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LOST IN MONETARY TRANSLATION : MONETARY SINGLENESS AND RELATIVE PRICE DISTORTIONS

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Lost in Monetary Translation: Monetary Singleness and Relative Price Distortions

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Abstract

This paper studies how currency conversion can disrupt relative prices by impairing the unit-of-account function of money. We examine Okinawa's 1972 conversion from the U.S. dollar to the Japanese yen, following the collapse of a previously shared unit-of-account triggered by the Nixon shock. Using wholesale price data for perishable goods, we show that relative prices exhibited sharp changes despite flexible prices. By contrast, Okinawa's 1958 currency conversion used a single, clearly announced rate and left relative prices stable. The comparison highlights the importance of institutional clarity for a shared unit of account and stable relative prices.

Keywords : *Unit of Account; Monetary Singleness; Relative Price Distortion; Currency Conversion; Okinawa Reversion*

JEL Classification Number : E42, E31, D40, N15

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1. Introduction

Money serves as a unit of account that allows economic agents to compare values across goods and transactions. When this function operates smoothly, relative prices convey information about scarcity and costs, supporting efficient real allocation. Standard monetary theory thus treats the unit-of-account role of money as largely innocuous for real outcomes. This presumption, however, rests on an implicit and rarely scrutinized condition: monetary singleness—the existence of a common and institutionally enforced unit of account that is uniformly applied and taken for granted across transactions, rather than merely the presence of a single legal tender.[1]

Direct empirical evidence on the real allocative consequences of failures in monetary singleness is remarkably limited. Disruptions to the unit-of-account function are rare, and when they do occur, they are typically embedded in episodes of abrupt inflation, monetary instability, or broader economic crises, making it difficult to disentangle causal mechanisms. Since relative prices are the fundamental signals guiding efficient allocation, it remains an open empirical question whether failures of monetary singleness alone—absent abrupt inflation, monetary instability, or crisis—can distort relative prices.

This paper studies a rare breakdown of a previously shared unit of account using the 1972 currency conversion in Okinawa as a quasi-natural experiment. At the time of the conversion in May 1972, Okinawa remained under U.S. administration and had not yet rejoined Japanese sovereignty. Under the Bretton Woods fixed exchange rate system, prior to the Nixon shock in August 1971, prices in Okinawa were widely evaluated using a common benchmark of 360 yen per U.S. dollar, even though transactions were denominated in dollars.

After the Nixon shock, however, political decisions by the Japanese government deliberately left the future conversion rate unspecified. Although the Okinawa Reversion Measures Outline, approved by the Japanese cabinet in November 1970, stipulated that conversion would be conducted based on an "official exchange rate," the rate itself was deliberately left unspecified. It was not announced until two days before reversion. Moreover, while the official rate was ultimately set at 305 yen per dollar, a sudden currency verification implemented in October 1971, prior to reversion,

[1] A small theoretical literature on the role of a shared unit of account includes Kocherlakota (1998) and Doepke and Schneider (2017). Related discussions of the importance of a shared unit of account and the "singleness of money" appear in recent policy-oriented work by the BIS, particularly in the context of payment system fragmentation and digital currencies, for example, Bank for International Settlements (2025).

protected certain household cash holdings and deposits at the long-standing 360 yen parity. As a result, multiple focal exchange-rate benchmarks coexisted at the time of conversion.[2]

In practice, prices of goods and services—including those recorded in official retail price surveys—were translated into yen using heterogeneous implicit conversion rates across agents and transactions, thereby undermining the shared monetary yardstick required for economic calculation.

This breakdown was not merely conceptual. Contemporary accounts make clear how this institutional ambiguity translated into confusion in everyday economic calculation. Newspaper reports describe consumers and retailers repeatedly converting yen prices back into dollars using different reference rates—305, 308 (the official IMF parity), or 360 yen per dollar—to judge whether prices were "reasonable." Without a single benchmark taken for granted, routine transactions required constant recalculation, verification, and negotiation, and even identical posted yen prices were interpreted differently across agents.[3]

Exploiting high-frequency wholesale price data for perishable fresh produce—markets characterized by flexible prices and stable cost structures—we document a sharp and persistent disruption of the relative price structure at the moment of currency conversion. Relative prices exhibit a large discontinuous shift at reversion, followed by slow and incomplete re-coordination. These patterns arise despite flexible prices, stable monetary policy, and the absence of nominal rigidities, seasonal patterns, or abrupt aggregate inflation, pointing instead to a breakdown of the shared unit of account.[4]

To isolate the role of monetary singleness, we contrast the 1972 episode with Okinawa's earlier currency conversion in 1958, when the transition from the B-yen—a military scrip that served as legal tender under U.S. administration—to the U.S. dollar was implemented at a single, clearly announced rate and credibly enforced. In that episode, relative prices remained stable despite a complete change in the nominal unit of account. This comparison shows that currency conversion *per se* need not disrupt relative prices; distortions arise when the unit-of-account function ceases to be shared and taken for granted.

[2] While these arrangements also implied redistribution across holders of dollar balances converted at different benchmarks, our focus is on how the loss of a commonly shared unit of account distorted relative prices, a mechanism we empirically isolate using wholesale markets with controlled quantities.

[3] See Online Appendix A for contemporaneous accounts from *Ryukyu Shimpo* and other sources.

[4] A short list of studies on relative price distortions arising from New Keynesian-type nominal rigidities includes Gagnon (2009), Nakamura et al. (2018), Alvarez et al. (2019), and Kano and Kano (2025).

The Okinawa experience in 1972 also contrasts sharply with well-studied episodes of currency unification, most notably the introduction of the euro. Evidence from the euro cash changeover in 2002 shows that, when conversion rates are fixed, transparent, and commonly understood, both actual prices and relative price structures remain largely stable, even if perceived inflation temporarily rises.[5]

Beyond its historical setting, the mechanism documented here has broader policy relevance. Recent debates on stablecoins, tokenized money, and unified ledger architectures have renewed attention to the integrity of the unit-of-account function in modern monetary systems. When multiple privately issued monies, settlement layers, or reference units coexist without clear institutional coordination, monetary singleness can no longer be taken for granted. [6]

2. Historical Background and 1972 Currency Conversion in Okinawa

Following World War II, Okinawa was administered by the U.S. Civil Administration of the Ryukyu Islands (USCAR) and remained outside Japan's monetary and institutional framework until its reversion to Japanese sovereignty on May 15, 1972. Although the U.S. dollar became the sole legal tender in 1958, Okinawa's real economy grew increasingly integrated with mainland Japan through trade, migration, and consumption patterns. By the late 1960s, prices, wages, and contracts were effectively formed with reference to the Japanese economy, even though transactions continued to be denominated in U.S. dollars.

Under the Bretton Woods system, the U.S. dollar was fixed at 360 yen, providing a stable and commonly understood reference point for price formation both in Okinawa and on the mainland. This arrangement allowed the dollar to function as a coherent unit of account in Okinawa: prices were quoted in dollars, but their underlying valuation was implicitly anchored to the fixed 360 yen parity. This monetary environment changed abruptly after the Nixon Shock in August 1971, when the suspension of dollar–gold convertibility triggered a rapid appreciation of the yen under the emerging floating exchange rate regime.

Okinawa's reversion to Japan involved a sixth currency conversion, replacing the U.S. dollar with the Japanese yen as legal tender. In principle, the Japanese government emphasized the

[5] See, for example, Hobijn et al. (2006), Del Giovane and Sabbatini (2008), and Dziuda and Mastrobuoni (2009).

[6] See Bank for International Settlements (2025). Related concerns have also been raised in policy commentary, including Wolf (2025).

importance of conducting the conversion smoothly and based on an "official" exchange rate. In practice, however, political negotiations between the Japanese government and the Government of the Ryukyu Islands, which operated under the authority of USCAR, over the applicable rate were prolonged and contentious. The official conversion rate—305 yen per U.S. dollar—was announced only two days before reversion, leaving households and firms with substantial uncertainty about the future yen value of their dollar holdings and existing prices.

Crucially, the conversion was implemented asymmetrically across agents and transactions. Household deposits and cash holdings verified prior to reversion by the sudden currency verification on October 8 and 9, 1971 were partially protected at the pre–Nixon Shock parity of 360 yen, while corporate dollar holdings and unverified balances were converted at a substantially lower rate of 305 yen. As a result, identical dollar-denominated amounts were subject to different implicit conversion rates depending on timing and institutional classification. At the point of conversion, multiple exchange rates coexisted in practice, preventing the yen from functioning as a shared and commonly understood unit of account.

Contemporaneous accounts indicate that this institutional ambiguity translated into a breakdown of the unit-of-account function in everyday economic life. Investigative reportage from the period (Masuda, 1972; Ryukyu Shimpo, 1972) describes how consumers and retailers routinely relied on multiple implicit exchange rates—305, 308, or 360 yen per dollar—to interpret newly posted yen prices. Without a single, taken-for-granted conversion benchmark, routine transactions required repeated mental recalculation and verification.

Importantly, the currency conversion did not coincide with major changes in other economic institutions or abrupt inflation dynamics. Under the Act on Special Measures Incidental to the Reversion of Okinawa (Act No.129 of 1971), most import tariffs, indirect taxes, and market access regulations were preserved for several years following reversion. At the same time, although inflation in Naha City was elevated in the months preceding reversion, aggregate price increases were moderate rather than abrupt.[7] These institutional and macroeconomic features imply that the sharp disruption of relative prices documented below cannot be attributed to contemporaneous regulatory reforms or large inflationary shocks, isolating the currency conversion itself as the primary source

[7] Between November 1971 and April 1972, the annualized inflation rate in Naha City was approximately 9.9 percent. Excluding seasonal items, the corresponding rate was about 8.9 percent, corresponding to a monthly rate of roughly 0.7–0.8 percent.

of disturbance.

The institutional background summarized here is sufficient to motivate the empirical analysis below; a more detailed discussion of contemporaneous narratives and policy documents is provided in Online Appendix A.

3. Relative Price Distortions under a Breakdown of Monetary Singleness

This section investigates how the breakdown of monetary singleness documented in Section 2 manifested itself in relative prices. Once the dollar–yen exchange rate ceased to function as a shared unit of account, how did relative prices adjust at the micro level?

3.1 Lost in monetary translation: Dispersion of cross-product implicit conversion rates

This subsection documents dispersion in implicit conversion rates across retail goods immediately after reversion. We exploit retail price surveys conducted in Naha City, the capital city of Okinawa, in May 1972 that report prices for identical goods both immediately before and after the currency conversion.

The core dataset consists of official retail price surveys conducted by the Ryukyu Government in early May 1972 and by the Okinawa Prefectural Government in late May 1972. The data, previously used in Kano and Kano (2025) and described in detail in Online Appendix B.1, cover 276 retail items and exploit the unique feature that prices in May 1972 are reported separately before and after the currency conversion—first in U.S. dollars and then in Japanese yen. This allows us to observe, within the same calendar month and for the same set of goods, how dollar-denominated prices were translated into yen at reversion.

The surveys were conducted using the same methodology and within the same local retail stores. Given the short interval between the two surveys and the absence of contemporaneous changes in trade policy, taxation, or market access, differences between early- and late-May prices primarily reflect the currency conversion rather than changes in underlying economic fundamentals.

We complement these data with an independent retail price survey conducted by Masuda (1972), which records posted prices for identical goods at the same stores in Naha over a narrow window spanning May 10–19, 1972. Prices are observed in U.S. dollars prior to reversion and in

Japanese yen thereafter, providing a high-frequency snapshot of how individual prices were recalculated at the moment of conversion.

Combining the two sources yields 511 retail items, of which 484 have valid price observations both before and after reversion. For each item, we infer an implicit conversion rate from the ratio of the post-reversion yen price to the pre-reversion dollar price. Because these observations straddle the reversion date, implicit conversion rates can be inferred without assumptions about price adjustment dynamics or cost changes. Whether the resulting dispersion reflects product-level or store-level variation is immaterial for our purposes: any failure of prices to translate at a common rate constitutes direct evidence that the unit of account was no longer applied uniformly across transactions.

For each item i, we define the implicit conversion rate s_i as the ratio of the post-reversion yen price P_i^{yen} to the pre-reversion dollar price P_i^{usd},

$$s_i \equiv \frac{P_i^{\text{yen}}}{P_i^{\text{usd}}}.$$

This implicit rate captures how each dollar-denominated price was effectively translated into yen at the product level.

Figure 1 plots the distribution of product-level implicit conversion rates s_i at the time of reversion. If the dollar–yen exchange rate had functioned as a common and uniformly applied unit of account, these implicit rates would cluster tightly around a single value—most plausibly the official conversion rate of 305 yen per dollar or the long-standing parity of 360 yen that had anchored price-setting prior to reversion.

Instead, Figure 1 reveals substantial dispersion across retail goods. While some prices were converted at rates close to 305 yen or 360 yen, a large mass of observations lies between these benchmarks, and a nontrivial fraction exhibits extreme values far from either rate. Dollar-denominated prices were therefore translated into yen at markedly different conversion rates across goods and retailers.

A salient feature of the distribution is its pronounced multimodality. Implicit conversion rates cluster not only near the official rate of 305 yen per dollar, but also around the long-standing 360 yen parity. This pattern indicates that price setters did not converge on a unique focal con-

version rate at reversion. Instead, multiple competing benchmarks coexisted: a policy-imposed rate announced only days before reversion, and a historically entrenched valuation norm that had anchored economic calculation since 1958 and was reinforced through pricing and wage-setting practices.

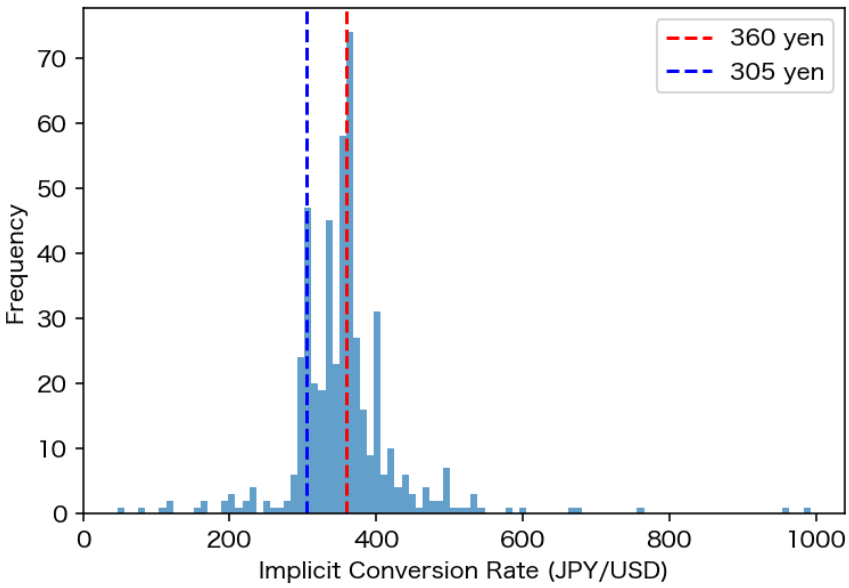

Figure 1: Cross-product Implicit Conversion Rates at the 1972 Reversion

Note. The histogram plots item-level implicit conversion rates $s_i = P_i^{\text{yen}}/P_i^{\text{usd}}$ for 484 retail goods in Naha City. The red and blue dashed lines indicate the long-standing 360 yen parity and the official conversion rate of 305 yen per dollar, respectively.

The coexistence of these focal benchmarks provides micro-level evidence of unresolved expectation drift. Even in the presence of an official conversion rate, economic agents continued to rely on alternative valuation norms when translating prices into yen. The resulting dispersion thus reflects a coordination failure in which different goods—and potentially different retailers—implicitly selected different conversion benchmarks.

Importantly, these competing benchmarks were not merely statistical artifacts. Rather, Bank of the Ryukyu (1984), Makino (1987), and contemporaneous newspaper accounts indicate that the 360 yen parity continued to function as a socially legitimate reference point for pricing and wage setting, while the newly announced 305 yen rate lacked such coordination power.[8]

The right tail of the distribution, consisting of implicit conversion rates exceeding the 360 yen parity, is particularly informative. Masuda (1972), Bank of the Ryukyu (1984), Makino (1987),

[8]Detailed qualitative evidence supporting this interpretation is documented in Online Appendix A.

Kabira (2015), and contemporaneous newspaper accounts emphasize that such prices were widely perceived as illegitimate and provoked strong public resentment, often described as opportunistic behavior exploiting conversion-related confusion. These reactions reflect not merely dissatisfaction with perceived losses, but the violation of a socially entrenched fairness norm associated with the 360 yen benchmark.

Taken together, the distribution in Figure 1 provides direct micro-level evidence that the yen valuation of the dollar ceased to function as a shared unit of account at reversion. Rather than serving as a uniform numeraire, the conversion rate became product-specific and effectively discretionary, reflecting the institutional fragmentation documented in Section 2.

This dispersion has immediate implications for relative prices. By definition, the relative price between products i and j satisfies

$$\frac{P_i^{\text{yen}}}{P_j^{\text{yen}}} = \frac{s_i}{s_j} \cdot \frac{P_i^{\text{usd}}}{P_j^{\text{usd}}}.$$

When implicit conversion rates differ across goods, relative prices in yen necessarily depart from their dollar-denominated counterparts.

To assess whether this mechanical implication translated into genuine disruptions of the relative price structure, the next subsection turns to wholesale markets for perishable goods, where prices are highly flexible and nominal rigidities are minimal.

3.2 Relative price distortions in flexible-price wholesale markets

We examine how dispersion in implicit conversion rates translated into relative price distortions using high-frequency daily wholesale price data for perishable fresh products traded in Naha City.

Identification is strengthened by institutional continuity: under the Act on Special Measures Incidental to the Reversion of Okinawa, most import tariffs and indirect taxes were held constant for several years following reversion. Fresh produce enjoys an additional advantage: according to contemporaneous Ryukyu Government publications, imports of fruits and vegetables from mainland Japan were already tariff-free prior to reversion.[9]

[9]For fresh produce, tariffs were already zero prior to reversion. See Government of the Ryukyu Islands (1969).

As a result, wholesale prices were insulated from both short-run tariff adjustments and broader trade policy shocks. This institutional continuity allows us to interpret observed relative price distortions as reflecting the breakdown of the unit-of-account function, rather than changes in border protection, tax incidence, or other policy-induced cost shocks.

The wholesale price data are constructed from daily market quotations published in the *Ryukyu Shimpo*. For fresh produce, the newspaper reports prices from the Okinawa Agricultural Cooperative Central Wholesale Market (Nōren Chūo Ichiba). For fresh fish, quotations are drawn from wholesale markets operated by the Naha Fisheries Cooperative (Naha Gyokyō) and the Ryukyu Federation of Fisheries Cooperatives (Ryukyu Gyoren). The same quotations are independently reported in the *Okinawa Times* with identical price levels.[10]

For each product, the newspapers report a daily high price, low price, and shipment volume. In the empirical analysis, we use the midpoint of the reported high and low prices as the representative transaction price. This approach mitigates the influence of transient price spikes and captures the central tendency of prices formed in daily wholesale trading.

The dataset covers 79 distinct wholesale items, including fresh fruits, vegetables, fish, and eggs traded in Naha markets. These items generate up to $(79 \times 78)/2 = 3{,}081$ relative-price pairs, though the number of observed pairs varies over time due to missing observations and market closures. The dataset is described in detail in Online Appendix B.2.

3.2.1 Visual evidence: Heatmap analysis of relative price disruptions

Figure 2 visualizes the evolution of relative prices across wholesale goods using a time-series heatmap. Each row corresponds to a unique pair of goods (i, j), and each column represents a trading day. The color scale reports the log of the relative price $\log(P_i/P_j)$, first normalized so that the value on the eve of reversion (May 13, 1972) equals zero for each pair.

To facilitate comparison across pairs, relative prices are then oriented using their average value in the pre-reversion window. For each product pair, we compute the mean relative price over the one-month window immediately preceding May 13, 1972, and if this mean is positive, the entire series is multiplied by -1. Pairs are ordered vertically according to the magnitude of their pre-reversion means, with item pairs exhibiting stronger negative (blue) pre-reversion means

[10] These data were digitized manually from original newspaper archives, as no systematic machine-readable records exist for Okinawan wholesale markets during this period.

appearing at the top of the heatmap.

This sign normalization ensures that, by construction, pre-reversion relative prices are on average negative across all pairs. As a result, the heatmap exhibits a predominantly blue coloration prior to reversion. The analysis then focuses on whether, and to what extent, relative prices shift toward the red region after reversion. Importantly, this transformation does not alter the magnitude or timing of relative price changes. It is designed solely to align pre-reversion baselines and to visually isolate the size and synchronicity of the discrete shift in relative prices at reversion.

The heatmap in Figure 2 reveals a striking and abrupt structural break at the moment of currency conversion (May 15, 1972, indicated by the vertical dashed line). Prior to reversion, relative prices across pairs are tightly clustered and exhibit limited dispersion, consistent with a stable relative price structure coordinated by a shared unit of account. In this period, the heatmap is dominated by blue tones, reflecting the sign-normalized construction in which pre-reversion relative prices are, by design, negative on average across pairs.

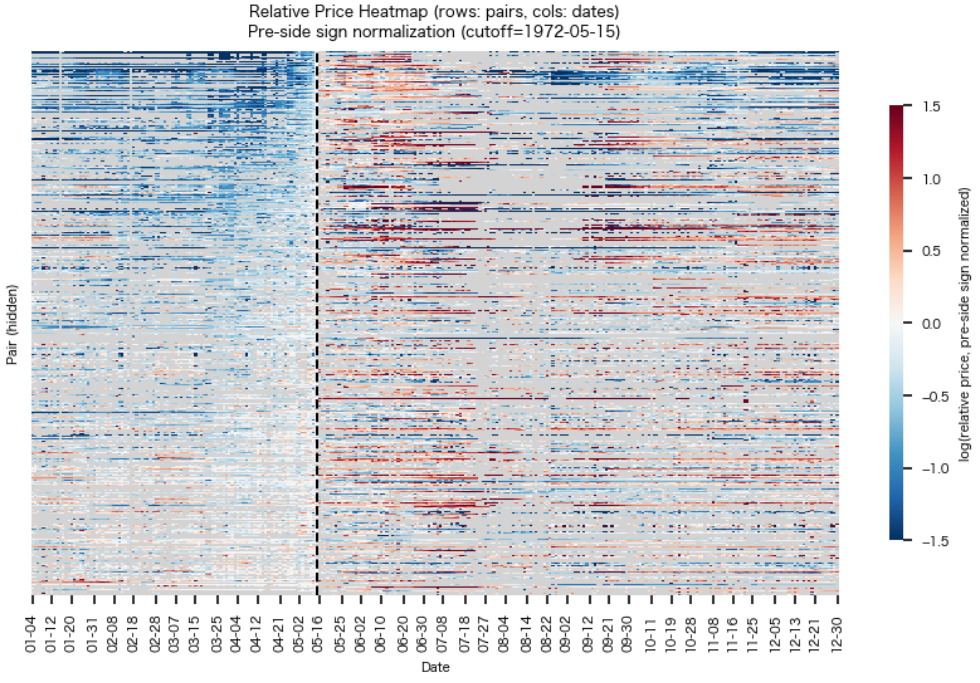

Figure 2: Time-series Heatmap of Normalized Relative Prices in Wholesale Markets

Note. Each row corresponds to a unique pair of wholesale goods (i, j), and each column represents a trading day. Colors report the log relative price $\log(P_i/P_j)$, normalized so that the value on the eve of reversion (May 13, 1972) equals zero for each pair. Relative prices are sign-normalized using their average value over the one-month pre-reversion window to facilitate visual comparison across pairs. Rows are ordered by the magnitude of pre-reversion deviations. The vertical dashed line marks the date of currency conversion (May 15, 1972). Blue (red) colors indicate lower (higher) relative prices relative to the pre-reversion benchmark. Gray cells indicate missing observations.

Immediately after reversion, however, dispersion increases sharply across a large fraction of item pairs. Large swaths of the heatmap shift abruptly from blue toward red, indicating discrete jumps in relative prices at the moment of conversion. Relative prices fan out in both directions, producing a pronounced fragmentation of the relative price structure. Crucially, these color shifts occur simultaneously across many unrelated product pairs, pointing to a common underlying mechanism rather than idiosyncratic supply or demand shocks.

Importantly, the observed distortions are not merely transitory. In the weeks following reversion, relative prices do not rapidly revert to their pre-conversion configuration. Red and mixed-color regions persist well beyond the conversion date, indicating that relative prices remain displaced from their earlier alignment. While some pairs re-converge more quickly than others, the overall structure remains visibly disorganized well into the post-reversion period.

This persistence is particularly striking given the highly flexible-price nature of wholesale markets for perishable goods, where standard state-dependent pricing models predict rapid relative price adjustment following large shocks (e.g., Gagnon, 2009; Nakamura et al., 2018; Alvarez et al., 2019; Kano and Kano, 2025). The continued fragmentation of relative prices therefore points to a coordination failure rather than conventional price stickiness.

The heatmap therefore provides direct visual evidence that the breakdown of monetary singleness documented in Sections 2 and 3.1 translated into a genuine disruption of the relative price structure. When implicit conversion rates differed across goods, these discrepancies were mechanically inherited by yen-denominated relative prices. The abrupt color transition at reversion thus captures the collapse of a common unit of account and its immediate imprint on relative prices. As a result, even in markets characterized by flexible prices and frequent re-optimization, relative prices failed to re-coordinate smoothly after conversion, undermining the allocative role of relative prices.

3.2.2 Quantifying the discontinuity: Regression discontinuity estimates

In this subsection, we quantify the discontinuous change in relative prices at the moment of currency conversion using a regression discontinuity design (RDD) centered on May 15, 1972.

The identifying assumption is that, absent the conversion, pairwise relative prices would have evolved smoothly through the cutoff. Any discontinuity at May 15 can therefore be attributed to the breakdown of the common unit of account rather than smooth demand, supply, or seasonal forces.

Table 1: Regression Discontinuity Estimates at Reversion

	No quantity controls			With quantity controls		
Bandwidth $\pm h$ days	10	20	30	10	20	30
Panel A. Currency Reversion (May 15, 1972)						
D_t	0.180	0.154	0.091	0.179	0.158	0.092
	(0.043)	(0.035)	(0.036)	(0.044)	(0.036)	(0.036)
r_t	0.013	0.011	0.010	0.013	0.010	0.010
	(0.004)	(0.002)	(0.001)	(0.004)	(0.002)	(0.001)
$D_t \times r_t$	−0.025	−0.013	−0.006	−0.025	−0.012	−0.006
	(0.005)	(0.003)	(0.002)	(0.006)	(0.003)	(0.002)
yq_{ijt}				0.006	0.035	0.050
				(0.011)	(0.012)	(0.010)
Observations	5,705	19,552	31,258	5,705	19,552	31,258
Product pairs	573	1,064	1,083	573	1,064	1,083
Panel B. Placebo Cutoff (May 15, 1971)						
D_t	−0.038	−0.078	−0.030	−0.038	−0.078	−0.030
	(0.024)	(0.024)	(0.025)	(0.024)	(0.024)	(0.025)
r_t	0.019	0.017	0.011	0.019	0.017	0.011
	(0.003)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)
$D_t \times r_t$	−0.018	−0.009	−0.005	−0.018	−0.009	−0.005
	(0.004)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)
yq_{ijt}				0.000	−0.002	0.004
				(0.004)	(0.004)	(0.005)
Observations	13,040	28,171	44,994	13,040	28,171	44,994
Product pairs	1,164	1,411	1,597	1,164	1,411	1,597
Implied difference $\hat{\tau}_{1972} - \hat{\tau}_{1971}$	0.218	0.232	0.121	0.217	0.236	0.122

Notes. The table reports regression discontinuity estimates using symmetric windows of $\pm h$ days around the cutoff. Panel A uses the May 15, 1972 currency reversion as the treatment cutoff, while Panel B reports placebo estimates using May 15, 1971. All specifications include product-pair fixed effects, with two-way clustered standard errors by product pair and calendar date. The final row reports the difference between the estimated discontinuities at the true and placebo cutoffs.

We estimate the following specification within a symmetric window $t \in [t_0 - h,\, t_0 + h]$:

$$y_{ijt} = \tau D_t + \beta r_t + \gamma(D_t \times r_t) + \alpha_{ij} + \varepsilon_{ijt},$$

where y_{ijt} denotes the sign-normalized log relative price between goods i and j on day t, D_t is an indicator for post-reversion observations, and r_t is the running variable measured in days relative to May 15, 1972. The term α_{ij} denotes a fixed effect for each product pair, and ε_{ijt} is an idiosyncratic disturbance term. Standard errors are two-way clustered by product pair and by calendar date to account for serial correlation within pairs and common shocks across markets. The coefficient τ captures the average discontinuous jump in relative prices at reversion.

Panel A of Table 1 reports RDD estimates of the discontinuous jump in sign-normalized log relative prices at the moment of currency conversion on May 15, 1972. Each column corresponds to a symmetric estimation window of $\pm h$ days around the cutoff, with $h = 10, 20,$ and 30.

For each bandwidth, the table reports two specifications. The first specification ("No quantity controls") includes only the post-reversion indicator, the running variable, their interaction, and product-pair fixed effects. The second specification ("With quantity controls") augments this baseline regression by including the sign-normalized log relative quantity measure $yq_{ijt} = \log(Q_{it}/Q_{jt})$, which captures pair-specific supply and demand shocks in wholesale arrivals.

Across all bandwidths and specifications, the estimated jump coefficient $\hat{\tau}$ is positive, statistically significant, and largely insensitive to the inclusion of quantity controls, indicating a sharp and economically meaningful disruption of the relative price structure at the moment of reversion. Importantly, relative quantities—the primary margin through which wealth redistribution or changes in purchasing power would be expected to affect wholesale markets, encompassing both demand shifts and induced supply responses—have limited explanatory power. Controlling for relative quantities leaves the estimated discontinuity essentially unchanged, indicating that the observed relative price disruption does not operate through standard wealth or demand channels.

For the narrowest window of ± 10 days, the estimated discontinuity implies an average change in relative prices of approximately 18 percent. The magnitude remains large and precisely estimated for ± 20 days (about 15 percent) and remains statistically significant even at ± 30 days. These magnitudes are exceptionally large in the context of daily wholesale price movements, where relative prices between closely related goods are typically stable over short horizons. These results demonstrate that the relative price distortion emerges immediately at reversion with a substantial and economically meaningful magnitude.

The estimated coefficients on the running variable and its interaction with the post-reversion indicator provide additional insight into post-conversion dynamics. Across all bandwidths, the interaction term $D_t \times r_t$ is negative and statistically significant, indicating a downward post-reversion slope in relative prices. This pattern is consistent with gradual re-coordination following the initial disruption, but the magnitude of the slope implies that adjustment is slow relative to the size of the initial jump.

Importantly, Panel B of Table I reports placebo RDD estimates using May 15, 1971 as a pseudo-cutoff. In contrast to the true 1972 reversion date, the estimated discontinuities in 1971 are negative across all bandwidths and are statistically insignificant for ± 10 and ± 30 days. This sharp contrast between the true and placebo cutoffs indicates that the observed discontinuity in 1972 is

not driven by seasonal patterns or calendar effects.[11]

4. Preserved Monetary Singleness in the 1958 Currency Conversion

As noted in the Introduction, Okinawa experienced multiple currency conversions under U.S. administration, culminating in the adoption of the U.S. dollar as the sole legal tender in September 1958. This section revisits that episode not to restate institutional facts, but to interpret the 1958 conversion as a benchmark case in which monetary singleness was credibly and forcefully preserved. In contrast to the 1972 reversion, the 1958 conversion left little quantitative trace precisely because relative prices remained stable. The absence of observable disruption is therefore most informatively documented through contemporaneous institutional records and narratives, which confirm that monetary singleness is not an automatic consequence of currency conversion, but the outcome of deliberate institutional design.

4.1 Institutional background: Monetary singleness in the 1958 currency conversion

This subsection outlines the institutional framework governing the September 16, 1958 currency conversion in Okinawa. Rather than focusing on economic outcomes, the discussion emphasizes the legal, administrative, and informational arrangements through which the U.S. dollar was introduced as the sole unit of account, medium of exchange, and means of settlement. These arrangements played a central role in shaping agents' expectations and in sustaining monetary singleness throughout the conversion process.

A central institutional feature of the 1958 conversion was the unambiguous definition of the unit of account. The B-yen was converted into U.S. dollars at a fixed rate of 120 B-yen per dollar, which was applied uniformly to all transactions. As a result, valuation was clear and transparent from the outset, leaving little scope for interpretive discretion or strategic repricing. Both contemporaneous and retrospective accounts consistently describe the conversion as proceeding in a clear-cut manner, with no meaningful ambiguity regarding relative prices.[12]

[11] Appendix B reports that the RDD estimates for wider bandwidths (± 60, ± 90, and ± 120 days) and specifications excluding extreme-weather (severe rain and/or severe wind) days are quantitatively similar to those in the benchmark specification in Table I.

[12] See, for example, Ryukyu Shimpo (1972), which explicitly contrasts the smooth 1958 conversion with the 1972 reversion, noting that the former "was carried out from the beginning at a clean rate of 120 yen per dollar, and did not generate major confusion or sharp price increases."

Crucially, the conversion rate was not the outcome of decentralized market adjustment or negotiation among private agents. Instead, it was imposed by a formal directive of USCAR, carrying binding legal force over all monetary transactions in Okinawa.[13] Under this arrangement, neither price setters nor consumers exercised discretion in interpreting the conversion: alternative rates, negotiated conversions, or parallel units of account were explicitly ruled out. As documented in subsequent institutional histories, the conversion was executed under the authority of the High Commissioner and enforced uniformly across the economy.

Historical accounts indicate that residents became aware of the impending currency conversion well before its implementation, initially through newspaper commentary and rumors in the spring and early summer of 1958. Newspaper editorials and columns published in April, June, and August reflect both growing public awareness and substantial skepticism toward the policy. Importantly, however, while opinions regarding the conversion were divided, there is no evidence that the officially announced conversion rate itself was regarded as uncertain once it was formally declared. In this sense, public expectations may have been unsettled *ex ante*, but became sharply coordinated following the High Commissioner's announcement.[14]

Matsuda (1981) also documents that concerns about potential price increases were already present among residents at the time of the 1958 conversion. Anticipating such concerns, the USCAR administration introduced complementary price stabilization measures, including temporary price controls under High Commissioner Ordinance No. 13 ("On the Control of Prices and Related Matters"). Importantly, however, these measures were implemented in conjunction with a clearly defined and uniformly enforced conversion rate, and did not undermine the uniqueness of the unit of account.

This combination of advance announcement, institutional clarity, and coercive enforcement ensured that a single unit of account prevailed throughout the conversion. There was no scope for implicit conversion rates to emerge across goods, no basis for heterogeneous expectations regarding

[13] The adoption of the U.S. dollar as the sole legal tender was mandated by the High Commissioner of the Ryukyu Islands through Ordinance No. 14 ("Currency"), enacted in September 1958. See Bank of the Ryukyu (1984) and Makino (1987) for a detailed discussion.

[14] According to Bank of the Ryukyu (1962), residents first became aware of the possibility of a currency conversion through a *Morning Star* editorial published on April 11, 1958. While press coverage and rumors intensified during the summer, expectations remained unsettled until the High Commissioner's formal announcement on August 23, which effectively fixed the conversion rate and coordinated public expectations.

relative values, and no coordination problem in price setting. Contemporary evaluations further emphasize that overall price movements following the conversion largely mirrored price trends in mainland Japan, rather than reflecting effects attributable to the currency switch itself.[15]

In this sense, the 1958 episode closely resembles later currency reforms—such as the introduction of the euro—in which a fixed and commonly understood conversion rate anchored relative prices despite a change in nominal units. The contrast with the 1972 reversion is stark. In that episode, the conversion rate between the dollar and the yen changed repeatedly in the period leading up to implementation and was finalized only after a sequence of discrete adjustments. This process undermined the uniqueness of the unit of account and created scope for heterogeneous interpretations of relative values across goods.

The 1958 conversion thus provides a benchmark case in which monetary singleness was credibly and forcibly maintained. In the next subsection, we examine retail price data from 1958 to show that, consistent with this institutional narrative, the relative price structure remained largely unchanged through the currency conversion.

4.2 Quantitative evidence: Stability of relative prices after the 1958 conversion

This subsection examines the behavior of relative prices around the 1958 currency conversion using retail price data collected by the Government of the Ryukyu Islands in Naha City. Unlike the wholesale market data analyzed for the 1972 reversion, comparable high-frequency wholesale price quotations are not available for the 1958 episode. We therefore rely on monthly retail prices for 90 consumer goods observed throughout 1958 to assess whether the conversion was associated with systematic changes in relative price dispersion. This dataset is described in detail in Online Appendix B.3.

The purpose of this exercise is not to replicate the RDD employed in Section 3, but to assess whether the 1958 conversion was associated with any discrete reorganization of relative prices. If the replacement of the B-yen with the U.S. dollar had disrupted the unit-of-account function, one would expect an abnormal widening in the distribution of pairwise relative prices immediately following the conversion.

To this end, we analyze the distribution of pairwise log relative prices and their month-to-

[15] See Matsuda (1981) and Kabira et al. (2022), which conclude that price movements following the 1958 conversion did not exhibit abnormal inflation or deflation attributable to the currency exchange.

month changes in the period surrounding the conversion. August 1958, the final month before the conversion, serves as a natural reference point. The analysis focuses on whether September 1958 exhibits unusually high dispersion or instability relative to both earlier and later months.

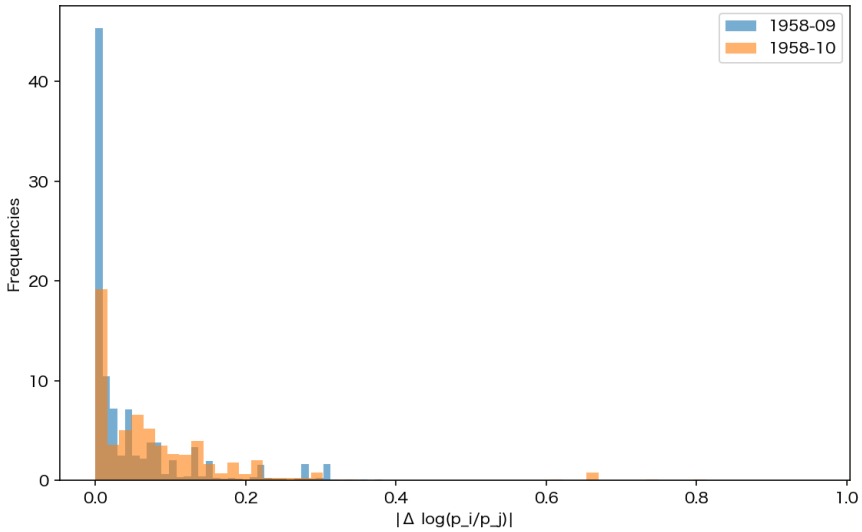

Figure 3: Distribution of absolute changes in log relative prices after the 1958 currency conversion

Note. This figure plots histograms of absolute changes in pairwise log relative prices, $|\Delta \log(P_{i,t}/P_{j,t})|$, between August 1958 and September (blue) and October (orange) 1958, using retail price data for 90 items collected in Naha City.

Figure 3 presents the distribution of absolute changes in pairwise log relative prices,

$$\left|\log\left(\frac{P_{i,t}}{P_{j,t}}\right) - \log\left(\frac{P_{i,1958/8}}{P_{j,1958/8}}\right)\right|, \qquad t \in \{1958/9,\ 1958/10\}.$$

Both September (blue) and October (orange) display a pronounced concentration of mass near zero, indicating that the overwhelming majority of relative prices experienced negligible changes following the switch from the B-yen to the U.S. dollar.

Table 2 reports summary statistics of the absolute changes in pairwise log relative prices over the course of 1958, using August 1958—the month of the currency conversion—as the reference point. For each month, the table reports the mean absolute deviation across all item pairs, the 90th percentile of the distribution, and the share of pairwise relative prices that remain within a ± 5 percent band.

Two features stand out. First, relative price dispersion declines gradually over the first half of 1958, as reflected in both the mean and the upper tail of the distribution, and collapses mechanically to zero in August by construction, owing to normalization relative to August 1958. Second, and

Table 2: Relative price stability around the 1958 currency conversion

Month	Number of pairs	Mean $\lvert\Delta \log(p_{i,t}/p_{j,t})\rvert$	90th percentile	Share within $\pm 5\%$
1958-01	3,486	0.162	0.486	0.496
1958-02	3,403	0.140	0.405	0.520
1958-03	3,486	0.142	0.357	0.557
1958-04	3,486	0.124	0.282	0.564
1958-05	3,486	0.085	0.154	0.682
1958-06	3,403	0.088	0.251	0.669
1958-07	3,486	0.021	0.080	0.840
1958-08	3,486	0.000	0.000	1.000
1958-09	3,403	0.048	0.142	0.711
1958-10	3,321	0.087	0.192	0.446
1958-11	3,321	0.102	0.251	0.489
1958-12	3,321	0.120	0.323	0.485

Notes: The table reports absolute changes in pairwise log relative prices, $\lvert\Delta \log(P_{i,t}/P_{j,t})\rvert$, measured relative to August 1958. The number of item pairs varies slightly across months due to missing observations.

more importantly, neither September nor subsequent months exhibit an abnormal increase in dispersion. Both the mean and the upper tail of the distribution remain well within the range observed earlier in the year, and the share of relative prices within the ± 5 percent band remains high. Collectively, these patterns provide no evidence of a discrete reorganization of relative prices associated with the 1958 currency conversion.

These statistics reinforce the distributional evidence presented in Figure 3. Despite the complete replacement of the unit of account, relative prices remained tightly anchored, with no indication of widespread reordering or fragmentation. In sharp contrast to the 1972 reversion analyzed in Section 3, this pattern is consistent with a currency conversion that preserved monetary singleness through a clearly defined and credibly enforced conversion rate.

5. Conclusion

This paper documents and quantifies the real effects of a breakdown in monetary singleness using the 1972 currency conversion in Okinawa as a quasi-natural experiment. Exploiting high-frequency wholesale price data for perishable goods, we show that the conversion was accompanied by a sharp and persistent disruption of the relative price structure. Relative prices jump discontinuously at the moment of conversion and remain misaligned for several months thereafter.

A central finding is that these distortions arise despite highly flexible prices and the absence of conventional nominal rigidities. The Okinawa episode therefore differs fundamentally from standard mechanisms emphasized in the New Keynesian literature, such as menu costs or staggered

price adjustment. Instead, the evidence points to a failure of price comparability itself. When the unit of account is no longer uniquely and uniformly defined, prices cease to function as a common yardstick, even when they are free to adjust.

The comparison with Okinawa's earlier currency conversion in 1958 further clarifies this mechanism. In 1958, the conversion was implemented at a single, clearly announced, and credibly enforced rate, and relative prices remained stable. By contrast, the institutional ambiguity surrounding the 1972 reversion undermined monetary singleness and generated widespread relative price distortions. This contrast shows that currency conversion per se need not disrupt relative prices; what matters is whether a unique and commonly understood unit of account is preserved.

The Okinawa experience thus highlights a neglected channel through which monetary arrangements affect real economic outcomes. Even in environments with flexible prices and stable nominal conditions, failures of the unit-of-account function can generate substantial misallocation. Preserving monetary singleness is therefore not merely a technical detail, but a fundamental prerequisite for the proper functioning of relative prices in any monetary system.

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Online Appendix

Lost in Monetary Translation: Monetary Singleness and Relative Price Distortions

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Appendix A: Okinawa's Currency History around the Reversion

A.1 Okinawa's postwar monetary regime and institutional background of the currency conversion

Following the end of World War II, Okinawa was placed under the U.S. Civil Administration of the Ryukyu Islands (USCAR) and remained outside Japan's monetary and institutional framework until its reversion to Japanese sovereignty on May 15, 1972.[1] Okinawa experienced multiple currency conversions under U.S. administration, and the U.S. dollar was adopted as the sole legal tender only with the fifth currency conversion in September 1958.[2] From that point onward, the U.S. dollar served as the legal means of payment and the unit of account in Okinawa. Despite this formal separation, Okinawa's real economy became increasingly integrated with mainland Japan through trade, migration, and consumption patterns, such that by the late 1960s prices, wages, and contracts were effectively formed with reference to the Japanese economy, even though transactions continued to be denominated in U.S. dollars (Bank of the Ryukyu, 1984; Kano and Kano, 2025).

Under the Bretton Woods system, the U.S. dollar was fixed at 360 yen per dollar, and this parity served as a stable reference point for price formation in Okinawa as well as in mainland Japan. This arrangement allowed the U.S. dollar to function as a coherent unit of account in Okinawa: although prices were quoted in dollars, their underlying valuation was implicitly anchored to the 360 yen parity (Bank of the Ryukyu, 1984; Makino, 1987). This monetary environment changed abruptly with the Nixon Shock in August 1971, when the U.S. government suspended the dollar's convertibility into gold and effectively abandoned the fixed exchange rate regime. Following the shock, major currencies began to float, and the Japanese yen appreciated rapidly against the U.S. dollar. For the Okinawan economy, this constituted an unanticipated and exogenous disruption to the monetary framework underpinning economic calculation, unrelated to local economic conditions.[3]

[1] USCAR was established in 1950 as the governing administrative authority in the Ryukyu Islands with ultimate authority vested in the High Commissioner of the Ryukyu Islands. While labeled a "civil administration," USCAR held overarching powers under U.S. control throughout the occupation period.

[2] The adoption of the U.S. dollar as the sole legal tender was mandated by the High Commissioner of the Ryukyu Islands through Ordinance No.14 ("Currency"), enacted in September 1958. See Bank of the Ryukyu (1984) and Makino (1987) for a detailed discussion.

[3] Bank of the Ryukyu (1984) and Kabira (2015) provide numerous anecdotal accounts from both private and government perspectives, illustrating how widely the 360 JPY/USD rate was expected as the conversion rate prior to the

Against this backdrop, Okinawa's reversion to Japan involved a sixth currency conversion, replacing the U.S. dollar with the Japanese yen as legal tender. Japan's reversion policy framework explicitly recognized the importance of institutional coordination in this process. In the Okinawa Reversion Measures Outline, approved by the Japanese cabinet on November 19, 1970, the government stipulated that "the currency conversion shall be conducted based on an official exchange rate, and the conversion procedures shall be implemented smoothly so as not to disrupt the daily lives of Okinawan residents." This language indicates that the authorities understood, *ex ante*, that the determination and communication of the conversion rate could have real economic consequences.

In practice, however, the implementation fell short of this objective. Political negotiations between the Japanese government and the Government of the Ryukyu Islands, which operated under the authority of USCAR, over the applicable conversion rate proved contentious, and the official rate was announced only days before reversion. As a result, households and firms entered the conversion period with substantial uncertainty about the yen value of their dollar holdings and existing prices.

Crucially, the phrase "official exchange rate" itself remained fundamentally ambiguous. For Okinawan households and firms, it was unclear whether this referred to the long-standing 360 yen parity under the Bretton Woods system, the IMF's 308 yen parity rate, the prevailing market exchange rate around 304 yen under the newly floating regime, or a politically adjusted rate to be determined by the Japanese government. Rather than anchoring expectations, the reference to an "official" rate generated divergent interpretations across economic agents, undermining the common knowledge necessary for the exchange rate to function as a shared unit of account.

Importantly, the monetary transition did not coincide with major changes in other economic institutions. In response to concerns about potential disruptions from the reversion, the Government of Japan enacted the Act on Special Measures Incidental to Reversion of Okinawa (Act No.129 of 1971) on December 31, 1971. This act provided explicit transitional arrangements designed to ensure a smooth and gradual adaptation of Okinawa to Japan's legal and institutional framework.

Nixon shock and how the subsequent yen appreciation was largely unanticipated in both Okinawa and on the mainland.

Under these provisions, key economic institutions—including sales taxes, import tariffs, and import quotas for a broad range of goods—were largely maintained at their pre-reversion levels for two to five years after reversion.

These transitional measures are central to the identification strategy of this paper. Because the core elements governing trade, taxation, and market access remained unchanged around the time of reversion, the sharp disruption in relative price structure documented below cannot be attributed to contemporaneous institutional reforms. Instead, it isolates the effects of the monetary transition itself, and in particular the breakdown in the unit-of-account function arising from the ambiguous and delayed determination of the conversion rate.

In parallel with these transitional arrangements, the Japanese government and the Government of the Ryukyu Islands introduced a partial and selective exchange-rate compensation scheme prior to reversion. Household bank deposits were verified and fixed as of October 8, 1971, net of outstanding liabilities, while household cash holdings in U.S. dollars were verified through a sudden currency verification conducted on October 9. Dollar balances verified through these procedures were guaranteed conversion at the pre-Nixon Shock parity of 360 yen per dollar after reversion.

Crucially, this protection was neither comprehensive nor symmetric. Corporate dollar holdings were excluded from compensation, and any dollar income or cash received after the verification dates and before reversion was fully exposed to the prevailing 305 yen conversion rate at the time of conversion, which was officially determined and announced by the Japanese cabinet on May 12, 1972. As a result, identical dollar-denominated assets were subject to different implicit conversion rates depending on the holder, timing, and institutional classification, directly undermining the singleness of money at the point of conversion.

A.2 The drift of public expectations and the breakdown of a common unit of account

This subsection documents how a common unit of account gradually unraveled in Okinawa between the Nixon Shock and reversion. Three forces are central to this process: (i) the currency verification, which undermined the legal certainty of the 360 yen parity; (ii) government pricing and wage-setting practices, which simultaneously reinforced the 360 yen rate as a focal benchmark

in everyday economic life; and (iii) the failure to re-coordinate expectations prior to conversion, resulting in the coexistence of multiple conversion rates at reversion.

As emphasized by Bank of the Ryukyu (1984) and Makino (1987), the implementation of the currency verification in October 1971 fundamentally altered how the value of the dollar was understood in Okinawa. Prior to verification, households did not share a single, well-defined expectation regarding the conversion rate. While the long-standing parity of 360 yen per dollar continued to serve as a focal benchmark, the Nixon Shock and the rapid appreciation of the yen generated growing uncertainty about the eventual conversion rate, with expectations gradually drifting toward lower, market-based rates. The verification process made explicit that conversion would be based on prevailing market exchange rates, supplemented only by limited and politically contingent compensation.

In this sense, the Nixon Shock—an event entirely exogenous to Okinawa—generated persistent uncertainty about the eventual dollar-yen conversion rate that lasted for nearly nine months until reversion. While the shock itself was global, its local consequence in Okinawa was the gradual dispersion of expectations regarding the unit of account. Crucially, neither the Japanese government nor the Ryukyu authorities succeeded in re-coordinating these expectations prior to conversion.

In Makino's account, this unresolved dispersion of expectations had a decisive implication for monetary valuation. The currency verification effectively negated the 360 yen parity as a meaningful unit of account by revealing that dollar holdings would be converted at market-based rates, subject only to selective and politically contingent compensation. Crucially, this occurred even though the real side of the Okinawan economy—relative price structures among goods, services, and wages—continued to be organized around the 360 yen parity, which had anchored economic valuation since the adoption of the U.S. dollar regime in 1958. The resulting divergence between monetary valuation and the relative price structure undermined the basis of economic calculation in the period leading up to reversion.

At the same time, an important countervailing force worked in the opposite direction. On May 15, 1972, the *Ryukyu Shimpo* reported that the Government of the Ryukyu Islands had authorized

a uniform conversion of major public utility prices—including bus and taxi fares and charges for electricity and gas—at the 360 yen rate, accompanied by a 16.88 percent price increase.[4] By doing so, the authorities effectively reaffirmed the 360 yen parity as the socially legitimate benchmark for everyday economic calculation.

Crucially, this policy influenced not only households but also firms and retail shops. Public utility prices enter directly into firms' cost structures and daily cash-flow calculations, and they are highly salient, non-negotiable, and continuously observed. By fixing these inputs at the 360 yen rate, the Government of the Ryukyu Islands implicitly re-anchored the 360 yen parity as a practical unit of account for pricing, cost accounting, and wage-setting decisions throughout the local economy.

As a result, while the currency verification undermined the legal status of the 360 yen parity, government pricing practices simultaneously reinforced it as a normatively appropriate and operationally convenient focal point for economic coordination in everyday transactions.[5]

A second, and equally important, mechanism reinforcing the 360 yen parity as a focal point operated through the labor market. In the months after the Nixon Shock, large-scale labor actions intensified across Okinawa, involving public-sector unions as well as major private enterprises. Through collective bargaining and strike threats, these unions succeeded in securing wage conversion terms based on the 360 yen parity for public employees and workers in large firms.

These agreements had effects well beyond the unionized sector. Wage settlements at the 360 yen rate became highly salient reference points in local labor markets, and in their wake, portions of non-unionized wages were also informally converted at or near the same parity. As a result, the 360 yen rate was not only historically entrenched but actively reproduced through contemporaneous wage-setting practices, further anchoring it as a normatively legitimate and economically meaningful unit of account.

[4] See Ryukyu Shimpo (1972f).

[5] See Ryukyu Shimpo (1972a) and Masuda (1972), which sharply criticize the Ryukyu Government's announcement that public utility prices would be converted at 360 yen per dollar, characterizing the policy as "public utility prices leading price increases." Both accounts emphasize that these prices were highly salient for households and businesses alike, and that their conversion at the 360 yen rate served as a powerful signal shaping broader pricing behavior.

Together with the Ryukyu Government's decision to convert highly visible public utility prices at the 360 yen rate, these wage agreements endowed the parity with exceptional salience. Households, firms, and retailers thus confronted a situation in which key components of everyday economic life—wages and public prices—continued to be organized around the 360 yen benchmark, even as official monetary policy moved toward a lower conversion rate.

This coexistence of competing conversion benchmarks eroded the dollar's role as a shared unit of account well before reversion. When economic agents faced incompatible valuation rules—305 yen in official monetary policy and 360 yen in wages and public prices—the future yen value of dollar-denominated transactions became inherently uncertain.

This erosion of a shared unit of account was not merely conceptual. Contemporary accounts indicate that as confidence in the future conversion value of the dollar weakened, households and retailers began to adjust their behavior accordingly. Holding dollar cash came to be perceived as increasingly risky, while real goods were viewed as a safer store of value. As a result, episodes of precautionary purchasing, stockpiling, and reluctance to sell at prevailing prices emerged in the months leading up to reversion.[6]

Importantly, these behaviors should not be interpreted as conventional demand shocks. Rather, they reflect a deterioration in the unit-of-account function itself: when the future monetary standard is unclear, economic agents seek refuge in real transactions. In this sense, the observed shift from money to goods was a symptom of collapsing monetary singleness, rather than an independent driver of price dynamics.

The remaining uncertainty was resolved only immediately before reversion. On May 12, 1972, the Japanese cabinet decided that the conversion from the U.S. dollar to the Japanese yen would be conducted at a rate of 305 yen per dollar. The decision was communicated to the public through evening newspapers on May 12 and morning newspapers on May 13, only two days prior to rever-

[6]Newspaper accounts from late 1971 to early 1972 repeatedly report episodes of precautionary buying and reluctance to sell goods particularly in the period following the currency verification, often explicitly linking these behaviors to uncertainty over the eventual dollar-yen conversion rate. See, for example, *Ryukyu Shimpo* and *Okinawa Times*, November 1971-May 1972.

sion[7]. Under the announced arrangement, dollar cash circulating in Okinawa was to be exchanged for yen over a six-day period following reversion. Any difference between the conversion rate and the former 360 yen parity was compensated *ex post* only for dollar holdings that had been verified under the earlier currency verification scheme. As a result, for a large share of dollar-denominated prices, balances, and transactions, the yen value remained uncertain until the very eve of the currency conversion.

The announcement of the conversion rate immediately revealed the institutional fragmentation underlying the currency changeover. Contemporary newspaper accounts emphasized that while public debts and financial contracts with banks were to be redenominated at 305 yen per dollar, many prices and private obligations—including rents, land leases, public utilities, and a substantial share of retail prices—continued to be quoted at the former 360 yen parity.[8] Identical dollar-denominated amounts were therefore converted at different rates depending on the type of transaction, the counterparty involved, and the timing of acquisition.

This coexistence of multiple conversion rates implied that the dollar-to-yen exchange rate ceased to function as a common unit of account. Rather than serving as a uniform and taken-for-granted numeraire, the conversion rate became contingent on institutional classification and bargaining power. Contemporaneous accounts explicitly warned that such discrepancies would generate economic confusion, as households and firms faced incompatible valuation rules across markets and contracts. This institutional fragmentation provides the historical foundation for the relative price distortions documented in the subsequent sections.

This breakdown stands in sharp contrast to the currency conversion from the B-yen—a special military scrip—to the U.S. dollar in September 1958.[9] In that earlier episode, the conversion

[7]See, for example, Ryukyu Shimpo (1972b,d). Similar concerns are echoed in *Okinawa Times*, May 12 and 13, 1972. The conversion rate was formally promulgated in the Official Gazette (Kanpō) on May 13.

[8]For a contemporaneous account of this fragmentation, see Ryukyu Shimpo (1972c). The article reports that prices including public utilities, rents, and land leases continued to be calculated at 360 yen per dollar; wages of regular wage earners and large organized firms were also effectively treated at the 360 yen parity, while wages of small and medium-sized firms, corporate assets, and dollar holdings accumulated after October 9 were converted at 305 yen per dollar. The situation was succinctly summarized in the press as "prices at 360 yen and wages at 305 yen," highlighting the coexistence of multiple conversion rates across transactions. Similar descriptions of the coexistence of multiple conversion rates and the resulting confusion appear in Bank of the Ryukyu (1984) and Makino (1987).

[9]The B-yen was a special scrip issued by the U.S. military government and circulated in Okinawa between 1948 and

was implemented at a single, clearly announced rate of 120 B-yen per dollar, applied uniformly across all transactions and credibly enforced. Contemporary accounts report little confusion and no comparable disruption of relative prices or everyday transactions, underscoring that the severe distortions observed in 1972 were not an inevitable consequence of currency conversion *per se*, but rather the result of institutional fragmentation and unresolved expectation drift.

A.3 Life after reversion: monetary confusion as a social experience

While the previous subsections documented how institutional ambiguity and policy design undermined monetary singleness prior to reversion, contemporaneous reportage and private writings reveal how this breakdown was experienced in everyday economic life after reversion. Newspaper articles and investigative reportage consistently describe a pervasive sense of confusion, anxiety, and cognitive burden surrounding routine market transactions. These accounts provide qualitative evidence on the mechanisms through which the collapse of a common unit of account translated into real economic frictions.

A particularly detailed contemporary investigation is the reportage by Masuda (1972), which documents retail price surveys conducted in Naha immediately before and after reversion. The author reports that the announcement of the conversion rate at 305 yen per dollar—lower than both the long-standing 360 yen parity and widely expected market benchmarks—played a central role in triggering widespread perceptions of price instability. While few households expected conversion at 360 yen by May 1972, the final decision at 305 yen was nonetheless perceived as a sharp negative surprise, generating anger, resistance, and a sense of betrayal.[10] Prices were frequently recalculated using a 360-yen benchmark or higher, not merely as opportunistic price gouging, but also as an expression of protest and self-protection against perceived losses.

1958 under U.S. administration. It was replaced by the U.S. dollar at a fixed rate of 120 B-yen per dollar in September 1958. The conversion was administered and credibly enforced by USCAR.

[10]Contemporaneous newspaper reports document the intensity of this negative surprise and the emotional response to the 305 yen decision. For example, Ryukyu Shimpo (1972e) reports widespread expressions of anger, disappointment, and a sense of betrayal among Okinawan residents immediately following the announcement. Many interviewees stated that while conversion at 360 yen was no longer expected by May 1972, they had anticipated a rate closer to prevailing market benchmarks such as 308 or 330 yen, and perceived the final decision at 305 yen as an unexpected and unjustified loss.

These contemporaneous perceptions are echoed vividly in private diaries written during the days immediately surrounding the announcement (Yanagida, 1972). Entries dated May 12 and 13 repeatedly express shock, anger, and a sense of betrayal in response to the 305-yen decision. Typical entries note that households had expected a rate closer to 308 yen, and describe feelings of being "cheated," "taken lightly," or "made to bear an unexpected loss." Several diaries also record heightened tension within households, with remarks such as "my father was furious today" or "distrust among residents is rapidly rising."[11]

Beyond price increases, Masuda's (1972) discussions reportage emphasizes the collapse of cognitive ease in everyday transactions. Ordinary shopping became stressful and time-consuming, as households were forced to navigate the simultaneous circulation of dollars and yen under multiple implicit exchange rates that coexisted in practice. Consumers struggled to interpret newly introduced three-digit yen prices, repeatedly converting them back into dollars using alternative benchmarks—360, 308, or 305 yen per dollar—in order to assess whether a price was "reasonable." As the author notes, this mental arithmetic was unavoidable: without performing such conversions, consumers could not feel confident that they were not being overcharged. Shopping time reportedly increased severalfold, and routine purchases frequently escalated into disputes between customers and shopkeepers.[12]

Strikingly, the breakdown of monetary singleness affected not only consumers but also retailers, extending the disruption from valuation to the very operation of markets. In traditional small retail shops (machaguwa), many shopkeepers reportedly closed their businesses for an entire week following reversion. As the reportage succinctly explains, "They could handle addition and subtraction. But currency conversion required multiplication, and until they mastered it, they could

[11] Representative diary expressions include: "I thought at least 308 yen would be guaranteed, yet it fell again"; "we are being completely mocked"; "this is unbearable"; "I feel betrayed"; and "my father was furious today." All entries are dated May 12 or 13, 1972.

[12] Contemporaneous newspaper accounts provide vivid descriptions of the cognitive and transactional confusion during the first days of the yen transition. For example, Ryukyu Shimpo (1972g) documents widespread difficulties arising from the parallel circulation of dollars and yen, with shopkeepers and customers repeatedly consulting conversion tables and disputing prices depending on whether transactions were settled at 360 or 305 yen per dollar. Similar observations appear in Ryukyu Shimpo (1972h,i), which emphasize that routine purchases became time-consuming and contentious due to rounding problems, dual-currency settlement, and the instability of the implicit conversion rate.

not reopen their shops." This episode illustrates that the disruption was not merely distributive, in the sense of redistributing gains and losses, but operational: when the unit of account ceased to be taken for granted, even the basic act of price setting became prohibitively costly.[13]

The reportage concludes by characterizing the Okinawa experience as an unintended large-scale natural experiment. In the absence of effective institutional measures to re-anchor prices to a common unit of account, prices were left to "move freely without restraint." The burden of this monetary confusion fell disproportionately on households with lower incomes, larger families, and those responsible for daily consumption decisions—most notably housewives. As the author observes, Okinawa became a case study of what happens to economic coordination when monetary policy fails to preserve a shared and credible unit of account—precisely the mechanism this paper investigates through the lens of relative price distortions.

Taken together, these contemporary accounts underscore that the relative price distortions documented in the subsequent empirical sections were not abstract statistical anomalies. Rather, they reflected a pervasive breakdown of economic coordination, experienced daily by households and retailers alike. The Okinawa episode thus provides rare and compelling evidence that when monetary singleness collapses —when the unit of account ceases to be shared and taken for granted —even markets with flexible prices and otherwise stable cost structures can temporarily cease to function smoothly.

Appendix B: Data Description

B.1 Retail price surveys in 1972

During the U.S. occupation period, the Ryukyu Government conducted retail price surveys that were broadly comparable to those implemented in mainland Japan. Prices were collected based on standardized item specifications and sampling procedures designed to monitor consumer price

[13] Ryukyu Shimpo (1972a) also reports widespread confusion under the dual-currency regime immediately after reversion: shopkeepers routinely asked customers whether they wished to pay in yen or dollars, triggering repeated mental conversions, bargaining, and second-guessing on both sides. As one shopkeeper noted, "Just doing the calculations gave me a headache," and many small shops reportedly closed temporarily during the exchange period, not because of insufficient demand, but because routine price calculation itself had become prohibitively costly. Similar expressions of confusion are found in the private diaries on May 16, 1972 (Yanagida, 1972).

movements.

For example, in 1971, prices for most non-fresh items were collected once per month from three retail stores, while prices for fresh food items were collected three times per month. For Naha City, reported prices represent averages across two city zones. All prices were recorded in U.S. dollars and rounded to the nearest cent.

We use data from the appendix of *Okinawa no Tokei* (Okinawa's Statistics), published in 1973, which reports monthly retail prices from January to November 1972. The dataset covers 276 individual retail items. Importantly, May 1972 is the only month for which prices are reported separately for early May and late May, reflecting the currency conversion on May 15, 1972. Prices in early May are recorded in U.S. dollars, while prices in late May are recorded in Japanese yen.

Item definitions and specifications are obtained primarily from Okinawa Prefecture Office (1973) which provides detailed descriptions of product characteristics and measurement units. Table B.1 reports the full list of the 276 retail items.

Table B.1: Official Retail Price Survey Items (276 items) (Naha City, May 1972)

Food and Beverages			
Rice	Glutinous rice	Wheat flour	White bread
Butter bread	Somen noodles	Boiled soba	Boiled udon
Dried soba	Instant ramen	Salted mackerel	Dried bonito flakes
Pork (loin)	Pork (leg)	Pork belly	Pork (bone-in)
Beef (loin)	Beef (standard cut)	Ground beef	Chicken
Sausage	Ham	Bacon	Eggs
Condensed milk	Milk	Butter	Cheese
Kombu	Tororo kombu	Wakame	Dried gourd strips
Dried shiitake	Julienned daikon	Adzuki beans	Tofu
Konnyaku	Fried fish cake	Abura-age	Kamaboko
Croquette	Fish sausage	Pressed ham	Pickled plum
Pickled radish	Seaweed paste	Tsukudani	Canned mackerel
Canned squid	Canned tuna	Canned beef	Canned pork
Canned mandarin oranges	Canned pineapple	Canned soup	Salt
Soy sauce	Soy sauce (local)	Miso	Miso (local)
Sugar	MSG	Cooking oil	Lard
Margarine	Mayonnaise	Ketchup	Sauce
Jam	Sweet bun	Steamed bun	Crackers
Caramel	Drops candy	Chewing gum	Chocolate
Ice cream	Brown sugar	Awamori	Shochu

Sake	Whisky (grade 1)	Whisky (grade 2)	Beer
Beer (local)	Green tea	Oolong tea	Black tea
Genmaicha	Instant coffee	Cocoa	Cola
Soda	Juice	Yogurt	Soba (restaurant)
Curry rice	Meat bowl	Coffee	Miso soup
Lunch			

Housing, Utilities, and Durables

Lumber board	Plywood	Timber	Galvanized steel sheet
Nails	Window glass replacement	Cement	Tatami mat
Tatami resurfacing	Radio	Portable radio	Black-and-white TV
Refrigerator	Washing machine	Electric iron	Fluorescent lamp
Light bulb	Dry cell battery	Electric fan	Rice cooker
Chest of drawers	Dining table	Bucket	Lunch box
Cooking pot	Kettle	Tea cup	Rice bowl
Plate	Broom	Straw mat	Gas stove
Kerosene	Charcoal	Matches	Propane gas

Clothing, Services, and Miscellaneous

Men's suit	School uniform	Replacement trousers (synthetic)	Replacement trousers (winter)
Women's sweater	Skirt (summer)	Blouse	Men's raincoat
Dress shirt (blend)	Open-collar shirt	Men's shirt	Men's summer shirt
Men's winter shirt	Men's briefs	Men's socks	Women's stockings
Towel	Yarn	Sewing thread	Synthetic fabric
Blanket	Necktie	Student cap	Travel bag
Men's leather shoes	Women's leather shoes	Women's vinyl shoes	Women's sandals
Athletic shoes	Rubber boots	Women's rain boots	Zori sandals
Handkerchief	Men's umbrella	Women's umbrella	Tailoring fee
Laundry (trousers)	Laundry (shirt)	Shoe repair	Wristwatch
Injection	Cold medicine	Stomach medicine	Fatigue tonic
Vitamin supplement	Antibiotic	Eye drops	Powdered milk
Bath fee	Haircut	Permanent wave	Tissue paper
Insecticide	Lotion	Cold cream	Vanishing cream
Soap	Laundry detergent	Toothpaste	Toothbrush
Hair pomade	Hair cream	Shampoo	Kitchen detergent
Razor blades	Mosquito coil	Ink	Notebook
Letter paper	Crayons	Paints	Pencil case
Pencil	Fountain pen	Record	Black-and-white film
Photo development	Baseball glove	Baseball	Tuna
Sea bream	Mackerel	Squid	Octopus
Chinese cabbage	Spinach	Cabbage	Lettuce
Mustard greens	Bean sprouts	Cauliflower	Leek
Onions	Green peas	Daikon radish	Carrot
Burdock	Cucumber	Bitter melon	Loofah
Eggplant	Tomato	Pumpkin	Green pepper
Mandarin oranges	Apples	Pears	Persimmons

Bananas	Watermelon	Potatoes	Sweet potatoes

The second dataset, compiled by Masuda (1972), is an investigative retail price survey conducted in Naha immediately before and after reversion. The survey collected posted prices (i.e., shelf prices faced by consumers) for identical retail goods at the same stores over a narrow window spanning May 10–19, 1972. Prices were recorded in U.S. dollars prior to reversion and in Japanese yen after reversion, reflecting the change in the unit of account associated with the currency conversion.

The Masuda survey covers 235 individual items, most of which are daily consumer goods, and was explicitly designed to document how retail prices were recalculated at the moment of currency conversion. Table B.2 reports the full list of the 235 retail items.

Table B.2: Masuda's (1972) Survey Items (235 items) (Naha City, May 1972)

Meat and Eggs			
Beef (premium sirloin)	Beef (sirloin)	Beef (standard cut)	Ground beef
Pork (loin)	Pork (lean cut)	Ground pork	Pork belly
Pork with skin	Chicken tenderloin	Chicken wings	Chicken breast
Chicken thigh	Ground chicken	Chicken liver	Eggs
Dairy and Fish			
Milk	Mackerel	Rockfish	Shrimp
Red fish	Gurukun (Okinawan white-striped fusilier)		
Vegetables and Fruits			
Green beans	Lettuce	Onions	Carrots
Potatoes	Cabbage	Cucumbers	Tomatoes
Green peppers	Garlic	Bean sprouts	Pumpkin
Daikon radish	Mustard greens	Green onions	Bitter melon (goya)
Pineapple	Grapefruit	Bananas	Lemons
Oranges			
Processed Foods and Condiments			
Bacon	Sausages	Butter (imported)	Margarine (imported)
Butter (domestic)	Cheese (imported)	Cheese (domestic)	Tofu
Dried seaweed (nori)	Rice	Wheat flour	White bread

Miso paste	Soy sauce	Salt	Sugar
Salad oil (Okinawa-produced)	Tempura oil (Okinawa-produced)	MSG	Powdered milk (for coffee)
Mayonnaise (domestic)	Mayonnaise (imported)	Jam	
Beverages and Alcohol			
Coffee (Blue Mountain)	Instant coffee	Black tea (tea bags)	Black tea (canned)
Whisky (Johnny Walker Red Label)	Whisky (Suntory Old)	Beer	Cola
Awamori			
Tobacco and Canned Goods			
Cigarettes (imported)	Cigarettes (Okinawa-produced)	Corned beef	Luncheon meat
Canned beef (imported)	Canned bacon	Canned pork	
Sweets and Eating Out			
Cream puffs	Chocolate (imported)	Chocolate (domestic)	Caramel candies
Mixed nuts	Fresh confectionery	Chewing gum	Coffee (coffee shop)
Tea (coffee shop)	Coca-Cola	Restaurant steak	Lunch (restaurant meal)
Clothing (Men)			
Men's undershirt	Men's briefs	Men's patterned underwear	Men's white dress shirt
Men's polo shirt	Men's short-sleeve sweater	Men's cardigan	Men's replacement trousers
Men's suit (jacket and trousers)	Men's handkerchief	Men's socks	Men's pajamas
Men's suiting fabric	Men's aloha shirt		
Clothing (Women and Children)			
Women's bra	Women's slip	Women's shirt	Women's shorts
Women's white blouse	Women's skirt	Women's dress	Women's cotton shirt
Women's cardigan	Women's slacks	Women's raincoat	Women's pantyhose
Women's handbag	Women's pajamas	Wool fabric	Broadcloth fabric
Women's suit	Children's undershirt	Children's pants	Children's slip (imported)
Children's shorts	Children's sweater	Children's blouse	Children's dress shirt
Children's denim trousers	Children's skirt		
Infant and Household Essentials			
Disposable diapers (U.S.-made)	Disposable diapers (Japan-made)	Undershirt (U.S.-made)	Long underwear
Powdered milk	Dress shirt	Bed sheets	
Utilities and Services			
Electricity	City gas	Propane gas	Water supply
Bus fare	Taxi fare (small)	Airfare (Naha–Miyako)	Gasoline
Haircut (adult)	Bathing fee (adult)	Bathing fee (youth)	Bathing fee (child)
Local telephone charge	Public telephone charge	Garbage collection	Night soil collection
Television license fee	Newspaper subscription (local)	Postcard postage	Letter postage
Initial medical consultation fee	Public high school tuition	Elementary school lunch fee	
Durables, Household Goods, and Education			

Air conditioner	Color television	Freezer-refrigerator	Refrigerator
Electric rice cooker	Vacuum cleaner	Washing machine	Electric fan
Electric iron (imported)	Electric iron (domestic)	Automatic toaster	Large radio
Hair dryer	Automobile (Nissan Sunny)	Piano	Record (LP)
Record (SP)	High-end camera	Single bed sheet	Blanket (acrylic fiber)
Mattress	Quilt		
Household Goods and Stationery			
Soap (imported)	Toothpaste	Toothbrush (imported)	Razor blades
Detergent	Shaving cream	Tissue paper	Toilet paper
Bath towel	Hand towel	Bath towel (large)	Permanent wave
Cold cream	Lipstick	Nail polish	Disinfecting alcohol
Vitamin supplements	Dinner plate	Meat plate	Cake plate
Drinking glass	Spoon	Fork	Knife
Frying pan	Kettle	Tea strainer (imported)	Fountain pen
Paper clips	Eraser	Pencil	Name tag
Paints	Crayons	Black-and-white film	Drawing paper
University notebook	Recorder (school use)	Harmonica (school use)	Piano lessons
Movie ticket (first-run)	Museum admission	Roses	Carnations
Chrysanthemums	Rubber plant	Paperback book	

B.2 Wholesale price surveys in 1972

The wholesale price data are constructed from daily market quotations published in the Ryukyu Shimpo. For fresh agricultural products, the newspaper reports prices from the Okinawa Agricultural Cooperative Central Wholesale Market (Nōren Chūō Ichiba). For fresh fish and seafood, quotations are taken from wholesale markets operated by the Naha Fisheries Cooperative (Naha Gyokyō) and the Ryukyu Federation of Fisheries Cooperatives (Ryukyu Gyoren).

The same wholesale market quotations are independently reported in the *Okinawa Times* with identical price levels. This cross-reporting confirms the consistency and reliability of the wholesale price information across newspaper sources.

For each product, the newspaper reports a daily high price, a daily low price, and shipment volume. In the empirical analysis, we use the midpoint of the reported high and low prices as the representative wholesale transaction price. This measure reduces the influence of short-lived price spikes and provides a stable summary of daily price movements in wholesale trading.

These wholesale markets primarily handle perishable goods and operate with frequent turnover and continuous price discovery. As a result, wholesale prices adjust rapidly to prevailing market conditions and are largely free from the nominal rigidities typically observed in retail prices.

The wholesale dataset covers 79 distinct items, including fresh vegetables, fruits, fish, and eggs traded in Okinawan wholesale markets. Table B.3 reports the complete list of wholesale items used in the analysis. The sample period spans from April 1, 1971 to December 31, 1972, covering both the pre- and post-reversion phases. These items generate up to $(79 \times 78)/2 = 3{,}081$ relative-price pairs, although the number of observed pairs varies over time due to missing quotations and market closures.

Table B.3: Wholesale Produce Items: Fresh Produce and Fish (79 items, Wholesale Markets in Naha City)

Leafy Vegetables			
Shantung cabbage	Okinawan mustard greens (Taina)	Okinawan leafy greens (Shimana)	Young leafy greens
Chinese cabbage (heading type)	Cabbage	Spinach	Leaf lettuce
Head lettuce	Garland chrysanthemum	Green onions	Garlic chives
Fruit Vegetables and Gourds			
Green peppers	Green beans	Cauliflower	Celery
Green peas	Snow peas	Tomatoes	Eggplant
Chili peppers	Pumpkin	Cucumbers	Bitter melon (goya)
Loofah gourd	Bottle gourd		
Root Crops			
Carrots	Okinawan carrots	Onions	Garlic
Early-season daikon radish	Okinawan daikon radish	Radish	Burdock root
Japanese yam	Taro root	Water taro	Sweet potatoes
Potatoes	Ginger	Young ginger	
Beans and Legumes			
Hyacinth beans	Pinto beans		
Fruits			
Papaya	Oriental melon	Kabuchi citrus (Okinawan citrus)	Mandarins
Satsuma mandarins	Pineapple	Bananas	Plums
Other Crops			
Parsley	Sugarcane (per stalk)		
Fresh Fish and Seafood			

Aigo (Rabbitfish)	Aomachi (Blue jack)	Akamachi (Red snapper)	Horse mackerel
Squid	Inuba (local reef fish)	Omonaga (Longfin jack)	Marlin
Bonito	Kuchinashi (local reef fish)	Kurukinmachi (local snapper)	Black marlin
Gurukun (Okinawan fusilier)	Mackerel	Spanish mackerel	Halfbeak
Shichūmachi (local snapper)	Icefish	White shichūmachi (local snapper)	Sea bream
Octopus	Taman (Lutjanus snapper)	Chinshīmachi (local snapper)	Chinmi (local small fish)
Flying fish	Sailfish	Flounder	Dolphinfish (Mahi-mahi)
Striped marlin	Tuna	Māmachi (local snapper)	Swordfish
Murū (local reef fish)	Yaki (local fish)	Mixed small fish	Other
Other sea bream			
Egg			
Egg			

B.4 Retail price surveys in 1958

We use data from the *Ryukyu Tokei Nenkan* (Ryukyu Statistical Yearbook), published in 1959, which reports monthly retail prices collected from retail stores in Naha City from January to December 1958. The dataset covers 90 individual retail items. Importantly, all retail prices are reported in U.S. dollars, including the period prior to the currency conversion implemented in September 1958 under the fixed conversion rate of 120 B-yen per U.S. dollar.

Item definitions and specifications are obtained primarily from Government of the Ryukyu Islands (1959), which provides detailed descriptions of product characteristics and measurement units. Table B.4 reports the complete list of the 90 retail items included in the survey.

Table B.4: Official Retail Price Survey Items in 1958 (90 items, Naha City)

Domestic rice	Imported rice (Burma)	Wheat flour	Sōmen noodles
Sweet potatoes	Tuna	Takasago fish	Dried sardines
Dried bonito flakes	Beef (A)	Pork (B)	Chicken eggs (A)
Chicken eggs (B)	Condensed milk	Soybeans (A)	Soybeans (B)
Cabbage	Spinach	Green onions	Onions
Daikon radish	Burdock root	Cucumbers	Winter melon
Kombu (kelp)	Tofu	Fried fish cakes (Satsuma-age)	Pickled daikon (Takuan)
Canned mackerel	Salt	Soy sauce	Miso paste (A)
Miso paste (B)	White sugar	Brown sugar	Cooking oil
Lard	Sweet bread (Anpan)	Caramels	Mandarins

Apples	Beer	Awamori	Green tea (Sencha)
Oolong tea	Dress shirts	Rayon fabric	Cotton fabric
Towels	Sewing thread	Men ' s socks	Athletic shoes
Men ' s wooden sandals (Geta)	Parasol	Tailoring fees	Electricity charges
Kerosene	Charcoal	Firewood	Water charges
Cedar boards	Cedar beams	Nails	Tatami mats
Tea cups	Rice bowls	Cooking pots	Buckets
Cold medicine	First-aid medicine	Public bath fee	Men ' s haircut fee
Permanent wave fee	Toilet soap	Laundry soap	Skin cream
Pomade	Tuition fees	Reference books	Notebooks
Pencils	Newspaper (Okinawa Times)	Newspaper (Ryukyu Shimpo)	Magazines
Movie ticket	Peace cigarettes	Cherry cigarettes	Domino cigarettes
Turban cigarettes			

Appendix C. RDD with Wide Bandwidths and Weather Robustness

This appendix examines the robustness of the RDD results reported in Section 3.2.2 along two dimensions. First, we consider wider symmetric estimation windows around the cutoff (± 60, ± 90, and ± 120 days) to assess whether the estimated discontinuity persists beyond the narrow bandwidths emphasized in the main text. Second, we evaluate the sensitivity of the estimates to extreme weather conditions by re-estimating the RDD after excluding days with severe rain and/or severe wind, which could affect the relative price structure of fresh produce through delayed wholesale arrivals and temporary disruptions in market clearing.[14]

Table C.1 reports the corresponding robustness results. Panel A uses the true currency reversion date of May 15, 1972 as the treatment cutoff. Across all wider bandwidths, the estimated discontinuity remains positive, large, and statistically significant. Moreover, excluding extreme-weather days has virtually no effect on the estimated jump: the point estimates of $\hat{\tau}$ are nearly identical to those obtained using the full sample.

Panel B implements a placebo exercise using May 15, 1971 as a pseudo-cutoff. While the estimated coefficients become positive and statistically significant when very wide bandwidths are

[14]Daily weather condition reports were obtained from the Japan Meteorological Agency. We construct extreme-weather indicators that take the value of one on days with severe rain and/or severe wind, and zero otherwise.

Table C.1: Regression Discontinuity Estimates with Wide Bandwidths and Weather Robustness

	Whole sample			Excluding extreme weather days		
Bandwidth $\pm h$ days	60	90	120	60	90	120
Panel A. Currency Reversion (May 15, 1972)						
D_t	0.223	0.366	0.491	0.226	0.369	0.491
	(0.034)	(0.040)	(0.044)	(0.034)	(0.041)	(0.045)
r_t	0.006	0.003	0.001	0.006	0.003	0.001
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
$D_t \times r_t$	-0.005	-0.004	-0.004	-0.005	-0.004	-0.004
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
yq_{ijt}	0.027	0.017	0.017	0.025	0.015	0.016
	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Observations	61,271	81,135	97,319	59,376	77,547	98,029
Product pairs	1,104	1,172	1,208	1,125	1,209	1,232
Panel B. Placebo Cutoff (May 15, 1971)						
D_t	0.151	0.213	0.255	0.149	0.211	0.252
	(0.038)	(0.036)	(0.034)	(0.038)	(0.036)	(0.034)
r_t	0.005	0.003	0.002	0.005	0.003	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$D_t \times r_t$	-0.005	-0.003	-0.003	-0.005	-0.003	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
yq_{ijt}	0.001	-0.003	-0.004	0.001	-0.004	-0.004
	(0.005)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
Observations	78,705	104,273	123,891	78,216	103,102	122,133
Product pairs	1,651	1,655	1,661	1,651	1,655	1,661

Notes. This table reports regression discontinuity estimates using wider symmetric windows of $\pm h$ days around the cutoff date. Panel A uses the currency reversion on May 15, 1972 as the treatment cutoff, while Panel B implements a placebo test using May 15, 1971. The left-hand columns report estimates using the full sample, while the right-hand columns exclude days with extreme weather shocks (severe rain and/or severe wind). All specifications include product-pair fixed effects and control for sign-normalized log relative quantities yq_{ijt}. Standard errors are two-way clustered by product pair and calendar date.

used, their magnitudes remain substantially smaller and less stable than those observed at the true 1972 cutoff. This comparison indicates that the large and persistent positive jumps in the relative price structure for $h = 60, 90, 120$ reported in Panel A cannot be explained solely by seasonal patterns that would also be present in the 1971 placebo estimates, nor by temporary disruptions due to severe weather conditions. Instead, they reflect the long-lasting effects of the collapse of the common unit of account triggered by the currency conversion.

Crucially, the sharp contrast between Panels A and B reinforces the interpretation that the large and immediate discontinuity in the relative price structure observed in May 1972 is specific to the currency reversion, persists for at least four months, and cannot be attributed to seasonal factors or severe weather conditions.

Overall, these robustness checks confirm that the main results are not sensitive to the choice of bandwidth or to the inclusion of days with extreme weather shocks. The breakdown of the relative

price structure at reversion therefore reflects a genuine and persistent monetary coordination failure, rather than seasonal factors or transitory real disturbances.

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