires adequate consultations with affected families. The importance of LHB mechanism was also reflected in the operational funding of the board. Only the QCHB had a separate line budget for LHB operations. The budget, which was PHP 5 million per year, included the honorarium paid to PO and NGO representatives. No honorarium was given to the representatives of the local and national government. In the case of Pasig and Manila, there were no separate budget items for LHBs. In Manila, although the ordinance authorized a budget for the LHB to be taken from 1 percent of the internal revenue allotment (IRA), this was not implemented. Expenses for LHB meetings were subsumed in the operation of the housing offices in the cities of Manila and Pasig. No honorarium was provided to any board members. Table 4 provides a summary of the key features of LHB in the case LGUs.

Table 4. Key features of LHB in the case LGUs

	Quezon City	Pasig City	Manila City
Sanggunian ordinance creating LHB	Ordinance 1111 series of 2002	Ordinance 14 series of 2009	Ordinance 8185 series of 2009
Year LHB formally convened	2011	2013	2012
Mandate of LHB	Formulate, develop, and ensure implementation of policies on the provision of housing and resettlement areas, and the observance of the right of the underprivileged and homeless to a just and humane eviction and demolition	Sole clearinghouse for eviction and demolition activities of ISF in danger areas, public places, and government projects	Sole clearinghouse for eviction and demolition activities of ISF in danger areas, public places, and government projects
Membership of LHB	Chaired by the mayor with 17 members composed of 2 city officials; 6 duly accredited POs; 2 duly accredited NGOs; members from the City Development Council; 5 members to be appointed by the mayor, which include the PCUP and representative from HUDCC	Chaired by mayor with 10 members composed of 6 city officials; 2 representatives from national government agencies; 1 duly registered PO representative; and 1 duly registered NGO representative	Chaired by the mayor with 10 members; 4 city officials; 2 from national government agencies; at least 2 duly registered POs; and 2 duly registered NGOs

Table 4. (continuation)

	Quezon City	Pasig City	Manila City
Selection of PO and NGO representatives	Mayor approves registered POs and NGOs in Quezon City from civil society recommendations; PO representatives are different from those in the City Development Council	Selected by the affected community No fixed PO representative	POs or NGOs in the City Development Council can also be representatives in the LHB
Meetings per year	Monthly pre-LHB meetings plus 4 regular (main) LHB meetings per year	Not regular; LHB convenes based on need; prefers to use LIAC; LHB as last resort	Not regular; LHB convenes only when there is an application for CoC
Quorum	POs or NGOs in the City Development Council can also be representatives in the LHB Key shelter agencies are nonvoting representatives	50+1 (PO may not sign resolution)	50 +1 (PO may not sign resolution)
Budget for LHB	Annual funding of PHP 5 million for LHB operational expenses Honorarium provided to PO representatives; none for local and national government board representatives	PHRU authorized to provide budget for LHB; expenses for travelling, representation, and other allowances are provided	With authorized budget but unfunded; LHB operations is subsumed in the City Housing Division No honorarium given to the board representatives

LHB = local housing board; LGU = local government unit; ISFs = informal settler families; PO = people's organization; NGO = nongovernment organization; PCUP = Presidential Commission on the Urban Poor; HUDCC = Housing and Urban Development Coordination Council; LIAC = Local Interagency Action Committee; CoC = Certificate of Compliance; PHRU = Pasig Housing Regulatory Unit; PHP = Philippine peso
Sources: Quezon City Local Government (2002); Pasig City Local Government (2009); Manila City Local Government (2009)

Delivery of social housing services

The existence of LHB is argued to promote transparency and accountability and build social capital associated with policies and programs that benefit the poor and other marginalized sectors. Data and information from the case LGUs are presented to demonstrate the potential effects of participatory governance. Given the limitation of data and the case study approach, the results are not intended to establish causality nor imply that LHB is the only factor for effective delivery of social housing services.

a. Quezon city social housing policy/programs

When the QCHB was formally convened in 2001, the Quezon City local housing office conducted a census of ISFs in the city to serve as the baseline for its local shelter plan. From 2001 to 2016, Quezon City reduced the total number of ISFs by 16 percent, specifically those residing in government priority areas, open spaces, and private properties (Table 5). However, the number of ISFs in danger areas and waterways continued to grow.

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Table 5. Magnitude of ISFs in Quezon City

Location	Year						% change from 2011 to 2016
	2011	2012	2013	2014	2015	2016	
	Total no. of ISFs						
I. Private properties	102,946	100,783	91,983	93,167	92,026	91,871	-10.76
II. Danger areas/waterways/ in infrastructure	31,840	40,909	45,649	48,927	49,310	46,477	45.97
III. Government projects (+ area priority development)	15,664	15,484	15,897	17,538	15,907	15,832	1.07
IV. Government priorities	77,581	35,453	34,203	34,212	35,426	36,831	-52.53
V. Open spaces	2,663	2,658	2,974	2,974	2,392	2,392	-10.18
Total	230,694	195,287	190,706	196,818	195,061	193,403	-16.16

ISFs = informal settler families

Source: Information compiled by the authors from the minutes of Quezon City Housing Board meetings

The city, through the LHB, approved 137 CoCs from 2012 to 2017 covering several ISF communities (Table 6). However, not all approved CoCs were implemented outright.

The implementation was deferred due to a lack of preparedness in relocating affected families. The POs considered concerns on the readiness of affected families as the openness of LGUs to the wellbeing of disadvantaged communities. The CoC approval process and the possibilities of deferment and allowances for renewal indicate that when the eviction orders are carried out, there is less resistance and violent clashes between the ISFs and the police are avoided.

Table 6. Summary of CoCs approved and renewed: Quezon City

Year	Approved	Deferred	Renewed
2012	8	3	-
2013	14	4	8
2014	29	6	5
2015	30	12	33
2016	18	6	112
2017	38	0	125
Total	137	31	283

CoC = Certificate of Compliance

Source: HCDRD (2016)

It should be noted that the Quezon City LGU strongly supports national government social housing programs, such as the Community Mortgage Program (CMP), which is considered as an effective pro-poor program (Table 7).⁷ The CMP remains as the city's major program while the local government serves as its accredited originator or mobilizer. In addition, the city implements

⁷The CMP assists the organized associations of underprivileged and homeless citizens to purchase and develop a tract of land under the concept of community ownership (RA 7279). For direct sales, the LGU supports ISFs occupying city-owned properties to acquire the lots they occupy by way of direct payment to the city government through monthly amortization for 25 years.

its local housing programs, such as financing social housing developments (including the CMP) and providing mortgage finance for the beneficiaries who seem to have a high level of acceptance and commitment to the city's housing projects as evidenced by their willingness to pay their monthly amortization. This is reflected in the high collection efficiency rate of the city's housing projects.⁸

Table 7. Quezon City housing program accomplishments, 1990–2017

Intervention	No. of projects	No. of beneficiaries	Collection efficiency rating (as of Q1 of 2017)
CMP			
Mobilizer			
LGU-QC	286	12,985	108.63%
Others a/	226	12,245	86.92%
Direct sale program	28	6,102	108.48%
Direct sale	21	5,790	
Bistekville	7	312	
Resettlement program	-	*39,305	
Socialized housing program	37	**7,320	
In-house			169.19%
SHFC			128.54%
HDMF			146.75%
Total	605	84,059	

*Number of Families

**Number of units

a/ mobilizers other than LGU-QC; collection efficiency data from SHFC

CMP = Community Mortgage Program; LGU = local government unit; QC = Quezon City; SHFC = Social Housing Finance Corporation; HDMF = Home Development Mutual Fund

Source: HCDRD (2016)

The LHB played a significant role in the implementation of the city's housing programs. For instance, under the CMP and direct sales programs, the LHB made the venue for the approval of CMP and direct sales projects. Moreover, it became a venue for the approval of major housing policies, such as the following:

1. Signing of the ordinance on socialized housing tax (5th LHB meeting on October 25, 2011);
2. Establishment of the Socialized Housing Fund (approved during the 11th LHB meeting on April 22, 2013);
3. Adoption of the city's updated shelter plan (approved during the 25th LHB meeting on May 29, 2017); and
4. Approval of Socialized Housing Financing Scheme (in-house and rent-to-own) (27th LHB meeting on November 29, 2017).

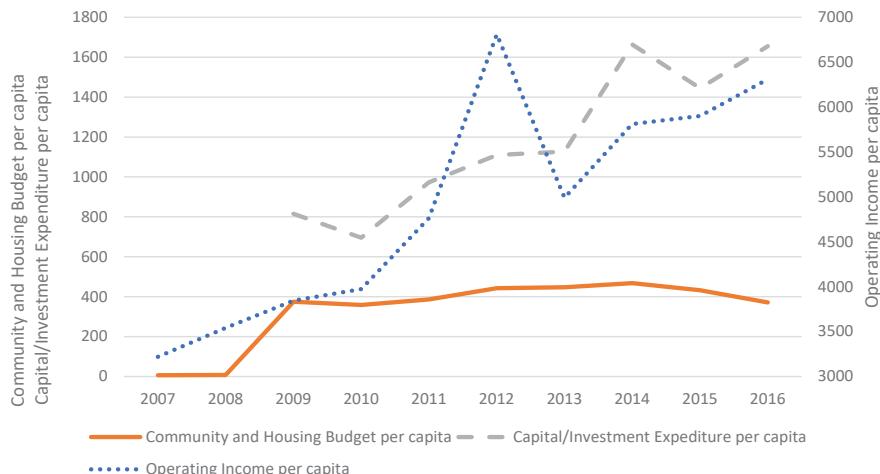
In particular, the socialized housing fund was generated from socialized housing tax, idle land tax, and proceeds from all housing programs of the city. The strong fiscal position of the Quezon City LGU also supported the LHB and the adoption of local social housing programs. On average, the city budget per

⁸ High collection efficiency is rare especially for public housing.

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capita doubled in 2016 from its level in 2007 (Figure 5). The city's expenditure on community and housing grew from PHP 6 million per capita in 2007 to PHP 372 million per capita in 2016. Capital investments in property, plant, and equipment per capita increased by 100 percent between 2009 and 2016.

Figure 5. Quezon City operating income, capital/investments and housing/community expenditure



Source: DOF-BLGF (2007–2016)

b. Pasig City housing policy/programs

Pasig City's housing programs for ISFs in the years prior to 2011 include the zonal improvement program (ZIP), CMP, medium-rise housing, and *Balik-Probinsya* program.⁹ More than 6,000 ISFs benefited from these programs (Table 8). It is important to note that both the ZIP and the CMP were settlement upgrading programs that did not involve the relocation of ISFs outside the area or city boundaries. Informal settlements were instead improved to address blighted conditions and give access to basic services. Likewise, medium-rise housing is an in-city housing program whereby the city allocates land within the city for the development of multistorey social housing for low-income families.

Table 8. Pasig City housing program accomplishments

Project	No. of projects
Zonal Improvement Program (as of 2011)	8
Medium-rise housing projects (as of 2011)	8
Relocation programs (2009–2016)	5
Financial assistance to relocated ISFs	
Community Mortgage Program (CMP) (as of 2011)a/	7

a/ = no new CMP projects after 2011

ISFs = informal settler families

Source: Pasig City Housing and Homeside Regulation Office (2014)

⁹ Families that did not submit the requirements for housing benefits were given financial assistance to cover their transport costs for moving back to their respective provinces.

In later years, the city's housing program for ISFs involved mainly off-city resettlement programs. From 2009 to 2016, the city utilized its resources to relocate over 6,000 families. Between 2009 and 2010 alone, the period with the highest number of families relocated off-city, the city relocated 2,639 ISFs. The ISFs were mainly those occupying the waterways. While the LHB was already institutionalized in 2009, it was not operationalized during the same year because relocation was mostly voluntary. There was less resistance among ISFs, which was attributed to two major events that occurred: the massive flooding in the area that resulted from Typhoon *Ondoy* (*Ketsana*) and the final and executory ruling of the Supreme Court on the cleaning up of Manila Bay. The LIAC implemented "voluntary" relocation as required under the UDHA.

From 2011 to 2016, the relocation of families in these areas slowed down due to the national government's strong support for participatory housing. This policy required housing agencies and LGUs to give optimum consideration for the "People's Plan" in cases of relocation, and for the intention of PO and NGOs to utilize LHBs as an instrument to support this process. The People's Plan was proposed by the affected community wherein settlers themselves "identify, conceptualize, plan, design, develop, and manage their shelter projects" (DILG 2014, p.1).¹⁰ The city's housing officials considered the People's Plan approach as a long process, thus, the support from the city officials became lukewarm.

This period also corresponds to the institutionalization of the city's LHB whose function was limited to that of a clearinghouse for the eviction and relocation of ISFs. The board is convened only in cases of involuntary relocation. In the past two years, the LHB was convened only twice for the relocation of ISFs who were resisting off-city resettlement. Thus, the LHB was operationalized mainly to facilitate the issuance of CoC and hasten relocation. It provided the city government with the means to protect itself from the law through a participatory governance platform dominated by those who held political power and practiced patronage politics.

Moreover, the city did not engage the LHB in local shelter planning. The local shelter plan was developed by the city housing office in partnership with other relevant city offices, such as the engineering department and the mayor's office.

While off-city resettlement is currently the main social housing program of Pasig City, the resettlement support is said to have been comprehensive. Unlike most cities in Metro Manila that simply provided a resettlement site to relocated ISFs, Pasig City implemented a complete resettlement package for ISF communities relocated at the urban fringes. The city government formalized a partnership with the receiving LGUs to enable the latter to support the needs of relocated ISF communities. In particular, it signed a memorandum of agreement (MOA) with the receiving LGUs for the provision of infrastructure and other facilities needed by newly resettled communities.

As shown in Table 9, the assistance includes both physical and social infrastructures and capital equipment amounting to millions of pesos. Moreover, although the MOA was only for five years, the city government was open to provide additional support. The funding support for these projects was taken from the city's overall operating budget. To further support similar programs in the future, the city considered the implementation of social housing tax. In 2016, the Pasig City Sanggunian approved in the City Revenue Code the collection of social housing tax equivalent to 0.5 percent of the assessed value of properties at PHP 1.5 million and above. From the perspective of some government officials, the strategy of Pasig was considered the best practice for off-city relocation. However, this did not show whether the scheme was inclusive and welfare-enhancing.

¹⁰ The People's Plan can be considered as a direct form of participatory governance or a coproduction strategy.

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There were anecdotal evidence of resettled households returning to the city and/or requiring continued support beyond the agreed five years due to lack of livelihood opportunities in relocation sites, which raised concerns on the fiscal sustainability of off-city resettlements.

Table 9. Summary of assistance given by Pasig City to off-city relocations as of 2017

Off-city relocation (Southville 7, Calauan, Laguna)			
Assistance given to relocated families	Assistance given for the resettlement site	Assistance given to host LGU	Assistance given to host barangay
<ul style="list-style-type: none"> Provision of winged vans trucks for the relocatees' belongings Provision of airconditioned buses PHP 15,000 livelihood assistance Installation of public faucets Giving of four units of generator sets Yearly giving of <i>Pamaskong Handog</i> 	<ul style="list-style-type: none"> Three-storey (15 classrooms) school building and covered basketball court (PHP 38,297,955) Livelihood caravan (includes medical, optical, and dental missions, and livelihood programs) 	<ul style="list-style-type: none"> Donation of PHP 1.3 million for the construction of cemetery 	<ul style="list-style-type: none"> Donation of ambulance
Near-city relocation (Southville 10, Tanay, Rizal)			
No. of units: 2,162			
Assistance given to relocated families	Assistance given for the resettlement site	Other assistance provided	
<ul style="list-style-type: none"> Aircon buses for the transportation of relocated families Provision of winged vans/trucks Loading of belongings to trucks with assistance from the BCEO, action line, and MMDA Bags of groceries and packed lunch for relocated families Giving of PHP 10,000 financial livelihood assistance Yearly giving of Pamaskong Handog Medical, dental, and optical missions 	<ul style="list-style-type: none"> Pasig City released PHP 140 million for the funding of 500 families qualified for relocation Initial deliveries of potable water during the first five months of relocation Concreting of the 320.00-km access road Construction of security outpost Construction of a three-storey school building (PHP 20,278,000) Donated various furniture and school supplies Donated ambulance, service vehicles, mini dump truck, rescue vehicle Donated equipment for livelihood programs 	<ul style="list-style-type: none"> Salaries of 26 teachers Salaries of other personnel Allowances of security personnel Garbage collection and disposal expenses Gas/oil and maintenance of garbage trucks Tree planting activities with the LIAC of Pasig and the Pasig City Biker's Club 	

Table 9. (continuation)

Near-city Relocation II (Eastshine Residences, Tanay, Rizal)

No. of units: 2,482

Assistance given to relocated families	Assistance provided to host LGU
<ul style="list-style-type: none"> • Aircon buses for the transportation of relocatees • Provision of winged van/trucks • Loading of belongings to trucks with assistance from the BCEO, action line, and the MMDA • Bags of groceries and packed lunch for relocatees • Giving of PHP 10,000 financial livelihood assistance 	<ul style="list-style-type: none"> • Construction and concreting of the access road • Construction of super health center (PHP 36,128,582)

LGU = local government unit; PHP = Philippine peso; BCEO = Batas Ciudad Enforcement Office;

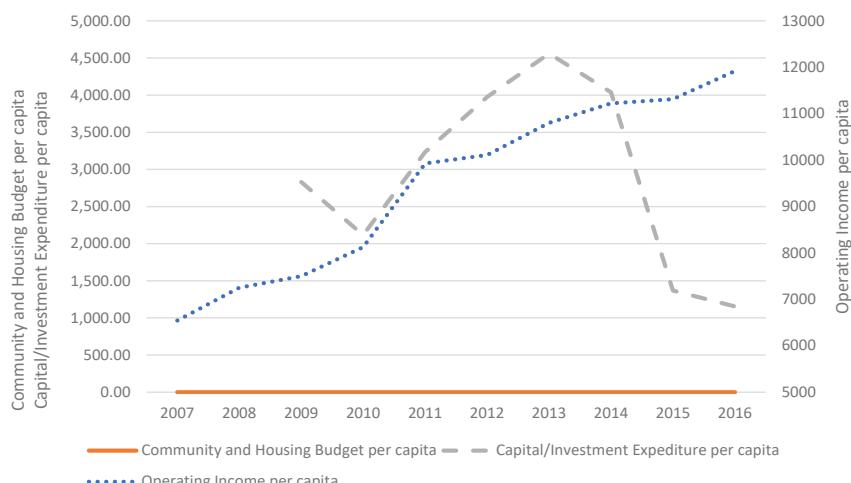
MMDA = Metropolitan Manila Development Authority; km = kilometer; LIAC = Local Interagency Action Committee

Source: Pasig Housing Regulatory Unit (2017)

Overall, the Pasig LHB has a limited role in the social housing policies and programs of the city. Social housing decisions are based mainly by local executives indifferent toward participatory governance due to the long process involved in decisionmaking. In particular, the high income per capita in the city of Pasig enabled the local government to provide relocation incentives. From 2007 to 2016, the city's income per capita showed a rising trend (Figure 6).

Capital/investment expenditure per capita rose sharply between 2010 and 2013, corresponding to the large number of families resettled during the period. Note that in the city, housing and community expenditures per capita were minimal and remained unchanged in the past 10 years. The expenditure was confined mainly to beautification expenses. All infrastructure expenditures, whether physical or social, were collectively reported in the city's capital/investment expenditures with no specific line of budget for capital housing expenditure.

Figure 6. Pasig City operating income, capital/investment and housing/community expenditure, 2007–2016



Source: DOF-BLGF (2007–2016)

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c. Manila social housing policy/programs

The Manila housing office mainly implemented a housing program known as the “Land for the Landless”, a provision of the law creating the City of Manila (RA 409 or the Revised Charter of the City of Manila) in 1949. The program targets families occupying privately owned lands for several years but are not necessarily informal settlers since some families pay rent to the landowners to use the lot. The land occupied by settlers may be expropriated by the city government through an expropriation ordinance whereby it buys the land from current owners at fair market price to be amortized by the settlers for 30 years. The prerequisite is for families to organize themselves and request sponsorship from their representative councilors for the expropriation.

The relocation of ISFs is undertaken by the office in compliance with the UDHA but there is no specific funding provided for relocation and resettlement programs. Given the absence of funding from the city government, the clearing of ISFs in danger areas, waterways, and public places is often not undertaken.

Most targets of ISF clearing operations were not achieved even under the *Oplan Likas*¹¹ program of the Aquino administration, which provided PHP 50 billion for the relocation and resettlement of ISFs in priority sites (Table 10). A major reason was the absence of relocation sites and the lack of funding. The program fund was released at PHP 10-billion installments yearly. The early tranches of the funds were transferred to the NHA, which was able to spend the funds faster through the classical off-city relocation approach (Galuszka 2018). On the other hand, other agencies, such as the DILG and the SHFC, developed the program modalities for the urban poor approach at a later part. Overall, 64 percent of the fund was transferred to the NHA, 18 percent to the SHFC, and the rest were allocated to the DILG, Department of Social Welfare and Development, and PCUP.

Table 10. City of Manila relocation activities as of 2016

Site	No. of ISFs		Relocation sites	Remarks
	Censused	Relocated		
Estero de Concordia	43	43	Bulacan	100% of ISFs relocated
Estero de Paco	1,372	1,372	Laguna Bulacan	100% of ISFs relocated
Estero de Pandacan	1,421	737	Laguna Bulacan c/o NHA	Relocation under the bridge not yet completed
Estero de Valencia	392	302	Bulacan	90 ISFs did not avail of relocation assistance
Estero de Sampaloc	78	52	Bulacan	
Estero de San Miguel	1,646	279	c/o People's Plan (on-site/in-city) c/o NHA	
Estero de Sta. Clara	229	153	Cavite	

¹¹ *Oplan Likas*, known as the “Lumikas para Iwas sa Kalamidad at Sakit”, is an operation to avoid disaster and sickness from the threats of climate change.

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Table 10. (continuation)

Site	No. of ISFs		Relocation sites	Remarks
	Censused	Relocated		
Estero de Sunog Apog	284	93	Smokey Mountain (for in-city) Cavite	
Estero de Maypajo	498	-	Smokey Mountain (for in-city) Cavite	
San Juan River	427	-	Cavite	
Tripa de Gallina	624	-	c/o NHA	
Estero de Magdalena	2,382	-		Priority project of City of Manila
Estero de Kabulusan	111	-	c/o NHA	
Estero de San Lazaro	1,567	-		Priority project of City of Manila
Estero de Vitas	218	-		
North and South Antipolo	-	-		Priority project of DPWH Not included in prior- ity areas of PRRC and DPWH
Estero de Tutuban	87	-		
Estero de San Antonio	51	-		
Total	13,548	3,724		

ISFs = informal settler families; NHA = National Housing Authority; PRRC = Pasig River Rehabilitation Commission; DPWH = Department of Public Works and Highways

Source: Urban Settlements Office (2017)

Similar to Pasig City, the role of the LHB in Manila was limited to that of a clearinghouse, which was only convened when there were available funds for eviction and demolition. From 2014 to 2016, the LHB issued only seven CoCs in government properties that affected specific government infrastructure projects (Table 11).

Table 11. Summary of CoCs approved: City of Manila

Year	Location	No. of families/ structures affected	Proponent
2014	Radial Road 10, Tondo, Manila	567 ISFs	DPWH
2014	Three-meter legal easement along Estero dela Reina, Br�ys. 8 and 9, Zone 1, Tondo, Manila	142 ISFs	MMDA
2015	PPA property in North Harbor, Bgys. 20, 29, and 39, Tondo, Manila	401 ISFs	PPA
2015	PPA property in North Harbor, Tondo, Manila, under the territorial jurisdiction of Bgys. 29 and 39	91 ISFs	PPA
2015	Barcelona St., Bgy. 283, Sonce 26, Binondo, Manila	40 ISFs	City Engineering

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Table 11. (continuation)

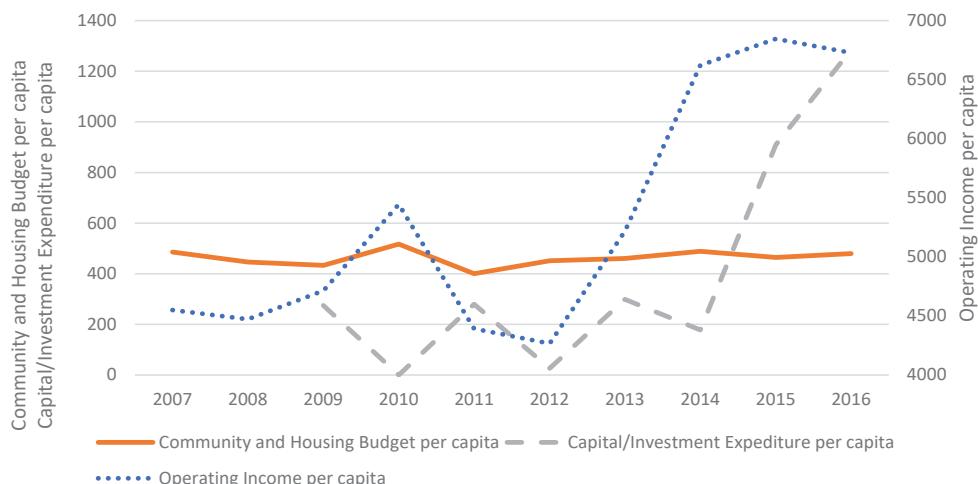
Year	Location	No. of families/ structures affected	Proponent
2016*	Concreting/widening of RROW from Chesa to Pacheck Sts., Radial Road 10, Tondo, Manila	189 ISFs	DPWH
2017	Sidewalk of Radial Road 12, Bgy. 628, Zone 63, Sta. Mesa, Manila	140 ISFs	City Engineering

CoC = Certificate of Compliance; ISFs = informal settler families; DPWH = Department of Public Works and Highways; MMDA = Metropolitan Manila Development Authority; PPA = Philippine Ports Authority; RROW = road right-of-way

Source: Information compiled by the authors from the minutes of Manila City Housing Board meetings

Manila relied mainly on other government agencies (e.g., MMDA, DPWH, Philippine Ports Authority, and NHA) to finance relocation activities. The city rarely allocated funds for relocation. According to the Manila City housing officials, they were constrained by the law and their finances from expanding their housing program. While the Land for the Landless was considered as an inefficient social housing strategy for a highly urbanized city such as Manila, abolishing the program would require a legislative action since it is part of the law that created the city. The LHBs were also not incorporated in the city's housing programs since they did not involve relocation/resettlement. It also appeared that social housing was not a priority investment of the city. While the city's operating income per capita showed a rising trend from 2007 to 2016, the income was utilized mainly for nonhousing infrastructure or capital investments (Figure 7). Per capita expenditure on community and housing remained flat over time despite the city's rising income.

Figure 7. Manila City operating income, capital/investments and housing/community expenditure, 2007–2016



Source: DOF-BLGF (2007–2016)

CONCLUSION

The LHB is an evolving formal space for participatory governance. Many cities that institutionalized their LHBs have not considered them as a means for effective public deliberation, which can produce social housing policies and programs that are inclusive and welfare-enhancing. Instead, most cities limited the role of their LHBs to that of a clearinghouse to issue permits for the eviction and demolition of ISFs. Of the three case studies examined, only Quezon City has a functional LHB, which provided a genuine representation of civil society and the community in public deliberation. It was shown in the inclusion of PO representatives in the LHB decisionmaking process, their equal representation with public officials in the board, the involvement of the community in the selection of their representatives, the transparency in the decisions and discussions of the LHB through the provision of avenues (e.g., pre-LHB meetings) for the inclusion of other community members in public deliberation, and the minority's signing of the LHB resolutions. Moreover, public deliberation through the Quezon City LHB resulted in the provision of regular funding for socialized housing programs, the strong support for national housing programs that are pro-poor, such as the CMP, and the adoption of an updated local shelter plan that expanded the social housing programs in the city to include locally financed housing programs. These actions have created confidence in the community on the intentions of the Quezon City government with regard to housing for the marginalized sectors, and as such, social capital was being built in the process. The case of the Quezon City LHB shows that the greater participation of the community in shelter planning can result in more acceptable housing projects and in their stronger commitment to having better project outputs. Moreover, the greater involvement of communities in the LHB resulted in a humane implementation of CoCs, which tends to slow down the clearing of informal settlements but has also reduced the cases of violent confrontations as mentioned by the PO representatives and the local housing office.

On the other hand, the role of LHB in Pasig City and Manila is limited to that of a clearinghouse that is being convened only when there are cases of eviction and demolition especially in cases of involuntary relocation. The decision of the LHB is a majority decision based on a board composition dominated by representatives of national government agencies and local officials as voting members. The minority are also not compelled to sign the LHB resolutions. The LHB is considered as a last resort when the local government and ISFs fail to reach an agreement on relocation arrangements in this case. The essence of participatory governance or public deliberation is not present. Instead, the approach is through the market system whereby the local government proposes a resettlement plan and provides "sweeteners" to achieve the objective of removing ISFs in an area. For the market approach to work, it requires political power and incentives usually in the form of substantial funding from the local government. The market approach may also apply when public deliberation fails due to the absence of social capital within the community itself (i.e., there are internal conflicts within the community). However, the sustainability of the market approach has to be considered because the fiscal sustainability of this action is a concern. Not all local governments have similar financial capacities to replicate the Pasig City model. It is also uncertain whether the housing services and other interventions provided have adequately addressed the major concerns of the community to ensure that the relocated families will not have to go back to informal settlements.

The LHB, under its current legal mandate, is an independent body that governs participatory governance for social housing services. However, in many LGUs, the LHB decisionmaking process remains with the Sanggunian and the mayors' office with very limited involvement of concerned communities and POs. The governance structure of LHB has to be strengthened for it to be an

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effective participatory governance platform and to counter “elitist” proposals. This can be done through a legislative process that will give authority to the cities’ LHBs. It is also necessary to provide for the greater representation and active participation of POs as well as greater transparency and accountability on the decisions of LGUs. The LHB should also be given financial support through a socialized housing fund. It should be involved not only in informal settlements but also in the decisionmaking process for city-wide shelter and land use planning. Lastly, additional research is needed to analyze the internal struggles of the participatory governance institutions and provide direct evidence of their impact on the outcomes of social housing policies and programs.

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The Japan-Philippines Economic Partnership Agreement, a Decade After: Evaluating the Impact on Philippine Trade

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ABSTRACT

Free trade agreements (FTAs) and regional trade agreements have proliferated in recent decades as countries perceived them to effectively reduce trade barriers, thus helping nations expand market access, protect local markets, and enhance efficiency and productivity of domestic industries. Such preferential trade agreements, however, can have both advantages and disadvantages. The Japan-Philippines Economic Partnership Agreement (JPEPA), the first bilateral FTA that the Philippines entered into, aims to facilitate and promote free transborder flow of goods, services, capital, and people between the two countries. Whether the JPEPA has been able to deliver its intended benefits for both countries and what determines its success are two focal national interests. Evaluating such an agreement can be done through detailed examinations of the countries' economic conditions before and after its implementation. It requires a comparison group whose outcomes are analyzed in contrast with a reference group of factors. This paper explores the use of synthetic control method to understand the effects of JPEPA on Philippine exports without being hampered by the limitations in its existing approaches. The results reveal that the Philippines benefited from the JPEPA as determined by the difference in the actual exports and the counterfactual exports. The country's exports to Japan grew by about 26 percent after the agreement was signed. Investigating the effects of JPEPA at the sectoral level, however, yields varying results.

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INTRODUCTION

The Philippines and Japan have strengthened their economic partnership through the years by engaging in various cooperation agreements in economic development and other areas of mutual benefit. Such is the comprehensive Japan-Philippines Economic Partnership Agreement (JPEPA)² signed by the two countries on September 9, 2006. The agreement was ratified in the Philippine Senate two years later and was finally entered into force on December 11, 2008. As the first bilateral agreement of the Philippines,³ the JPEPA covers a diverse number of cooperation on several fields, including human resource development, financial services, information and communications technology, energy and environment, science and technology, trade and investment, small and medium enterprises, tourism, and transportation (PHILEXPORT 2007).

Anchored on three key pillars—liberalization, facilitation, and cooperation—the JPEPA aims to facilitate and promote free transborder flow of goods and services, capital, and people across Japan and the Philippines, and strengthen existing ties between the two countries. With the proliferation of bilateral agreements due to the globally observed slow progress in the World Trade Organization (WTO)'s facilitation of trade, the Philippines took a similar action in advancing its relationship with Japan (PHILEXPORT 2007). As a comprehensive economic partnership, the JPEPA does not only concern eliminating tariff and nontariff barriers but emphasizes cooperation in various areas. It is also considered as a “new age” free trade agreement developed to address the pressures of regionalism, globalization, and technological progress (Medalla et al. 2010).

Prior to the signing of the JPEPA, the Philippines' total value of trade with Japan amounted to USD 15,188 million in 2006, with a three-year average of USD 15,374 million from 2004 to 2006 (UN Comtrade 2019).⁴ The top exports of the Philippines during the time included electronic products, woodcrafts and furniture, ignition wiring sets, fresh bananas, and iron ore agglomerates, among others. The country's imports, on the other hand, included electronic products, industrial machinery and equipment, transport equipment, iron and steel, telecommunication equipment, and electrical machinery (SEPO 2007).

Japan has been one of the top sources of the country's foreign direct investment (FDI), with an estimated total of PHP 143.5 billion from 2000 to 2006 (SEPO 2007). More recent figures show that Japan, with an average annual share of 18.8 percent, was among the Philippines' top 10 sources of approved investments from 2012 to 2016. The Bureau of Investments projected that FDIs from Japan would reach PHP 559 billion between 2007 and 2016, from PHP 137 billion between 1995 and 2005, generating more than 35,000 jobs (SEPO 2007). With regard to exported goods, Philippine exports to Japan were projected to increase by up to 13 percent in 2011. With the JPEPA, meanwhile, the growth rate of Philippine exports to Japan was expected to reach between 15.9 percent and 19.6 percent during the same year, from an initial 9 percent to 9.5 percent in 2007 (Table 1).

² Interchangeably the Philippine-Japan Economic Partnership Agreement. For consistency, the JPEPA is used throughout this paper.

³ The Philippines is a signatory to several regional and multilateral trade agreements, including the WTO, Asia-Pacific Economic Cooperation, Association of Southeast Asian Nations (ASEAN), and the ASEAN Economic Community. Through the ASEAN, the Philippines is a party to the ASEAN Free Trade Agreement (AFTA) and the ASEAN Trade in Goods Agreement, which enhances the Common Preferential Tariff under the AFTA. The country entered six regional FTAs through the ASEAN, namely, the ASEAN-China FTA, ASEAN-India FTA, ASEAN-Japan FTA, ASEAN-Korea FTA, ASEAN-Australia, and New Zealand FTA. The remaining FTAs—the JPEPA and the recently ratified Philippines-European Free Trade Agreement (PH-EFTA) FTA—are bilateral (ILO 2019).

⁴ United Nations (UN) Comtrade data show that the average total trade of the Philippines with Japan from 2006 to 2008 was at USD 14,982 million while the average total trade of Japan with the Philippines for the same period was at USD 17,860 million.

Table 1. Projected increases in Philippine exports to Japan (in billion USD)

Year	Projected annual growth rate		
	Without JPEPA* (10%)		With JPEPA
	Low (15%)	High (20%)	
2007	8.71	9.08	9.47**
2008	9.62	10.44	11.37
2009	10.63	12.00	13.64
2010	11.76	13.81	16.37
2011	13.00	15.88	19.64

*Based on average growth from 2001 to 2006 (annualized January–August) of 10.4% compared with total Philippine exports average growth of 13%

**Based on the Philippine Export Development Plan projections

JPEPA = Japan-Philippines Economic Partnership Agreement; USD = United States dollar

Source: Department of Trade and Industry (DTI) as cited in SEPO (2007)

After the signing of JPEPA, the Philippines' total trade with Japan averaged at USD 15,956 million from 2010 to 2012, while Japan's total trade with the Philippines for the same period averaged at USD 20,121 million.

OBJECTIVES OF THE STUDY

FTAs are expected to boost trade between two economies that are already conducting trade with each other. The value added by FTAs is in the expansion of market access for goods, services, and investment through the elimination of tariff duties and the expansion of preferential access. However, a study showed that there was a need for complementary domestic reforms for FTAs to have a positive impact on the economic growth of countries (Hur and Park 2012).

The interest of this paper falls particularly on export promotion. This study assesses the contribution of the JPEPA to the Philippines' export of goods to Japan. Specifically, it aims to:

1. explore the potential determinants of Philippine exports to Japan;
2. evaluate the effect of the JPEPA using the synthetic control method (SCM); and
3. determine how similar agreements have contributed to the exports of selected partners of Japan.

Significance of the study

Pursuing trade agreements and economic cooperation have been adopted as national policies by East Asian countries to expand trade and stimulate economic development (Kawai and Wignaraja 2010). For a country like the Philippines, which aims to promote its position in the global trade platform, understanding how a bilateral trade agreement can affect a country's exports to one of its major partners is an important interest. This research supports the Philippines' strategy of utilizing its existing FTAs as a means to increase both its agricultural and manufacturing exports (NEDA 2011; NEDA 2017).

The proliferation of trade agreements and its evolution from traditional to "new age" also suggest that more economies have perceived trade agreements to be more beneficial as trade liberalization under the WTO progressed very slowly (Urata 2005). For the Philippines, assessing the benefits of FTAs showed mixed results (Wignaraja et al. 2010; Aldaba 2015, 2017).

This study provides a different perspective on assessing the Philippine FTAs by looking at its effect on the country's exports to Japan. In addition, this paper contributes to the body of knowledge

on the impact assessment of FTAs through a novel method of calculating a counterfactual for the exports.⁵ Research on the impact of FTAs on exports at the micro level has relied on surveys of establishments to understand the FTA utilization rate (Wignaraja et al. 2010; Aldaba 2015, 2017). Given the difficulty of conducting firm-level surveys, the researchers explored country data to assess the impact of FTAs using SCM.

Limitations of the study

This study aims to evaluate the performance of Philippine trade exports to Japan considering only its specific attributes and with reference to the exports and attributes of other export partners of Japan. Imports and importer-specific attributes are not considered in the analysis of this paper as it wishes to focus on the expansion of the Philippines' access to the Japanese market.

This paper's analysis is also limited to the effects of JPEPA on trade. Other areas of cooperation and provisions in the agreement were not discussed because of the limited information and data quantifying areas of cooperation and provisions in the JPEPA.

Coverage and areas of cooperation of JPEPA

Similar to other conventional free trade agreements, the JPEPA covers trade in goods and services. However, it goes beyond by including the countries' bilateral cooperation, investments, government procurements, competition, and business environments, among others. The JPEPA provides the principles of liberalization and the permitted exceptions (emergency measures), and includes commitments on lowering tariffs and other trade barriers, as well as the procedures for settling disputes (relying on the primacy of consultations). The agreement also provides the governments of the two economies with a mechanism for simplified, paperless, and transparent trade and procurement policies to address trade costs and increase trade at the same time. The agreement on investments provides equal privileges to investors from each economy.⁶ It provides opportunities for Filipino professionals to practice their professions in Japan, including those from the areas of legal services, accounting, architecture and engineering, travel, education, and nursing and caregiving, among others (PHILEXPORT 2007). (*See Annex 1 for the list of areas covered in JPEPA*)

The provision on cooperation, which provides for bilateral economic assistance through the official development assistance (ODA), and the provision on dispute avoidance and settlement, which provides a mechanism to address disputes, are not typical of a traditional trade agreement, making JPEPA a comprehensive and "new age" FTA. New age FTAs, accordingly, are developed in response to the pressures of the growing trends in regionalism amid globalization and other technological progress (Yap et al. 2006).

On trade, meanwhile, a total of 5,968 lines are included in the Philippines' JPEPA tariff schedule. Out of this number, 3,947 lines (66%) are subject to immediate tariff elimination and 32 percent to gradual reduction from five to 10 years. The rest are either for renegotiation or special tariff treatment. Tariff lines of 0.10 percent are excluded from the agreement (Table 2).

⁵ Other researches (Navarrete and Tatlonghari 2018) utilized a gravity model to estimate the benefits of an FTA. Their method, however, did not resolve the identification problem common to impact evaluation studies. Yotov et al. (2016) likewise presented a methodology in using the gravity model to calculate for counterfactuals and estimate the impact of trade agreements.

⁶ Prohibitions, however, apply as provided in the Foreign Investment Negative List of the Philippines.

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Table 2. Philippine tariff commitments in JPEPA

Legend	Category	Number of lines	% of Total lines
A	Immediate tariff elimination	3,947	66.14
B4	Equal annual tariff reduction starting 2006, final reduction in 2010	97	1.63
B4**	Tariff elimination on the 1st day of the 5th year (2011)	2	0.03
B5	5 years or 6 annual installments	230	3.85
B5*	5 years, 1-year grace period, 5 equal annual installments	220	3.69
B5**	1 single installment at the beginning of the 6th year	14	0.23
B7	7 years or 8 equal annual installments	2	0.03
B10	10 years or 11 equal annual installments	1,077	18.05
B10*	10 years, 1-year grace period, 6 equal annual installments	154	2.58
B10**	10 years, 5-year grace period, 6 equal annual installments	103	1.73
R	Renegotiation	24	0.4
S	Special treatment tariff	92	1.54
X	Excluded from any commitment of preferential or renegotiation	6	0.1
Total		5,968	100

JPEPA = Japan-Philippines Economic Partnership Agreement

Source: Philippine Tariff Commission as cited in SEPO (2007)

Of the tariff lines subjected to immediate elimination, 92 percent are industrial goods valued at USD 2.23 billion, which include machinery and mechanical appliances, electrical machinery and equipment, clothing and textiles, organic chemicals and pharmaceutical products, and other miscellaneous manufactured products (SEPO 2007).

On the other hand, there are a total 7,476 lines of Philippine exports under Japan's commitments. Out of this number, 80 percent were subjected to immediate tariff elimination (Table 3).

Table 3. Japan tariff commitments in JPEPA

Legend	Category	Number of lines	% of total lines
A	Immediate tariff elimination	5,994	80.17
B3	3 years or 4 equal annual installments	3	0.04
B5	5 years or 6 annual installments	148	1.98
B7	7 years or 8 equal annual installments	140	1.87
B10	10 years or 11 equal annual installments	368	4.92
B15	10 years, 1-year grace period, 6 equal annual installments	48	0.64
P	Special tariff treatment	26	0.35
Q	Tariff rate quota	11	0.15

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Table 3. (continuation)

Legend	Category	Number of lines	% of total lines
R	Renegotiation	215	2.88
X	Excluded from any commitment of preferential treatment or renegotiation	522	6.98
Total		7,476	100

JPEPA = Japan-Philippines Economic Partnership Agreement

Source: Philippine Tariff Commission as cited in SEPO (2007)

Meanwhile, 93 percent of these exports are industrial products with an estimated total value of USD 575 million and include office machines and automatic data processing machines, electrical machinery and parts, road vehicles, telecommunication and sound recording equipment, textile yarn fabrics and clothing apparels (e.g., knitted and crocheted fabrics), and inorganic chemicals and pharmaceutical products (SEPO 2007). The tariff elimination applied to the Philippine exports to Japan is presented in Table 4. Before the enforcement of the JPEPA, 3,714 tariff lines (41.7% of Japan's tariff) were already duty-free on a most-favored-nation (MFN) basis. When the agreement was entered into force, the number of tariff lines almost doubled, adding 3,598 lines equivalent to 40.4 percent in Japan's schedule. In other words, immediately after the JPEPA was entered into force, 90 percent of imports from the Philippines became free of duties. The remaining lines are gradually being subjected to tariff elimination until 2023.

Table 4. Tariff elimination commitments under the JPEPA and corresponding average trade (for Japan)

Duty phase-out period	Number of lines	% of total lines in Japan's tariff schedule	Value of Japan's imports from the Philippines (2004–2006) in million USD	% of Japan's total imports from the Philippines 2004–2006
MFN duty free				
2008	3,714	41.7	6,220.40	80.9
2008–2010	3,598	40.4	699.8	9.1
2011–2012	4	0	0.3	0
2013–2014	175	2	60.5	0.8
2015–2016	171	1.9	6	0.1
2017	1	0	0	0
2018–2022	377	4.2	32.3	0.4
2023	58	0.7	0.1	0
Remain dutiable	814	9.1	673.3	8.8
Total	8,912	100	7,692.60	100

Note: Based on the HS 2002 nomenclature; calculations exclude tariff lines having an in-quota rate

JPEPA = Japan-Philippines Economic Partnership Agreement; HS = Harmonized System; USD = United States dollar; MFN = most favored nation

Source: WTO (2010)

Looking at how these rates are applied to Philippine products according to the type of goods, as classified in the HS 2002 nomenclature, more than half of the lines immediately subjected into tariff elimination are textiles, followed by chemicals (Table 5).

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Table 5. Tariff elimination under the JPEPA, by HS section (for Japan)

HS section	MFN Ave. %	Total no. of lines	MFN 2008	Number of duty-free lines								No. of lines remaining dutiable	Ave. final tariff (dutiable)
				2008–2010	2011–2012	2013–2014	2015–2016	2017	2018–2022	2023			
I Live animals and animal products	8.4	508	109	60	1	69	25	4	240	15.3 ^a			
II Vegetable products	6.1	526	165	142		38	35	39	12	95	20.5 ^a		
III Animal or vegetable fats and oils	3.8	85	20	21		6		2	2	34	14.8 ^a		
IV Prepared foods etc.	16.4	761	77	56	3	43	70	133	44	335	23.3 ^a		
V Minerals	0.5	219	166	27		7		18		1	-		
VI Chemicals and chemical products	2.3	1,034	403	620		1	1	3		6	13.2 ^a		
VII Plastics and rubber	2.4	296	103	170		6		17					
VIII Hides and skins	10.4	196	66	3		32	1	66		28	17.7		
IX Wood and articles	3.4	233	83	72		3		37		38	6.6		
X Pulp, paper etc.	0	172	172										
XI Textiles and textiles articles	6.5	2,058	86	1,966						6	-		
XII Footwear, headgear	16.3	111	6	26		4		44		31	25.8		
XIII Articles of stone	1.1	160	100	59				1					
XIV Precious stones, etc.	1.3	80	58	17				5					
XV Base metals and base metals products	0.9	842	604	230		2		6					
XVI Machinery	0.1	959	945	14									
XVII Transport equipment	0.1	147	146	1									
XVIII Precision equipment	0.2	294	285	6			3						
XIX Arms and ammunition	6.9	24	24										
XX Misc. manufactured articles	1.7	200	113	84			1	2					
XXI Works of art, etc.	0	7	7										
Total	4.8	8,912	3,714	3,598	4	175	171	1	377	58	814	19.2	

Note: Based on the HS 2002 nomenclature; for tariff lines subject to TRQs, only the out-of-quota duty is included in the tariff-related calculations.

JPEPA = Japan-Philippines Economic Partnership Agreement; HS = Harmonized System; MFN = most favored nation; Ave = average; Misc = Miscellaneous; a = combination of *ad valorem* and specified duties; - = specific duty

Source: WTO (2010)

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FTAs and EPAs of Japan

Japan has several other bilateral agreements, apart from the one it signed with the Philippines. Urata (2005) identified two motivations for Japanese negotiation of FTAs: promoting economic growth in the East Asian region and improving the business environment for Japanese firms. Japan currently has 16 bilateral agreements in force, including its first, with Singapore, which was concluded in 2000, and the latest, with Mongolia, in 2016 (Table 6).

Table 6. List of bilateral agreements of Japan

Partner	Year signed	Year in force
Singapore	2002	2002
Mexico	2004	2005
Malaysia	2004	2006
Philippines	2006	2008
Indonesia	2008	2008
Chile	2007	2007
Thailand	2007	2007
Brunei	2007	2008
Viet Nam	2009	2009
Switzerland	2009	2009
India	2011	2011
Peru	2011	2012
Australia	2014	2015
Mongolia	2015	2016
EU	2018	2019
ASEAN	2008	2008
TPP	2016	Discontinued

EU = European Union; ASEAN = Association of Southeast Asian Nations; TPP = Trans-Pacific Partnership

Source: Compiled from ARIC (2019) database

The bilateral agreements with Japan contain a varied number of provisions. Common to all is the provision on market access of goods, trade facilitation, rules of origin, services, dispute settlement, and institutional mechanism, although each chapter may contain different specific agreements across Japan's partner economies. On the other hand, the coverage of these agreements varies on other chapters, particularly on nontariff measures, government procurement, e-commerce, labor standards, environmental policy, and technical cooperation, among others (Table 7).

Japanese exports and imports trade

Japan trades with more than 200 countries. The country's world exports averaged at USD 655.97 billion from 2015 to 2018 while its world imports averaged at USD 634.66. Based on the average annual trade value during the same period, Japan has no existing bilateral agreement with 11 out of its top 20 export and import partners (Table 8).

Quimba and Barral

Table 7. Provisions under different agreements with Japan

Chapters	ASEAN	BRU	IND	IDS	CHL	MYS	MEX	MON	PER	PHI	SNG	CHE	THA	VNM
Market access	•	•	•	•	•	•	•	•	•	•	•	•	•	•
NTMs	•	•	•	•	•	•	•	-	•	•	•	-	•	•
Trade facilitation	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Export measures	-	•	•	•	•	•	•	•	•	•	•	•	•	•
Rules of origin	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Services	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Investment	-	•	•	•	•	•	•	•	-	•	•	•	•	•
Government procurement	-	•	•	•	•	-	•	•	•	•	•	•	•	•
Competition policy	-	-	•	•	•	•	•	•	•	•	•	•	•	•
Intellectual property	-	•	•	•	•	•	•	•	•	•	•	•	•	•
E-commerce	-	-	-	-	-	-	-	•	-	•	•	•	-	-
Dispute settlement	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Labor standards	-	-	-	-	-	•	-	-	-	•	-	-	-	-
Environmental policy	-	•	•	•	•	•	•	-	•	•	-	•	•	-
Technical cooperation	•	•	-	•	-	•	•	•	•	•	•	-	•	•
Institutional mechanism	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Other measures	-	•	-	•	•	•	•	-	-	-	-	-	-	•

Note: “•” with provision; “-” no provision

ASEAN = Association of Southeast Asian Nations; BRU=Brunei; IND=India; IDS=Indonesia; CHL = Chile; MYS = Malaysia; MEX = Mexico; MON = Mongolia; PER = Peru; PHI = Philippines; SNG = Singapore; CHE = Switzerland; THA = Thailand; VNM = Viet Nam; NTMs = nontariff measures

Source: Compiled from ARIC 2019 database

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Table 8. Top 20 exports and imports partners of Japan, average annual values in billion USD, 2015–2018

Country	Export values	Country	Import values
China	137.10	China	158.43
United States	53.87	United States	135.31
Korea, Republic of	26.81	Korea, Republic of	50.76
Australia*	22.40	Hong Kong, China	34.83
Thailand*	21.86	Thailand*	32.30
Germany	20.97	Germany	25.63
Indonesia*	17.84	Singapore*	20.35
Malaysia*	17.18	Mexico*	17.16
Singapore*	16.16	Australia*	15.69
Viet Nam*	15.19	Viet Nam*	15.40
Russian Federation	11.93	Malaysia*	14.40
Philippines*	11.10	Indonesia*	14.14
Qatar	10.58	Canada	12.49
Hong Kong, China	8.32	United Kingdom	12.14
Canada	8.30	United Arab Emirates	11.89
Switzerland*	7.45	India*	11.06
United Kingdom	7.09	France	10.68
France	7.02	Philippines*	10.04
Italy	6.70	Belgium	9.58
Chile*	5.96	Netherlands	8.34

* bilateral trade partners of Japan

USD = United States dollar

Source: UN Comtrade Database (2019)

METHODOLOGY

Synthetic control method

The SCM was first proposed in the seminal works of Abadie and Gardeazabal (2003), Abadie et al. (2009), and Abadie et al. (2015) to estimate the impact of a treatment.⁷

Following Abadie et al. (2009), the model assumes a $J+1$ regions, the first of which is exposed to an intervention or treatment. The remaining J regions can be the potential controls or the “donor pool”. The model has the following variables:

- Y_{it}^N is the outcome observed for region i at time t in the absence of intervention, for units $i=1, \dots, J+1$, and time periods $t=1, \dots, T$.
- T_0 is the number of preintervention periods, with $1 \leq T_0 < T$.
- Y_{it}^I is the outcome observed for unit i at time t if unit i is exposed to the intervention in periods $T_0 + 1$ to T .

⁷ Abadie and Gardeazabal (2003) introduced the method to present evidence of the negative economic impact of conflict, where a 10-percent average gap in the per capita gross domestic product (GDP) was observed between the control group and the treatment group (Basque Country). In 2009, Abadie et al. extended the model to demonstrate how the tobacco control program had reduced per-capita cigarette sales.

- The intervention is assumed to have no effect on the outcome prior to the intervention period, so for $t \in \{1, \dots, T_0\}$ and $i \in \{1, \dots, N\}$, $Y_{it}^I = Y_{it}^N$.
- $\alpha_{it} = Y_{it}^I - Y_{it}^N$ is the effect of the intervention for unit i at time t , and D_{it} is an indicator that takes the value of 1 if the unit i is exposed to the intervention at time t , and takes 0, otherwise. The observed outcome for unit i at time t is then $Y_{it} = Y_t^N - \alpha_{it}D_{it}$. Since the first region (region “one”) is exposed to the intervention only after period (with $1 \leq T_0 < T$):

$$D_{it} = \begin{cases} 1 & \text{if } i = t > T_0, \\ 0 & \text{otherwise.} \end{cases}$$

The aim is to estimate $(\alpha_{1T_0+1}, \dots, \alpha_{1T})$. For $t > T_0$,

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N = Y_{1t} - Y_{1t}^N.$$

Since Y_{1t}^I is observed, to estimate α_{it} requires estimating the Y_{1t}^N . It can be assumed that Y_{it}^N is given by the factor model:

$$Y_{it}^N = \delta_t + \theta_t Z_i + \lambda_t \mu_i + \varepsilon_{it},$$

where δ_t is an unknown common factor with constant factor loadings across units; Z_i is a $(r \times 1)$ vector of observed covariates (not affected by the intervention); θ_t is a $(1 \times r)$ vector of unknown parameters; λ_t is a $(1 \times F)$ vector of unobserved common factors; μ_i is an $(F \times 1)$ vector of unknown factor loadings; and the error terms ε_{it} are unobserved transitory shocks at the region level with zero mean.

Abadie et al. (2009) further discussed that $(J \times 1)$ the vector of weights $= (w_2, \dots, w_{J+1})'$, such that $w_j \geq 0$ for $j = 2, \dots, J+1$ and $w_2 + \dots + w_{J+1} = 1$. This means that the weights as originally suggested by Abadie et al. (2009) are nonnegative and sum up to one. Each particular value of W represents a potential synthetic control or weighted average of control regions. The weights are, therefore, chosen to match both the pretreatment outcomes and a set of fixed characteristics (Doudchenko and Imbens 2016). The value of the outcome variable for each synthetic control indexed by W is:

$$\sum_{j=2}^{J+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{J+1} w_j Z_t + \lambda_t \sum_{j=2}^{J+1} w_j \mu_j + \sum_{j=2}^{J+1} w_j \varepsilon_{jt}.$$

Supposing that there are $(w_2^*, \dots, w_{J+1}^*)$ such that

$$\begin{aligned} \sum_{j=2}^{J+1} w_j^* Y_{j1} &= Y_{11}, & \sum_{j=2}^{J+1} w_j^* Y_{j2} &= Y_{12}, & \dots, \\ \sum_{j=2}^{J+1} w_j^* Y_{jT_0} &= Y_{1T_0}, & \text{and} & \sum_{j=2}^{J+1} w_j^* Z_j &= Z_1. \end{aligned}$$

Thus, the weights are determined to minimize the root mean square predictor error (RMSPE), which measures the lack of fit between the path of the outcome variable for the donor pool and its synthetic counterpart (Abadie and Gardeazabal 2003; Abadie et al. 2009), and can be defined as

$$RMSPE = \left(\frac{1}{T_o} \sum_{t=1}^{T_o} \left(Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt} \right)^2 \right)^{1/2}$$

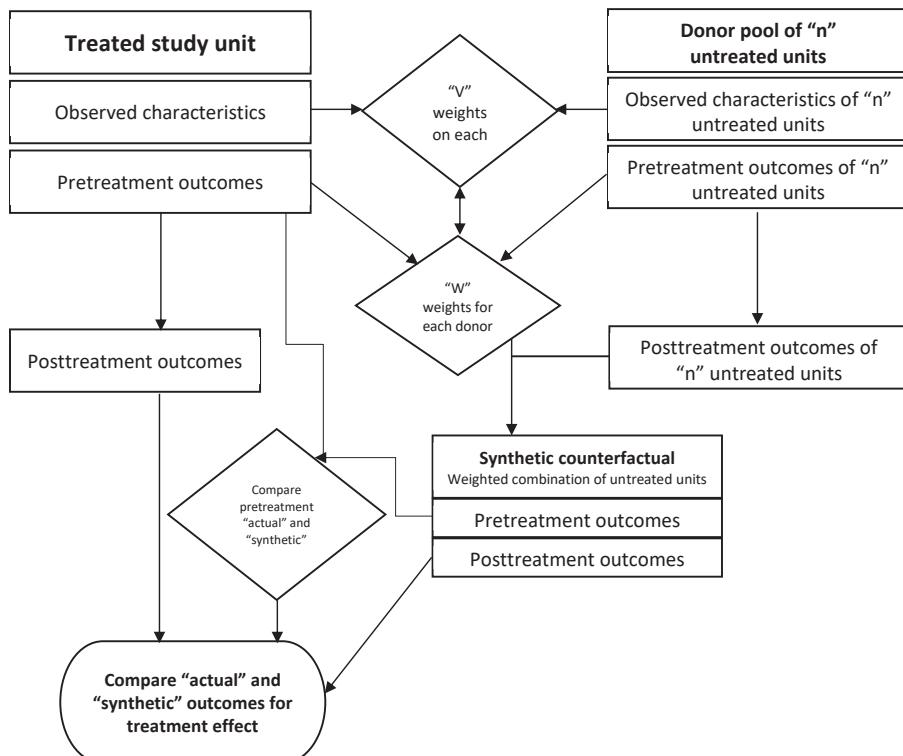
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The treatment or intervention effect can be estimated then by

$$\hat{\alpha}_{1t} = Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt} \quad \forall t \in \{T_0 + 1, \dots, T\}.$$

The first step in employing the SCM is to identify different units involved in the analysis, particularly the treated unit affected by the intervention and the pool of untreated units (donor pool or the set of potential control units), and the outcome of interest observed both in the pre and posttreatment. The donor pool or control units are determined to be similar to the treated units in terms of factors that might generate the outcome. Both treated and untreated units contain observed and pretreatment outcomes, as well as posttreatment outcomes. From these potential control unit, the SCM selects weights (W) to establish a linear combination of the control outcomes (synthetic control), which is the difference between the synthetic outcome and the treated unit outcome. Since the outcome (Y) is dependent on the observed (Z) and unobserved (U) factors ($Y=BZ + U$), the SCM determines the weight W that can result in similar Y, Z, and U in the pretreatment period. Since all differences cannot be minimized at the same time, except for some combinations of characteristics and outcomes differences, another vector V is used to assign weights to Z variables and to each year in the pretreatment Y. The next steps will then be to compare the pretreatment “actual” and “synthetic” outcomes, and the posttreatment “actual” and “synthetic” outcomes for treatment effect. How closely the weighted synthetic outcomes match the outcomes for the treated unit in the pretreatment period determines the quality of the synthetic control (Sills et al. 2015).

Figure 1. Flow diagram for synthetic control method



Source: Sills et al. (2015)

Using this donor pool, the synthetic export trade between the Philippines and Japan is constructed by getting the weighted average of past observable covariates and past realizations of the outcome variable. To determine the covariates to be used, the gravity model was used to explain the bilateral trade between the treated unit and used the determinants of trade from the model as the covariates and the exports between the country pair and as the outcome variable to create the counterfactual outcome. The gravity model is expressed by

$$x_{ijt} = G_t M_{jt}^{ex} M_{jt}^{im} \emptyset_{ijt}$$

where M_{jt}^{ex} and M_{jt}^{im} are indexes of the attributes of exporter i and importer j in year t , characterizing specific factors that represent the total amount exporters are willing to supply and the importer's total demand. G_t is a common year specific factor of trade that does not depend on i or j . \emptyset_{ijt} represents the variation in trade intensity or the ease of market access (Hannan 2016).

Advantages of using SCM

In evaluating the effectiveness and efficiency of policies, the economic conditions of countries before and after the implementation of policies (treatment) are compared. This requires a comparison (control) group from which the outcomes can be compared or contrasted with the outcome of the region (treated observation) that undergoes the policy. Determining the control group can be a difficult task, but without this, it is impossible to isolate the effects of the policy from the effects not attributable to it. In many cases, geographic proximity is used to determine the control group for the lack of an alternative, but this is a poor measure of similarity and cannot capture the differences of countries in terms of political or cultural attributes. Spillover of effects should also be considered.

Moreover, the use of existing and usually qualitative approaches limits the generalization of analysis as few quantitative results can be applied to similar cases (McClelland and Gault 2017). The SCM approach of Abadie and Gardeazabal (2003), Abadie et al. (2009), and Abadie et al. (2015) have gained increasing popularity in the field of policy evaluation as it addresses these issues. McClelland and Gault (2017) identified the following as the strengths and assumptions of SCM:

Strengths

- a. The SCM is transparent. The analyst can evaluate how well the outcome of synthetic control matches that of the affected region before the policy changes.
- b. The donor regions and the weights assigned to them are known and the analysts can evaluate the similarity of those regions to the policy region.
- c. The SCM does not require the same strict assumptions for accurate estimation as difference-in-differences (DID) or panel data methods.⁸

Assumptions

- a. No region in the pool of potential donor regions can have a similar policy change.
- b. The policy in the affected region cannot affect the outcome in the pool of donor regions.
- c. To avoid possible interpolation bias, the variables used to form the weights must have values for the donor pool regions that are similar to those for the affected region.

⁸The DID assumes that the trend of control group provides an adequate proxy for the trend that will be observed in the absence of treatment. The difference in slope is the actual treatment effect. The DID, therefore, requires the trends of the control group and treated unit to follow the same path during pretreatment period. Trade flows, however, might have not followed parallel trends. Even without a trade agreement, trade flows tend to change due to changes in the observed and unobserved country-specific attributes.

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- d. The values of variables for the policy region cannot be outside any linear combination of the values for the donor pool (the treatment region cannot be an outlier in the pretreatment period).
- e. Those variables and the outcome must have an approximate linear relationship (the variables used in the pretreatment period for the donor pool must be comparable to that of the treatment region).

Data and donor pool

This paper employed the SCM to understand the bilateral export of the Philippines to Japan under the JPEPA. The JPEPA, therefore, is the “treatment” while the country pair and “treated unit” is the Philippines-Japan. A donor pool or the control group was determined to construct the counterfactual. Following Hannan (2016), the donor pool should exclude all country pairs that had trade agreements in the same year. It should also exclude all other agreements the exporting country has with other countries (Hannan 2016). Considering these criteria, the donor pool was composed of countries exporting to Japan, excluding those with existing bilateral trade agreements with Japan from 2008 to 2018. Hypothetical exports of the Philippines to Japan (as the treated unit) were reconstructed based on the exports of these countries to Japan.⁹

RESULTS AND DISCUSSION

Gravity model estimates

Before the main procedure, the paper examined the Philippine exports using the gravity model (Table 9). The model was estimated using the intuitive ordinary least squares (OLS) procedure, fixed effects, and the Poisson Pseudo-Maximum Likelihood (PPML) estimator. The results of the first OLS estimation showed expected signs and were statistically significant, particularly the exchange rate, lag of exports, GDP of partner economy, and per capita of the exporter. The OLS, however, was not enough to capture fixed effects. Considering the country pair fixed effects revealed that the area and distance of exporters were an important determinant of trade with Japan. Remoteness is notably positive, which indicates that the regions isolated from the rest of the world tend to trade more with each other. Such is the case of the Philippines and Japan.

The results of the OLS estimation revealed that exports to Japan were strongly and positively affected by the GDP of Japan in the previous year and the prevailing exchange rates in the exporting countries. Exports, however, were negatively affected by the GDP of exporting countries during the previous year. The results of the fixed effects and PPML estimations, on the other hand, both revealed that exports to Japan were positively affected by the geographical size and remoteness of the exporting country while distance negatively affected exports to Japan. Exports during the previous year had a positive and strong effect as revealed in all the estimations while the PPML estimation revealed that the interaction between exporting countries was also an important determinant.

Table 9. Results of gravity model estimations

Variables	OLS	FE	PPML
GDP of exporter (ln)	.0131852 (.0357647)		
GDP of partner (ln)	14.2574 (432.3623)		

⁹ Countries included in the donor pool were taken from the top trade partners of Japan as listed in Annex 2 except those that had bilateral agreements with Japan in 2008 (Table 6).

Table 9. (continuation)

Variables	OLS	FE	PPML
Population of exporter (ln)	.0477567 (.0316099)		
Population of partner (ln)	-26.77818 (436.0053)		
Per capita GDP of exporter (ln)	.0713138 .0539808)		
Per capita GDP of partner (ln)	-12.89679 (433.147)		
Exchange rate of exporter (ln)	.039986** (.0132634)		
Exchange rate of partner (ln)	.9687115 (.6761155)		
Area of exporter (ln)	.2468581 (.0754164)	.1618519** (.0698938)	.0122066** (.004287)
Distance of reporter (ln)	-.6843404 (.1896316)	-.3994393** (.1629106)	-.0294532** (.0102359)
Landlocked (Dummy, exporter)	-.0683796 (.183167)	-.0185985 (.1820848)	-.00219 (.0118825)
Remoteness of reporter (ln)	.015097 (.0205939)	.0356755** (.0151428)	.0024167** (.0010433)
Lag of exports	.9406363*** (.0082737)	.5022681*** (.0331183)	.03325*** (.0021701)
Lag of GDP of exporter	.0283393 (.0243242)		
Lag of GDP of partner	28.41141*** (7.80118)		
Lag of population of exporter	-.025913 (.0478823)		
Lag of per capita GDP of exporter	-28.10449** (8.299848)		
Reporter_n			.0007008** (.0002467)
Constant	-320.1152 (161.8821)	6.384275*** (.5234476)	2.113028*** (.0469626)
R-squared	0.9243	0.9425	.9344
Number of observations	3,021	3,027	2758

Note: Robust standard errors in parentheses; clustering by distance is specified to identify each country pair independently of the trade direction; ***p<0.01; **p<0.05; *p<0.1

OLS = ordinary least squares; FE = Fixed effects; PPML = Poisson pseudo maximum likelihood; GDP = gross domestic product; ln = natural log

Source: Authors' estimates

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Results of SCM procedure

The effects of JPEPA on Philippine exports were examined using the SCM. First, the aggregate exports to Japan were evaluated using a different combination of covariates. These combinations were classified in this paper as SCM models. An “eyeball test” and robustness check can be done. The RMSPE measured the goodness-of-fit to gauge the difference between the actual and the predicted (synthetic) values. Weak predictors, or using outcome variables from problematic pretreatment years as predictors or using predictors for the treated pair with values extreme relative to the donor pool, may result in a poor fit (McClelland and Gault 2017). The RMSPE, therefore, indicates how the model can approximate (or reconstruct) the actual values during the pretreatment period and how this information is used to construct the hypothetical pattern during the treatment period, if the treatment is not implemented.

The results of the SCM procedures for the aggregate exports revealed that the JPEPA generally contributed to the growth of Philippine exports to Japan (Table 10).

Table 10. SCM specification and robustness

Variables	SCM Models								
	I	II	III	IV	V	VI	VII	VIII	IX
Exports value (ln)	✓	✓	✓	✓	✓	✓	✓	✓	✓
GDP of exporters (ln)	✓	✓		✓	✓	✓	✓	✓	
GDP per capita of exporters (ln)	✓	✓					✓	✓	
Population of exporters (ln)	✓	✓		✓	✓		✓	✓	
Exchange rate (ln)	✓	✓		✓			✓	✓	
Distance (ln)	✓		✓	✓	✓	✓	✓		✓
Area (ln)	✓		✓	✓	✓	✓	✓		✓
Landlocked (Dummy)	✓		✓	✓	✓	✓	✓		✓
Remoteness (ln)	✓		✓	✓	✓		✓		✓
Lag of exports					✓		✓	✓	✓
Lag of GDP							✓	✓	
Lag of per capita GDP							✓	✓	
Lag of population							✓	✓	
RMSPE	.0546188	.105035	.1162155	.0820717	.0564138	.077798	.0850199	.1052392	.1180626

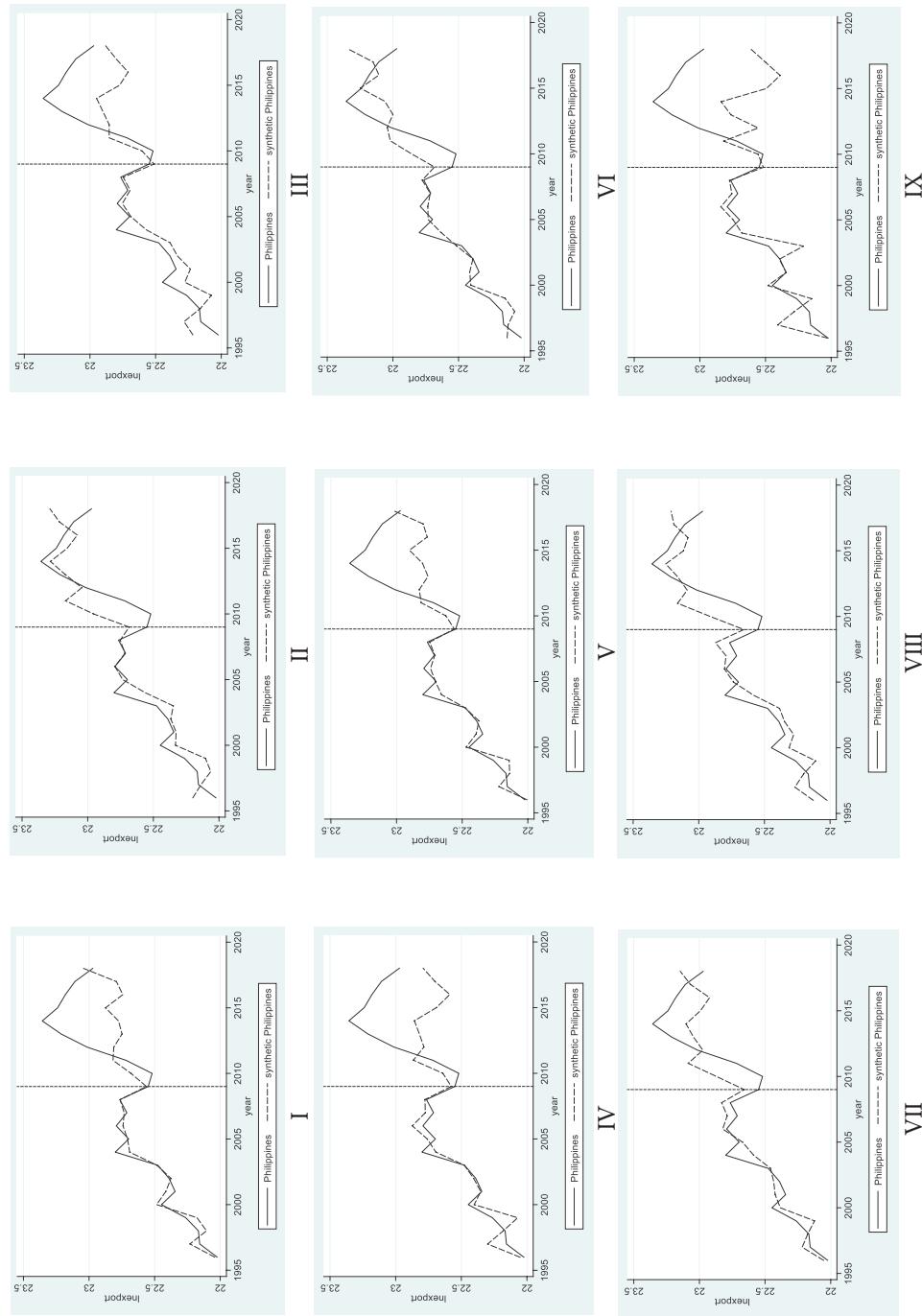
SCM = synthetic control method; ln = natural log; RMSPE = root mean square prediction error; GDP = gross domestic product

Source: Authors' estimates

SCM models 1 and 5 appear to best describe the counterfactual exports but the results of 4, 6, and 8 are also plausible. The RMSPE of the predictor variables has to be minimized in an order that the treated unit and its synthetic control may resemble for predicting the pretreatment outcomes. Thus, a smaller RMSPE value indicates a better fit.¹⁰ These can be visually examined using the following figures (Figure 2).

¹⁰ Several works, such as that of Galiani and Quistorff (2016) and Klößner and Pfeifer (2016), demonstrated that lower RMSPE provides a better match. Similarly, McClelland and Gault (2017) demonstrated how an increase in RMSPE indicates a worse fit.

Figure 2. Synthetic counterfactual results for Philippine exports to Japan



Source: Authors' computation

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Prior to the signing of JPEPA in 2008, the average Philippine exports from 2005 to 2007 was at USD 7.474 billion. Immediately after the signing of the agreement, the average Philippine exports from 2009 to 2011 declined to USD 6.529 billion (with an average annual growth of -0.12 percent). It was lower than the average synthetic estimate using models I and V, which is about USD 7.088 billion, at an average annual growth rate of 3.18 percent. From 2012 to 2014, however, export averaged at USD 11.949 billion annually (23.93% average annual growth), higher than the average synthetic estimate of USD 7.882 billion (-0.70% average annual growth). Similarly, the average annual growth of exports from 2015 to 2017 was at USD 11.636 billion (-0.79% average annual growth), higher than the average synthetic estimate of USD 8.090 billion (0.67 average annual growth). The average value of exports from 2009 to 2018 was at USD 9.981 billion annually, higher than the average synthetic estimate of USD 7.923 billion. This means that exports grew by about 26 percent after the signing of the JPEPA.

Using models I and V, the same procedure was done to compare the effects of the Philippines' bilateral agreement with Japan with the exports of its other selected bilateral trade partners (Figure 3). Since the trade agreements of these countries with Japan were signed and entered into force in different years, the treatment periods used in employing the SCM for these exporters varied.

Table 11 presents the data of signing and effectiveness of each agreement and the treatment period in employing SCM for these agreements in Figure 3.

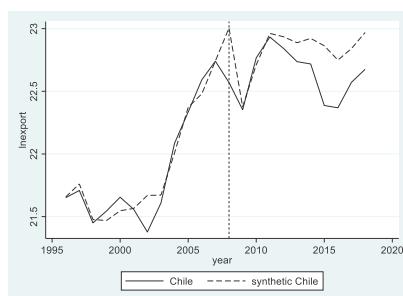
Table 11. Date of effectiveness and treatment period for selected pairs

Trading pairs	Signed and in effect	Treatment period
Philippines-Japan	December 2008	2009
Chile-Japan	September 3, 2007	2008
India-Japan	August 1, 2011	2011
Indonesia-Japan	July 1, 2008	2008
Switzerland-Japan	September 1, 2009	2010
Thailand-Japan	November 1, 2007	2008

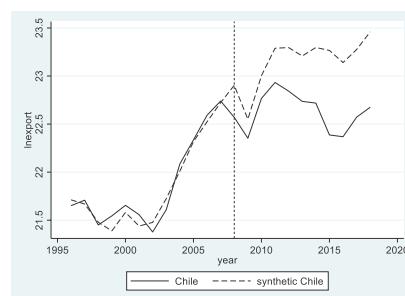
Source: Authors' compilation based on ARIC (2019) database

Figure 3. Actual and synthetic exports of selected bilateral trade partners of Japan, using models I and V

a. Chile



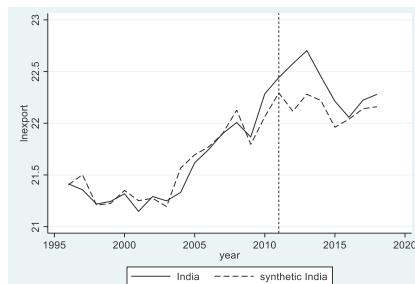
I. (RMSPE: 0.1040137)



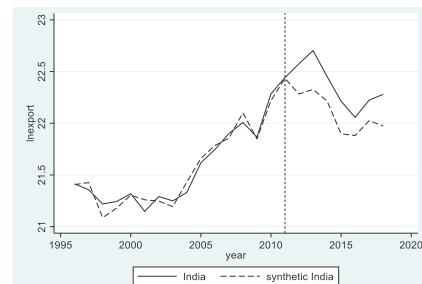
V. (RMSPE: 0.0812319)

Figure 3. (continuation)

b. India

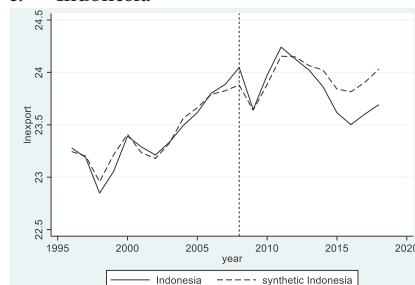


I. (RMSPE: 0.110977)

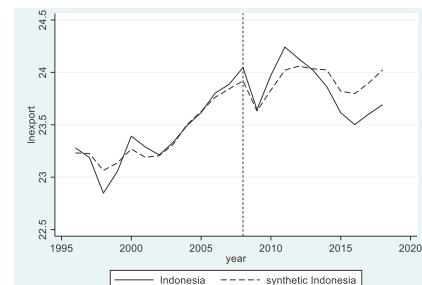


V. (RMSPE: 0.0695712)

c. Indonesia



I. (RMSPE: 0.0650733)

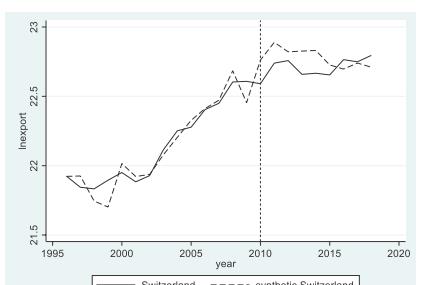


V. (RMSPE: 0.0848863)

d. Switzerland

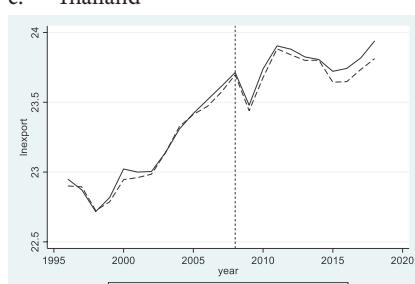


I. (RMSPE: 0.0879381)

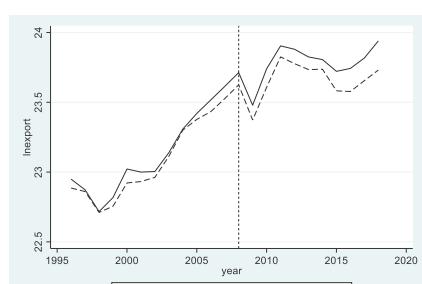


V. (RMSPE: 0.0817162)

e. Thailand



I. (RMSPE: 0.0290311)



V. (RMSPE: 0.0313785)

Note: Treatment periods vary on dates the agreements were entered into force.

RMSPE = root mean square percentage error

Source: Authors' estimates

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The figures reveal variations in the actual and counterfactual exports of bilateral partners of Japan. Noticeable differences can be observed in the exports of Chile, which seems unable to maintain the growth after the agreement took effect. For India and Thailand, the agreements seem to have benefited their exports. For Switzerland, meanwhile, the country's exports seem unable to immediately undergo the expected transition, although it may be coping. For Indonesia, actual exports appear to slightly surpass the hypothetical exports but eventually declined over the years. To understand further how Philippine exports to Japan benefited from the agreement, the SCM procedure using models I and V identified in the foregoing procedure was used to construct the counterfactual exports at the sectoral level. Goods exported to Japan were classified into 14 different sectors, which correspond to the classification of commodities in the HS Nomenclature 2002. This was the basis for the classification of goods used in the JPEPA. Table 12 presents this classification, as well as the corresponding sections used in this paper.

Table 12. Exports classification

Classification	HS 2002 Sections	HS 2002 Section notes/chapters
Agriculture	I, II, III	1-15
Food manufactures	IV	16-24
Minerals	V	25-27
Chemicals	VI	28-38
Plastic and rubber	VII	39-40
Leather	VIII	41-43
Wood	IX, X	44-49
Textiles, textile articles, and other articles	XI, XII	50-67
Nonmetals	XIII, XIV	68-71
Metals	XV	72-83
Machinery and mechanical appliances	XVI	84
Electrical machinery and equipment	XVI	85
Vehicles, aircraft, vessels, and transport equipment	XVII	86-89
Others	XIX, XX, XXI	90-97

HS = Harmonized System

Source: UN Trade Statistics (n.d.)

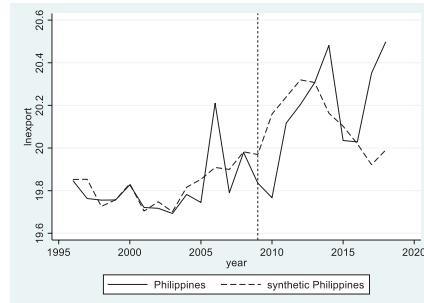
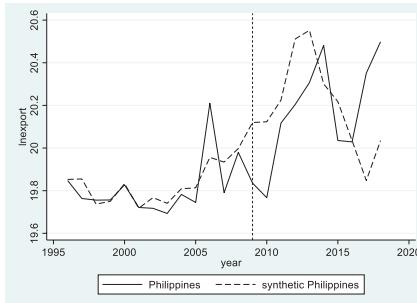
The results of the SCM estimation revealed varying effects on each sector (Figure 4). The effects on agriculture and nonmetals did not seem to prevail as much as other sectors. The results also showed that the agreement did not immediately bring improvements in the exports of a certain sector. This is evident in the patterns for agricultural products, plastic and rubber, textiles, electrical machinery and others. For these sectors, the counterfactual exports were greater than the actual exports for some years immediately after the JPEPA. Actual exports have risen above the counterfactual exports only after some time. This result implies that there are other impediments to the export of these goods to Japan, apart from tariff because the agreement has provided that upon its entry into force, most products that fall under HS sections XI (textiles), and VI (chemicals) will be immediately liberalized.

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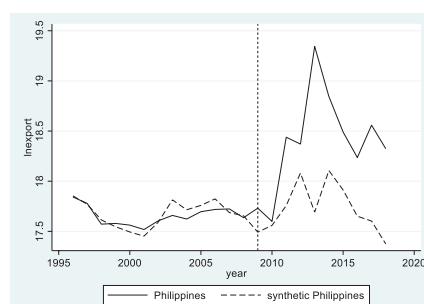
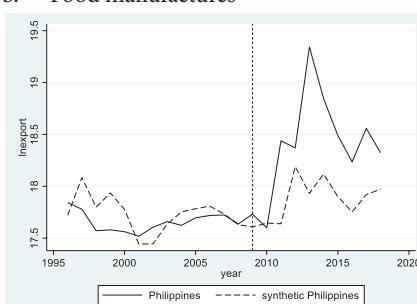
While the results generally reveal that the agreement has benefited Philippine trade exports for most of its sectors, the machinery and mechanical appliances seem to have not benefited from the JPEPA, as shown by counterfactual exports consistently being higher than actual exports to Japan.

Figure 4. Synthetic exports at sector level using models I and V

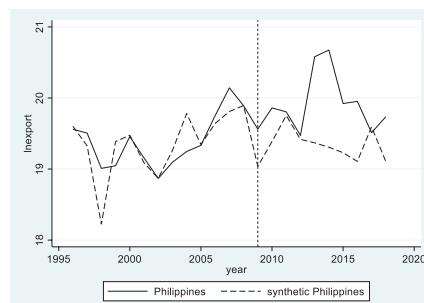
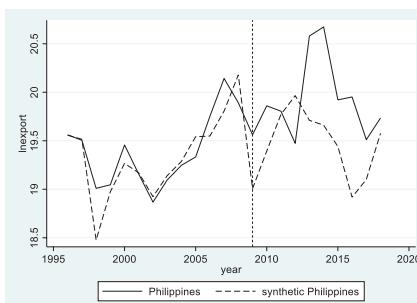
a. Agricultural products



b. Food manufactures



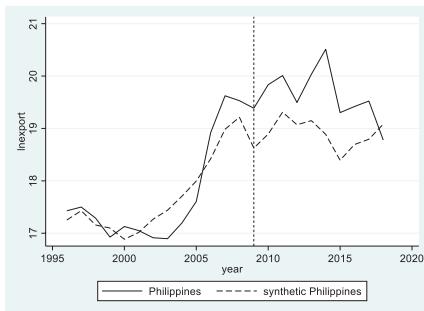
c. Minerals



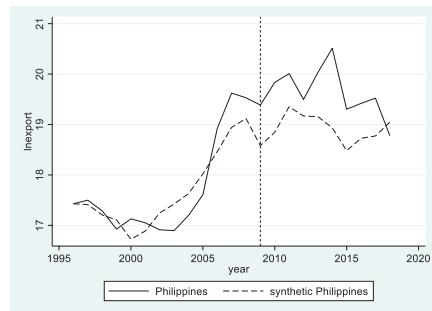
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Figure 4. (continuation)

d. Chemicals

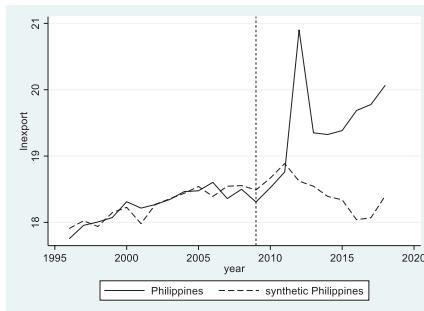


(RMSPE: 0.3652073)

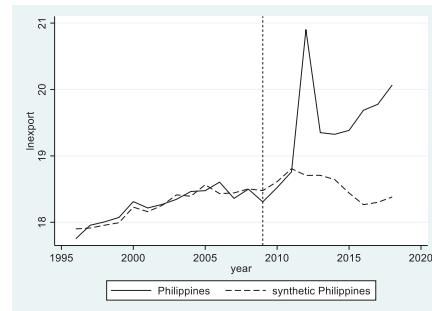


V (RMSPE 0.375144)

e. Plastic and rubber

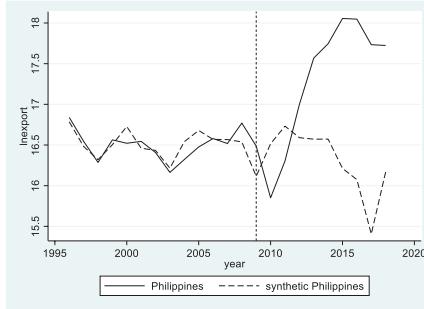


I. (RMSPE: 0.120729)

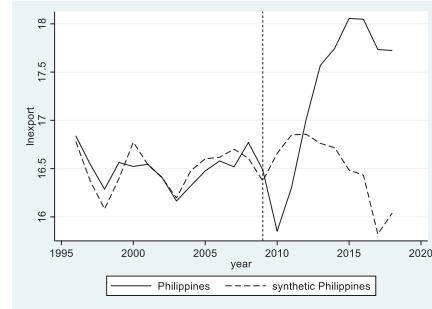


V (RMSPE 0.0856642)

f. Leather

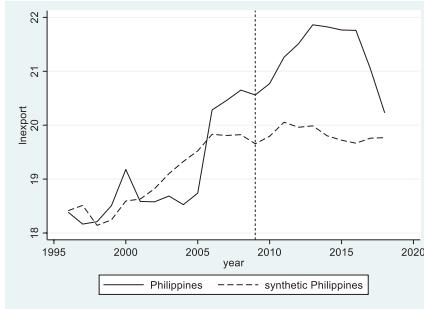


I. (RMSPE: 0.1272539)

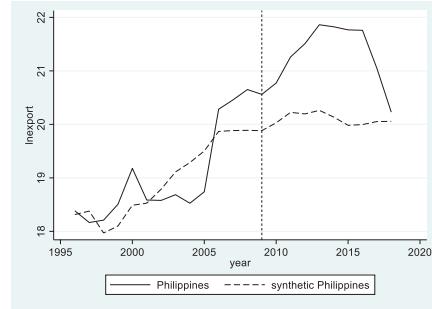


V (RMSPE 0.1439041)

g. Wood



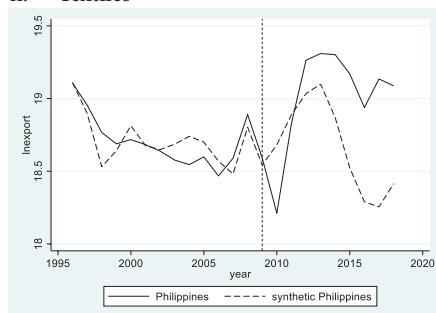
I. (RMSPE: 0.5073863)



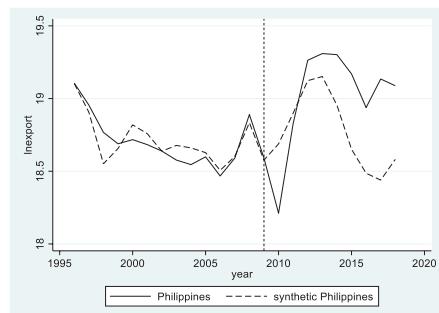
V (RMSPE 0.497534)

Figure 4. (continuation)

h. Textiles

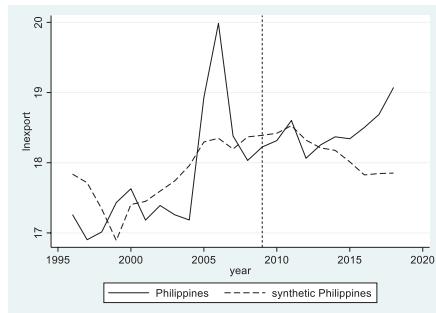


I. (RMSPE: 0.1109782)

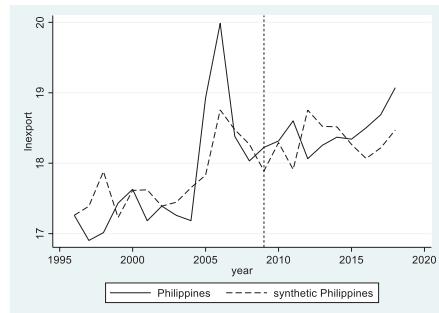


V (RMSPE 0.0856382)

i. Nonmetals

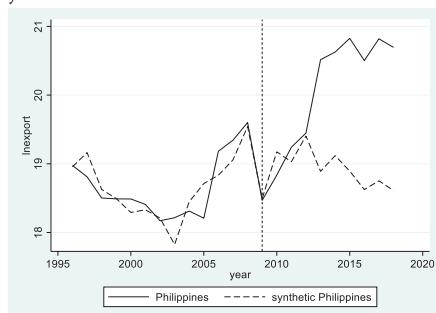


I. (RMSPE: 0.656242)

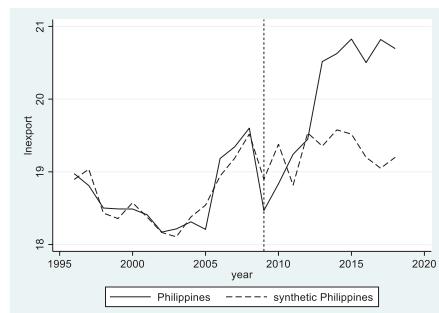


V (RMSPE 0.5725963)

j. Metals

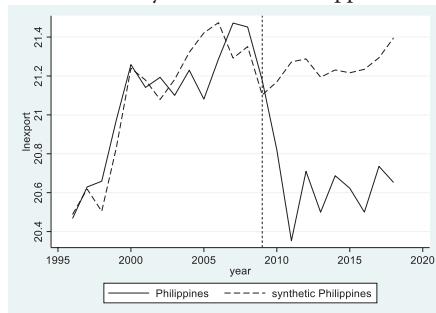


I. (RMSPE: 0.2506397)

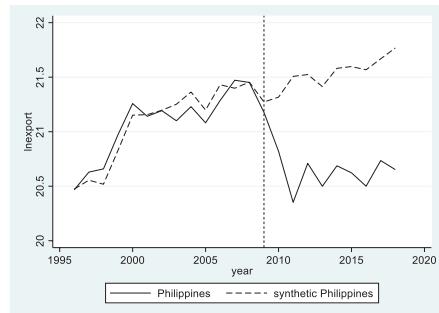


V (RMSPE 0.1524746)

k. Machinery and mechanical appliances



I. (RMSPE: 0.1447)

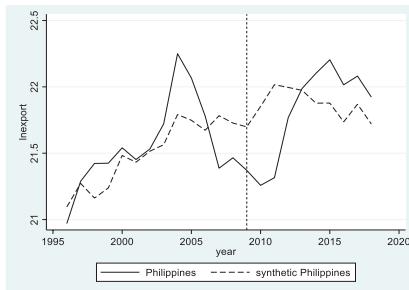


V (RMSPE 0.1030114)

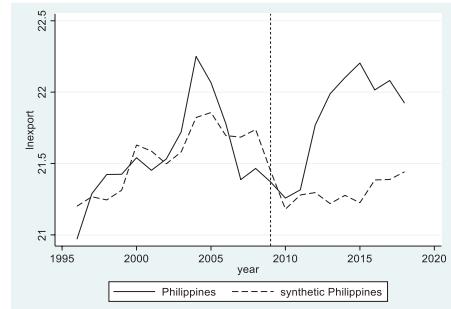
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Figure 4. (continuation)

l. Electrical machinery and equipment

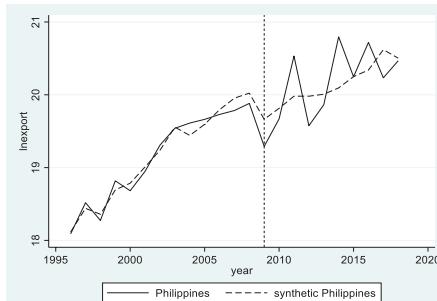


I. (RMSPE: 0.2276206)

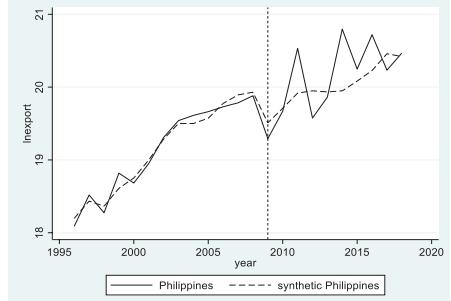


V (RMSPE 0.2041212)

m. Vehicles

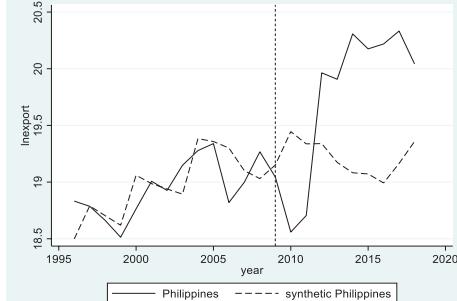


I. (RMSPE: 0.1014767)

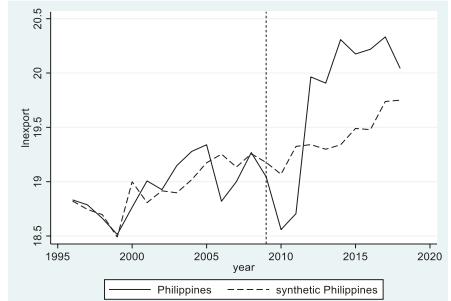


V. (RMSPE: 0.0945569)

n. Others



I. (RMSPE: 0.2109442)



V (RMSPE 0.1887321)

RMSPE = root mean square percentage error

Source: Authors' estimates

Looking at how the Philippine exports evolved before and after the agreement was entered into force, it can be observed that vehicles have the largest leap from the 10th export (based on average from 2006 to 2008) to becoming the 4th export (based on average from 2016 to 2018) sector. This was followed by plastic and rubber, which jumped from 12th to 7th place. The rest of the sectors did not seem to have changed ranks. The nonmetals, however, dropped immediately from 2nd to 12th, which, more or less, was its position through the years (Annex 3).

On the other hand, comparing the position of the Philippine exports before and after the agreement was entered into force, relative to the top exporters of Japan, the agriculture sector

immediately dropped from 7th (based on 2006–2008 average) to 16th (based on 2010–2012 average) and improved only by two notches in recent years. It can be noted, however, that the agriculture sector was in this position even during the previous years. Food manufactures, minerals, vehicles and others seemed to have dropped prior to the agreement but regained their position after the agreement was entered into force. The rest of the sectors seemed fluctuated through time, but most notable improvements can be observed in leather, wood, and metals. Noticeable drops can be observed in machinery and electrical machinery (Annex 4).

CONCLUSION AND POLICY RECOMMENDATIONS

Conclusion

The SCM simulates the impact of JPEPA by constructing the counterfactual of the Philippines' exports to Japan using a pool of other bilateral exports of Japan. The synthetic export provides an idea on what the export would be if the JPEPA was not implemented. The SCM algorithm predicts and creates the hypothetical counterfactual of the treated unit by getting the weighted average of preintervention outcomes or predictors from the donor pool using selected covariates, such as GDP, GDP per capita, and geographic attributes, among others. This helps identify the donor units or predictors and their influence in the prediction. Thus, the covariates, which affect the outcome and the outcome variable itself before the JPEPA was implemented, determine the selection of donor units and the weights. The SCM was able to assess the effect of JPEPA on Philippine exports to Japan, which revealed the predictive capacity of the technique that could be used to complement other qualitative and quantitative techniques over a wide array of uses. Since it has fewer assumptions, it exhibits several advantages over other quantitative methods.

The results generally suggest that the agreement between Japan and the Philippines have benefited the aggregate exports to Japan. The average value of exports from 2009 to 2018 was USD 9.981 billion annually, higher than the average synthetic estimate of USD 7.923 billion. This means that exports grew by about 26 percent after the signing of the agreement. In specific sectors, however, the results suggest that the agreement did not immediately bring improvements, particularly for agricultural products, plastic and rubber, textiles, electrical machinery, and others. Immediate improvements, on the other hand, were realized for food manufacturing, minerals, chemicals, and wood products.

The results also show that trade agreements with Japan have varying effects on the exports of its bilateral partners. Improvements in the exports of India and Thailand were noted while Chile and Switzerland's exports seemed to have suffered. For Indonesia, improvements were realized immediately after the country's agreement with Japan was entered into force but eventually declined below the synthetic exports. The results verified that the realized growth in the Philippine exports to Japan during the duration of the agreement was in fact due to the strengthened trading partnership between the Philippines and Japan. Philippine exports to Japan could have potentially increased more than what was actually realized.

It should be noted, however, that the procedure used for the aggregate exports does not fit well to all sectors, particularly on chemicals, wood, nonmetals, electrical machinery and equipment, and others. This suggests further investigation and improvements in the selection of predictor variables and the use of SCM.

Policy recommendations

The results looked at the impact of JPEPA at the macro level and revealed that the Philippines had benefitted from the expansion of its market in Japan. The results, however, show that there were some industries to which the Philippines failed to expand its exports. There is a need to conduct further analysis to identify the factors that allow industries to expand their markets in Japan.

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In particular, there is a need to support the machinery and mechanical appliances export sectors to Japan. Among the industries analyzed, it was shown that the JPEPA had a negative impact on Philippine exports from this industry. There is a need to identify what prohibits this sector from expanding its exports to Japan.

The results also imply that tariffs are not the only determinants of Philippine exports to Japan. The delays in the improvement of exports imply factors influencing the market access of Philippine exports to Japan. According to Palanca-Tan (2004, p.vii), the determinants of Philippine exports to Japan include the highly protected Japanese market and some domestic factors, such as “deficient technological know-how, high shipping and packaging costs, high labor and power costs (relative to competitors), lack of credit facilities, problems on raw materials sourcing, insufficient infrastructure facilities and lack of government support”. It is recommended for the Philippines to focus more on nontariff barriers to Japan using the mechanisms available in the JPEPA. In addition, the Philippines needs to address domestic issues to further expand its access to the Japanese market.

Consistent with a number of studies on gravity model estimation, distance is a negative determinant of trade between the Philippines and Japan. The variable distance may be capturing other trade costs as well. The Philippines needs to reduce the impact of distance by improving its logistics and reducing the cost of doing business. For instance, to reduce the cost of doing business for micro, small, and medium enterprises (MSMEs), business permits and licensing procedures should be further streamlined. The Access of Small Entrepreneurs to Sound Lending Opportunities Program aims to improve the MSME sector’s access to finance by lowering the effective cost of borrowing and ease down requirements, creating a wider financing system and standardized ending procedures (DTI-MSMED Council 2018). The DTI pursues initiatives to reduce the cost of doing business in the country through the provision of targeted and time-bound initiatives to strategic sectors, which can contribute to improving technology and innovation (NEDA 2017).

As the results show the potential of Philippine manufactured goods to penetrate the Japanese market through the JPEPA, the country should provide further support to its key sectors. The DTI has identified these key sectors in its most recent industrialization strategy. It is important that these sectors are aligned with the export trade strategy of the country.

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ANNEXES

Annex 1. Areas covered in JPEPA

-
- a. Trade in goods – reducing and eventually eliminating tariffs on industrial and agricultural products
 - b. Emergency measures – providing rules to address serious injury or threats from increased imports
 - c. Rules of origin – determining the originating foods for which preferential tariff treatment will be accorded
 - d. Customs procedures – provides for information exchange and cooperation to facilitate trade through simplified and harmonized customs procedures, including maximizing the use of ICT
 - e. Paperless trading – sharing of information on best practices and encouraging cooperation between private entities
 - f. Mutual recognition – facilitates trade in electrical products and other products such that both parties shall accept the results of conformity assessment as conducted by the other party
 - g. Trade in services – provides standstill obligation or liberalization of services sectors, including outsourcing, air transport, health and social services, tourism and travel, maritime transport, telecommunications and banking
 - h. Investment – provision on national treatment, MFN, and prohibition of performance requirements for the liberalization of investment, and on enhancement of transparency by specifying all exceptions to these provisions
 - i. Movement of natural persons – Easing the entry of qualified Filipino nurses and certified caregivers through language training, providing clear guidelines on the exercise of profession/occupation
 - j. Intellectual property – enhances the understanding of protecting the intellectual property, given Japanese practices; includes cooperation and appropriate protection and enforcement elements
 - k. Government procurement – increases the transparency of government procurement laws, regulations, and procedures and possible liberalization of government procurement activities in accordance with the development, financial, and trade needs of both parties
 - l. Competition – ensuring protection of fair competition, including measure to promote competition by addressing anticompetitive activities and through cooperation
 - m. Improvement of the business environment – encourages cooperation to improve business environment; efficient and timely resolution addressing issues affecting Japanese and Filipino enterprises through a series of consultations
 - n. Cooperation – provision of bilateral economic assistance in 10 fields within the context of official development assistance
 - o. Dispute avoidance and settlement – provides a mechanism to address dispute between the two governments on the interpretation and implementation procedures while relying on the primacy of consultations
-

JPEPA = Japan-Philippines Economic Partnership Agreement; MFN = most favored nation; ICT = information and communications technology

Source: PHILEXPORT (2007)

Annex 2. Top 35 trade partners of Japan based on 2015–2018 annual trade values (in billion USD)

Country	Export values	Country	Import values
China	137.10	China	158.43
United States	53.87	United States	135.31
Korea, Republic of	26.81	Korea, Republic of	50.76
Australia*	22.40	Hong Kong, China	34.83
Thailand*	21.86	Thailand*	32.30
Germany	20.97	Germany	25.63
Indonesia*	17.84	Singapore*	20.35

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Annex 2. (continuation)

Country	Export values	Country	Import values
Malaysia*	17.18	Mexico*	17.16
Singapore*	16.16	Australia*	15.69
Viet Nam*	15.19	Viet Nam*	15.40
Russian Federation	11.93	Malaysia*	14.40
Philippines*	11.10	Indonesia*	14.14
Qatar	10.58	Canada	12.49
Hong Kong, China	8.32	United Kingdom	12.14
Canada	8.30	United Arab Emirates	11.89
Switzerland*	7.45	India*	11.06
United Kingdom	7.09	France	10.68
France	7.02	Philippines*	10.04
Italy	6.70	Belgium	9.58
Chile*	5.96	Netherlands	8.34
Brazil	4.76	Russian Federation	8.07
India*	4.36	Saudi Arabia	7.05
South Africa	4.02	Switzerland*	4.40
Netherlands	3.81	Spain	4.22
Ireland	3.80	Brazil	4.14
Belgium	3.72	Italy	3.93
Mexico*	3.51	Turkey	3.86
Spain	2.78	Poland	3.31
New Zealand	2.15	Czech Republic	2.70
Sweden	2.14	New Zealand	2.69
Brunei*	1.98	Austria	2.27
Peru*	1.61	Chile*	2.17
Denmark	1.45	Israel	2.08
Austria	1.38	South Africa	2.07
Norway	1.25	Peru*	1.05

* bilateral trade partners of Japan

Note: Countries included in the donor pool are selected based on this list. Countries having bilateral agreement with Japan from 2008, as listed in Table 6, were excluded from the donor pool.

USD = United States dollar

Source: UN Comtrade Database (2019)

Quimba and Barral

Annex 3. Evolution of Philippine exports composition

Sector	1996–2018		Prior to the agreement				Initial year in force				Duration of agreement							
	Average	Position	Average	Position	Average	Position	Average	Position	Export	Position	Average	Position	Average	Position				
	(1996–1999)	(1996–1999)	(1996–1999)	(2000–2002)	(2000–2002)	(2003–2005)	(2003–2005)	(2006–2008)	(2006–2008)	(2009)	(2010–2012)	(2010–2012)	(2013–2015)	(2013–2015)				
Electrical machinery and equipment	2,728.06	1	1,767.40	1	2,193.83	1	3,715.81	1	378.90	1	1,911.41	1	2,120.37	1	3,969.56	1	3,616.27	1
Wood	1,005.24	3	91.01	9	149.46	8	126.33	8	99.85	4	850.20	3	1,651.74	2	2,990.18	2	1,603.79	2
Machinery and mechanical appliances	1,260.34	2	976.68	2	1,608.50	2	1,515.77	2	149.60	3	1,574.43	2	926.25	3	889.48	3	914.54	3
Vehicles, aircraft, vessels, and transport equipment	407.26	5	104.30	8	180.84	6	327.18	4	22.39	10	238.94	8	497.33	5	706.63	6	794.21	4
Agriculture	485.31	4	389.92	3	380.37	3	374.36	3	72.89	5	411.59	4	508.28	4	649.02	7	662.44	5
Others	288.75	8	133.04	7	162.21	7	231.13	5	30.86	9	186.64	9	238.57	10	559.90	8	595.46	6
Plastic and rubber	204.08	10	62.70	10	85.71	10	101.00	10	8.93	12	89.32	11	482.01	6	254.20	10	420.82	7
Minerals	369.12	6	243.91	4	215.56	4	224.65	6	67.79	7	313.06	5	369.22	8	755.94	4	377.38	8
Metals	369.12	7	243.91	5	215.56	5	224.65	7	67.79	8	313.06	6	369.22	9	755.94	5	377.38	9
Chemicals	209.86	9	32.89	12	25.01	13	31.80	13	68.23	6	262.50	7	398.02	7	517.35	9	238.49	10
Textiles, textile articles, and other articles	156.87	11	160.31	6	129.65	9	116.58	9	21.43	11	118.56	10	154.54	11	232.03	11	188.92	11
Nonmetals	93.86	12	287.5	13	36.68	12	75.53	11	176.06	2	82.19	12	93.29	12	90.69	13	143.68	12
Food manufactures	73.85	13	48.67	11	42.40	11	46.73	12	1.79	13	50.17	13	80.29	13	170.57	12	96.23	13
Leather	25.40	14	15.83	14	14.55	14	12.34	14	1.69	14	14.46	14	14.60	14	54.34	14	56.32	14

Source: Authors' estimates based on UN Comtrade Database (2019)

The Japan-Philippines Economic Partnership Agreement, a Decade After

Annex 4. Philippine exports position with respect to Japans top exporters

Sectors	1996–2018				Prior to the agreement				Initial year in force				Duration of agreement					
	Average	Position	Average (1996– 1999)	Position (1996– 1999)	Average (2000– 2002)	Position (2000– 2002)	Average (2003– 2005)	Position (2003– 2005)	Average (2006– 2008)	Position (2006– 2008)	Average (2009)	Position (2009)	Average (2010– 2012)	Position (2010– 2012)	Average (2013– 2015)	Position (2013– 2015)	Average (2016– 2018)	Position (2016– 2018)
Agriculture	485.31 (5.24%)	15	389.92 (-2.92%)	14	380.37 (-1.03%)	15	374.36 (1.08%)	15	72.89 (33.01%)	7	41.59 (-13.43%)	15	508.28 (14.80%)	16	649.02 (-2.04%)	16	662.44 (17.75%)	14
Food manufactures	73.85 (8.89%)	28	48.67 (-8.04%)	27	42.40 (1.02%)	23	46.73 (3.19%)	26	1.79 (4.32%)	41	50.17 (9.91%)	29	80.29 (37.49%)	26	170.57 (31.89%)	22	96.23 (-1.77%)	25
Minerals	369.12 (9.66%)	24	243.91 (-13.57%)	19	215.56 (-0.08%)	22	224.65 (16.98%)	24	67.79 (32.02%)	29	313.06 (-28.09%)	19	369.22 (0.40%)	26	755.94 (53.15%)	21	377.38 (-2.51%)	23
Chemicals	209.86 (21.10%)	24	32.89 (-14.02%)	33	25.01 (0.71%)	35	31.80 (28.00%)	37	68.23 (99.92%)	12	262.50 (-13.42%)	21	398.02 (11.87%)	18	517.35 (20.73%)	17	238.49 (-9.71%)	25
Plastic and rubber	204.08 (39.71%)	12	62.70 (11.53%)	15	85.71 (7.78%)	13	101.00 (7.25%)	15	8.93 (16.01%)	13	89.32 (-17.45%)	16	482.01 (267.09%)	10	254.20 (-25.05%)	11	420.82 (26.15%)	10
Leather	25.40 (9.30%)	15	15.83 (-5.17%)	17	14.55 (-4.85%)	17	12.34 (4.05%)	21	1.69 (11.62%)	17	14.46 (-24.64%)	18	14.60 (36.80%)	22	54.34 (44.23%)	9	56.32 (-9.57%)	10
Wood	1,005.24 (24.11%)	6	91.01 (6.51%)	19	149.46 (16.71%)	16	126.33 (6.78%)	19	99.85 (154.80%)	4	850.20 (-8.62%)	6	1,651.74 (38.21%)	3	2,990.18 (11.03%)	2	1,603.79 (-35.85%)	3
Textiles, ...	156.87 (2.68%)	16	160.31 (-12.89%)	14	129.65 (-1.60%)	15	166.58 (-1.20%)	15	21.43 (16.14%)	8	183.56 (-25.83%)	17	154.54 (36.99%)	17	232.03 (-2.80%)	16	188.92 (-11.18%)	15
Nonmetals	93.86 (32.32%)	24	28.75 (11.21%)	26	36.68 (2.95%)	24	75.53 (150.98%)	18	176.06 (107.65%)	3	82.19 (21.18%)	20	93.29 (0.35%)	21	90.69 (10.14%)	21	143.68 (-28.24%)	19
Metals	369.12 (18.96%)	14	243.91 (-14.33%)	21	215.56 (-9.64%)	22	224.65 (1.59%)	27	67.79 (63.05%)	20	313.06 (-67.79%)	25	369.22 (39.07%)	22	755.94 (74.99%)	8	377.38 (-0.71%)	6
Machinery...	1,260.34 (3.23%)	9	976.68 (19.9%)	10	1,608.50 (9.06%)	7	1,515.77 (-2.95%)	8	149.60 (10.50%)	6	1,574.43 (-24.01%)	7	926.25 (-8.16%)	10	889.48 (-1.51%)	10	914.54 (2.34%)	10
Electrical...	2,728.06 (7.03%)	9	1,767.40 (17.56%)	10	2,193.83 (4.04%)	7	3,715.81 (24.60%)	8	378.90 (16.38%)	6	1,911.41 (-9.00%)	7	2,120.37 (17.55%)	10	3,969.56 (15.75%)	10	3,616.27 (-8.33%)	10
Vehicles, ...	407.26 (22.60%)	10	104.30 (34.73%)	16	180.84 (20.37%)	13	327.18 (12.90%)	11	22.39 (1.78%)	24	238.94 (-44.56%)	11	497.33 (40.43%)	9	706.63 (48.48%)	8	794.21 (16.06%)	9
Others	288.75 (13.87%)	17	133.04 (-9.99%)	18	162.21 (16.08%)	17	231.13 (15.01%)	17	30.86 (29.22%)	15	186.64 (-19.96%)	19	238.57 (76.41%)	19	559.90 (10.44%)	14	595.46 (-2.88%)	14

Source: Authors' estimates based on UN Comtrade Database (2019)



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Survival Analysis of Export Relationships of Philippine MSMEs

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ABSTRACT

This study examines the survivability of Philippine micro, small, and medium enterprises' (MSMEs) exports to select countries within the frameworks of the Asia-Pacific Economic Cooperation Boracay Action Agenda to Globalize MSMEs and the Association of Southeast Asian Nations Strategic Action Plan for SME (small and medium enterprises) Development. The analysis is based on the model of Besedeš and Prusa (2006a; 2006b; 2011). Using the Kaplan Meier estimator model in the exports of MSMEs and the total trade data, this study documents the survival rate and duration of Philippine exported goods. It shows that most export relationships of the Philippines are brief, contrary to conventional trade theories which suggest that most of the country's trade relationships are long-lived. This paper concludes that MSMEs, on average, account for a more significant number of the Philippines' export relations than large establishments.

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INTRODUCTION

The Philippines has championed the cause of micro, small, and medium enterprises (MSMEs) in several international fora held over the past few years. For instance, under the Philippines' chairmanship, the 2015 Leader's Declaration of the Asia-Pacific Economic Cooperation (APEC) recognized the promotion of a trading environment conducive to the development and participation of MSMEs. This set into motion the Philippine-led Boracay Action Agenda to Globalize MSMEs. The country's position to include MSMEs among the priority agenda of the Association of Southeast Asian Nations (ASEAN) was echoed in the ASEAN Leader's Declaration on its 50th anniversary (ASEAN 2017). As a result, the call to integrate MSMEs into the global value chains was reiterated. The heightened priority given to MSMEs in the research agenda was also supported at the national level. To this end, the Philippine APEC Study Center Network incorporated MSMEs into its priority research areas.

It is not difficult to understand why MSMEs have become a priority in the policy agenda of economic groups. The literature on MSMEs is replete with studies on its critical contribution to the economy. In the Philippines, MSMEs comprised 99.5 percent of firms in 2018 and employed 62 percent of workers, making them an important generator of jobs (DTI 2019). As such, MSMEs have a major role in sustaining the country's economic growth. The call for inclusive growth is often understood in the context of integrating MSMEs into the mainstream of national and international commerce but despite the extensive presence of MSMEs, they account for only 36 percent of the country's gross value added (DTI 2019). This indicates low productivity among Philippine MSMEs, which continues to be a real concern that demands policy attention.

How to nurture, transform, and strengthen MSMEs are common themes in the research agenda of many institutions. There is research interest in identifying the factors that allow MSMEs to penetrate export markets and scale up their businesses. This paper offers another window to understand the behavior of MSMEs in the process of internationalization. While the internationalization issues of MSMEs usually involve studies on export intensity and propensity and their corresponding impediments, this study takes another track by documenting the duration of Philippine MSMEs' trade relationships. A trade relationship means that the Philippines is exporting goods to a destination or market over a continuous period (Trung et al. 2008; Tuaño et al. 2014). This paper analyzes the length of time until the export activity or relationship of MSMEs ceases. Note that a trade relation does not necessarily correlate with the volume of exports but rather with count item. To illustrate this, if the Philippines exports three items to its partner, there will be three trade relationships, and the count is independent of the exported items' value or volume.

This paper documents the behavior of Philippine MSMEs, particularly the duration of their export activities, which is akin to gauging their survivability. The study seeks to provide answers to the questions: To what extent are the Philippine MSMEs engaged in sustaining the country's export activities (i.e., the duration of their trade relationships)? Does the duration of MSMEs' export activities vary based on their partners? To what extent do large firms dominate trade relationships in comparison to MSMEs?

SIGNIFICANCE AND REVIEW OF LITERATURE

Focusing on the trading performance of MSMEs, the World Trade Organization's *World Trade Report 2016* stated that most MSMEs stopped exporting after a year (WTO 2016). Other studies observed that large exporters were relatively more successful in introducing new export goods in international markets (Freund and Pierola 2010). Furthermore, a publication discussed that

internationally-oriented MSMEs, both on the import and export sides, tend to have higher survivability than those that are exclusive to the domestic sectors (Muuls and Pisu 2009). Thus, internationalization is associated with providing MSMEs with new growth opportunities.

The standard models of international trade do not specifically deal with trade duration. There is an implicit assumption in some models, however, that trade relationships persist. For instance, according to the factor proportions theory, trade is based on differences in (relative) factor endowments (Salvatore 2013).

On the other hand, Besedeš and Prusa (2006a; 2006b) found that trade relationships were often not long-lived. More particularly, they estimated that the median duration of United States (US) imports was just one year. One implication was there might be a high frequency of entry and exit of suppliers at the product level even if the aggregate trade volume appeared to be stable.

Extending the analysis to other cases, Besedeš and Prusa (2007; 2011) showed that the duration of exports relationships from a number of Central and South American countries—the Asian Dragons countries, as well as the US and the European Union (EU) countries—was very short. Specifically, many relationships failed in their first year resulting in most countries having a median duration of an export relationship at only one or two years.

Fuggaza and Molina (2011) carried out a study on the trade duration of 96 countries over the period 1994–2004. They found that a large fraction of trade relations had failed after a short period. They tried to find a link between the trade failures of countries and the type of products they traded and discovered that heterogenous or differentiated export products tend to have longer trade relations than the homogenous ones. Furthermore, Besedes and Blyde (2010) applied the trade duration analysis to export flows between Latin America and its partners. Similar to other studies, they provided evidence that export relationships generally lasted for a brief period. However, they noted significant differences in the trade duration across regions, with Latin America manifesting lower export survival rates than the US, EU, and East Asia.

On the other hand, Nicita et al. (2013) focused on whether comparative advantage affected the duration of exports of the least developing countries upon applying the survival analysis. They found evidence that products exhibiting high comparative advantage tend to have longer trade relationships.

The wave of trade liberalization at the global level has expanded market access, leading to improvements in the export activities of local industries. There is a distinct prod by governments to internationalize MSMEs. However, there appears to be a dearth in the current policy research on the analysis of the duration of trade relationships, particularly for Philippine MSMEs. This study hopes to contribute to this strand in the literature on Philippine trade.

METHODOLOGY

The first step in determining the survivability characteristics of MSMEs is to find the link between each exported good and the size attribute (large or MSMEs) of representative firms from the industries that produced the exported items. By using the correspondence tables of trade and industry nomenclatures, each exported product is matched with the producing sector from where the average firm size can be determined. The average size of firms, in turn, can be used to designate whether the exported item is produced either by MSMEs or by large firms. By doing so, the duration of each exported good's trading relation can be used to proxy the duration of trade relations of MSMEs or large firms.

Having established the link between the goods and the size of the producing sector, the research strategy in determining the length of export relationship and survivability pattern of Philippine MSMEs can be carried out in two parts. The first part documents the duration of the relationships of

Survival Analysis of Export Relationships of Philippine MSMEs

MSMEs' exports to a set of the country's trading partners. To carry this out, the total subset of exported products from MSMEs will be filtered from their total number. Once the subsets are determined, the duration of trading relations can be computed for each exported product. Afterwards, the distribution of the entire sample's duration can be estimated from the individual duration of trade relationships. Since the aforementioned sample comprises the products exported from dominating industries whose average firm size attribute is labeled as MSMEs, the duration of the distribution of products can be used as a proxy for the duration of MSMEs' exports to a specific trading partner.

In the second part, the duration of trade relations of Philippine exports at the Harmonized System (HS) six-digit level is computed and matched with the average firm size of the sector that produced the exported product. Hence, each exported product can be tagged from a large firm or MSME. Afterwards, the distribution of different durations of export trade relations classified according to the size of establishment per sector (large or MSMEs, i.e., the aggregate exports) is generated on a count basis. This analysis reveals the distribution of the duration of export relationships, including the breakdown of ties associated with export items and the size of establishments (large or MSMEs).

Documenting the duration of Philippine exports over a specified period is interesting from both theoretical and policy perspectives. As Besedes and Prusa (2006a) stated, trade theories mostly posit a long-lasting trade relationship. For instance, the Heckscher-Ohlin model showed that the basis trade relationships are expected to persist. From a policy perspective, understanding the survivability characteristics of MSMEs can aid in crafting government support interventions, such as the duration of incentives.

Dataset and mapping of export product data with size of firm

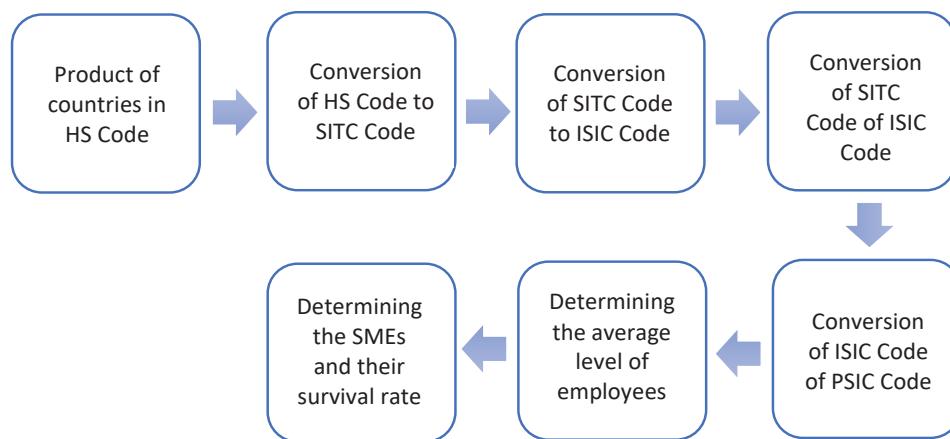
Prior to determining the survivability characteristics of MSMEs, it is important to find the connection between the exported goods and the size characteristics (large or MSMEs) of firms that produced the goods. By using the correspondence tables, each exported good is identified with the size of the producing sector. In a sense, the traded good defines whether the producing firm is large or an MSME. By doing so, the duration of each exported good is treated as the duration of the export activities of large firms or MSMEs. Having established the link between the goods and the size of the producing sector, the research strategy in determining the duration of export relationship and pattern of the survivability of Philippine MSMEs can also be carried out in two parts.

The survival analysis of MSMEs' export relations is carried out based on the bilateral trade of the Philippines with a set of partners. The outcome of the analysis documents the probabilities that the export relationships of Philippine MSMEs with the country's ASEAN partners will last over time. This pattern of survivability is then contrasted with the corresponding pattern of the aggregate export products, i.e., with all exported products coming from all sectors—MSMEs and large establishments. The basic data is the bilateral export data at the HS six-digit as sourced from Trademap.org. Following Besedes and Prusa (2006a), the length of time that the Philippines continuously shipped a product to its partner is calculated for each bilateral trade for given partners. The analysis focused on the frequency of changes in the Philippine exports' trade relations and not on the actual size of exports.

The conversion of export products to being linked to exporting firms begins with the Harmonized Code of Trademap, which generates the list of exported goods in the HS code of the Philippines per partner country. The Kaplan Meier estimator method forms their corresponding survival probabilities using the count of spells. The HS codes are converted to the Standard International Trade Classification (SITC), which, in turn, will be further converted to the United Nations International Standard Industrial Classification (ISIC). Finally, the list generated using ISIC will be transformed into one based on the Philippine Standard Industrial Classification (PSIC).

Using Philippine Statistics Authority (PSA)'s Annual Survey of Philippine Business and Industry (ASPBI), formerly known as the Annual Survey of Establishments, the average number of employees per sector correlates with the PSIC code to link the MSME incidence of industries or segments with the survival rates computed in the earlier stages of research. Figure 1 illustrates the conversion to MSME.

Figure 1. Conversion from product code (HS) to firm size



HS = Harmonized System; SITC = Standard International Trade Classification; ISIC = International Standard Industrial Classification; PSIC = Philippine Standard Industrial Classification; SMEs = small and medium enterprises
Source: Authors' compilation

Table 1 illustrates the actual conversion from product code to firm size. Examples show the use of HS Code with its description to SITC, then to ISIC, and finally to PSIC to identify the average employment of the industry.

Table 1. Conversion from product code (HS) to firm size

HS2012	HS2002 description	SITC_r3	ISIC_r31	PSIC	Employment	Firm type
180610	Cocoa powder, containing added sugar or other sweetening matter	73.1	1543	C107	106	Medium
903210	Thermostats	874.61	3312	D29111	180	Medium
570110	Of wool or fine animal hair	659.21	1722	D17221	173	Medium
330430	Manicure or pedicure preparations	553.2	2424	D24234	95	Small
330420	Eye makeup preparations	553.2	2424	D24234	95	Small
330410	Lip makeup preparations	553.2	2424	D24234	95	Small
330300	Perfumes and toilet waters	553.1	2424	D24234	95	Small

Note: "r" denotes revision

HS = Harmonized System; SITC = Standard International Trade Classification; ISIC = International Standard Industrial Classification; PSIC = Philippine Standard Industrial Classification

Source: Trademap.org; authors' computation

Determining trade duration and survival rates

This study's primary objective is to identify the length of time of trade relationships. In the event that the Philippines ceases to export products to its FTA partners, a "failure" is said to occur, which, in turn, is needed to compute for the spell. For each product and partner country, the spell data is created using annual data. To illustrate this, if the Philippines exported a particular product to its specific partner from 2001 to 2005, the trade relationship between the two partners would have a spell length of five.

The level of disaggregation of the product classification significantly affects the measurement of trade duration. As Nitsch (2007) discussed, at higher levels of aggregation where a wider range of products is involved, the periods of continued trade tend to be longer because there is a greater possibility that at least one product is traded in a given year.

In contrast, at a more detailed level of product classification, there is a greater variance in the measurement of the trade's duration. Further, as Nitsch (2007) argued, instances of reclassification of product codes at the level of individual product classification would impact trade duration more sharply than it would impact broader product categories. In this paper, the researchers used previously unexplored dataset of product-level trade for the Philippines. The six-digit HS level report trade values and quantities, which is the most detailed product classification in the International Trade Centre-Trademap statistics, for which data on the 16-year period (from 2001 to 2016) are available.

Trademap (www.trademap.org) sources its data from the United Nations Committee on Trade. For each year, the value of Philippine exports to its top bilateral partners at the six-digit HS product level is recorded. Note that the total number of trade observations for all possible combinations of products, countries, and years is about 1.2 million (approximately 5,000 products \times 15 nations \times 16 years). However, most of these potential trade relationships are non-existent. Moreover, the majority of these nonzero trade observations are small in value. About 30 percent of the Philippines' export to the product-country pair have an amount of less than USD 10,000 while about 60 percent have an amount of less than USD 100,000.

The duration can be calculated as the time (measured in years) that a trade relationship occurs without interruption. As Nitsch (2007) stated, using survival analysis, the duration could be modeled as a sequence of conditional probabilities that a trade relationship continued after a specified number of periods, given that it already survived for the said period. A critical observation that Besedes and Prusa (2008) found in their work was that a loss of trade relationships re-occurred, exhibiting what referred to as the multiple spells of service. A country serves the market, exits, and re-enters it, then almost always exits the market again. Based on the study of Besedes and Prusa (2008), approximately 30 percent of trade relationships experienced multiple spells of service in the disaggregated product-level data. About two-thirds of contacts with various intervals suffered just two spells; less than 10 percent had more than three spells. The paper treats multiple periods as independent, similar to the framework of Besedes and Prusa (2008).

In considering data on spells, a need to account for censoring in the analysis is apparent. The need for censoring arises because it is often unknown whether a trade relationship ended because of a failure or for some other reasons. Besides, there is uncertainty either in the beginning or ending date (or both) of some trade relationships. The work of Besedes and Prusa (2008) showed censoring as a standard in the US import data. They found that in both periods, about half of all spells were censored and about 20 percent of intervals were censored at one year. The censoring problem comes in two kinds. First, there was no information on trade relationships for the years before the beginning and after the end of the sample. For example, the US imported corn from the Philippines in 1972. It may have begun in 1972 or prior years. The most appropriate interpretation is that it had a duration of at least one year. Similarly, one can consider the case of the US importing corn from Peru from 1984 to 1988.

Note that the data did not continue beyond 1988 and it was impossible to ascertain how long the spell ultimately lasted. Once again, the most appropriate interpretation is at least five years.

As Bojnec and Ferto (2016) stated, the survivor function in practice was estimated in a nonparametric way by computing the number of spells that survived as a fraction of the total number of spells after t periods with t denoting length in years. The survival analysis generates the list of exported goods in the HS code of the Philippines with their corresponding survival probabilities using the count of spells. The standard Kaplan Meier methodology for generating the survival analysis was utilized in the paper.²

Limitations

One of the limitations of the study is the definition of MSMEs. In the Philippines, there are two criteria in operationally defining MSMEs—employment and asset size—as articulated by Aldaba et al. (2010). Production units that have 1 to 9 workers are referred to as the household industry or microenterprises and fall outside the MSME designation. Thus, the recognized size categories for the Philippines are: micro, 1 to 9 employees; small, 10 to 99 employees; medium, 100 to 199 employees; and large, 200 and over employees.

Note that the operational definition adopted by policymakers in identifying MSMEs refers to asset size and not employment. The Magna Carta for MSMEs (Republic Act 9501), for instance, defines the range of asset sizes for micro (not more than PHP 3 million), small (PHP 3–15 million), and medium (PHP 15–100 million). There are limitations when using asset size as the basis for firm size classification. As Tamangan et al. (2004) stated, changes in price levels would affect the nominal values, which, in turn, could have implications on the classification.

This study, however, used employment figures as the operational definition of MSMEs because of the availability of data. It used the ASPBI of the PSA in constructing a correspondence between the export products and the size of the establishment that produced them. The ASPBI contains data on the country's total employment and establishments, which allows the computation of the average employment per establishment in the PSIC code. Mapping the export items with the average employment per establishment completes the correspondence of export relations based on HS (product code) to the large or MSME categories of the average employment per sector. Because the ASPBI does not have regularly updated data on the average asset size per PSIC code, it is not possible to make a correspondence between the PSIC code and the average asset size per establishment.

The second limitation of the analysis is the use of the ‘representative’ firm defined by employment per establishment. As discussed earlier, categorizing whether MSMEs produce an export product is carried out from the average employment per establishment in the industry classification, corresponding to each traded product. There may be large firms operating in industries whose average firm employment size are labeled as MSMEs. However, because the distributions of the firms' sizes in each sector in the PSIC are not readily available, only the average size of firms is used in this study.

FINDINGS

Survival analysis of Philippine MSMEs' exports

Table 2 reports the full result of the survival analysis of MSMEs where the probabilities of Philippine MSMEs' goods to a sample of trading partners are specified. The conditional probabilities of survival are reported at the end of the 1st, 4th, 12th, and 16th years.

² A description of the survival analysis can be gleaned from the study of Besedes and Prusa (2008).

Survival Analysis of Export Relationships of Philippine MSMEs

Table 2. Survival analysis of Philippine MSMEs' exports to countries with FTAs: Conditional probabilities of survival

Countries with FTAs	Year 1	Year 4	Year 12	Year 16
Brunei	0.649	0.354	0.298	0.298
Cambodia	0.468	0.183	0.156	0.156
Indonesia	0.654	0.387	0.327	0.324
Malaysia	0.694	0.444	0.44	0.44
Myanmar	0.422	0.281	0.25	0.25
Laos	0.382	0.133	0.133	0.133
Thailand	0.738	0.516	0.394	0.392
Singapore	0.741	0.533	0.467	0.466
Viet Nam	0.583	0.381	0.29	0.29
Australia	0.858	0.491	0.432	0.426
China	0.694	0.443	0.37	0.369
India	0.632	0.4178	0.306	0.306
Japan	0.782	0.493	0.454	0.45
South Korea	0.675	0.532	0.427	0.427
New Zealand	0.633	0.441	0.328	0.328
Average	0.640	0.40	0.3464	0.337

MSMEs = micro, small, and medium enterprises; FTAs = free trade agreements

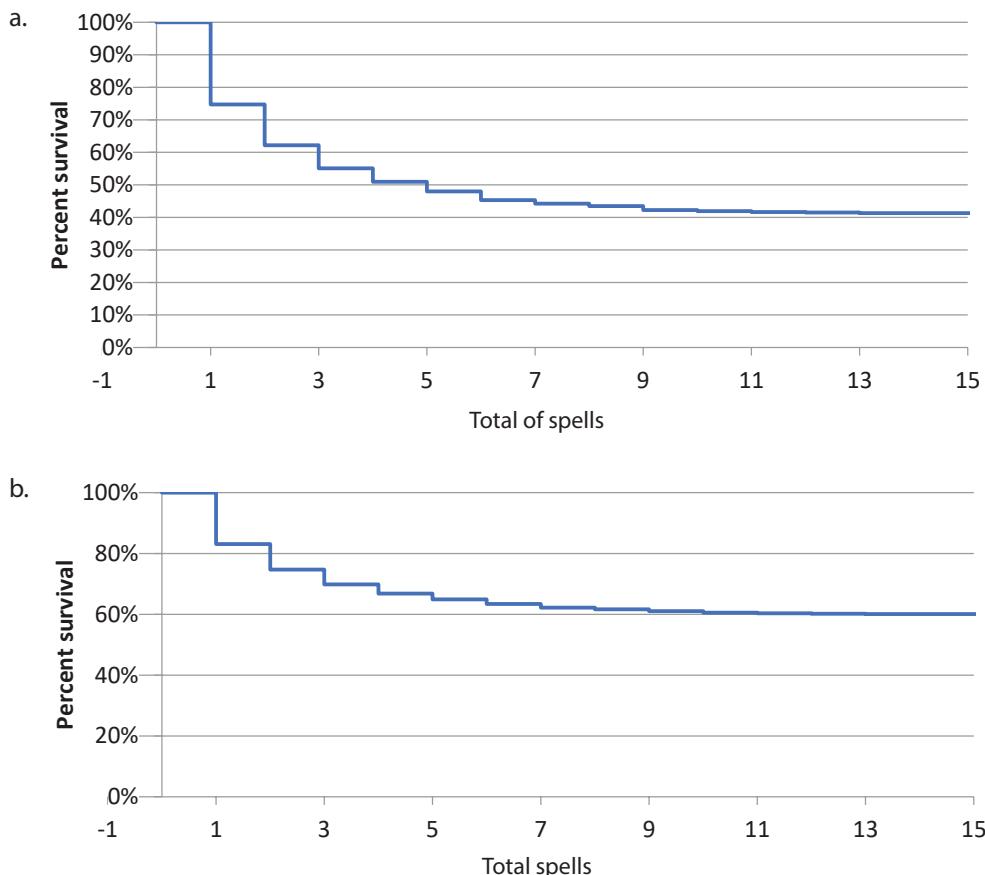
Source: Authors' compilation

In general, the pattern of MSMEs' export survival rates across different partner countries of the Philippines is rather mixed. Products exported to Australia exhibited the highest survival rate with almost 86 percent after year one. The second highest survival rate of exports by Philippine MSMEs after one year of activity was recorded with Japan at 78 percent. Meanwhile, with its ASEAN peer, Myanmar, only 42 percent of Philippine export products survived after one year. In contrast, products exported to Singapore exhibited the highest survival rate after 15 years of trade relations at 46 percent, followed by Japan at 45 percent. The lowest survival rates, in the long run, belong to Cambodia and Laos at 16 percent and 13 percent, respectively. For nations considered as established trading partners, e.g., Japan, Thailand, and Malaysia, the survival rates were higher with rates achieving 60 percent or more.

Considering the new markets of Philippine exports such as Cambodia, Laos, and Myanmar, the survival rates of exported products are rather low, i.e., prone to failure or abrupt exit from foreign markets. With an average survival rate of 41 percent after year one, it implies that local firms are still struggling to find appropriate partners or adapt to new partner countries. The long-term survival rates of Philippine exports to these countries (12 years) also showed to be lower at about 18 percent. The result suggests that there are other determinants of higher survival rates of exported products from MSMEs apart from regional proximity. This pattern is consistent with trade theories that found market knowledge and reliable networks with foreign partners as a crucial determinant of long-term trade relationships.

The Kaplan Meier plots from which Table 1 is generated for a sample of partners (Malaysia and Japan) are shown in Figure 2.

Figure 2. Survival analysis (Kaplan-Meier plot) of Philippine MSME exports to Malaysia (a) and Japan (b)



Note: The Y axis is the aggregate conditional probability; X axis is the duration of trade relations.

Source: Authors' calculations

The patterns of survival rates across different partners as reported in Table 2 are quite similar to Besedes and Prusa (2006b) but only in the early portion of time duration. In the first year, only 64 percent of relationships survived, which was higher than the average duration of the US trade relations from the study of Besedes (2006a). However, after four years, it had a conditional probability of surviving at 35 percent, which was a reduction of about 29-percentage points. Finally, the average chances of surviving for 12 straight years decreased to 34 percent. The survival function is downward sloping, suggesting a declining failure rate function.

According to Besedes and Prusa (2006a), a substantial fraction of relationships failed after only a year or two. For benchmark seven-digit Tariff Schedule of the US data, only 67 percent of relationships survived 1 year; 49 percent survived 4 years; and 42 percent survived 12 years. An almost identical survival experience was found in HS data, implying that the finding was quite robust. The message of Besedes and Prusa (2008) is summed up in a few words: the typical US trade relationship is very short-lived.

Survival Analysis of Export Relationships of Philippine MSMEs

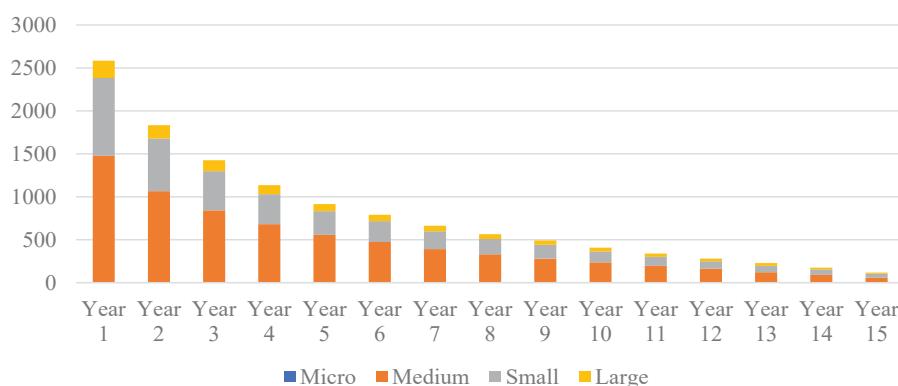
Another finding is the sharp decline in the risk of exports failure. It was quite high in the early years, but then rapidly fell once a trade relationship survived a threshold duration.

As shown, a large number of trade relationships failed over the first four years especially in the first year when the survival rate fell by 30-percentage points. However, after about four years, the occurrences of failure dwindled. For example, the failure rate between the first and the fourth year was an additional 25-percentage points. In contrast, the failure rate between the 4th and 12th year was just 11-percentage points. The decreasing rate of failure implies that once a trading relation hurdled a ‘critical’ year, the chances of surviving is better (Besedes and Prusa 2006a).

Comparative analysis of trade duration of large enterprises and MSMEs in the Philippines: Count basis
The methodology carried out to achieve the second objective of the paper started with projecting the distribution of export trade relations according to the size of firms on a count basis. To carry this out, the trade relations were first tagged according to spell. Recall that spells are the number of years where trade continually occurred. Such spells were then ordered according to duration, starting with those that lasted for one year, up to those that persisted up to year 15. Thereafter, the stacks of spells were filtered and categorized according to the size of the firm (large or MSMEs) that corresponded to export relation. Naturally the longer the spell or duration, the higher the survivability of an export relation. It is essential to see the distribution of trade relations by count as it provides a relationship of the duration of trade relations depending on firm size.

Figure 3 illustrates an example of this methodology using China as a model. The X-axis indicates the number of years of trade relations. Note, however, that “year 1” does not represent the duration but the first year of trade relations. The Y-axis shows the number of goods exported (trade relation) according to tariff line. For instance, the record of trade relations of exports to China indicates that there are more than 2,500 exported products corresponding to trade relationships that lasted for at least one year. Of the sum, close to 1,500 of the total export relations were accounted for by medium-sized firms. Some export relations failed in the second year. Hence, export relations that ran for two continuous years number less than those that survived one year. Interestingly, medium-sized sectors again accounted for the bulk of export relations.

Figure 3. Export duration of Philippine products destined for China according to firm size



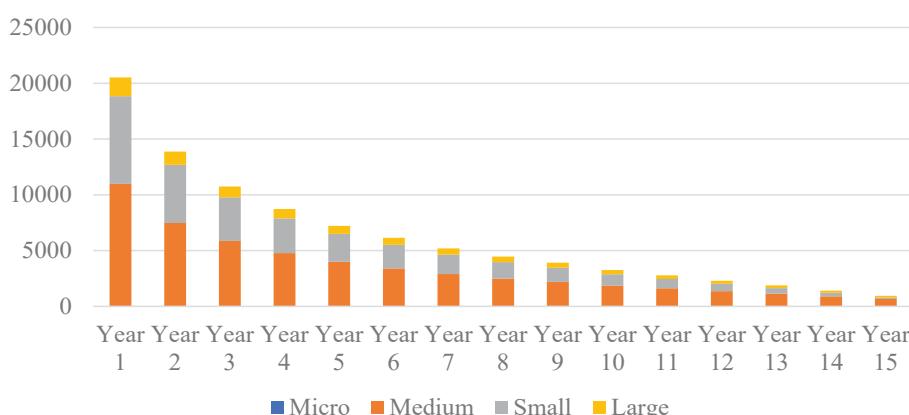
Note: Y axis is number of tariff lines; X axis is the duration of trade relations.

Source: Authors' calculations

The illustration indicates the increased survivability of products from the first year up to the 15th year. However, unlike the survival analysis of the previous section, the information in this section does not imply conditional probabilities, but merely the count or number of trade relations over different spells, and decomposed according to the size of the exporting sector's business (large or MSMEs).

Figure 4 reports the distribution of the duration of exported products from both Philippine MSMEs and large enterprises to ASEAN destinations on a count basis. For example, over 20,000 export trade relations destined to ASEAN markets survived for at least one year. Of the sum, close to half of the items were exported from industries or sectors whose average firm size is considered medium. For year 2, there were fewer than 15,000 exported products out of the 20,000 that survived for more than one year. Again, the majority of the exported products were from sectors whose average firms were considered medium-sized based on the average number of workers per establishment. The absolute difference between the count in years 1 and 2 represents the number of trade relationships that did not survive after a year. Generally, MSMEs exports accounted for most of the products but with varying durations of survivability across different partners. The number of exported goods from MSMEs (at the six-digit HS) tends to be more numerous and has a longer duration than those that came from large enterprises.

Figure 4. Export duration of Philippine products destined for ASEAN countries according to firm size



Note: Y axis is number of tariff lines; X axis is the duration of trade relations.

ASEAN = Association of Southeast Asian Nations

Source: Authors' calculations

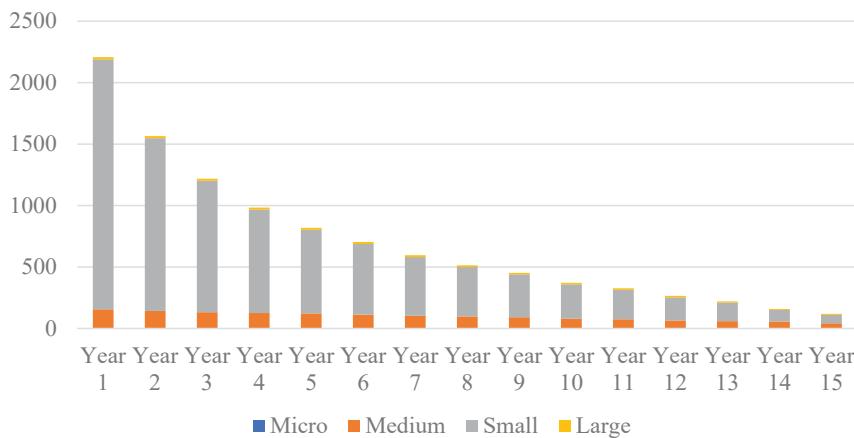
Interestingly, the export products associated with MSMEs that exhibited survival rates of more than four years across the ASEAN region are resource and agriculture-based. These products include fresh or dried guavas, mangoes and mangosteens; fresh, chilled, frozen or dried roots and tubers of manioc cassava; vinegar; soap and organic surface-active products and preparations; and ice cream and other edible ice, whether or not containing cocoa.

As mentioned, large enterprises generally did not outperform MSMEs in terms of the duration of export survivability. Thus, the broader resources of large firms on the number of employees and the higher capital base do not guarantee a longer duration of export relations. Overall, large firms did not fare better than medium-sized establishments when it comes to the survivability of their exports.

Figures 5 and 6 report the export duration of Philippine products destined for Malaysia and Laos, respectively, according to firm size on a count basis.

Survival Analysis of Export Relationships of Philippine MSMEs

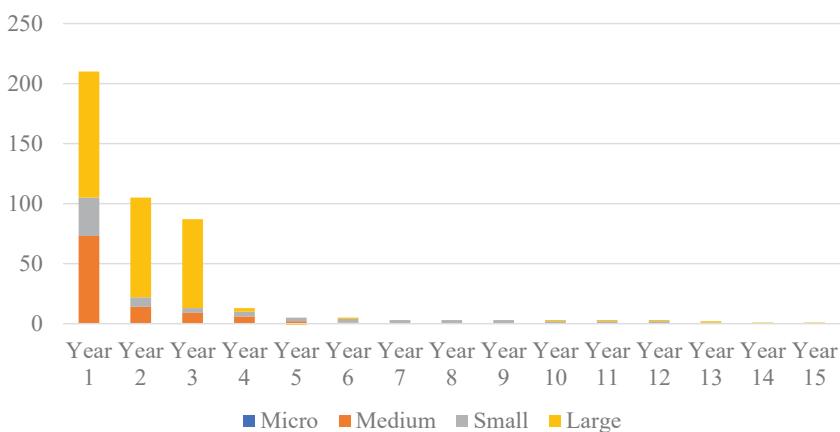
Figure 5. Export duration of Philippine products destined for Malaysia according to firm size



Note: Y axis is number of tariff lines; X axis is the duration of trade relations.

Source: Authors' calculations

Figure 6. Export duration of Philippine products destined for Laos according to firm size



Note: Y axis is number of tariff lines; X axis is the duration of trade relations.

Source: Authors' calculations

A comparison of the distribution of Philippine export relations between Malaysia and Laos reveals striking contrasts. There seems to be no general trend which indicates that small firms consistently outperform large firms in the duration of export performance of the Philippines across all its trading partners. For example, the Philippines' export relation with Malaysia was dominated by small and medium firms compared with large firms. However, MSMEs have lower survival rates in the latter years than large firms. In the case of Laos, large firms dominated the trade relations of Philippine exports with only a few of MSME firms establishing trade relations after one year of trading. In the latter years, the duration of MSMEs' export relations with large firms also faltered.

The contrasting distributions of Philippine export trade relations observed across countries are not inconsistent with the stage and network frameworks discussed in the literature. The status of firm trade relations may be attributed to the degree of market knowledge on the two countries (Malaysia and Laos). Its long-established trade relations with the Philippines reflect the strong

ties of MSMEs with Malaysia. Conversely, the trade activities of the Philippines with Laos have generally become more recent.

The findings reveal that export relations from medium establishments tend to last longer than small and large establishments. What could account for the relatively more prolonged duration of exports from medium-sized establishments from the Philippines? One possible explanation may arise from the nature of the country's top exports. The electronic components, microprocessor, and semiconductor type of products have become the top export products of the Philippines since the late 1990s. Due to the advent of the Factory Asia framework of Japan, the Philippines became one of the manufacturing hubs of the automotive and electronics industries in East Asian countries.

However, based on the current findings, these factories are still not considered as the large enterprise in the firm category of the Philippines. According to PSA (2015), the average number of workers in the electronics industry is 155, which puts it under medium-sized firms. Production lines of these industries rely less on human resource and more on the automation of processes. Moreover, the findings of business classification help us understand the actual level of impact of traded goods on the number of employees needed to produce it. Despite the high volume of products generated by the semiconductor industries, its labor is from medium-sized firms.

IMPLICATIONS, RECOMMENDATION, AND CONCLUSION

This paper attempts to document the duration aspect of the trade performance of Philippine exports using an approach pioneered by Besedes and Prusa (2006a). The survivability of the country's exported goods for a sample of its partners was analyzed using the Kaplan-Meier estimator. The survivability analysis was carried out for a total of 18 country partners including members of the ASEAN, East Asian countries, Australia and New Zealand, and India—all of which have FTAs with the Philippines.

This study's findings show that Philippine exports exhibit relatively short trade durations, consistent with the result of Besedes and Prusa's (2006a). From the trade relations of MSME exporters, it was observed that a large number of export relations failed after a few years. The results indicate that the fourth year is critical in trade duration where the average reduction in survivability is at its minimum before reaching an asymptotic relationship. Therefore, contrary to what the classical trade theories suggest, the overall export trade duration of Philippine exports is quite short.

Furthermore, MSMEs account for the greater share in the number of exported products (i.e., count of trade relations). Note that the computed percentage share was based on the number of tariff lines and not from export values. However, there is variation in the composition of the exporters (large or MSMEs) depending on specific partners. For some countries like Malaysia, MSMEs dominated the trade patterns of survivability. In contrast, the findings of the trade pattern with Laos showed a higher number of large firms accounting for trade relationships. Among MSMEs, the medium type accounts for the greatest number of exported products while micro establishments have very negligible exports.

Given these results, there could be a case for government support to be tied up with the critical years of export survivability. As the findings of Rauch and Watson (2003), which identified the processes of establishing trade relations, the support of the Department of Trade and Industry is critical in supporting MSMEs in the first four years of trading internationally. Efforts are vital in assisting firms to reach larger orders either through financing or consolidation with other similar firms that have hurdled the product standards required by buyers. In such fashion, the authors hope that the assistance for MSMEs could be better targeted.

Survival Analysis of Export Relationships of Philippine MSMEs

Several policy implications can be gleaned from the study. Firstly, the findings show that Philippine exports exhibit relatively short trade durations, consistent with the result of Besedes and Prusa's (2006a). The results indicate that the fourth year is critical in the trade duration of Philippine MSME exporters where the average reduction in survivability is at its minimum before reaching an asymptotic relationship. On the basis of percentage share of the number of tariff lines (and not from export values), MSME exporters account for the greater share of the total count of Philippine trade relations. Furthermore, among MSMEs, the medium-sized establishments account for the greatest number of exported products while the corresponding number for the micro establishments is negligible. Given the results, there could be a case for government support for the duration of the critical years of export survivability. Such time-bound assistance can be oriented towards shepherding MSMEs to sustain and scale up their exporting activities by financing or developing their capacity to hurdle international product standards.

Secondly, the survivability analysis can be employed as an additional monitoring mechanism of MSME programs by the government agency tasked to promote MSME development. The existing competitiveness benchmark can be augmented with the inclusion of the survival analysis results. Improvements in export survivability of MSMEs indicate the effectiveness of targeted government programs and policies aimed at facilitating the internationalization of MSMEs.

Lastly, there is scope for further research on the determinants of export survivability. The current study is limited to documenting the pattern or characteristics of the survivability of export relations of MSMEs. Investigating the determinants of the duration of a trade relationship is critical in uncovering the factors that can lead to a more extended survival rate of goods. Future papers on survivability can focus on the determinants of survivability of exported products that survive beyond 4 to 10 years, compared with others that exit after just one year of trading. Additionally, an analysis of the import demand characteristics of the country's FTA partners can be undertaken. This exercise in market intelligence could be useful in crafting policies and marketing programs to guide MSMEs in targeting the needs of FTA markets more precisely and hopefully increase their survival rates.

Another possible study in the future is covering the profile of companies that had exited export markets before reaching four years of trade. Profiling could answer the following questions: How long have they been in business before engaging in export? Why did they abandon their exporting activities? What happens to firms once they exit the export market? Will they close down locally as well? By investigating these questions, policymakers and researchers can identify the situation and determinants of firms that led to their exit from international markets.

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Strategies for Managing Household Water Demand in Carcar City, Cebu, Philippines¹

Serge Jude B. Bargayo and Gerard L. Go²

ABSTRACT

The main drivers for economic development are dependent on water, which provides the basic need for survival and comfort. Water, with its competing uses and economic value, has become a scarce resource, particularly in areas where the population and the economy are thriving. Water usage in developing cities needs to be strategized to meet the growing demand caused by increasing population and business growth. A few studies on household water demand as a basis for demand management have been done for minor cities.

Carcar City, an urban city in southern Cebu, experienced an unparalleled population and economic growth after its cityhood in 2007. This situation put pressure on the Carcar Water District (CWD), the major water provider in the city, to expand its service capacity. Changes in water management has affected households in Carcar City, which comprise the majority of connections served by the CWD.

This study aims to analyze water demand among households in Carcar City. Policy implications for water demand management are drawn from the findings. The multiple regression results from primary data identified average price, household income, some housing attributes, household characteristics, and water conservation behavior variables as statistically significant in explaining demand for water. Hard and soft mechanisms based on the findings are recommended to manage water demand in Carcar City. Price, along with water use restriction policies and public education, can be effective for water demand management, which can be jointly undertaken by the water district and the local government unit.

¹ This paper was drawn from Serge Jude B. Bargayo's master's thesis titled "Water demand among residential household consumers in Carcar City, Cebu: Basis for demand management", with adviser Gerard L. Go, submitted to the School of Business and Economics, University of San Carlos, in February 2020. The authors are grateful to the thesis panel, Mr. Francisco M. Largo, Dr. Elizabeth M. Remedio, and Dr. Julius P. Relampagos, for their valuable insights. The usual disclaimer applies.

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INTRODUCTION

The concept of “water as an economic good” implies that water is a scarce good and has cost. With all its competing uses, water has an economic value. Delivering water to the taps of households requires investments in storage, drinking facilities, and underground distribution networks (Bernardo 2019).

Water supply is finite, limited, extremely changeable, and unsettled. Water is not only essential for life but also for economic development. The target to achieve access to clean water and sanitation for all by 2030, as adopted by the United Nation’s Sustainable Development Goal No. 6, remains a major challenge for world economies (UN-Water 2018). This challenge, however, will become more critical in the future, with the increasing world population and standards of living, changing diets, and the intensifying effects of climate change.

Water usage in a developing city like Carcar in Cebu needs to be strategized because of the increasing population brought about by rapid business growth in the area. Carcar City, a major urban junction in southern Cebu, contributes to the economic growth of the province. Carcar turned from a municipality to a city in 2007. Subsequent to Carcar’s cityhood, it experienced an unparalleled population and economic growth. The city’s population grew from 100,632 to 124,874 in the period between 2007 and 2017. This 24.09-percent increase is equivalent to 2.18-percent average annual growth within the 10-year run.³ Meanwhile, the number of construction activities in the city grew from 130 to 1,049, posing a 706.92-percent growth in 10 years.⁴

More businesses in an area can attract more migrating residents and households. Ongoing urbanization means increasing demand for water, which often results in a water shortage. Trends indicate a continued gap in water demand and supply that creates a tradeoff between quality and equitable distribution of water. There is a growing interest in water demand studies between large and small cities. Recent studies showed that water footprint consumption in large cities was more efficient than in small cities despite the increasing population in large cities (Mahjabin et al. 2018).

This study analyzes water demand among households in Carcar City by determining the factors that affect residential water demand as a basis for effective demand management. It is necessary to better explain how households use water to effectively manage and expand the water system in an area (Nauges and Whittington 2009). Understanding household water demand can advance more aggressive strategies to water demand management in cities. It also makes possible any interventions that bring about long term and substantial reductions in water use (Shan et al. 2015).

Water demand management has gradually found its place in Integrated Water Resource Management (Wang et al. 2009). Water supply management is not suitable because it treats freshwater as a limitless resource and rarely takes full account of the environmental and economic impacts (Frederick 1993). Supply-side management involves policies and activities that increase the availability and obtainability of freshwater.

However, as water service development augments a fixed area of supply, the resource becomes continuously scarce and any use of water can adversely affect its obtainability for other purposes. With this scenario, the management and construction of new facilities can turn into lesser means of adding into the aggregate supply. Thus, the project is plausibly to be of demand management rather than supply management (Frederick 1993).

³ Retrieved from Philippine Statistics Authority (PSA)’s 2015 census.

⁴ Retrieved from the Carcar City Engineering Department.

Carcar Water District

The major water provider in Carcar City is the Carcar Water District (CWD). It is a government-owned or controlled corporation and is under the jurisdiction of the Local Waterworks and Utilities Administration (LWUA). From 2007 to 2017, the demand for connection of potable water in Carcar City increased significantly from 2,985,514 cubic meter (m^3) to 4,549,398 m^3 .⁵ The 52.38-percent rate increase in water supply put pressure on the CWD to expand its capacity to meet the future demand of consumers. The numbers proved that the CWD experienced a faster increase in water consumption than the population growth in the area during Carcar's post-cityhood period.

The existing maximum water supply of the CWD is 194.5 liters per second (lps). This can accommodate a maximum of 120 households per lps or up to 23,340 households. The total number of the CWD's service connections as of June 2018 was 17,062, which translate to 50.89 percent of the total households in Carcar City. To serve 100 percent of the households in the city, the CWD needs to have an available water supply of 279.42 lps, leaving a shortage of 84.92 lps from the existing supply of 194.5 lps. The CWD has developed a master plan to provide enough supply for the city's growing population from 2018 to 2040.⁶ The master plan consists of five new major sourcing projects, which are spread out across 22 years, from the northwestern side (mountaininside) to the western side (going to the town of Barili), and southwestern and southern parts (toward the town of Sibonga) of its area of jurisdiction. The plan consists of eight deep-wells and targets a total of 182 lps, an addition to the existing source supply capacity of 194.5 lps. Once implemented, the eight additional deep-wells will give the CWD a total of 25 sources (6 springs and 19 deep-wells).

Based on the CWD data, water consumers in the city are categorized into residential, government, and commercial. The government is treated as a residential consumer based on the pricing and administrative rules of the LWUA. Water pricing for commercial consumers or businesses in the city is different. However, from the total number of connections of the CWD as of June 2018, commercial consumers covered only 4.98 percent (850 connections) of the 17,062 total connections, while the rest (95.02%) were counted as residential consumers.⁷ This means that residential consumers had a greater impact on the scarcity and other changes on water supply in Carcar City.

Factors affecting water demand

Numerous studies have been conducted to estimate household water demand in developed and developing countries. Empirical water demand studies include price and household income variables as factors affecting water consumption. For other determinants, researchers used several variables (House-Peters and Chang 2011; Bandeira 2013). Explanatory variables depended on the availability of data and its applicability on the location.

Water price or tariff

Price negatively influences the quantity of water use from purchased sources (Arouna and Dabbert 2009). Studies have shown that water demand is price inelastic because water is a basic commodity with fewer substitutes and consumers have low awareness of the water tariff structure. Typically, the proportion of water expenditure to the total household income is small (Arbues et al. 2003).

⁵ Retrieved from the CWD Finance Division's monthly data sheet.

⁶ The master plan was designed by the CWD general manager (GM) and his consultant to meet the future water demand of residents in Carcar City. This was based on the master plan gathered from the GM's office.

⁷ Based on the numbers discussed, this study focused on residential household consumers as they comprised the bulk percentage of water consumers in Carcar City. Also, *barangays* (villages) in the mountainous portion of the city are mostly residential water consumers.

Strategies for Managing Household Water Demand in Carcar City, Cebu, Philippines

Gunatilake et al. (2001) emphasized that the average price of water in Pakistan represented a uniform or flat pricing across any water users regardless of their class, quantity consumed, and the amount paid. In the study of Hoglund (1999) in Sweden, the average price was positive and significant in one of the demand models. Using the average price, the price elasticity of demand was -0.2. The study concluded the importance of increasing the average price than the marginal price if the main or focal objective of taxing water was to reduce water demand due to excessive use.

Socioeconomic factors

In a study of water demand estimation in the United States (US) and Canada by Howe (2005), the results showed that a 100-percent change in the income of a household would lead to a 30-percent increase in the demand for household water. The study also emphasized that knowledge requirement for income elasticity of demand was fitting and appropriate in the formulation of pricing policies. Worthington and Hoffman (2007) pointed out that income through its correlation with education could be a reflective measure of water conservation taken by households by purchasing water-conserving appliances.

Household characteristics

Based on past studies about water demand, household characteristics like the size of household and the number of senior and minor members affect water demand. Arbues and Villanua (2006) proved that household size was statistically significant in a study of water demand estimation in Zaragoza, Spain. Larger households also had higher water consumption (Arouna and Dabbert 2009). In the study of Xayavong et al. (2008) in Perth, Western Australia, the coefficient of household members with ages over 65 years old was negative, while those with ages under 19 had a positive estimated coefficient. Younger household members were likely to consume more water with more frequency in laundering and intensive water use due to outdoor leisure activities.

Housing attributes

Housing attributes, which refer to the features of houses and water connection areas, are expected to impact water demand. For instance, lot area contributed to residential water demand in Perth, Western Australia (Xayavong et al. 2008). Water facilities like the number of faucets in a household posted positive significance in all three econometric models in the study on water demand of rural communities in Argentina (Bachrach and Vaughan 1994). The studies of Gunatilake et al. (2001) in Sri Lanka, and Sadr et al. (2016) in Jaipur, India, explicitly emphasized that the number and kind of toilets and showers had the highest proportion of water consumption. Many studies used home gardens as an exogenous variable in determining household water demand since plants need water to blossom. Binet et al. (2005) found in their study in French Island La Reunion that gardening positively influenced water consumption. The majority of households that had plants and gardens used sprinklers. In the same study of Gunatilake et al. (2001), a household having cottage industry that used water at home was found to have a statistically significant positive effect on water demand in Kandy municipality, Sri Lanka.

Water use behavior

In solving water scarcity, water conservation behavior had come out as important information and tool (Adams 2014). Carmela and Damiano (2016) used large data set from the Italian Central Statistics Office and established that variables on environmental concerns were significant in explaining water demand with a different sign. Respondents who had greater concerns for climate change, pollution, and resource exhaustion had a greater likelihood to conserve water, and alteration of environmental heritage

had less likelihood in conserving water. These findings were similar to the study of Adams (2014) in the US that pro-environmental concern variables (energy, recycling, and willingness to sacrifice for the environment) had significant correlations with water conservation attitudes.

Policy implications based on studies

Policymakers play an essential role in formulating policies that can meet the targets in managing water demand (Bryx and Bromberg 2009). Leaders also have a vital role in enhancing demand management and boosting the performance of water utilities (Araral and Wang 2013). Changing societal behavior in conserving daily water use should be the main goal in crafting water policies (Tortajada and Joshi 2013). Many studies have shown the positive impacts of implementing such policies.

Water demand management involves hard and soft mechanism programs. Hard mechanisms can be categorized as pricing, restrictions, ordinances, and policies while soft mechanisms include education campaign, public awareness, and public consultations, which provide the stakeholders' involvement in water demand management. Hard mechanisms drive and direct consumers to control, and as much as possible, minimize water consumption, while soft mechanisms aim to change the societal behavior in conserving daily water use by directly influencing the household members' attitudes and behaviors (Tortajada and Joshi 2013).

Market and water prices are highly effective mechanisms of water demand allocation when successfully implemented (Abansi et al. 2018). Increasing block tariffs are commonly used in urban areas (Araral and Wang 2013). Consumers adjust their water consumption in response to marginal prices. The water tariffs set by the LWUA are based on economic valuation balancing affordability, conservation, and sustainability (Abansi et al. 2018).

In managing water demand in Southeast Asia, utilities adopt moral suasion and educate the public on water conservation. The methods often used in moral suasion are conversing with concessionaires on marginal cost information, comparing past consumptions with national averages, and discussing block-tariff details. Particularly in Manila, Philippines, which has to deal with a large number of informal settlements, water demand has been reduced effectively through community-based conservation programs (Araral and Wang 2013).

Xayavong et al. (2008) had some critical findings for water policies in Perth, Western Australia. While the government was allowed to influence the operational efficiency of the water district, such as having rebates to consumers in having the approved water-saving devices, there were still more rooms for new policies. The nonprice controls, such as the sprinkler restriction and the “Waterwise Rebate Programme” resulted in water conservation advocacies, and the findings also suggested that price could be used as an instrument to manage water demand.

Another technical mechanism aimed at freeing up large quantities of water is the use of greywater or wastewater from sinks, baths, and washing machines. Wastewater from these sources accounts for 60 percent of water outflow from homes that usually go directly to the storm drain instead of being reused in gardens and farms (Abansi et al. 2018).

Olmstead and Stavins (2008) found that for the same level of aggregate demand reduction, as imposed by the two-day-per-week outdoor watering restriction, the establishment of a market-clearing drought price in cities like Atlanta and Raleigh would result in welfare gains in the US and Canada. In Israel, there have been major changes in policy implementation on water demand (Katz 2013). Policymakers have implemented a series of policies to limit the use of water, such as washing vehicles using a water bucket instead of a hose, requiring newly constructed houses to have dual-flow and low-flow toilets, distributing water-saving faucets, and raising public awareness of water shortages. This campaign reached a high level and was incorporated into the school curriculum by drawing

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significant media attention after it publicized the water levels in the Sea of Galilee. In their research project, Howarth and Butler (2004) cited that the price and nonprice initiatives of Copenhagen Energy were responsible for water demand and distribution in Copenhagen, Denmark.

The human behavior aspect of water includes understanding how consumers use water and their consciousness and knowledge of water and its conservation. The Philippine Clean Water Act of 2004 promotes policies toward greater awareness of water and the environment. It includes the provision of “due public consultation” and the inclusion of individuals and civil society among the recipients of incentives and rewards in water management (Abansi et al. 2018). Based on research and industry experience, the proposed measures and the current water supply situation determine the public's acceptability of water demand management policies.

THEORETICAL AND CONCEPTUAL FRAMEWORK

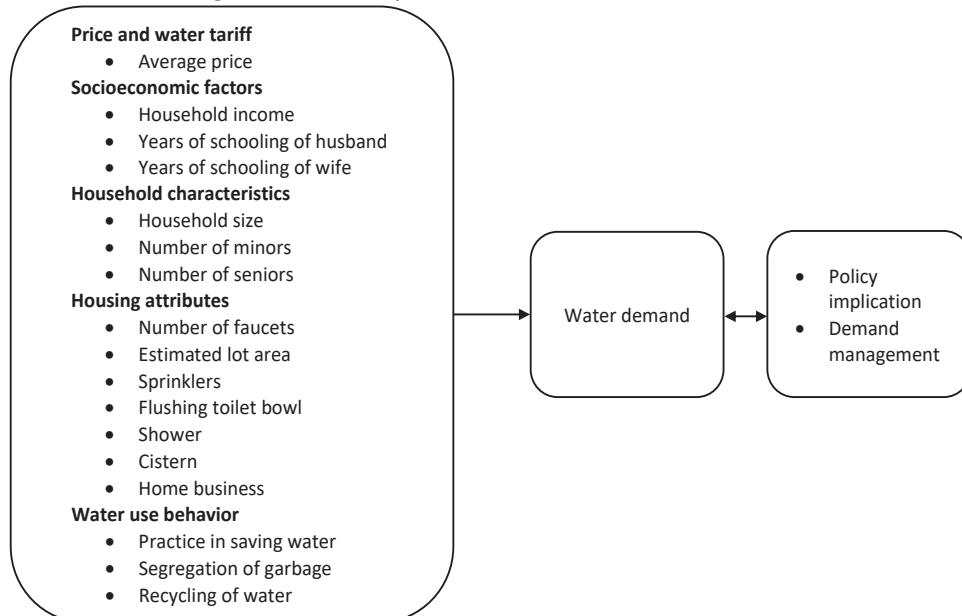
The microeconomic theory states that households tend to satisfy their needs and wants by consuming goods and services. Households decide to consume a certain level of water consumption (q_1) that satisfies their utility to produce water services and the rest of their budget to spend on other goods and service (q_2). The Marshallian demand for water is given by:

$$\ln q_1 = \beta_1 \ln P_1 + \sum \gamma_{ik} \ln Z_k$$

where P_1 is the price of water and Z_k represents other control variables like household size and income, among others. With the use of natural logarithm (ln), the resulting coefficients of the demand equation provide a percentage change measurement of the relevant variable or elasticity. Estimates for price and income elasticity of demand were obtained from the regression.

A conceptual framework for analyzing the factors affecting water demand as the basis for water demand management is illustrated in Figure 1.

Figure 1. Schematic diagram of the study



Source: Authors' compilation

DATA

The study used primary data collected by the authors. The research environment was Carcar City, which had a total population of 119,664 in 2017. Carcar City recorded a population of 33,530 households as of June 2018 based on data from the Commercial Division of the CWD. A random sample of 398 households distributed among the 15 barangays was interviewed. The 95-percent confidence level or the ±5-percent margin of error was used to calculate the sample size. The household head or spouse was interviewed using a structured survey questionnaire. Data on water consumption and the amount paid were gathered from the CWD for respondents who were also its customers. Out of the 398 sampled households, 86.43 percent or 344 households sourced their water from the CWD. Other sources of water included water associations, public artesian well, and vended water.

Table 1 presents the descriptive statistics of the variables gathered in the study that were used in the regression analysis for households with water connection from the CWD.

Table 1. Summary of descriptive statistics of variables used in multiple regression, CWD households, 2019

Variables	Variable	(1)	(2)	(3)	(4)
	Code	Mean	Standard Deviation	Minimum	Maximum
Water consumption (m ³)	Q _d	19.76	10.79	2	77.33
Household income	HHI	55,324	57,312	3,000	350,000
Average price	AP	17.53	5.89	2.26	73
Household size	HHS	5.26	2.07	1	12
Average household age	AHA	32	10.88	13	87
Number of minors	AGEM	1.83	1.26	0	7
Number of seniors	AGES	0.53	0.83	0	3
Estimated lot area	LA	189.3	188.4	40	1,900
Total number of faucets	F	4.17	1.67	1	9
Sprinklers	GS	0.56	0.5	0	1
Rainwater tank or cistern	RC	0.21	0.41	0	1
Home business	HB	0.26	0.44	0	1
Years of schooling of husband	HE	13.1	2.55	0	18
Practice in saving water	SW	0.55	0.5	0	1
Recycling of water	RW	0.4	0.49	0	1

m³ = cubic meter

Source: Authors' compilation

The lowest amount was PHP 2.26 per m³ and the highest was PHP 73 per m³. The mean monthly household income was PHP 55,324, with a standard deviation of PHP 57,312. The average number of household members living in one roof was 5.2. For education, which was measured by years of schooling, the husband had the mean years of schooling of 13, signifying that he had reached third year in college.

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The regression analysis considered several categorical or dummy variables. These variables included sprinklers, rainwater tank or cistern, home business, practices in saving water, and recycling of water. Fifty-six percent of the households connected with the CWD used sprinklers while only 21 percent had rainwater or cistern tank. Meanwhile, 26 percent of the households had business conducted at home. More than half of the households practiced saving water, such as using water from the bath to flush the toilet bowl or from washing kitchen utensils to water plants, while 40 percent of the households recycled water. Recycling of water was typically done by using water from cooking to water the plants or from washing utensils to flush the toilet bowl, among others.

Estimation

Multiple regression was performed using IBM-SPSS (Statistical Package for the Social Sciences) to estimate the factors affecting water demand as revealed by the related studies. The econometric model of this study is given by:

$$\ln Q_d = \beta_0 + \beta_1 \ln P + \beta_2 \ln HHI + \beta_3 \ln HHS + \beta_4 AGEM + \beta_5 AGES + \beta_6 \ln LA + \beta_7 \ln F + \beta_8 HE + \beta_9 WE + \beta_{10} GS + \beta_{11} FT + \beta_{12} SHR + \beta_{13} RC + \beta_{14} HB + \beta_{15} SW + \beta_{16} SG + \beta_{17} RW + \mu \text{ (error term)}$$

RESULTS AND DISCUSSION

Table 2 shows the regression results of the three specifications. The models used different combinations of variables, taking into consideration the possibility of multicollinearity problem, mean square error (MSE), adjusted R², and F statistic. Model A had the smallest MSE. In terms of adjusted R², the values were 78–79 percent for the three model specifications. In addition, the F-values of the three models were significant. F-statistic is the ratio of two variances and the test for overall significance of the regression.

Table 2. Multiple linear regression results of residential water demand by the Carcar Water District, Carcar City, 2019

Variables (Code)	Model A	Model B	Model C
(Constant)	1.3 (0.284)	1.316 (0.263)	1.446 (0.268)
Average price (ln AP)	-0.226** (0.049)	-0.228** (0.048)	-0.237** (0.049)
Average household income (ln HHI)	0.071** (0.026)	0.103** (0.024)	0.081** (0.025)
Household size (ln HHS)	0.574** (0.048)	0.615** (0.047)	0.575** (0.048)
Estimated lot area (ln LA)	0.057* (0.025)		0.0002** (0.00007)
Total number of faucets (ln F)	0.141** (0.053)		0.145** (0.052)
Number of minors (AGEM)	0.011 (0.035)		0.013 (0.033)

Table 2. (continuation)

Variables (Code)	Model A	Model B	Model C
Number of seniors (AGES)	-0.064** (0.019)		-0.056** (0.018)
Year of schooling of husband (HE)	-0.041 (0.03)	-0.027 (0.029)	
Year of schooling of wife (WE)			-0.014 (0.031)
Sprinklers (GS)	0.160** (0.037)	0.207** (0.036)	0.179** (0.039)
Flushing toilet bowl (FT)		0.032 (0.03)	
Shower (SHR)		0.022 (0.034)	0.021 (0.033)
Rainwater tank or cistern (RC)	0.087* (0.039)	-0.127** (0.039)	-0.094* (0.039)
Home business (HB)	0.175** (0.036)	0.213** (0.036)	0.184** (0.035)
Practice of saving water (SW)	-0.080** (0.042)		
Segregation of garbage (SG)		0.069* (0.035)	
Recycling of water (RW)	-0.087* (0.038)	-0.158** (0.036)	-0.121** (0.033)
N	344	344	344
R- square	0.796	0.783	0.796
Adjusted R- square	0.789	0.778	0.79
Mean square	7.415	10.026	8.154
F-value	117.705	150.835	129.694
Durbin-Watson	1.857	1.888	1.846

* and ** indicate significance at 5% and 1% level, respectively

Standard errors are reported in parenthesis

Dependent variable: water demand (ln Q)

Dummy variables are GS, FT, SHR, RC, HB, SW, SG, and RW

Source: Authors' computation

Consistent with the theory of demand, the quantity demanded for water varies inversely with price and directly with household income. Both price and household income are statistically significant at 1-percent and 5-percent levels in the three specifications. In Model A, the demand for water is price inelastic (-0.226), signifying that its quantity demanded is less responsive or not

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sensitive to price changes. Water demand, as in other necessities, is inelastic. Estimates in Model A suggest that a 1-percent increase in price has resulted in 0.226-percent decrease in quantity demanded for water. Using the average price, Tan (2020) estimated the price elasticity of water demand to be -0.38 in Pandi, a second-class municipality in Bulacan that serves as a relocation site. The price elasticity of demand is comparable to the findings of a study in Sweden by Hoglund (1999), which obtained a price elasticity of -0.20 using the average price. On the other hand, the income elasticity of demand for water is 0.071, which means that a 1-percent increase in income results in 0.07-percent increase in demand for water. Household water demand in Bontoc, Mountain Province, increases as household income increases in a recent study by Marrero and Marrero (2018).

Household size and the number of seniors proved to be statistically significant in explaining water demand. Water consumption tends to increase with the number of family members per family unit. The results reveal that a 10-percent increase in household size raises water demand by at least 5 percent. In contrast, households with more seniors had lower demand for water. On average, a one-count increase in the number of seniors reduces the demand for water by 5–6 percent. This finding supported the study in Perth, Western Australia, by Xayavong et al. (2008) that seniors had a negative impact on water demand.

Among the housing attribute variables, the estimated lot area; total number of faucets, sprinklers, rainwater tank or cistern; and presence of home business have a statistically significant effect on water demand. Results indicate that on average, a 10-percent increase in the housing area is significantly associated with an increase in water consumption by at most 5.7 percent.

A positive coefficient for the number of faucets variable indicates that water consumption goes up with more faucets in the household. Estimates suggest that a 10-percent increase in the number of faucets also raises water demand by 1.4 percent. Also, a one-unit increase in the number of sprinklers increases water demand by at least 16 percent. Binet et al. (2005) pointed out that outdoor water positively influenced water consumption especially with the use of sprinklers. In contrast, water tank or cistern has opposing effects depending on the model specification. The result in Model A points out that having a rainwater tank or cistern resulted in lower water demand among households in Carcar City. This result validates that a household that saves rainwater in a cistern demands less water from the service provider as they tend to use this water for flushing and cleaning purposes. This finding confirmed the water demand study in Katerini, Greece, that a household that used rainwater had decreased their water consumption from the local water provider and supported the campaign on water conservation (Aravidis 2007).

Finally, having a home business raises water demand by at least 17 percent. The empirical result of the presence of business at home also supported previous findings that having business at home had positive effect on water demand.

The dummy variables that capture water use or conservation behaviors are statistically significant in explaining demand. The negative signs of the dummy variables—recycling of water and the practice of saving water—indicate that the households adopting these behaviors consume less water. Water conservation behavior turned out to be an important factor in solving water scarcity problems (Adams 2014).

Both the number of minors and the years of schooling for husband have the expected signs but are not statistically significant. The negative sign for the coefficient for husband's years of schooling indicated that a household whose husband has a higher education tends to save or consume less water.

Tests for normality, heteroscedasticity, and multicollinearity were conducted to check the assumptions of the classical linear regression model. To check for the normality of the regression, the normal P-P plot standardized residual was done. The result showed that there were no drastic deviations of data points that follow the normal (diagonal) line. To check for the heteroscedasticity, a scatter plot on

SPSS was performed. The problem of heteroscedasticity was not present where a cone or fan shape in the data was not observed. The variance inflation factor (VIF) was used to check for multicollinearity. None of the VIF values of the predictors was above 10.00 and all were below 2.7, which are the best-case values.

POLICY IMPLICATIONS

From the regression results, water demand is price inelastic. Even if the quantity demanded for water among consumers is less responsive to price changes, price can be used by the CWD to manage demand. A price increase is also a signal function, making people aware that water is limited and valuable and therefore encourage water conservation (Zhong and Mol 2010). If the water district sets a target of 5-percent decrease in quantity demanded for water, price increase will be 22 percent, given the price elasticity of demand of -0.226. The average price paid per m³ will be PHP 21.39. The feasibility of this price increase is discussed below.

The CWD follows the increasing block tariff (IBT) scheme under the regulation of the LWUA and is classified under Category B. The IBT is designed for water demand management that gives consumers a higher price for every different block. Comparing the CWD's pricing with other water districts belonging to Category C, like the Bayawan Water District (BAWAD) in Negros Oriental, the CWD's tariff rate is lower even if it belongs to a higher category.⁸ BAWAD has a minimum rate of PHP 230 for the first 10 m³ and the average consumption is only about 15 m³. Thus, the CWD's tariff at only PHP 146 for the first 10 m³ consumption is still cheap among other water districts in the country.⁹

Table 3. Water rates in Region 7, as of 2018

Water district	Service connection	Minimum rate (PHP)
Dalaguete	5,405	101
Tabuelan	3,860	120
Ayungan	3,205	125
Clarin	1,188	132
Tanjay	6,736	139
Carcar	17,527	146
Metro Cebu	190,505	152
Metro Siquijor	2,382	160
Sibulan	8,803	165
Balamban	12,769	170
Talibon	2,925	175
Bogo	9,145	201
Bayawan	5,223	230

PHP = Philippine peso

Source: Local Water Utilities Administration (2018)

As of 2018, the CWD's minimum water fee ranks 6th among the 13 lowest water districts in the region and is next to Tanjay City, Negros Oriental, which belongs to Category C.

⁸ See Table 3 for the CWD's current residential rate.

⁹ See <https://lwua.gov.ph/water-districts/categories-credit-classification/> for the detailed rates of all water districts in every region.

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Tanjay City's total number of connections is only 6,736, compared with the CWD's 17,527 connections. The LWUA has mandated the local water districts that the households' water expenditure must not go beyond 5 percent of the average monthly household income of the low-income group, which was at PHP 9,296 as of 2011. Table 4 shows the CWD'S current water tariff rates. The PHP 146 rate for the first block is 1.57 percent of the average monthly family income. The CWD's current pricing at PHP 146 for the first block is 1.57 percent of the average monthly family income.¹⁰ In 2015, the average family income of the lowest income group (under PHP 40,000) in Region 7 as reported by the Philippine Statistics Authority was PHP 12,762 per month. Therefore, the CWD's existing tariff rate for the first block is only 1.14 percent of this average income. A household in Carcar City will only need 15.6 m³ of water monthly based on world observation that 50 to 100 liters of water per day is needed by every person to live and ensure that his basic needs are met in a comfortable way.¹¹ The calculated 15.6 m³ is lower than the current average of 19.76 m³.

Table 4. Carcar Water District's increasing block tariff-residential, Carcar City, 2019

Block	Cubic meter (m ³)	Rate (PHP)
First	0–10	146 minimum
Second	10.01–20	15.60/m ³
Third	20.01–30	18.20/m ³
Fourth	30.01–40	21.20/m ³
Fifth	40.01–up	24.70/m ³

m³ = cubic meter; PHP = Philippine peso

Source: CWD Commercial Division (2013)

Holding household income constant, the monthly household water expenditure from the price increase of 22 percent will be PHP 401.47, which is 0.73 percent of the average monthly household income (PHP 55,324) in this study, and 3.15 percent of the average monthly household income of low-income group in the region (PHP 12,762) under the PHP 7,890 to PHP 15,780 income bracket. In addition, the price increase conforms to the LWUA's conditions for price increase to be not more than 60 percent from the current rate and not more than 5 percent of the average monthly family income of the low-income group.

Local leaders should be proactive in requiring a rainwater cistern when granting building permits to new housing constructions. Rainwater can be used for cleaning the household area, washing vehicles, watering plants and driveways, as an alternative in directly using the treated water from the CWD.

In terms of water conservation behaviors, households that save and recycle water also reduce their monthly water consumption. Under the soft mechanisms, public education campaign on water conservation is an essential aspect of demand management in the sense of altering the behavior of individual water consumers in a massive scale (Bryx and Bromberg 2009). Engaging the public and other stakeholders rather than pushing the public to conserve water can have longer and sustainable effects on demand management. Moral suasion can also be adopted to influence the behavior of household members by relaying the negative effects of having water resources run dry.

¹⁰ This information was gathered during the interview with the Officer-in-Charge of the CWD Finance Division.

¹¹ See https://www.un.org/waterforlifedecade/pdf/human_right_to_water_and_sanitation_media_brief.pdf for detailed water needs.

Public education can be undertaken jointly by the CWD and the local government of Carcar City. The CWD can include discussions on block tariff pricing, effects of water shortage and drought, practices in saving and recycling of water, and introduction of greywater usage. Through public consultations, people become more engaged because they can voice out their ideas and feel that they are part of community programs. Araral and Wang (2013) found that raising public awareness, particularly in Manila, that has to deal with large informal settlers, was effective in reducing water demand.

With the statistically significant results of variables like having sprinklers and cistern tanks in the regression analysis, the local government unit (LGU) of Carcar can initiate steps in managing water demand in the city. The Carcar LGU should undertake a systematic water educational program and not only occasional campaigns by prompting end-users to conserve water even if there is no drought. This campaign should focus on banning the use of hose (sprinklers) for pavements and drive paths, washing cars, and watering plants in households. Specifically, this educational program can emphasize hosing/sprinkling (using the water district's disinfected and filtered water) of the household's paved areas and restricting hours on watering plants by two days per week between 6 am and 8 am (in order to shun from loss of evaporation). The policies of a two-day-per-week outdoor watering restriction and car washing using buckets have been successfully implemented in other countries (Olmstead and Stavins 2008). The Carcar LGU can focus on using hoses/sprinklers with the CWD's disinfected/filtered water since there are costs in extracting and disinfecting.

The convenience of sprinkling increases water consumption with a positive result in water demand in this study. To have a sustainable effect on water demand management, the CWD should regularly coordinate with the LGU on the effectiveness of every action in water demand management.

CONCLUSION

The water pricing of the CWD serves a good ground for water demand management, given that the ratio of the average monthly water expenditure to the average monthly household income is very low at 0.67 percent. Compared with other water districts in the region, the current CWD tariff is cheap. Also, 36.68 percent of the sample households belonged to the middle-middle income group or PHP 31,560.01 to PHP 78,900 income range based on the income classification of Albert et al. (2018).

The significant factors affecting water demand supported the findings of the related literature cited in this paper. Price and nonprice programs can be hinged from the significant variables in the multiple regression analysis. Like other cities that have successfully adopted both the hard and soft mechanism, Carcar City should be able to do the same.

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