

Visualizing Relief Funds Flow for the Great East Japan Earthquake: Trial Study to Construct an Inflow and Outflow Matrix Model

Takako NAKAJIMA*, Hideaki BABA**, Yu ISHIDA***

The Great East Japan Earthquake in 2011 caused unprecedented damage. During this time, several nonprofit organizations conducted voluntary emergency support activities in damaged areas. Although there was a magnificent giving, donations to nonprofit organizations' disaster relief funds still seemed to be low. As streams of donations are very complex, people cannot acquire enough information about their donations' use by nonprofit organizations. Moreover, a primary method for grasping the framework or streams of donations has not yet been clearly determined. To examine these problems, we aim to aggregate the flow of disaster relief funds by constructing a matrix model of the inflows and outflows of relief funds at various disaster support organizations. Throughout this process, we discuss statistical methods for accounting for the various relief fund streams. Using this matrix model, we found that donations given by people amounted to over 675 billion yen (8.4 billion U.S. dollars), and each had a different stream leading to final use.

Keywords: disaster relief, disaster support, donation, fundraising, nonprofit organization

*Research fellow, Osaka School of International Public Policy, Osaka University, Japan Society for the Promotion of Science

**Professor, Faculty of Business and Commerce, Kansai University

*** Associate Professor, School of Project Design, Miyagi University

1. Introduction

On March 11, 2011, the Great East Japan Earthquake, a large earthquake and the subsequent tsunami affected a widespread area of Northeast Japan. Just after the disaster, over 600 billion yen (7.5 billion U.S. dollars)¹⁾ was donated both in Japan and worldwide for the disaster relief (Japan Fundraising Association 2012).

In Japan, these disaster relief donations were delivered to the disaster-affected victims through the local government or civil-based organizations providing various levels of support. Since the previous large earthquake in 1995, the Great Hanshin-Awaji Earthquake, disaster support activities by volunteer organizations have been recognized as playing an important role in “disaster relief support”. Therefore, during the Great East Japan Earthquake, as compared to the case of the Great Hanshin-Awaji Earthquake, a large amount of support funds for civil-based nonprofit organizations’ disaster support activities were donated such as from the Central Community Chest of Japan’s (CCCJ) “The Disaster Relief Volunteer & NPO Support Fund (VolSup)”. Additionally, as the Director General for Disaster Management (2013) has shown, the earlier the disaster relief support was actively provided, disaster-affected victims found rebuilding more affordable, so quick support activities were more highly demanded.

However, as the report of the Nippon Foundation (2012) has indicated, many civil-based nonprofit organizations faced financial difficulties at the beginning of their disaster support activities for the Great East Japan Earthquake. Thus, managing financial matters for such activities is a crucial issue for developing civil-based nonprofit organizations.

1.1. Disaster relief donation in Japan: *Gienkin* and *Shienkin*

There are two main factors explaining the financial problems in civil-based nonprofit organizations.

First, in Japan, disaster relief donations are mostly donated to the disaster relief fund called *Gienkin* (relief donation) in Japanese. These donations are fairly and equally distributed among disaster victims using cash (Hayase 2013, Cabinet Office 2014a). Indeed, these cash donations are traditionally held by the Japanese civil society. Donations made to *Gienkin* are collected nationwide by media organizations and official government-appointed organizations such as the Japanese

1) The yen’s yearly average exchange rates of 2011 and 2012 against the U.S. dollar are 79.84 and 79.82. Thus, we approximately convert the yen into the U.S. dollar at the rate of 80.

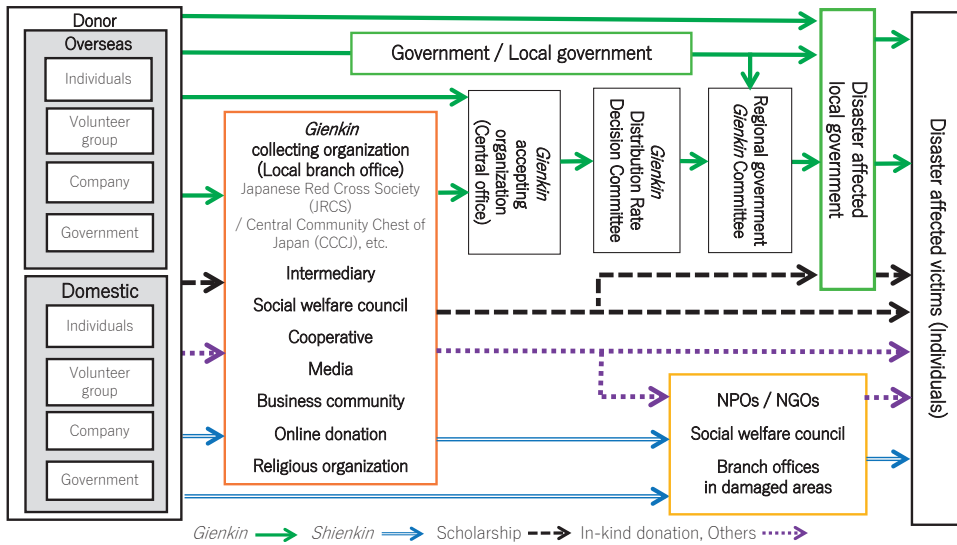


Figure 1: Flow chart of disaster relief donations in Japan

Source: Nakajima (2014), translated by the authors.

Red Cross Society (JRCS) or the Central Community Chest of Japan (CCCJ). The *Gienkin* disaster relief system is believed to have been started in 1885 for assisting the victims of the flood disaster caused by the Yodo River in Osaka and was then widely used all over Japan (Kitahara 2011). The *Gienkin* distribution for individuals is officially decided by the *Gienkin* Distribution Rate Decision Committee. Funds are then distributed to the victims through the local government of the disaster-affected area. This system is deeply rooted in Japanese cultural identities as a direct donation tool for disaster assistance (Figure 1).

In Japan, donations for civil-based disaster support activities are called *Shienkin* (assistance money) and are distinct from *Gienkin*. *Shienkin* is seemingly in the same roles as the disaster relief donation in other countries. However, as *Gienkin* is well known as the main disaster relief donation for the Japanese, it becomes difficult for *Shienkin* funds to collect donations as an indirect assistant to donate for assisting the civil-based disaster support activities that are conducted by nonprofit organizations. Moreover, many civil-based organizations not only accept cash donations but also various types of non-monetary, in-kind, donations such as food, clothes, medical supplies and other materials necessary for relief support activities. Figure 1 shows how complex these funding streams are that makes it difficult to grasp how much or how the donations are collected and used for the disaster relief (Nakajima 2014).

Second, the flow of disaster relief donations is too complex to be trustworthy for donors. It is hard to determine whether donations for *Shienkin* are appropriately used for assistance activities and this leads to less transparency in *Shienkin* in contrast to the distribution flow of donations for *Gienkin* which seem clear since the donations are being equally distributed to the victims in cash.

This issue potentially causes inefficiency in the information that people require. *Gienkin* requires fairness and equality in their processes of cash distribution being conducted by the government. So, the information, such as the distribution process or transfer of the donated amount to disaster-affected local governments, is regularly disclosed to the public through related organizations and ministries.

As Yamauchi (2014) discusses, *Gienkin* is effective as long as it supports rebuilding daily life. However, the distribution takes much time until the money reaches the individual victims. Moreover, the distribution amount is just equally decided for the disaster-affected levels for each local government's administrative area, not for individual's affected level.

In contrast, though *Shienkin*, which is used for the specific purpose of support by the civil-based organizations, does not always have fairness or equality for people, it allows them to provide their support activities quickly along with the various needs of the locals, such as care for children or the elderly, or by distributing in-kind assistance with food or medical assistance.

1.2. Research objectives

While previous studies contribute to illustrating the characteristics of Japanese disaster relief donations, *Gienkin* and *Shienkin* denote how and who has provided donations to these respective funds. For *Gienkin*, we can follow the latest information on donation flow and distributing conditions that is disclosed by the government's website as both the *Gienkin* distribution committee as well as the governments receiving the donations are obligated to disclose their distribution schemes to the public, or, in other words, their outflow stream. This is because the government should always be fair and transparent to the victims, donors or people.

Nevertheless, some issues have not been clearly discussed. How many donations are made and who are the donors? Where are the donations coming from and how and what are they used for? The information on *Gienkin* disclosed by the government only reveals information about the total amount received without an explanation of the details on who donated it, or, in other words, their inflow stream. Meanwhile, as the information on the donation flow of the *Gienkin* has

not been sufficiently explained by the voluntary disclosure of *Gienkin* accepting organizations, it mainly relies on the government's disclosure for *Gienkin* how the donations are acquired or what they are used for.

There is no administrative obligation for the disaster donation accepting organizations to disclose the financial details as far as they are legally accountable on annual financial statements. This accounting environment allows government and disaster relief donation accepting organizations to provide information on *Gienkin* without a unified format to the public. Moreover, for *Shienkin*, which is not under governmental observation, there is no data to understand their donation inflows and outflows, including who donates to whom or what the donations are used for.

So far, it seems that no efficient methodology has discussed how to quantitatively discuss disaster donation efforts in support activities by civil-based organizations due to the complex environment of donation flows. In this study, we try to establish a methodology so as to clarify disaster relief funds and visualize the role of civil-based organizations in disaster support activities by using the disaster relief funds donated by people. To establish a data collection methodology for disaster support efforts, we quantitatively systematize the major disaster relief support for the Great East Japan Earthquake so as to accumulate the amount of funds collected even from both domestic and foreign donors. For the quantitative systematization, we try to create a “Matrix model of the inflow and outflow of relief funds” to explain the dual stream of the disaster relief funds.

2. Data collection and analysis methodology

Various methodologies were applied for discussing disaster relief fund streams. The Japan Fundraising Association (2012) integrated the total donations for the JRCS, CCCJ, and other organizations to discuss the major donation flow for the Great East Japan Earthquake. For overseas disaster relief support, the International Development Center of Japan (2013) conducted comprehensive research to estimate the total amount collected for disaster support by individuals and organizations in human resource (in-kind and cash) that were donated by other nations, international organizations, NGOs, private companies, grant foundations, and religious organizations. Moreover, the Japan Center for International Exchange (2013) reported that 712 million U.S. dollars were collected in the United States, which is the highest donation that American people ever had for the disaster assistance for overseas developed countries.

Other surveys were conducted within particular sectors. The Japan Business

Federation (*KEIDANREN*) (2012) surveyed the assistance received from the business sector. Chugai Nippou (2013) and Okamoto (2014) researched disaster assistance received from religious organizations. At the organization level, Hayase (2013) focused on disaster relief funds donated by intermediaries, such as the Nippon Foundation and the Japan Platform, while Tanaka (2011) discussed the donations and disaster assistance received from civil-based organizations referring to cases by NPOs, such as the Association for Aid and Relief (AAR), the World Vision Japan, and the Japan Civil Network for Disaster Relief in the East Japan (JCN). All these sectors immediately provided disaster assistance after the earthquake occurred. Additionally, Okamoto (2012) tried to estimate the amount of major disaster relief funds so as to widely correct documented records on assistance activities by NPOs, NGOs, private companies, cooperatives, and religious organizations.

For fundraising analysis, the Cabinet Office (2014b) and Sakurai (2013) conducted important discussions on inflows, considering how civil-based organizations raised funds for their support activities. Following the Cabinet Office (2014b) findings, the civil-based organizations raised funds from various resources, not only from donations from outside but also from private funds. Sakurai (2013) shows some cases in which relatively new fundraising tools, such as through collective funds, were used.

So far, these studies have mainly discussed relief funds in particular fields by individuals and organizations. This might be insufficient to quantitatively systematize assistance levels. At this point, Nakajima (2014) tried to summarize relief donation flows from two sides such as the inflow and outflow streams in disaster relief funds by using the information on major disaster relief funds available from various civil-based organizations. In this paper, we developed the methodology from Nakajima (2014). The references have been extensively updated from Nakajima (2014) by using the latest information disclosed in individual annual reports and websites. We also try to aggregate the flow of disaster relief funds by constructing an original matrix model of the inflow and outflow of relief funds, with the details of relief funds from various disaster support organizations.

Though no disaster relief funds have been statistically analyzed, the methodology in this study should help researchers aggregate and understand the picture of relief funds for great disasters. Table 1 lists data sources referred to in this paper. These have been disclosed publicly and voluntarily by individual organizations, and as a result, most of the data collected was as of March 2012, while some data is available on another date. In this study, the authors use not only the

balance of payments on each organization voluntarily disclosed but also the other data available such as activity reports as additional references. For summarizing, the authors recount the amount of the donation by using the additional data, specific support contents and the balance of payment breakdowns, therefore, some numerical values may be different with each published article at the individual organizations.

3. Matrix model of the inflow and outflow of relief funds

In this section, based on the public information of each group shown in Table 1, we state the process of creating a matrix model that shows the flow of relief funds related to the Great East Japan Earthquake. However, the naming or method of classification of relief funds is different depending on the organization. Therefore, we tried to extract and re-aggregate data from materials collected so that they can be commonly understood as much as possible, thereby explaining the contribution of donor source (inflow) and the flow of the use of the destination (outflow) such as distribution to victims or private organizations' support activities.

As a result, a relief funds matrix model such as that shown in Table 2 has been created. In the following, we describe the information obtained from the method of counting the inflow and outflow in the process.

3.1. Inflows

Disaster relief funds are mainly donated in the following categories: (1) overseas, (2) individuals, (3) private companies, and (4) co-workers. Additionally, various foundations and private companies add amounts to these collected donations from (5) private funds; and (6) other donations are made by accepting subsidies or support funds from other organizations. Many donations are not only made in cash but also in kind. We calculated these in-kind donations with cash donations based on the cash based amount and they are shown below the line of each number in Table 2²⁾.

2) The in-kind donations, such as goods or services, are not a form of monetary donation. They do not constitute direct assistance funds. However, there is a case where a relatively large amount through goods and services needed in the affected areas was donated. Therefore, in-kind donations are included in the aggregation as to replace the monetary based amount only if they can be converted into the case mentioned before.

Table 1: List of data sources of donations for the Great East Japan Earthquake

Organization	Fund / Research Title	Data	Reference
Japanese Red Cross Society, Central Community Chest of Japan	Relief and Recovery Operation Program	2011/6/30	Relief and Recovery Operation Program
	Japan Earthquake & Tsunami	2013/5/22	Japan Earthquake & Tsunami
	The Great East Japan Earthquake International Donation	2011/3/16 -2012/3/31	Statement of Income and Expenditure of the Japanese Red Cross Society for the Great East Japan Earthquake International Donation from 16 March 2011 to 31 March 2012
	The Great East Japan Earthquake Kuwait Donations	2011/9/28 -2012/3/31	Statement of Cash Receipts and Disbursements of the Japanese Red Cross Society for the Great East Japan Earthquake Kuwait Donations from 28 September 2011 to 31 March 2012
	The Disaster Relief Volunteer & NFO Support Fund (VolSup)	2012/3/31	Review of Activities 2011
	Reserve Fund for Disasters	2012/3/31	
	The Disaster Relief Fund for Victims (<i>Gienkin</i>)	2013/6/12	Situation of Remittance of Donation Cabinet Office website develops the details. (Japanese only)
	Japan NGO Earthquake Relief and Recovery Fund	2012/3/29	Civil Society Monitor, March 2012
	Bain Capital Japan Disaster Relief Fund	2012/3/29	
	Japan Society Tohoku Earthquake Relief Fund (Rose Fund)	2012/12/31	Japan Society Tohoku Earthquake Relief Fund
Grant foundation, Intermediary	"ROAD Project" the Great East Japan Earthquake Relief Fund	2012/3/31	"ROAD Project" to Help Rebuild Tohoku
	Aid to Victims of the Great East Japan Earthquake	2012/3/31	Aid to Victims of the Great East Japan Earthquake (Report for 2014)
	Yume Fund	2011/12/27	Rescue Fund Sent to Tohoku Kantou Great Earthquake
	Japan NFO Center	2012/3/10	Japan Earthquake Local NPO Support Fund: 1st Grant Activity Report (April - November 2011), 2nd Mid Report (January - April 2012) (Japanese only)
	Japan NGO Center for International Cooperation (JANIC)	2013/3/31	NGO Relief Fund for Japan Earthquake and Tsunami (NGO Support Fund, The Great East Japan Earthquake Matomete Kikin)
	Sanaburi Foundation (Chūikisouzoukikin Sanaburi, renamed from Chūikisouzoukikin Miyagi on July 1, 2014)		
	Nippon Foundation		
	Japan Platform (JPF)		
	Yume Fund		
	Japan NFO Center		

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	Organization	Fund / Research Title	Date	Reference
Grant foundation, Intermediary	Association for Corporate Support of the Arts (Kigyō Mécénat Kyōgikai, KMK)	GB Fund	2012/3/9	Press Release 2012 No.2 (Japanese only)
	Japan Association of Charitable Organizations (JACO)	The Great East Japan Earthquake Relief Fund	2011/9/30	A Report from the Japan Association of Charitable Organizations (Japanese only)
	Japan Foundation Center (JFC)	The Great East Japan Earthquake Support Fund	2011/9/30	Announcement for the Great East Japan Earthquake Support Fund (Japanese only)
	Foundation for International Development and Relief (FIDR)	Emergency Response and Rehabilitation Assistance for the Great East Japan Earthquake	2012/3/31	Relief No.1 The 1 Year Recode of the Emergency Relief Support for the Great East Japan Earthquake by FIDR (Japanese only)
	Plan Japan	The Great East Japan Earthquake Emergency and Relief Support	2012/3/31	The Great East Japan Earthquake Emergency and Relief Support Activity Report (Mar. 2011 - Mar. 2012) (Japanese only)
	Association for Aid and Relief (AAR), Japan	The Great East Japan Earthquake Support Activity	2012/2/29	The Great East Japan Earthquake: Activity Report (Mar. 2011 - Mar. 2012)
	Peace Boat Disaster Relief Volunteer Center (PBV)	The Great East Japan Earthquake Emergency Support	2012/3/31	Annual Report 11 March 2011 - 31 March 2012
	World Vision Japan	The Great East Japan Earthquake Emergency Relief Support	2011/3/15 -2012/12/31	The 24 Months Activity Report of the Great East-Japan Earthquake Emergency Relief Support (Japanese only)
	Joint Committee for Coordinating and Supporting Voluntary Disaster Relief Activities (<i>Shien P</i>)	Donations for Earthquake Support Activities of <i>Shien P</i>	2012/6/9	1% (One-Percent) Club News Zokangou, Disaster Affected Area Support Information No.8 (Japanese only)
	Fukushima Kids	Donations for the Support Activities for Disaster Affected Children	2012/4/6	Fukushima Kids Report 2011 (Japanese only)
	Japan Civil Network for Disaster Relief in the East Japan (JCN)	Donations for Our Support Activities	2012/3/31	Annual Report and Accounts 2011 (Japanese only)
	Ashinaga	Tohoku Rainbow House Construction Fund	2011/3/11 -2014/1/31	Report of the Donations for the Children Who Had Lost Parents to the Disaster by the Great East Japan Earthquake and Tsunami on April 5, 2013 (Japanese only) Report of the Donations for the Children Who Had Lost Parents to the Disaster by the Great East Japan Earthquake and Tsunami on April 9, 2014 (Japanese only)

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	Organization	Fund / Research Title	Data	Reference	
Business community	Japan Business Federation (KEIDANREN) Committee on Corporate Philanthropy 1% (One-Percent) Club	Questionnaire for the People and Regions Affected by the Great East Japan Earthquake	2011/3/11 -2011/9/30	Report on Relief Efforts by the Business Community for the People and Regions Affected by the Great East Japan Earthquake – Mutual-assistance Efforts by the Business Community – Overview (Japanese only)	
		The Great East Japan Earthquake Relief Rescue Fund	2012/4/2	The Great East Japan Earthquake Relief Rescue Fund (Japanese only)	
Media	Asahi Shimbun Social Welfare Organization	The Great East Japan Earthquake Relief Rescue Fund	2012/3/31	Asahi's Social Welfare 2011 Annual Report 2011 (Japanese only)	
	Sankei Shimbun Social Welfare Association	The Great East Japan Earthquake Relief Rescue Fund	2012/3/30	<i>Gienkin</i> for the Great East Japan Earthquake and Others (Japanese only)	
Cooperative	Chumichi Shimbun Social Welfare Association	The Great East Japan Earthquake Relief Rescue Fund	2013/10/31	The Great East Japan Earthquake Acceptance of <i>Gienkin</i> (Japanese only)	
	Japanese Consumers' Cooperative Union (SEIKYO)	The Great East Japan Earthquake Relief Rescue Fund	2012/3/31	SEIKYO's Social Activities Report: 2012 (Japanese only)	
		<i>Gienkin</i> Donation to the Japanese Red Cross Society and Other Associations	2012/3/31		
	Japanese Trade Union Confederation (RENGO)	Livings Support Fund (Kurashi Ouen Kikin)		2012/8/10	Tsunagarou COOP Action Kurashi Ouen Kikin (Japanese only)
			<i>RENGO</i> Pacific Coast of Tohoku Earthquake Disaster Rescue Donation	2011/12/26	<i>RENGO</i> Pacific Coast of Tohoku Earthquake Disaster Rescue Donation (Japanese only)
		Donations to Aid Victims	2011/11/11		
Fundraising Activities for the Great East Japan Earthquake Reconstruction Project		2012/4/28	Annual Report 2012		
National Federation of Workers and Consumers Insurance Cooperatives (ZENROSAI)	Special Fund to Support Recovery from the Earthquake in Addition to ZENROSAI Community Contribution Grant Program	2012 fiscal year			
	JA Group Relief and Reconstruction <i>Gienkin</i>	2011/10/31	JA Group Relief and Reconstruction <i>Gienkin</i> Activity Report (Japanese only)		
	JA Group Relief Support Fundraising	2011/4/28	JA Group Relief Support Fundraising Activities for the Great East Japan Earthquake Activity Report (Japanese only)		
Japan Fisheries Cooperatives (ZENGYOREN)	JF Group the Great East Japan Earthquake Disaster Affected Support Fundraising (Gambare Gyogyo Fund)	2012/1/13	JF Group the Great East Japan Earthquake Disaster Affected Support Fundraising 3rd Distribution Report and Appreciation (Japanese only)		

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	Organization	Fund / Research Title	Data	Reference
	Public Resource Foundation	Give One Donations Related to the Great East Japan Earthquake	2012/3/31	Report of the Donation Related to the Great East Japan Earthquake (FY 2010 - FY 2011) (Japanese only)
Online donation (Cloud funding)	Just Giving Japan (Japan Giving, renamed from Just Giving Japan on January 21, 2015)	Just Giving	2012/12/5	The Great East Japan Earthquake Relief Support Activity Organizations Homepage
	Charity Platform	The Great East Japan Earthquake Relief Support Project	2012/9/28	The Great East Japan Earthquake Relief Support Project (Japanese only)
	Yahoo! JAPAN	Yahoo! Fund (Emergency Disaster Donation (The Great East Japan Earthquake)) Pin Point Donation	2011/10/25 2013/6/10	Emergency Disaster Donation (The Great East Japan Earthquake) (Japanese only) The Great East Japan Earthquake Pin Point Donation (Japanese only)
Religious organization	Major 18 domestic religious organizations	Investigation on the Religious Organizations for the Great East Japan Earthquake	2013/1/1 -2013/2/28	Chugai Nippou "A Joint Religious Organization Questionnaire with Japan NPO Research Association" on March 9, 2011 (Japanese only) Okamoto (2014) Japan NPO Research Association Discussion Paper 2014-003-J. (Japanese only)

Note: The authors translated each name of organization, fund, research title and reference in case it is not officially translated in English.
Source: Nakajima (2014), revised and translated by the authors.

Table 2: Matrix model of the inflow and outflow of relief funds for the Great East Japan Earthquake

(1) Inflow of relief funds (Million yen)

Recipient	Donor						Total	%	Transfers from others	Net total
	Overseas	Individual	Private company	Co-worker	Private fund	Others				
JRCS, CCCJ	93,184	323,153	48,141	892			465,370	68.9%	(50,659)	414,711
Foundation, Intermediary (In-kind donations)	422	8,173	4,065 (37)	21	2,943		15,624	2.3%	(3,930)	11,694
NPO, NGO (In-kind donations)	3,252 (20)	14,645 (111)			11	1,174	19,082	2.8%	(1,324)	17,758
Business community (In-kind donations)		13,341		15,414 (352)	93,650 (14,855)		122,405	18.1%		122,405
Cooperative		223		18,329	10		18,562	2.7%		18,562
Media organization		16,286			20		16,306	2.4%		16,306
Online donation		2,263					2,263	0.3%		2,263
Religious organization		7,047			9,247		16,294	2.4%		16,294
Total	96,858	385,132	52,206	34,657	105,881	1,174	675,907	100%	(55,913)	619,994
%	14.3%	57.0%	7.7%	5.1%	15.7%	0.2%	100%			

(2) Outflow of relief funds (Million yen)

Recipient	Expenditure	Gienkin	Shienkin					Sub total
			NPO	Social Welfare Council	Private company	Branch office in damaged areas	Residual and others	
JRCS, CCCJ		367,789	1,830	539			2,027	4,397
Foundation, Intermediary			10,171	58	401		2,795	13,425
NPO, NGO			7,267				1,099	8,366
Business community		48,141	17,273					17,273
Cooperative		1,191	164			14,133		14,296
Media organization		464	1,043	603				1,645
Online donation		720	935				9	943
Religious organization		143	166	46		8,830		9,041
Total		418,448	38,848	1,246	401	22,963	5,930	69,388
%		61.9%	5.7%	0.2%	0.1%	3.4%	0.9%	10.3%

Others						Total	%	Transfers to others	Net total
Local government	Scholarship	Goods	Others	Residual and others	Sub total				
40,066		34,450	1,137	17,531	93,184	465,370	68.9%		465,370
21	866	37	88	1,187	2,199	15,624	2.3%	(1,174)	14,450
	5,914	3,977	124	701	10,715	19,082	2.8%		19,082
14,418	3,256	15,275	6,300	17,742	56,991	122,405	18.1%	(52,071)	70,334
3,065				11	3,076	18,562	2.7%	(1,341)	17,222
12,555	1,643				14,197	16,306	2.4%	(464)	15,842
600					600	2,263	0.3%	(720)	1,543
2,573			2,037	2,498	7,109	16,294	2.4%	(143)	16,150
73,298	11,679	53,738	9,686	39,671	188,071	675,907	100%	(55,913)	619,994
10.8%	1.7%	8.0%	1.4%	5.9%	27.8%	100%			

Note: Numbers are summarized from a variety of materials and rounded off to the aggregate amount. There is a case that caused a difference in the total and the breakdown amount.

Source: Nakajima (2014), revised and translated by the authors. Original data was collected from materials listed in Table 1.

The relief funds from these entities were sent to the JRCS and CCCJ as donations for *Gienkin*, through funding agencies and intermediates, support organizations, or were directly devoted to NPOs or NGOs as donations for *Shienkin*. In some cases, for-profit corporations and organizations solicit donations from consumers and employees, or media organizations, unions, fundraising websites and religious organizations also conduct fundraising.

In cases such as the JRCS or CCCJ, though it can be double counted in the case of relief funds transferred from other relief funds which were originally collected by another organization, we deducted these amounts from the total amount and classified it in the category (7) transfers from others in the matrix model of relief funds (Table 2 (1)).

In the following sections, we explain the details of inflows from (1) to (7) using the information collected for the analysis.

(1) Overseas

This section aggregated the donations, such as the 53.1 billion yen (663.8 million U.S. dollars) received by the JRCS from the Red Cross organizations overseas for the Great East Japan Earthquake International Donation, and relief funds, such as the 40.1 billion yen (501.3 million U.S. dollars) received from foreign governments for the Great East Japan Earthquake Kuwait Donations³⁾. This section also includes donations from grant foundations, intermediaries, and other funds that received by the NPOs/NGOs from international donors.

It should be noted that the 3.3 billion yen (41.3 million U.S. dollars) donated to the NPOs/NGOs also included in-kind donations donated to the World Vision Japan from abroad, which was equivalent to 20 million yen (250.0 thousand U.S. dollars) in cash value.

(2) Individuals

A large part of the assistance funds was contributed by individual donors. In particular, 323.2 billion yen (4.0 billion U.S. dollars) was donated to the JRCS and CCCJ by individuals. For the business community, private companies also accepted 13.3 billion yen (166.3 million U.S. dollars) from consumers and others, and religious groups collected 7 billion yen (87.5 million U.S. dollars) in donations

3) The Ministry of Economy, Trade and Industry asked the JRCS to implement the reconstruction assistance project using the petroleum donated by the Kuwaiti government. The corresponding amount from the sales of the petroleum was about 40 billion yen (500.0 million U.S. dollars) which was deposited with the JRCS as the relief fund for the Great East Japan Earthquake Kuwait Donations.

from the faithful. Additionally, donations of 16.3 billion yen (203.8 million U.S. dollars) were given by media organizations and 2.3 billion yen (28.8 million U.S. dollars) were raised through fund-raising websites. These donations indicated how individual donations have diversified in recent years⁴.

(3) Private companies

In this section, we aggregated the donations from private companies and various economic organizations. The Japan Business Federation (*KEIDANREN*) (2012), a comprehensive economic organization with a membership comprised of over a thousand representative companies of Japan, reported the amount of donations received from each of its private member companies and organizations⁵. According to this report, the authors re-aggregated the donation inflows from which it was found that private companies and organizations donated 48.1 billion yen (601.3 million U.S. dollars) for *Gienkin* to the JRCS and CCCJ.

The authors also found that the 3.9 billion yen (48.8 million U.S. dollars) donated by private companies to the Japan Platform, an international emergency humanitarian aid organization and a foundation distributing the resources to NGOs, included donations from their employees or customers and the matching gifts, which added the donation by companies to the collected donations. In addition, Table 2 shows those in-kind donations equivalent to 37 million yen (462.5 thousand U.S. dollars) were received from companies other than cash donations.

(4) Co-workers

In this category, donations made by the various member organizations were totaled in addition to those from employees and company officials. Further, as most of these donations were individual contributions, we aggregated the “co-worker” category separately from the individual category because of the considerable donations collected by companies or member organizations from their employees.

The employees and officials in the business community contributed 15.4 billion yen (192.5 million U.S. dollars). Cooperatives, such as the Japanese Consumers’

4) The breakdown of the donors may not be listed in the document in detail. Therefore, the authors added up all the amounts into the category of “individual” in case the details of other contributions were not displayed in the original documentation.

5) Of the 122.4 billion yen (1.5 billion U.S. dollars), accepted or contributed by *KEIDANREN*, 13.3 billion yen (166.3 million U.S. dollars) was donated by their consumers and customers (categorized as “individual”), 15.4 billion yen (192.5 million U.S. dollars) was contributed by their employees and members (categorized as “co-worker”), and 93.7 billion yen (1.2 billion U.S. dollars) was donated by self-funding (categorized as “private fund”). Of these, the in-kind donations offered by them for the disaster were 14.9 billion yen (186.3 million U.S. dollars) by the companies and 350 million yen (4.4 million U.S. dollars) by their co-workers.

Cooperative Union (*SEIKYO*), the Japanese Trade Union Confederation (*RENGO*), the National Federation of Workers and the Consumers Insurance Cooperatives (*ZENROSAI*), the National Federation of Agricultural Cooperative Associations (*ZEN-NOH*), and the Japan Fisheries Cooperatives (*ZENGYOREN*), contributed 18.3 billion yen (228.8 million U.S. dollars) for disaster assistance. Additionally, the CCCJ contributed 892 million yen (11.2 million U.S. dollars) from the “Reserve Fund for Disasters” of local Community Chests. These funds were reserved for disaster support partly from the citizens in their annual donation campaign called “red wings donation” for the Community Chest established in the local community.

(5) Private funds

Our analysis found that 105.9 billion yen (1.3 billion U.S. dollars) was added by companies or grant foundations when they granted to NPOs as for *Shienkin*.

The business community contributed 93.7 billion yen (1.2 billion U.S. dollars) from their private funds, which included in-kind donations of goods or services equivalent to 14.9 billion yen (186.3 million U.S. dollars) in cash value. Religious organizations also contributed 9.2 billion yen (115.0 million U.S. dollars) to support their disaster-affected branches⁶⁾.

A major Japanese grant foundation, the Nippon Foundation, contributed 2.9 billion yen (36.3 million U.S. dollars) from their private fund for their ROAD Project to support the disaster-affected areas in addition to the donations they had collected. The World Vision Japan, an NGO, contributed 11 million yen (137.5 thousand U.S. dollars), and through the media organizations, the Asahi Shimbun Social Welfare Organization contributed 20 million yen (250.0 thousand U.S. dollars) for disaster support. The *ZENROSAI*, the largest agricultural cooperative in Japan granted 10 million yen (125.0 thousand U.S. dollars) in addition to their other ordinary grants.

(6) Others

This category aggregated the grants by other organizations other than donations for each organization. One of the NGOs in Japan, the Association for Aid and Relief (AAR), Japan accepted 1.2 billion yen (15.0 million U.S. dollars) from

6) Chugai Nippou (2013) and Okamoto (2014)’s findings were collected by “A joint religious organization questionnaire through the Japan NPO Research Association” (*Takeda inochi to kurashi saisei* program). In this part, we adjusted the numbers from the references because we used different scales and categories for the relief money.

the Japan Platform.

(7) Transfers from others

A total of 50.7 billion yen (633.8 million U.S. dollars) collected by companies or media organizations was donated to the JRCS and CCCJ. For the grant foundations and intermediaries, 3.9 billion yen (48.8 million U.S. dollars) was given from the business communities donations. A total of 1.3 billion yen (16.3 million U.S. dollars) was granted to the NPOs and NGOs from the grant foundations, intermediaries, and cooperatives.

In this section, we deducted these transferred amounts from the total to ensure that there was no double counting, which included those donations that had been collected by the organizations in Table 2 and were transferred to another organization (Table 2 (1)).

3.2. Outflows

The disaster relief funds were mainly used for (1) *Gienkin*, (2) *Shienkin*, and (3) others. *Gienkin* was directly distributed to the disaster-affected victims through the government, and *Shienkin* was used to fund the various organizations like NPOs' disaster support activities in the disaster-affected areas. Assistance funds were also given to local governments to fund scholarships for disaster-affected children or for distribution of in-kind goods. As double counting may have occurred in the original case of donations by companies are donated again to the JRCS and CCCJ (being used for *Gienkin*) or the relief funds collected by foundations are granted to other organizations (being used for *Shienkin*, as support activities by the NPOs), we deducted these amounts from the total amount and classified them as (7) transfers to others in the matrix model of relief funds (Table 2 (2)).

In the following sections, we explain the details of the outflows from (1) to (7) using the information collected for the analysis.

(1) *Gienkin*

The *Gienkin* collected by the various groups including the JRCS, CCCJ, private companies, and media organizations was remitted to the *Gienkin* Distribution Rate Decision Committee in the disaster-affected areas. The amount is depending on the degree of damage and it was fairly distributed to the disaster-affected victims through the local government.

A total of 367.8 billion yen (4.6 billion U.S. dollars) of *Gienkin* was remitted

to the disaster-affected areas by the JRCS and CCCJ. Through a reaggregation of the data, it was found that the business community donated 48.1 billion yen (601.3 million U.S. dollars) for the *Gienkin* (Japan Business Federation (*KEIDANREN*) 2012). It was also found that 1.2 billion yen (15.0 million U.S. dollars) was donated by cooperatives, 720 million yen (9.0 million U.S. dollars) by online donation websites such as Yahoo! JAPAN, 460 million yen (5.8 million U.S. dollars) by media organizations, and 140 million yen (1.8 billion U.S. dollars) by religious organizations to *Gienkin*.

(2) *Shienkin*

Some assistance funds for *Shienkin* are used for providing assistance activities to the disaster-affected victim. The NPOs, Social Welfare Councils and private companies are providing these disaster assistances. Cooperatives and religious organizations also remitted assistance funds to support their own disaster-affected branches.

(2-1) NPOs

A total of 38.8 billion yen (485.0 million U.S. dollars) was given to the NPOs, with 17.3 billion yen (216.3 million U.S. dollars) of this amount having been donated by the business communities and 10.2 billion yen (127.5 million U.S. dollars) from grant foundations and intermediaries. For example, the Nippon Foundation ROAD Project donated 4.6 billion yen (57.5 million U.S. dollars) in assistance funds to the NPOs for emergency assistance activities or project-designated donations, and the Japan Platform donated 5 billion yen (62.5 million U.S. dollars) to the NGOs.

The NPOs were also funded by donations collected by other organizations. A total of 1.8 billion yen (22.5 million U.S. dollars) was funded from the Disaster Relief Volunteer & NPO Support Fund (VolSup) by the CCCJ and 1 billion yen (12.5 million U.S. dollars) from media organizations. Other fields, cooperatives, online donation websites, and religious organizations are also funded to NPOs.

(2-2) Social Welfare Councils

The Social Welfare Councils established disaster volunteer centers in the disaster-affected areas. To assist this project, the Asahi Shimbun Social Welfare Organization donated 600 million yen (7.5 million U.S. dollars) and the CCCJ donated 500 million yen (6.3 million U.S. dollars) from their “Reserve Fund for Disasters” of Community Chest donations in the non-disaster-affected areas for use to cover the set up or administrative costs of the volunteer centers. Additionally, 58 million yen (725.0 thousand U.S. dollars) was donated by grant

foundations and intermediaries and 46 million yen (575.0 thousand U.S. dollars) was donated by religious organizations.

(2-3) Private companies

As part of the consignment, support funds or donations designated for use were also used to fund for for-profit corporations when these companies were selected as project partners, even though *Shienkin* was to be mostly used by nonprofit organizations.

The Nippon Foundation funded 400 million yen (5.0 million U.S. dollars) to private companies in the project supporting the disaster-affected victims who had lost their fishing boats, or conducting a needs investigation in the disaster-affected ocean areas.

(2-4) Branch offices in damaged areas

Cooperatives, such as the *SEIKYO*, *RENGO*, *ZEN-NOH*, and *ZENGYOREN*, all have a nationwide network of branches and members. Donations were initially received in the branch offices and then assembled in the central office. The total donations received were 14.1 billion yen (176.3 million U.S. dollars), which was given as a lump sum to the internal disaster control headquarters or directly to their own damaged branches. Religious organizations also remitted 8.8 billion yen (110.0 million U.S. dollars) to support their members and reconstruct damaged facilities.

(2-5) Residual and others

Some of the collected funds were not immediately allocated as the relief funds needed more time for a decision for use. We aggregated the residuals in this column.

(3) Others

Other than *Gienkin* and *Shienkin*, the relief funds were given to local governments to use as scholarships or to provide in-kind support.

(3-1) Local governments

Various entities, mainly the JRCS, private companies, and media organizations donated 73.3 billion yen (916.3 million U.S. dollars) to the prefectural governments of Iwate, Miyagi, Fukushima, Chiba, and Ibaraki, all of which had been badly damaged by the disaster.

The JRCS donated 40.1 billion yen (501.3 million U.S. dollars) from “the Great East Japan Earthquake Kuwait Donations” to the Iwate, Miyagi, and Fukushima prefectural governments. Besides the donations given to NPOs and NGOs, other donations of 14.4 billion yen (180.0 million U.S. dollars) from the business

community and 12.6 billion yen (157.5 million U.S. dollars) from the media organizations were also made to local governments.

(3-2) Scholarships

Other than the direct *Gienkin* distribution made by the Distribution Rate Decision Committee, funds for scholarships and temporary assistances were also directly distributed to the disaster affected victims.

The Ashinaga, a Japanese nonprofit organization to support children who lost their parents, donated 5.9 billion yen (73.8 million U.S. dollars) to provide educational support to children who had lost their parents through their “Ashinaga the Great East Japan Earthquake and Tsunami Fund for Children Who Had Lost Parents to the Disaster”. The business community also donated 3.3 billion yen (41.3 million U.S. dollars) to the funds for scholarships and foundations founded by the private companies. Moreover, media organizations donated 1.6 billion yen (20.0 million U.S. dollars) to the governments’ youth support funds in Iwate, Miyagi, and Fukushima prefecture.

In addition to these, the Nippon Foundation donated 870 million yen (10.9 million U.S. dollars) from their ROAD Project to disaster-affected survivors who had lost their family members in the disaster as condolence money.

(3-3) Goods

In-kind donations were donated from inside and outside the country. Some were daily goods to be distributed in the disaster-affected areas, while some were stock supplies, such as cars or buses, to be used as part of the support activities. The relief fund was also used to purchase goods for distribution. The JRCS spent 34.5 billion yen (431.3 million U.S. dollars) from “the Great East Japan Earthquake International Donation” to buy necessary supplies, such as daily goods or home appliances, for distribution in the disaster-affected areas. The business community also provided services and items equivalent to 15.3 billion yen (191.3 million U.S. dollars) in cash value.

Through the NPOs and NGOs, the World Vision Japan distributed equivalent to 2.5 billion yen (31.3 million U.S. dollars) of assistance goods from inside and outside the country, and the AAR Japan distributed equivalent to 1.1 billion yen (13.8 million U.S. dollars) of goods to the disaster-affected areas. Moreover, 300 million yen (3.75 million U.S. dollars) was donated by the Foundation for International Development and Relief (FIDR) and 91 million yen (1.1 million U.S. dollars) was donated by the Plan Japan for in-kind support.

(3-4) Others

Other than the donations for local government, scholarships, or in-kind dona-

tions, the relief fund was used to fund various activities or administration cost for these activities.

The business community spent 6.3 billion yen (78.8 million U.S. dollars) for disaster assistance events. Religious organizations used 2 billion yen (25.0 million U.S. dollars) to provide funding for assistance activities by individual religious organizations. Other funding, such as 1.1 billion yen (13.8 million U.S. dollars) was spent for the administration of “the Great East Japan Earthquake International Donation” by the JRCS, 120 million yen (1.5 million U.S. dollars) for NPOs and NGOs, and 88 million yen (1.1 million U.S. dollars) for the grant foundations and intermediaries, covered the administrative costs for assistance activities.

(3–5) Residuals and others

All residuals of the relief fund were aggregated in this category. These residuals included those funds that had not yet been allocated for the assistance at the time of this analysis and those that were left over after the inflows and outflows had been calculated.

This residual fund included 17.7 billion yen (221.3 million U.S. dollars) from the business community that would be used for further assistance, 17.5 billion yen (218.8 million U.S. dollars) from “the Great East Japan Earthquake International Donation” of the JRCS, 2.5 billion yen (31.3 million U.S. dollars) from religious organizations, 1.2 billion yen (15.0 million U.S. dollars) from grant foundations and intermediaries, 700 million yen (8.75 million U.S. dollars) from NPOs and NGOs, and 11 million yen (137.5 thousand U.S. dollars) from cooperatives.

(4) Transfers to others

In the matrix model, it was found that the business community had transferred 52.1 billion yen (651.3 million U.S. dollars) to other organizations, 48.1 billion yen (601.3 million U.S. dollars) to the JRCS and 3.9 billion yen (48.8 million U.S. dollars) to the Japan Platform. The Japan Platform then transferred 1.2 billion yen (15.0 million U.S. dollars) in grant to the AAR Japan.

The cooperatives’ donation for *Gienkin* included 1.2 billion yen (15.0 million U.S. dollars) donated by the *SEIKYO* and 11 million yen (137.5 thousand U.S. dollars) donated to the JRCS and other *Gienkin* collecting organizations. the *RENGO* donated 1.3 billion yen (16.3 million U.S. dollars) to other organizations, such as a 150 million yen (1.9 million U.S. dollars) donation to the Ashinaga.

Other donations for the *Gienkin* were also made by some organizations. 720

million yen (9.0 million U.S. dollars) was donated by the online donation website Yahoo! Japan, 460 million yen (5.8 million U.S. dollars) by the Asahi Shimbun Social Welfare Organization, and 140 million yen (1.8 million U.S. dollars) by the religious organizations.

In this section, the transferred amounts were deducted from the total to ensure that there was no double counting. Relief funds originally accepted by an organization in Table 2 that were transferred to another organization are shown in Table 2 (2).

4. Results and discussion

Using the matrix model, we found that the inflow of donations by various donors to civil-based organizations was over 675.9 billion yen (8.4 billion U.S. dollars). The authors also found its outflows for final use, 418.4 billion yen (5.2 billion U.S. dollars) was sent to *Gienkin*, 69.4 billion yen (867.5 million U.S. dollars) was used for *Shienkin*, and 188.1 billion yen (2.4 billion U.S. dollars) was used for other assistance activities. However, the matrix model shows 55.9 billion yen (698.8 million U.S. dollars) in total has been transferred within organizations by grants or donations.

For inflows, donations by individuals of 385.1 billion yen (4.8 billion U.S. dollars), private companies of 52.2 billion yen (652.5 million U.S. dollars), and overseas of 96.9 billion yen (1.2 billion U.S. dollars) form a large part of the total. In addition, the important finding is that others were donated from private companies' co-workers of 34.7 billion yen (433.8 million U.S. dollars) or self-funding of 105.9 billion yen (1.3 billion U.S. dollars). These donations included in-kind goods or services. Our analysis clarifies the variety of funding source and how civil-based organizations raise funds, not only from the outside but also inner donations by co-workers and self-funding. It also found that they aggressively accepted in-kind donations.

Meanwhile, for outflows, the matrix model successfully shows that donation flows to *Gienkin* of 418.4 billion yen (5.2 billion U.S. dollars) not only occurred through direct donation to the JRCS or CCCJ but were also being transferred from donations collected by other organizations such as private companies and cooperatives. This study implies that the various inflows for *Gienkin* should be shown, other than those from organizations such as the JRCS and CCCJ.

Although *Shienkin* accounts for only 10% of the total amount of the relief funds, their final use was for various means such as for NPOs of 38.8 billion yen

(485.0 million U.S. dollars), Social Welfare Councils of 1.2 billion yen (15.0 million U.S. dollars), private companies of 401 million yen (5.0 million U.S. dollars), and branch offices in disaster affected areas of 23 billion yen (287.5 million U.S. dollars). Our analysis also found other fund flows in some organizations that use relief funds for local government such as for donations and scholarships, and for support activities by distribution with goods or services.

Before the Great East Japan Earthquake occurred, “disaster relief funds” in Japan had attracted attention only for donations as *Gienkin* that went through the government, since donations for *Shienkin* to civil-based organizations were small. However, this study found the construction of various relief fund streams in the Great East Japan Earthquake promoted that made people aware of the existence of disaster support activities by civil-based organizations. Aggregating the relief fund matrix model by collecting the disclosed information related to the relief funds can summarize the complex fund streams. At the same time, this matrix model can make visible the role of disaster support activities by civil-based organizations using the disaster relief funds.

However, there is no clear distinction or classification of information on relief funds, so that the duration or timing of the fund calculation by each disclosed material differs. Therefore, in this paper, the authors recalculate the amount using the unified criteria that is commonly applicable for the numerous pieces of information we collected. This analysis also shows information asymmetry that may cause contract failure problems (Hansmann 1980, Fujii 2014). This implies people are unable to acquire enough information they need from these organizations and this might inhibit donations to nonprofit organizations. As information asymmetry is a factor that lowers the reliability on organizations, further issues exist concerning how much information we can collect as common data, that people require for relief funds and to summarize or insert into the matrix model of relief funds.

5. Conclusion

From what has been determined, the lower donations to *Shienkin* arose because most of the funds were directed to *Gienkin* or because of the complex donation funding stream. Even though the *Gienkin* distribution process was always disclosed by the JRCS or CCCJ and government, the fund transfers and usage of the *Shienkin* for civil-based organizations’ disaster support activities were not clearly explained as there was not enough data.

As Nakajima (2014) discussed, our analysis also confirmed that the *Shienkin* flow was more complex than that of the *Gienkin*. Before the Great East Japan Earthquake, the government had only explained the flow of *Gienkin* to the public as part of the disaster relief fund. Our analysis found that the overall *Gienkin* and *Shienkin* disaster relief funding process needs to be explained more widely, which stands to ensure a more effective use of the relief funds developed for the great disaster. However, in fact, it is so difficult to explain the overall relief fund flow, especially that of the *Shienkin* because of the uncountable civil-based organizations that accepted assistance funds.

This study attempted to quantitatively systematize the major disaster relief funds for the Great East Japan Earthquake to assess the overall relief funds using the various disclosed information we collect. Using a “Matrix model of the inflow and outflow of relief funds” to explain the dual streams of the disaster relief funds, it indicates the possibility to systematically analyze the inflows and outflows of the complex disaster relief fund flow whose details have never been cleared. The matrix model also proved effective in visualizing the roles of the civil-based organizations in the disaster support activities.

However, it should be noted that the information on the disaster relief fund was voluntarily disclosed by each organizational level, so there was a lack of general reliability of the information for the civil-based organizations which might have caused the problems related to information asymmetry. This raises the implication that some regulations or standardization for information disclosure on the donors and recipients should be created so that reliable information from civil-based organizations can be consolidated. It is also important for civil-based organizations to strive for more objective information disclosure of the disaster relief funds.

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