

ODA PROFILES AND DONOR-SIDE ECONOMIC OUTCOMES: A COMPARATIVE ANALYSIS OF JAPAN AND SWEDEN

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Abstract

This study examines how different Official Development Assistance (ODA) profiles are associated with donor-side macroeconomic outcomes by comparing Japan and Sweden from 1960 to 2020. Rather than treating donor intent as directly observable, the paper uses Japan and Sweden as analytically contrasting cases: Japan is characterized by an ODA profile oriented toward economic diplomacy and regional development, while Sweden is characterized by a norm-oriented and welfare-centered ODA profile. Using annual macroeconomic data from the Penn World Table, OECD DAC statistics, and the World Development Indicators, we estimate country-specific growth regressions for GDP per capita growth, productivity growth, employment-rate growth, composite input growth, and export growth. The results show that Japan's ODA is not significantly associated with income, productivity, employment, or export growth under the reported specification, whereas Sweden's ODA is positively associated with income, productivity, and employment-rate growth, but not export growth. These findings should be interpreted as case-specific associations rather than causal evidence that one aid profile generates superior domestic returns. The contribution of the paper is to shift attention toward donor-side economic outcomes and to develop a bounded comparative framework for examining how aid profiles, rather than aid volume alone, may relate to long-term domestic economic patterns.

Keywords: Official Development Assistance, Donor-Side Economic Outcomes, Japan, Sweden, Aid Strategy, Comparative Political Economy

JEL classification: F35, O47, F43

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1. Introduction

Official Development Assistance (ODA) plays a central role in international development and foreign policy, serving humanitarian, diplomatic, and economic purposes. Most studies evaluate ODA by measuring its effects on recipient countries, while comparatively less attention has been given to whether and how aid is associated with economic outcomes in donor countries themselves. This study addresses that gap by examining the relationship between ODA and donor-side macroeconomic outcomes, including income growth, productivity growth, employment-rate growth, and export growth.

The paper compares two prominent but analytically different ODA donors: Japan and Sweden. Japan is often associated with an economic-diplomacy and regional-development-oriented aid profile, linking ODA to trade facilitation, infrastructure development, regional stability, and industrial diplomacy, particularly in Asia (Sunaga, 2004; Arase, 2005). Sweden, by contrast, is commonly associated with a norm-oriented and welfare-centered aid profile, emphasizing human rights, poverty reduction, democratic governance, and global equity (Nilsson, 2022). These labels are used here as comparative tendencies, not as fixed national types or direct measures of donor intent.

The selection of Japan and Sweden is theoretically useful because the two countries represent contrasting aid profiles within the group of established donors. The comparison allows us to examine whether ODA-outcome patterns differ across two historically and institutionally distinct donor cases. However, this is not a representative two-country sample from which broad claims about all donors can be generalized. The study is therefore framed as a bounded, theory-building comparison rather than a universal test of aid strategy.

The central research question is: How are different ODA profiles associated with donor-side macroeconomic outcomes over time? This framing deliberately shifts the focus away from unobservable donor intent and toward observable aid profiles and macroeconomic associations. Existing research suggests that aid can be linked to donor exports, firm opportunities, diplomatic influence, and longer-term economic relationships, but the mechanisms and timing of these relationships remain contested.

Empirical studies consistently confirm that foreign aid promotes the export interests of donor nations. Martínez-Zarzoso et al. (2009) find that bilateral aid is positively associated with increases in donor-country exports to recipient markets, estimating that, depending on scenarios, every dollar of ODA can generate more than two dollars in additional exports for the donor over time, thus substantiating the economic rationale for aid engagement. Kim et al. (2015) provides further evidence that the association between ODA and donor-side outcomes on donor exports is shaped by recipient countries' absorptive capacity and economic localization. The study's analysis of 33 donor countries between 1999 and 2009 reveals how ODA tends to boost export opportunities, particularly in sectors where donor competitiveness is robust, and the recipient's market integration with the donor is high. Ono et al. (2023) describe that infrastructure-focused ODA, such as concessional loans for transport, energy, and communications, not only fosters development but also systematically paves the way for donor-country firms to enter and invest in recipient markets. Their research finds a statistically significant relationship between specific types of ODA and increased foreign direct investment flows from donor to recipient, with clear implications for business opportunity expansion.

Evaluating the role of tied aid, Jalan (1969) contends that such aid, by mandating the use of donor-country goods and services, bolsters domestic employment and supports industrial output in the donor nation. The benefits of tied aid are particularly marked during periods of domestic economic slack or when targeting industries integral to the donor's strategic interests. Sectoral studies, including Choi (2022), reinforce that aid's impacts are not limited to one specific region or sector. The study's analysis on South Korea highlights a positive correlation between ODA and export expansion to recipients, emphasizing how tailored aid strategies can optimize both developmental and national commercial outcomes.

We employ a quantitative empirical analysis using annual macroeconomic data from 1960 to 2020 for Japan and Sweden. We construct country-specific time-series regression models to evaluate associations between ODA and indicators such as GDP per capita growth, export performance, employment-rate growth, and total factor productivity. The primary data sources include the Penn World Table (PWT 10.01), OECD DAC statistics, the World Development Indicators (WDI), and other publicly available databases.

Methodologically, the paper draws inspiration from growth regression frameworks used by Lee (2017) and Barro (2016), but its contribution is more modest and exploratory. First, it uses a country-specific time-series approach rather than a pooled donor panel, enabling contextual interpretation but limiting external validity. Second, it introduces ODA as the central explanatory variable for donor-side outcomes, an issue that remains relatively underdeveloped in the literature. Third, it treats Japan's commercially oriented profile and Sweden's norm-oriented profile as heuristic case contrasts, not as directly measured intent variables.

The empirical results complicate the assumption that economic-diplomacy-oriented aid necessarily produces stronger measurable donor-side returns. Under the reported specification, Japan's ODA is not significantly associated with income, productivity, employment-rate, or export growth, while Sweden's ODA is positively associated with income, productivity, and employment-rate growth. These results should be read as suggestive associations within two cases rather than as causal proof that norm-oriented ODA generates superior economic returns.

The study contributes to academic and policy debates by redirecting attention to donor-side outcomes and by showing why aid volume alone is insufficient for understanding the domestic implications of ODA. At the same time, the findings point to the need for more precise future

measurement of aid composition, tying status, sectoral allocation, geographic focus, and lag structure before stronger claims about strategy, causality, or policy transfer can be made.

2. Research Background

Foreign aid is a critical instrument through which donor nations pursue development, diplomacy, and international influence. Japan and Sweden are both significant development donors, but their ODA profiles differ in terms of policy objectives, institutional arrangements, geographic focus, and the degree to which aid is linked to commercial or normative priorities. This section compares these profiles while avoiding a simple binary opposition between commercial strategy and normative commitment. In practice, economic-diplomacy-oriented aid can include humanitarian components, while norm-oriented aid can also serve strategic purposes such as preference-shaping, diplomatic alignment, and soft-power accumulation (Asplund & Soderberg, 2016).

Table 1: Comparison of Japan and Sweden's ODA

Category	Japan's ODA Profile	Sweden's ODA Profile
Policy orientation	Economic-diplomacy and regional-development-oriented; linked to trade, infrastructure, regional stability, and industrial diplomacy.	Norm-oriented and welfare-centered; emphasizes poverty reduction, human rights, governance, gender equality, and sustainability.
Institutions and focus	MOFA shapes policy direction; JICA implements projects; historically strong focus on Asia and regional connectivity.	Sida manages development cooperation; broader focus on low-income countries, welfare sectors, governance, and social development.
Economic linkage	Infrastructure, loans, procurement, and trade-related development may support Japanese firms and supply chains.	Direct commercial linkage is weaker, but indirect effects may occur through stability, trust, institutional partnerships, and knowledge networks.
Humanitarian and institutional emphasis	Humanitarian and human-security elements are embedded in broader economic diplomacy and regional stability objectives.	Human rights, democratic governance, poverty reduction, gender equality, and social welfare are central priorities.
Possible donor-side channel	Trade facilitation, supply-chain reliability, regional connectivity, and firm participation in infrastructure projects.	Reputation, soft power, institutional cooperation, knowledge exchange, and long-term partnership formation.

Source: Created by the authors

Japan's ODA policy has been strongly shaped by economic and geopolitical priorities. Historically, Japan used ODA as a diplomatic instrument to restore international relations after World War II, particularly in Asia (Yoshimatsu, 2023). Over time, it developed into a mechanism for promoting regional stability, economic integration, infrastructure connectivity, and trade partnerships. Japan's aid allocations have therefore often prioritized countries and regions with long-term diplomatic or economic significance, especially Southeast Asia.

Sweden's ODA profile is guided by a commitment to global solidarity, poverty reduction, sustainable development, and rights-based international engagement. Rather than being designed primarily around direct commercial returns, Swedish aid has emphasized democratic governance, human development, gender equality, and welfare-oriented development priorities (Shimomura, 2016). This does not mean that Swedish aid is non-strategic; rather, its strategic value is more likely to operate through norms, institutions, reputation, and long-term partnerships than through direct export promotion.

Japan's ODA is coordinated by the Ministry of Foreign Affairs (MOFA), which establishes policy directions, and the Japan International Cooperation Agency (JICA), which oversees

implementation (Michishita, 2022). This structured framework ensures that Japan's ODA aligns closely with its foreign policy and economic objectives. A significant proportion of Japan's aid is directed toward Southeast Asia, reinforcing trade and investment partnerships with ASEAN countries. Infrastructure development, particularly in transport, energy, and industrial zones, remains a key area of Japanese investment (Rix, 1993).

Sweden, in contrast, administers its ODA through the Swedish International Development Cooperation Agency (Sida), responsible for both policy and implementation. Unlike Japan's regionally concentrated aid, Sweden's ODA targets low-income nations globally, with a particular focus on Africa and parts of Asia (Sida, 2005). The aid programs emphasize social welfare sectors such as education, healthcare, and gender equality, in alignment with Sweden's commitment to the United Nations' Sustainable Development Goals (Jonung, 2009).

Japan's ODA profile incorporates a clear economic and regional-development dimension, especially through infrastructure, connectivity, and capacity-building projects. Such projects can facilitate trade flows, regional economic integration, and opportunities for Japanese firms, although the strength of these links varies across periods, sectors, and recipient contexts (Martinez-Zarzoso et al., 2009). Historical procurement and tying arrangements may also have connected some aid projects to Japanese industrial capabilities (Arase, 2005). These features suggest plausible economic channels, but they should not be equated with a simple or automatic macroeconomic return to Japan.

By comparison, Sweden's ODA has generally operated on a more untied and welfare-oriented basis, meaning that it is less explicitly designed to benefit Swedish firms through mandatory procurement arrangements. While this makes its commercial linkage less direct than Japan's, it does not preclude indirect economic effects. Aid that supports governance, institutional capacity, social infrastructure, and long-term stability may contribute to trust-based partnerships and future economic relationships, although such mechanisms require careful empirical validation (Lloyd et al., 2001).

Japan's ODA also incorporates humanitarian, human-security, disaster relief, and capacity-building components. These elements often coexist with broader diplomatic, regional stability, and infrastructure-development objectives rather than standing outside them (Sunaga, 2004). This mixed orientation is important for the present analysis because it cautions against reducing Japan's ODA to a purely commercial instrument.

Sweden, on the other hand, places humanitarian assistance, human rights, democratic governance, gender equality, and poverty alleviation at the center of its ODA profile (Nilsson, 2022). These priorities are better described as norm-oriented or welfare-centered than purely welfare-centered or non-strategic, since they can also enhance Sweden's international credibility, policy influence, and institutional partnerships.

Both Japan and Sweden use ODA as part of broader international engagement, although the channels through which aid supports global standing differ. Japan's ODA has often been associated with economic diplomacy, quality infrastructure, and regional stability, particularly within Asia (Hoshiro, 2024). By financing infrastructure and development projects, Japan can contribute to long-term partnerships and regional connectivity, even where the aggregate donor-side economic effect is difficult to identify.

Sweden, on the other hand, has used ODA to support soft power, multilateral credibility, and trust-based partnerships. Its emphasis on human rights, sustainable development, and institutional cooperation may strengthen Sweden's position in global policy discussions, although these reputational and diplomatic channels are not directly measured in the empirical model (Osei et al., 2004; Nilsson, 2022).

Japan and Sweden thus exemplify two analytically contrasting ODA profiles, each shaped by national priorities, economic structures, and foreign policy orientations. Japan's ODA has been more closely linked to economic diplomacy, regional infrastructure, and trade-related development, while Sweden's ODA has been more closely associated with welfare, governance, human rights, and sustainable development. The comparison is useful not because the two cases represent pure types, but because they allow us to examine whether different aid profiles are associated with different donor-side economic patterns.

3. Analytical Expectations

This section develops empirical expectations for the comparative analysis of Japan's and Sweden's ODA profiles and their association with donor-side economic indicators. The hypotheses are not framed as direct tests of donor intent, since intent is not directly observed in the empirical model. Instead, they are derived from the observable policy orientations and aid profiles discussed in the previous section.

Japan's ODA profile is economic-diplomacy and regional-development-oriented, with strong links to trade facilitation, infrastructure development, supply-chain stabilization, and regional economic interdependence (Scheyvens, 2005). By directing aid toward countries that are actual or potential trade and investment partners, Japan has used ODA as one instrument of economic diplomacy. If these channels are effective, Japanese ODA may be positively associated with donor-side income growth and export growth.

Specifically, Japan's ODA may be associated with GDP per capita growth through increased trade volumes, smoother supply chains, and deeper regional economic integration. ODA-supported infrastructure in recipient countries may also create opportunities for Japanese exports or support Japanese firms operating across regional production networks. However, these mechanisms are indirect and may not translate into measurable aggregate macroeconomic outcomes, particularly when the dependent variables capture national-level performance rather than recipient-linked trade flows.

Sweden's ODA profile is norm-oriented and welfare-centered, prioritizing recipient welfare, institutional development, democratic governance, and social development rather than direct commercial gain. For this reason, one might expect Swedish ODA to have weaker or less immediate associations with Sweden's export growth. At the same time, it would be misleading to treat such aid as entirely non-strategic. Human rights, governance, and democracy-oriented aid can also serve preference-shaping, reputational, diplomatic, and institutional purposes.

Accordingly, Sweden's ODA may have indirect and lagged associations with donor-side outcomes through channels such as international reputation, institutional partnerships, knowledge exchange, governance networks, and long-term market stability. These mechanisms are more difficult to observe in aggregate macroeconomic regressions, but they provide a basis for examining whether Sweden's ODA is associated with income, productivity, or employment-rate growth even in the absence of a direct export-promotion agenda.

Table 2: Analytical Expectations about Japan and Sweden's ODA Profiles

Expected Association	Japan's Economic-Diplomacy-Oriented ODA Profile	Sweden's Norm-Oriented ODA Profile
ODA and GDP per capita growth	Positive or ambiguous association, depending on whether trade, infrastructure, and supply-chain channels appear in aggregate data.	Indirect and potentially lagged association through institutional, reputational, and knowledge-based channels.
ODA and export growth	Positive association expected, especially if aid strengthens recipient-linked trade or firm participation.	Weaker or indirect association expected, since aid is less explicitly designed around export promotion.

Source: Created by the authors

To examine these expectations, this study employs a quantitative analysis of macroeconomic data from Japan and Sweden, focusing on associations between ODA disbursements and national economic performance. The models evaluate whether the reported ODA-outcome patterns are consistent with the theoretical expectations above, but they do not directly identify aid profile, aid modality, sectoral composition, or the causal mechanisms linking aid to donor-side outcomes.

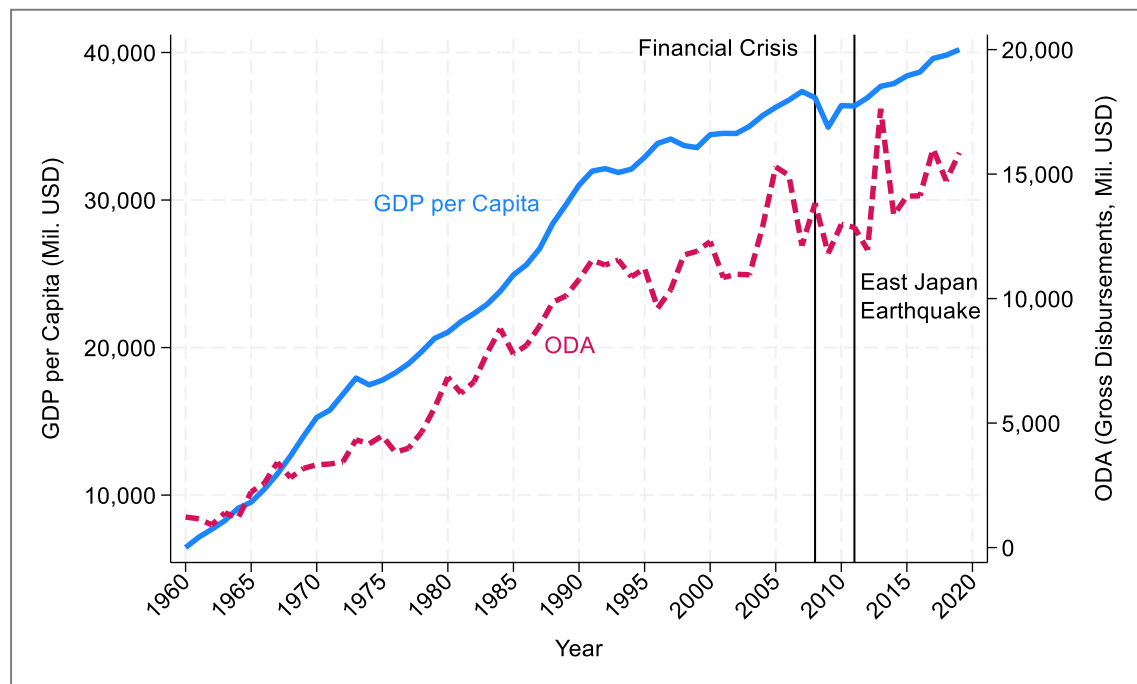
The purpose of the analysis is therefore not to demonstrate that one aid profile is superior to another. Rather, the analysis asks whether two contrasting ODA profiles show different patterns of association with donor-side economic indicators. This more limited framing is appropriate given the two-country design, the aggregate nature of the data, and the absence of direct measures of aid strategy in the regression models.

4. Statistical Overview

This section provides a statistical analysis of Japan's and Sweden's Official Development Assistance (ODA) trends in relation to their economic growth, measured as GDP per capita growth. The analysis explores the potential link between ODA disbursements and economic performance, offering insights into the role of foreign aid in fostering national income growth.

Figure 1 illustrates the trajectory of Japan's GDP per capita and its ODA disbursements from 1960 to 2020. Japan's GDP per capita exhibits a steady upward trend, with significant growth from the 1970s to the early 1990s, aligning with the country's rapid economic expansion. However, the financial crisis of 2008 led to a temporary decline in GDP per capita, followed by a subsequent recovery. The analysis of Japan's ODA trends suggests that foreign aid allocation has varied over time, with notable fluctuations in response to economic and geopolitical developments.

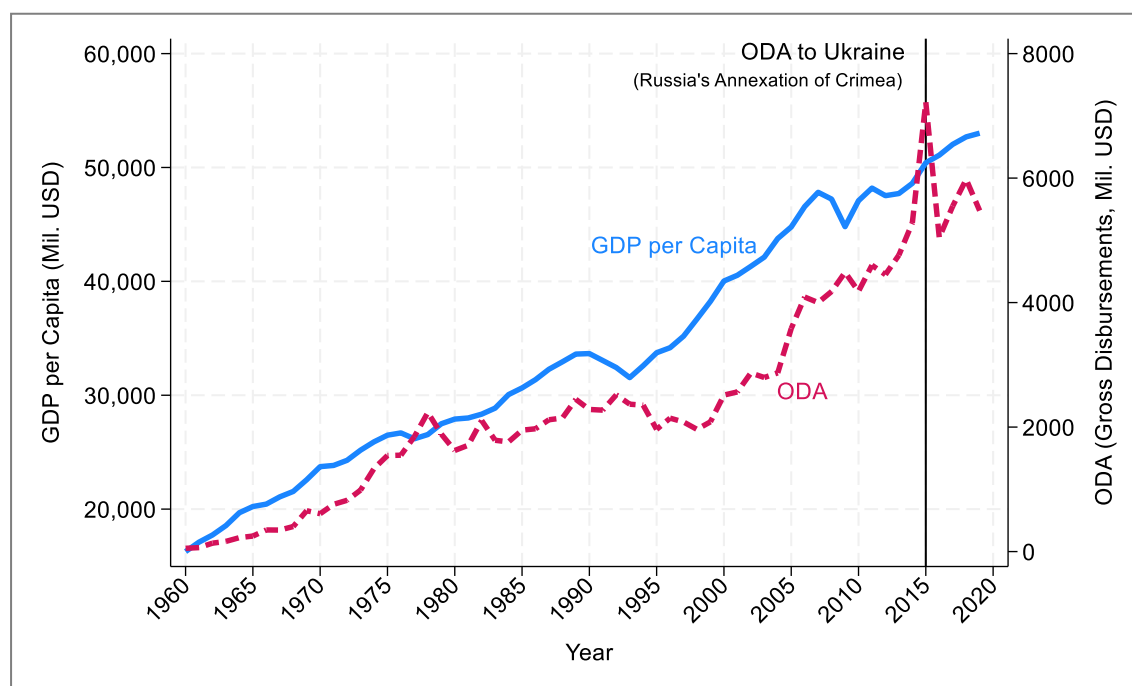
Figure 1. Japan's Time-series Trend of National Income and ODA Amount



Source: Penn World Table 10.01 and OECD DAC Statistics.

A key observation is the significant increase in ODA disbursements around 2013, following the East Japan Earthquake (2011). This surge may indicate a policy shift towards greater engagement in international development and humanitarian assistance. The correlation between ODA and economic growth warrants further investigation, as Japan's strategic use of aid could potentially contribute to domestic economic stability by fostering global economic ties and trade relations.

Figure 2 presents Sweden's ODA disbursements alongside its GDP per capita growth over the same period. Sweden's GDP per capita has shown consistent long-term growth, supported by a stable economic environment. Sweden's ODA trajectory also appears responsive to broader geopolitical and humanitarian developments. A notable increase in ODA disbursements is observed after 2014, coinciding with Russia's annexation of Crimea and subsequent regional instability. This pattern should be interpreted descriptively rather than as evidence of a single causal driver.

Figure 2. Sweden's Time-series Trend of National Income and ODA Amount

Source: Penn World Table 10.01 and OECD DAC Statistics.

Sweden has historically maintained a high level of ODA relative to its economic size, aligning with its policy of promoting global development, conflict prevention, and governance reforms. While Sweden's economy has remained resilient, further empirical analysis is needed to determine whether its ODA policies have had a measurable impact on GDP per capita growth, either through direct economic benefits or indirect contributions to global stability and trade.

Both Japan and Sweden demonstrate increasing ODA trends over time, yet their policy contexts and economic conditions differ. Japan's ODA trends appear connected to broader foreign economic policy, infrastructure cooperation, and regional engagement, while Sweden's ODA is more visibly linked to welfare, governance, and geopolitical-humanitarian concerns. These descriptive patterns motivate the broader question of whether ODA is statistically associated with donor-side income growth.

Testing whether ODA is associated with economic growth requires a more detailed empirical approach. The following models assess statistical associations between ODA disbursements and GDP per capita growth while controlling for other macroeconomic variables. The analysis should not be read as establishing causality, since ODA may be endogenous to broader domestic and geopolitical conditions.

The descriptive patterns are useful for motivating the empirical analysis, but they cannot by themselves establish whether aid serves as a catalyst for sustainable economic growth in donor countries. They should therefore be interpreted as contextual background for the regression analysis rather than as evidence of direct economic impact.

5. Empirical Strategy

While our empirical framework draws from the cross-country growth regression literature, including Lee (2017) and Barro (2016), our study adopts a more bounded design. First, we use a country-specific time-series approach for Japan and Sweden over the period 1960-2020, rather than a pooled cross-country panel. This allows for contextual interpretation, but it limits inferential leverage and external validity. Second, we introduce ODA as the central explanatory variable for donor-side outcomes, an issue that has received less attention than recipient-side aid effectiveness. Third, we use Japan and Sweden as contrasting aid-profile cases, while recognizing that the empirical model does not directly measure donor intent or the full composition of aid strategy. In this section, we describe our data, variable construction, and the

empirical models used to estimate associations between ODA and donor-side growth indicators such as GDP per capita, productivity, employment-rate, composite input, and export growth.

5.1. Data

Our main aim is to examine whether ODA disbursements are associated with economic growth for Japan and Sweden. Beyond income growth, we also examine potential macroeconomic channels by considering productivity growth, composite input growth, employment-rate growth, and export growth. These variables do not capture all possible aid mechanisms, but they allow us to explore whether donor-side outcomes differ across the two cases.

Penn World Table (PWT) 10.01 has an index for total factor productivity (TFP), the variable named '*rtfpna*', from which we derived the growth rates of TFP (g_T) using this variable.

When considering a neoclassical growth model of $Y = TX$ where T represents the TFP, we can derive the growth rate of composite capital (physical and human capital) per worker (g_x)

from T and Y as follows:

$$\frac{Y}{L} = ypw = T \cdot \frac{X}{L} = T x \quad (1)$$

$$g_{ypw} = g_T + g_x \quad (2)$$

$$\therefore g_x = g_{ypw} - g_T \quad (3)$$

Here, L represents employment (measured as '*emp*' in PWT 10.0), ypw denotes GDP per worker, and x refers to composite input per worker. GDP per worker growth is calculated using ypw , while per capita GDP growth is calculated using '*rgdpna*' divided by population ('*pop*') from the PWT 10.0 database.

Furthermore, employment rate growth (g_{emp}) is derived by calculating the growth rate of the employment rate, defined as employment divided by population, using the '*emp*' and '*pop*' variables from the PWT. Similarly, we can derive the following accounting identity:

$$ypc = \frac{Y = TX}{P} = T \cdot \frac{X}{L} \cdot \frac{L}{P} \quad (4)$$

$$= T \cdot x \cdot emp$$

$$\therefore g_{ypc} = g_T + g_x + g_{emp} \quad (5)$$

Because exports enter national output in the standard expenditure identity, we also test whether ODA is associated with export growth. This is an indirect test. The available export measure captures exports to all countries, whereas the most theoretically direct channel would be donor exports to recipient countries. As a result, the export model should be interpreted cautiously: a null result does not necessarily mean that ODA has no recipient-linked trade effect, and a significant result would not by itself identify the precise trade channel.

We also collected 13 macroeconomic, environmental, and policy variables (including two squared variables) as used in growth regressions in Lee (2017) and Barro (2016). While the aforementioned studies conducted cross-country panel analysis, here, we test by each country: Japan and Sweden. The control variables used by these two studies are (log of) per-capita income, (one over) life expectancy, (log of) fertility rate, investment ratio, years of schooling, government consumption ratio, terms of trade change, inflation, rule of law, and democracy index, however, since our data starts from 1960 but rule of law and democracy index which has data from back in 1960s and 70s which is publicly available were difficult to find, we omitted these two variables.

GDP per capita and its growth data are based on 2017 constant national prices and are sourced from PWT 10.01. The investment ratio is represented by '*csh_i*,' the openness ratio is calculated as '*csh_x*' minus '*csh_m*,' and the government consumption ratio is given by '*csh_g*,' all from PWT 10.01. The yearly inflation rate is calculated using the price level variable '*pl_con*', also from PWT 10.01. Life expectancy at birth data before 1970 are sourced from the UN Population Division, while data from 1971 are obtained from the World Development Indicators (WDI). The fertility rate is also sourced from WDI. Data on years of schooling are taken from PWT's Labor Detail dataset. The yearly terms-of-trade change is calculated using the export and import price index data, '*pl_x*' and '*pl_m*' variables respectively, from PWT 10.01.

As there are yearly fluctuations in many variables, including ODA values in Figures 1 and 2, the reported estimates use smoothed independent variables. Specifically, the independent variables are calculated based on values around the first year of each period (t), using moving averages with weights of 1, 2, 3, 2, and 1 for $t-2$, $t-1$, t , $t+1$, and $t+2$, respectively. This smoothing choice reduces short-term volatility but also limits causal interpretation because it incorporates forward-year information. Therefore, the reported results should be interpreted as descriptive associations under the current specification. A stricter future re-estimation should use backward-looking lag structures, such as $t-1$, $t-3$, or backward moving averages from $t-3$ to $t-1$, to preserve temporal ordering. Tables 3 and 4 present the summary statistics of our data.

Table 3. Summary Statistics (Japan)

Variable	Observation	Mean	Std. dev.	Min	Max
GDP per capita growth	55	0.031	0.028	-0.004	0.099
TFP growth	55	0.009	0.013	-0.008	0.043
Composite input growth	55	0.021	0.016	-0.003	0.053
Employment rate growth	55	0.001	0.005	-0.012	0.012
Export growth	55	0.059	0.054	-0.035	0.167
ODA (mil. USD)	60	8715	4647	914	17626
GDP per capita (mil. USD)	60	26469	10413	6444	40196
TFP index	60	0.893	0.112	0.576	1.001
Employment (mil.)	60	61.64	6.17	47.91	69.98
Life expectancy	60	77.82	4.77	67.70	84.36
Fertility rate	60	1.652	0.295	1.260	2.230
Investment ratio	60	0.318	0.055	0.229	0.421
Years of schooling	60	10.95	1.45	8.13	12.99
Government consumption ratio	60	0.164	0.026	0.125	0.217
Terms of trade change	59	-0.008	0.042	-0.145	0.108
Inflation rate	59	0.049	0.106	-0.211	0.396

Source: Created by the authors.

Table 4. Summary Statistics (Sweden)

Variable	Observation	Mean	Std. dev.	Min	Max
GDP per capita growth	55	0.020	0.012	-0.009	0.045
TFP growth	55	0.007	0.010	-0.008	0.025
Composite input growth	55	0.012	0.005	0.003	0.023
Employment rate growth	55	0.000	0.009	-0.029	0.015
Export growth	55	0.038	0.034	-0.042	0.099
ODA (mil. USD)	60	2406	1678	53	7218
GDP per capita (mil. USD)	60	33905	10625	16273	53013
TFP index	60	0.860	0.093	0.646	1.005
Employment (mil.)	60.00	4.27	0.34	3.66	5.00
Life expectancy	60.00	77.77	3.02	73.01	83.11
Fertility rate	60	1.867	0.234	1.500	2.470
Investment ratio	60	0.291	0.034	0.229	0.359
Years of schooling	60.00	10.49	1.33	7.84	12.33
Government consumption ratio	60	0.217	0.030	0.171	0.272
Terms of trade change	59	-0.004	0.025	-0.096	0.089
Inflation rate	59	0.037	0.096	-0.219	0.253

Source: Created by the authors.

5.2. Model Specification

Our empirical analysis examines associations between ODA and donor-side economic outcomes. We adopt reduced-form growth regression models as follows:

$$g_{i,t \sim t+5} = \beta_0 + \beta_1 \log(ODA_{i,t}) + \gamma X_{i,t} + \varepsilon_{i,t} \quad (6)$$

where the g represents the annual growth rate, from year t to year $t+5$, of one of four variables: state's per-capita GDP, total factor productivity, per-worker composite input, and employment rate. i is either Japan or Sweden. γX is a set of time-varying control variables influencing economic growth, as explained in Section 5.1. Lastly, ε refers to the error term. This methodology for running growth regressions on these four dependent variables is adapted from Jeong and Yu (2025). Given the country-specific design and aggregate data, the coefficients should be read as conditional associations rather than as causal estimates of aid strategy.

Furthermore, we test for the last dependent variable which is growth of exports.

$$g_{exp\ i,t \sim t+5} = \beta_0 + \beta_1 \log(ODA_{i,t}) + \gamma Z_{i,t} + \varepsilon_{i,t} \quad (7)$$

where the left-hand-side term represents the annual growth rate, from year t to year $t+5$, of state's export value. γZ is a set of time-varying control variables influencing economic growth as in Equation (6), but excluding the trade openness variable because export growth is closely related to trade openness and may create multicollinearity concerns. As noted above, the export measure covers total exports rather than exports to aid recipients, so the results cannot directly identify recipient-specific trade effects.

6. Results

The results show different ODA-outcome patterns for Japan and Sweden under the reported specification. Japan's ODA is not significantly associated with any of the dependent variables in Table 5. Sweden's ODA, by contrast, is positively associated with income growth, productivity growth, and employment-rate growth, and negatively associated with composite input growth in Table 6. These patterns are noteworthy, but they should not be interpreted as direct evidence that Swedish donor intent caused superior domestic returns. The model estimates associations between ODA and macroeconomic outcomes, not the causal effect of aid profile.

Table 5. Regression Results (Japan)

	(1)	(2)	(3)	(4)	(5)
	g_{ypw}	g_T	g_x	g_{emp}	g_{exp}
Log(ODA)	0.0048 (0.773)	0.0026 (0.798)	0.0092 (0.431)	-0.0062 (0.471)	-0.0329 (0.509)
Log(income)	-0.2220 (0.119)	-0.2525 (0.008)***	-0.1010 (0.166)	0.1316 (0.012)**	0.1603 (0.762)
1/life expectancy	-195.7838 (0.000)***	-112.0188 (0.000)***	-14.2265 (0.309)	-66.8173 (0.000)***	13.3509 (0.905)
Log(fertility rate)	0.1200 (0.000)***	0.0625 (0.001)***	0.0240 (0.082)*	0.0332 (0.014)**	-0.1571 (0.179)
Investment ratio	-0.2649 (0.080)*	-0.0668 (0.500)	-0.0084 (0.921)	-0.1842 (0.003)***	0.3393 (0.499)
Years of schooling	-0.0404 (0.334)	0.0215 (0.431)	0.0123 (0.579)	-0.0730 (0.000)***	-0.0799 (0.607)
Government consumption ratio	-0.5266 (0.249)	-0.8584 (0.004)***	-0.4545 (0.053)*	0.7913 (0.000)***	1.2355 (0.472)
Trade openness	-0.1173 (0.103)	-0.0033 (0.929)	0.0101 (0.740)	-0.1238 (0.002)***	

	(1)	(2)	(3)	(4)	(5)
Terms of trade change	0.0089 (0.901)	0.0031 (0.942)	-0.0122 (0.755)	0.0187 (0.577)	-0.0044 (0.987)
Inflation	-0.0372 (0.131)	-0.0138 (0.354)	-0.0165 (0.251)	-0.0068 (0.646)	-0.2011 (0.013)**
Constant	5.3380 (0.000)***	3.8721 (0.000)***	1.0662 (0.062)*	0.3407 (0.494)	-0.7915 (0.871)
Observations	55	55	55	55	55
R-sq.	0.9594	0.9186	0.9502	0.6601	0.8526
Adjusted R-sq.	0.9501	0.9001	0.9389	0.5829	0.8231

Note: Robust standard errors are used to calculate p-values; P-values are in parentheses (*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$); Residual-based ADF (Augmented Dickey-Fuller) tests confirm stationarity of the residuals in all five models at the 1% significance level. This suggests the presence of cointegration relationships among the variables and thus provides evidence against spurious regression.

Source: Created by the authors.

For Japan, the results do not support the expectation that an economic-diplomacy-oriented ODA profile is associated with aggregate income growth or export growth in the reported specification. For Sweden, ODA is positively associated with per-capita GDP growth, employment-rate growth, and productivity growth, while it is not associated with export growth. The negative association with composite input growth may be consistent with changes in the relative contribution of productivity and input accumulation, but this interpretation should remain cautious. The model does not directly test firm-level innovation, soft power, administrative employment, or specific procurement channels.

Table 6. Regression Results (Sweden)

	(1)	(2)	(3)	(4)	(5)
	g_{ypw}	g_T	g_x	g_{emp}	g_{exp}
Log(ODA)	0.0155 (0.000)***	0.0090 (0.016)**	-0.0212 (0.000)***	0.0273 (0.000)***	0.0136 (0.544)
Log(income)	-0.2082 (0.000)***	-0.0789 (0.000)***	0.0625 (0.000)***	-0.1880 (0.000)***	-0.1182 (0.472)
1/life expectancy	-161.4585 (0.000)***	-82.5161 (0.000)***	90.8690 (0.000)***	-166.3773 (0.000)***	64.5709 (0.533)
Log(fertility rate)	-0.0203 (0.009)***	0.0156 (0.020)**	0.0112 (0.019)**	-0.0460 (0.000)***	-0.0606 (0.288)
Investment ratio	-0.2416 (0.000)***	-0.0883 (0.078)*	-0.0931 (0.001)***	-0.0584 (0.191)	-0.4546 (0.153)
Years of schooling	-0.0207 (0.000)***	-0.0115 (0.005)***	0.0328 (0.000)***	-0.0411 (0.000)***	0.0135 (0.522)
Government consumption ratio	-0.0025 (0.931)	-0.1355 (0.000)***	0.0742 (0.000)***	0.0572 (0.109)	-0.5424 (0.011)**
Trade openness	-0.0595 (0.000)***	-0.0663 (0.000)***	-0.0089 (0.177)	0.0151 (0.252)	
Terms of trade change	0.0799 (0.139)	0.0084 (0.898)	0.0665 (0.048)**	0.0056 (0.947)	0.1296 (0.575)
Inflation	-0.0003	-0.0353	-0.0010	0.0352	-0.0640

	(1)	(2)	(3)	(4)	(5)
	(0.981)	(0.008)***	(0.895)	(0.050)*	(0.451)
Constant	4.4934	2.0433	-1.9821	4.3430	0.4735
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.869)
Observations	55	55	55	55	57
R-sq.	0.9087	0.8589	0.8776	0.8139	0.5258
Adjusted R-sq.	0.8879	0.8268	0.8498	0.7717	0.4350

Note: Robust standard errors are used to calculate p-values; P-values are in parentheses (*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$); Residual-based ADF (Augmented Dickey-Fuller) tests confirm stationarity of the residuals in all five models at the 1~5% significance level. This suggests the presence of cointegration relationships among the variables and thus provides evidence against spurious regression.

Source: Created by the authors.

7. Implications

This section interprets the statistical results as bounded, case-specific associations rather than as causal evidence of the economic superiority of one aid profile over another. The findings are useful because they complicate the assumption that economic-diplomacy-oriented aid necessarily produces stronger measurable donor-side economic returns. At the same time, the results cannot prove that norm-oriented aid generates domestic growth, since the model does not directly measure aid modality, tying status, sectoral allocation, geographic focus, or donor intent.

For Japan, the absence of statistically significant associations suggests that economic-diplomacy and regional-development-oriented ODA does not automatically translate into aggregate income, productivity, employment-rate, or export growth. This does not mean that Japanese ODA lacks economic value. Its benefits may operate through regional stabilization, supply-chain reliability, infrastructure connectivity, firm-level procurement, or recipient-specific trade channels that are not fully captured by national-level macroeconomic indicators.

For Sweden, the positive associations with income, productivity, and employment-rate growth suggest that a norm-oriented ODA profile may be compatible with favorable donor-side macroeconomic outcomes. However, these findings should be treated as suggestive rather than conclusive. Swedish aid may be linked to broader institutional, reputational, or knowledge-based channels, but the current model does not directly observe these mechanisms. The results therefore motivate further analysis rather than validate a simple claim that norm-oriented aid produces domestic economic returns.

The possible mechanisms behind Sweden's results require more careful specification. Employment-rate growth may reflect broader domestic labor-market dynamics, public-sector expansion, development administration, or internationally oriented sectors, but the regression model does not identify which channel is operative. Similarly, productivity growth could be linked to knowledge networks, institutional partnerships, or technological cooperation, but these mechanisms are not directly tested. Therefore, references to job creation, innovation, and soft power should be treated as possible interpretations, not as demonstrated empirical findings.

The comparison also suggests a conceptual lesson. A simple distinction between strategic and norm-oriented aid is too rigid. Economic-diplomacy-oriented aid can contain humanitarian and institutional components, while norm-oriented aid can also serve strategic purposes through reputation, preference-shaping, conditionality, multilateral influence, and diplomatic alignment. Future research should therefore move from intent labels to measurable aid profiles, including sectoral allocation, tying status, grant-loan composition, recipient concentration, and implementation modality.

The policy implications should therefore be stated cautiously. Rather than recommending that donor governments adopt one aid profile over another, the results suggest that policymakers should examine which components of ODA design are associated with specific donor-side outcomes, under what timing conditions, and through which mechanisms. For Japan, this may mean evaluating whether infrastructure and regional connectivity aid generates measurable firm-level, trade, or supply-chain benefits that aggregate macroeconomic models cannot detect.

For Sweden, this may mean examining whether governance, welfare, and sustainability-oriented aid produces indirect economic benefits through institutional partnerships, knowledge exchange, or reputation-based channels.

The findings also point to the importance of improving empirical measurement. Stronger policy claims would require direct indicators of aid composition, such as tied versus untied aid, grants versus loans, sectoral allocation, geographic focus, procurement structure, and recipient-linked exports. Without these measures, policy implications remain interpretive rather than operational. The current study should therefore be seen as an initial comparative analysis that identifies patterns requiring further testing.

More broadly, the results support a more integrated research agenda on ODA and donor-side outcomes. Traditional indicators such as GDP growth and aggregate exports may not fully capture the economic implications of aid. Future work should combine macroeconomic models with sectoral, firm-level, and recipient-linked trade data to determine whether ODA contributes to domestic economic resilience through concrete channels. Such work would allow scholars and policymakers to move beyond broad aid profiles and toward a more precise understanding of how aid design matters.

8. Conclusion

This study provided a bounded comparative analysis of Japan's and Sweden's ODA profiles and their association with donor-side economic outcomes. Using time-series macroeconomic data from 1960 to 2020 and a growth regression framework inspired by Lee (2017) and Barro (2016), we evaluated the relationship between ODA disbursements and GDP per capita growth, productivity growth, employment-rate growth, composite input growth, and export growth. Unlike studies that focus primarily on recipient-side outcomes, this paper redirects attention to the donor side of development assistance.

The findings show that Japan's ODA is not significantly associated with income, productivity, employment-rate, or export growth under the reported specification. Sweden's ODA is positively associated with GDP per capita growth, productivity growth, and employment-rate growth, but not export growth. These contrasting patterns are analytically interesting, but they should not be interpreted as proof that donor intent or aid profile directly causes domestic economic returns. The results are best understood as case-specific associations generated by a two-country time-series design.

In Japan's case, the absence of measurable aggregate growth associations may reflect the structure of its ODA profile. Much of Japan's aid has been directed toward infrastructure development, regional stability, and economic diplomacy in Asia. These forms of aid may generate benefits through supply-chain security, firm-level participation, regional connectivity, or recipient-specific trade relationships, but such effects may not appear clearly in aggregate national growth or export measures.

In Sweden's case, the positive associations with income, productivity, and employment-rate growth suggest that a norm-oriented and welfare-centered ODA profile can coexist with favorable donor-side macroeconomic outcomes. However, the analysis does not establish the mechanisms behind these patterns. Governance support, institutional cooperation, knowledge networks, reputation, and soft-power effects remain plausible but untested pathways that require additional empirical investigation.

The study has important limitations. Japan and Sweden are analytically valuable cases, but they are not representative of all donor countries. The empirical model uses aggregate ODA and macroeconomic indicators rather than direct measures of aid strategy, sectoral composition, tying status, or implementation modality. In addition, the smoothing specification used in the reported estimates limits causal interpretation because it includes forward-year information. For these reasons, the study should be read as a theory-building comparison, not as a universal model of ODA effectiveness or as a causal test of donor intent.

Future research should extend this framework in two directions. First, broader donor panels could test whether the patterns observed here hold across a larger set of established and emerging donors. Second, more disaggregated analysis should distinguish between aid sectors, grants and loans, tied and untied aid, geographic allocation, recipient-linked exports, and firm-

level participation in aid projects. Such work would make it possible to identify concrete policy levers rather than relying on broad labels such as strategic or norm-oriented aid.

Ultimately, the paper contributes to the reassessment of ODA as a policy instrument whose consequences may extend beyond recipient development outcomes. Its main claim is not that one aid profile is superior to another, but that donor-side outcomes deserve closer empirical attention and that aid profiles must be measured more precisely. A more careful integration of development objectives, economic analysis, and institutional design can help clarify when and how ODA may matter for donor countries as well as for recipients.

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Informed Consent

The authors declare that informed consent was not required as there were no human participants involved.

Conflict of Interest

The authors declare that there is no conflict of interest.

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