FOOD SECURITY AS A COMPONENT OF NATIONAL ECONOMIC STABILITY: AVAILABILITY, ACCESSIBILITY, AND AFFORDABILITY DIMENSIONS

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Abstract

Food is the one expense households cannot postpone, which makes food security a macroeconomic matter and not only a humanitarian one. When supply tightens or prices jump, the effects travel through consumer prices, import bills, subsidy budgets and exchange rates. This study asks how three dimensions of food security, availability, accessibility and affordability, relate to national economic stability, using a structured comparison of five countries chosen for contrast: Uzbekistan, Singapore, India, Egypt and Nigeria. They differ in income, import dependence, policy instruments and macroeconomic exposure. Drawing on FAO, World Bank, IMF and national statistical and central bank data for 2015 to 2025, the study tracks inflation, growth, exchange-rate and external and fiscal indicators against each dimension and traces how each economy absorbed the price shocks of 2020 to 2024. The pattern expected from the evidence so far is that import dependence alone does not predict instability, that strong availability does not shield an economy from price-driven inflation, that a weak currency turns import dependence into fiscal and external stress, and that producing food is not the same as people being able to obtain it.

Keywords

Food security; economic stability; food prices; import dependence; food subsidies; comparative case study; Uzbekistan; inflation

I. Introduction

1.1 The problem

When wheat prices jumped after early 2022, central banks were not the only institutions paying attention. Finance ministries, grain importers and ordinary households watched too, because bread cannot be skipped the way a holiday can. Food is a basic need that cannot be postponed, and in many lower-middle-income countries it takes a very large share of household spending. That fact alone gives food prices an unusual grip on the wider economy.

The scale of the underlying problem is large. The annual State of Food Security and Nutrition in the World reports from FAO, IFAD, UNICEF, WFP and WHO put the number of people facing chronic hunger at several hundred million, and the number unable to afford a healthy diet at billions. Those numbers are usually read as a social and humanitarian story. This paper reads them as an economic one as well.

The argument is simple. Food insecurity is not only something that happens to poor households; it is also a source of instability for the whole economy. Disrupted supply or sharply higher food prices raise the consumer price index, squeeze real incomes, widen import bills,

increase pressure on exchange rates, and push governments toward costly subsidies or export restrictions. The 2007 to 2008 global food price crisis and the 2021 to 2022 price surge are the recent proof (Headey & Fan, 2008; Headey, 2011; Naylor & Falcon, 2010).

1.2 Why it matters, and for whom it matters most

The causal chain can be written compactly:

Weak availability, accessibility or affordability → food price and supply shocks → higher inflation, lower real incomes, larger import and subsidy bills → macroeconomic instability

But the chain does not run equally in every country. Its strength depends on import dependence, domestic production capacity, the weight of food in the consumption basket, fiscal space, the exchange-rate regime and the depth of food storage and market infrastructure. A country that grows most of its own staples and holds strategic reserves sits in a very different position from one that buys most of its grain abroad and settles the bill in a volatile currency.

Five countries show how differently the chain can run. Singapore imports more than 90 percent of its food, yet it is generally counted among the best-protected systems in the world, because it buys from many places, holds stockpiles and has a strong fiscal position (Singapore Food Agency, n.d.). India grows most of its own staples and holds large public grain stocks, but price swings in vegetables and pulses still feed into inflation. Egypt is among the world's largest wheat importers and funds a subsidised bread programme that reaches most of its population, so a weak pound lands directly on the budget. Nigeria has large farming potential, but conflict, logistics and exchange-rate shocks keep food out of many households' reach. Uzbekistan, the focal case, is a lower-middle-income transition economy whose wheat imports come largely from Kazakhstan, whose currency was liberalised in 2017 and whose inflation has been falling toward a 5 percent target. Together they let the paper ask not only whether food security matters for stability, but which dimension is the weak link in which kind of country.

1.3 Brief literature review and the gap

The literature on food security and economics falls into four broad streams.

Concept and measurement. The standard definition comes from the 1996 World Food Summit: food security exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food (FAO, 1996). Sen (1981) shifted the debate from "is there enough food" to "can people obtain it," arguing that famines can occur even when aggregate supply is adequate. Barrett (2010) reviews the measurement problems that follow from this multi-dimensional concept.

Food prices and poverty. A large body of work links price spikes to poverty and welfare. Ivanic and Martin (2008) estimate how higher food prices affect poverty in low-income countries, with results that vary by whether households are net buyers or sellers of food.

Food prices and macroeconomic variables. Studies of the 2007 to 2008 crisis document pass-through from international to domestic food prices, effects on inflation, and policy responses such as export bans and subsidies (Headey & Fan, 2008; Headey & Fan, 2010; Naylor & Falcon, 2010). Much of this work centres on price dynamics.

Regional and country studies. Work on Central Asia and Uzbekistan exists but tends to be descriptive, concentrating on agricultural reform, production and trade.

The gap. The existing work usually treats one piece of the picture: food prices and inflation, or food insecurity and poverty, or agricultural production and growth. What is much less common is an analysis that treats availability, accessibility and affordability as distinct but connected dimensions and sets countries with very different structures side by side: an import-dependent high-income city-state, a grain-surplus giant with large safety nets, a subsidy-heavy importer, a resource-rich but access-constrained producer and a Central Asian transition economy. Evidence for Central Asia is thinner still. This paper addresses that gap. (Check this claim against a systematic search in Scopus and Web of Science before submission; a gap statement that a reviewer can disprove with one citation will sink the paper.)

1.4 Objective, research questions and hypotheses

Objective. To compare how availability, accessibility and affordability shaped macroeconomic stability in five countries (Uzbekistan, Singapore, India, Egypt and Nigeria) between 2015 and 2025, and to draw lessons for Uzbekistan.

Research questions

- **RQ1.** In each country, which dimension of food security has been the binding constraint on macroeconomic stability?
- **RQ2.** Through which channels (consumer prices, import bills, subsidies, the exchange rate) did food shocks reach the wider economy?
- **RQ3.** Does import dependence lead to instability, and under what conditions (sourcing, stocks, fiscal space, currency regime) does it not?
- **RQ4.** What should Uzbekistan take from the other four cases?

Propositions

Because five cases support comparison and not statistical testing, the hypotheses of the earlier draft become propositions. Each states an expected pattern that the evidence could contradict.

- **P1 (availability and import dependence).** Import dependence raises macroeconomic vulnerability only where sourcing is concentrated and buffers (stocks, fiscal space, a stable currency) are thin. Expected: Singapore stable, Egypt exposed.
- **P2 (affordability).** Food price volatility passes into headline inflation more strongly where food has a large weight in household spending and incomes are low. Expected: stronger in India, Nigeria and Uzbekistan than in Singapore.
- **P3 (accessibility).** Where physical and economic access is weak, domestic production does not stabilise prices or incomes. Expected: Nigeria.
- **P4 (policy instruments).** Subsidies and buffer stocks protect household access in the short run but shift risk to the fiscal and external accounts. Expected: Egypt and India.
- **P5 (combined effect).** Economies that perform on all three dimensions together show smaller inflation swings and less external stress than those strong on only one. Expected: Singapore strongest, Uzbekistan intermediate.

RQ4 is answered in the Discussion and not tested directly.

II. Methods

2.1 Research design

The study uses a comparative multi-case design in the tradition of structured, focused comparison (George & Bennett, 2005; Gerring, 2007). Every country is examined with the same

protocol: the same three dimensions, the same stability indicators, the same period (2015 to 2025, with 2007 to 2008 as a historical reference) and the same set of shock episodes. A cross-case scorecard then sets the five countries side by side. Five cases cannot support regression, so the propositions are assessed by pattern matching and process tracing, not by significance tests. An optional panel extension, described in Section 2.6, is available for readers who want statistical generalisation.

2.2 Conceptual framework and definitions

FAO's framework has four pillars: availability, access, utilization and stability. This study deliberately uses three, because utilization (nutrition, health, food safety) and the stability pillar overlap with the outcome variable and are less directly connected to macroeconomic aggregates. The choice should be stated in one sentence in the paper and defended by citing the framework.

To avoid double-counting, the three dimensions are defined as follows.

- **Availability** is the physical supply of food: domestic production, net imports and stocks.
- **Accessibility** is whether people can physically and economically reach food: income and poverty levels, and the quality of rural roads and market infrastructure.
- **Affordability** is the price of food relative to what people earn: food price levels, the share of spending on food, and the cost of a healthy diet relative to income.

The framework can be presented as Figure 1:

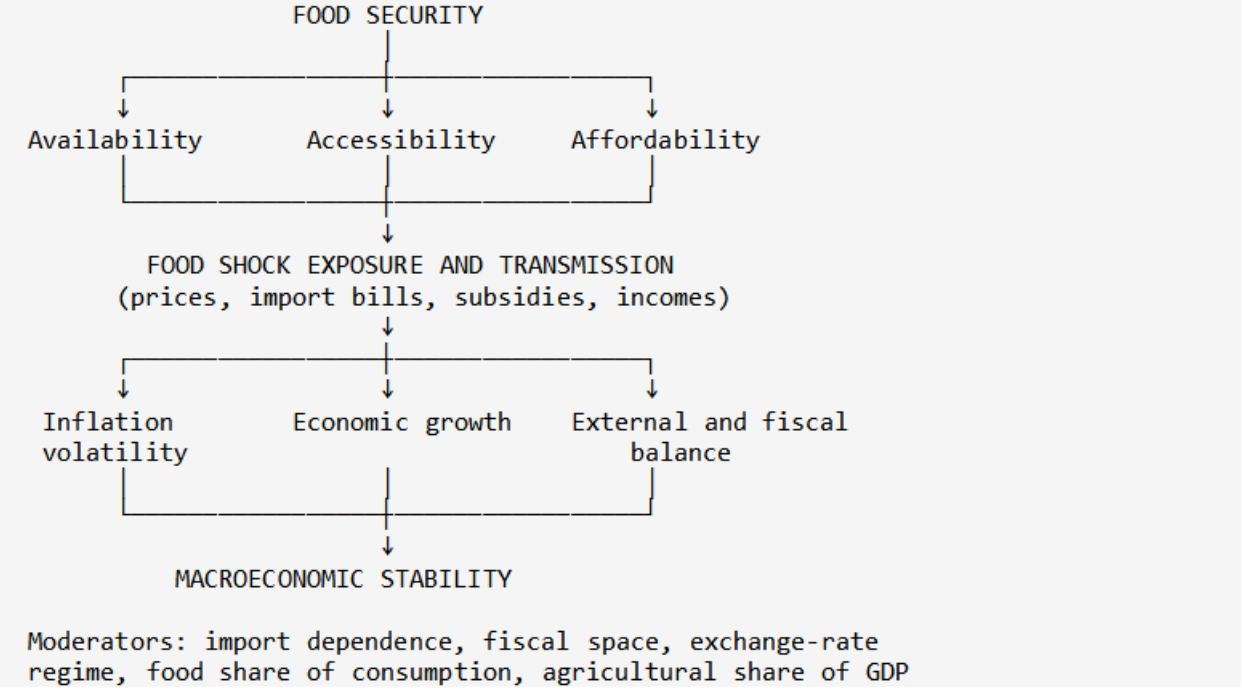

Figure 1. Conceptual framework of the relationship between food security and macroeconomic stability.

The transmission block in the middle is what separates this framework from a simple input-output diagram. It names the actual channels by which a food problem becomes a macroeconomic one.

2.3 Variables and indicators

Independent variables

Dimension	Indicator	Likely source
Availability	Cereal production per capita; average dietary energy supply adequacy; cereal import dependency ratio	FAOSTAT; FAO Food Balance Sheets; FAO Suite of Food Security Indicators
Accessibility	Poverty headcount; prevalence of undernourishment; infrastructure or logistics quality	World Bank WDI and PIP; FAO; World Bank Logistics Performance Index
Affordability	Food CPI relative to overall CPI; FAO Food Price Index (international benchmark); share of income needed to afford a healthy diet	National statistics; FAOSTAT; IMF; World Bank Food Prices for Nutrition

Case scorecard. Each indicator is reported in raw units and also placed against the average for the country's World Bank income group (or the SOFI regional figure where that is the only comparator). Countries are then rated high, medium or low on each dimension using written thresholds, stated in an appendix before the data are looked at, so the scoring cannot drift toward the story the author expects. Two coders should score independently and report where they disagreed.

Dependent variables (macroeconomic stability)

- Inflation volatility: the rolling three-year standard deviation of annual CPI inflation, together with the inflation level.
- Real GDP growth rate, and its volatility.
- Exchange-rate volatility: the standard deviation of monthly log changes in the nominal effective or bilateral rate against the US dollar.
- External balance: the current account as a share of GDP.
- Fiscal balance as a share of GDP, used as a secondary indicator because subsidy costs are one transmission channel.

As the template suggested, inflation volatility, growth and exchange-rate volatility form the core outcome set, and the other two serve as robustness checks. A fully composite stability index can also be built the same way as the FSI, if reviewers prefer a single outcome.

Case context

For each country the protocol records income group, population, the weight of food in the CPI basket, the main staple and its import share, the exchange-rate regime, fiscal capacity, and any conflict or major policy shift in the period. These replace the control variables of a regression and are what lets a reader judge whether two cases are really comparable.

2.4 Data sources

Primary sources are international and institutional: FAOSTAT, FAO Food Balance Sheets and the GIEWS country briefs; the annual SOFI reports; the World Bank (World Development Indicators, Poverty and Inequality Platform, Food Prices for Nutrition); and the IMF (World Economic Outlook, International Financial Statistics). National sources are added per case: the Statistics Agency and the Central Bank of Uzbekistan; the Singapore Food Agency's food statistics; India's Ministry of Statistics and Programme Implementation, the Food Corporation of India and Union Budget documents; Egypt's statistical agency, Ministry of Supply and Central

Bank; and Nigeria's National Bureau of Statistics and Central Bank. Where national and international figures differ, the paper reports both and states which it uses and why. Two comparability traps deserve a footnote: Nigeria rebased its CPI to a 2024 base year in 2025, which changed published food inflation sharply and makes pre- and post-rebasing series hard to join, and Egypt's repeated devaluations mean that local-currency and dollar figures tell different stories.

2.5 Case selection

The five cases follow a diverse-case logic (Seawright & Gerring, 2008): they are picked so that income level, import dependence, policy tools and macro exposure vary widely, which gives each dimension of food security a chance to be the weak link somewhere. Uzbekistan is the focal case and is studied in the most depth.

Case	Structure	Food import position	Main policy tools	Why it is in the set
Uzbekistan	Lower-middle income, transition economy	Wheat and flour imports large and growing, high-quality grain mainly from Kazakhstan	Tight monetary policy, liberalised exchange rate since 2017	Focal case and regional anchor
Singapore	High-income city-state	More than 90% of food imported	Source diversification, stockpiles, local production push	Import dependence without instability
India	Lower-middle income, very large	Staples largely domestic	Procurement, buffer stocks, public distribution, export restrictions	Strong availability, weaker price stability
Egypt	Lower-middle income	One of the world's largest wheat importers	Subsidised bread, state and private imports	Clearest food-to-macro link
Nigeria	Lower-middle income, resource-rich	Large farming potential, but import and currency policy shifts	Import and exchange-rate policy changes	Producing food is not the same as accessing it

The obvious objection is that five cases leave out the region's main grain exporter. Kazakhstan would be the natural sixth case, as a counterpoint to Uzbekistan, and can be added if the journal allows the space. The period 2015 to 2025 is chosen because it includes the 2017 Uzbek currency reform, the pandemic, the 2022 price surge and the later devaluations in Egypt and Nigeria.

2.6 Analytical strategy

The analysis runs in four steps.

1. **Within-case profile.** For each country, build the time series of the three dimensions and the stability indicators for 2015 to 2025, and write a short narrative of what moved and when.

2. **Shock episodes.** Trace the same sequence in each episode: shock, then food prices, then the CPI, then the currency and the balance of payments, then the fiscal accounts, then the policy response. The episodes are the 2020 pandemic, the 2022 price surge, Egypt's devaluations of 2022 to 2024, Nigeria's exchange-rate unification of 2023 to 2024, and Uzbekistan's 2017 liberalisation.

Dated releases from central banks and statistics offices fix who moved first, which speaks to the reverse-causality problem.

3. **Cross-case comparison.** Fill the scorecard and test the pattern in each proposition, giving as much weight to cases that contradict it as to cases that fit it.

4. **Rival explanations.** For every pattern found, ask what else could produce it: energy and fertiliser prices, the monetary regime, conflict, or simple base effects in the CPI. State which rivals the evidence rules out and which it cannot.

Optional panel extension. If reviewers want statistical generalisation, the same indicators can be run in a fixed-effects panel of roughly 40 countries over 2000 to 2024, with lagged regressors and system GMM to address endogeneity (Arellano & Bond, 1991; Blundell & Bond, 1998). This is described here as an extension, not as part of the core design, because it would turn a focused comparison into a second paper.

2.7 Robustness and limitations

Robustness comes from triangulation: where possible each indicator is taken from two sources, and a pattern is reported only if it survives a change of window (for example dropping 2020 to 2022) and a change of measure (for example food CPI against the cost of a healthy diet). The limitations to state plainly are the small number of cases, the risk that case selection steers the answer, differences in data quality and CPI methods across countries, the judgment involved in scoring, and the fact that pattern matching shows consistency with a cause and does not prove it.

III. Results

The evidence below is preliminary: it was collected from public sources on 3 November 2026, mostly from news and agency pages.

3.1 Global backdrop

The 2025 SOFI report puts global undernourishment at 8.2 percent in 2024, with about 2.3 billion people moderately or severely food insecure and 2.6 billion unable to afford a healthy diet, whose average cost reached 4.46 PPP dollars per person per day (SOFI 2025 summary, UNICEF; Carbon Brief). Food price inflation has outpaced general inflation since 2020, peaking globally at 13.6 percent in January 2023 and near 30 percent in low-income countries in May 2023. The report also notes that affordability has worsened in many lower-middle-income countries once India is excluded, which is a reminder that India's size can hide trouble elsewhere in comparisons.

3.2 Cross-case snapshot

Country	Food security position	Latest macro signal	Sources
Uzbekistan	Wheat import needs forecast at 4.2 million tonnes for 2026/27, slightly above average; flour imports up about 70% since 2016/17; high-quality grain mainly from Kazakhstan	Annual inflation 7.3% at end-2025 and 6.4% in June and July 2026; food prices up 6.3% year on year in June; policy rate 14%	FAO GIEWS, Interfax, CBU
Singapore	More than 90% of food imported from 187 countries and regions; rice stockpile scheme; local output under 10% of needs against a 30% by 2030 goal, now folded into Food Story 2	Ranked 9th of 60 in Economist Impact's 2026 Resilient Food Systems Index, as reported by NUS	SG101, NUS CGS
India	Large public grain stocks; PMGKAY allocation of about ₹2.27 lakh crore in the 2026-27 budget; food subsidy about 0.6% of GDP	CPI 3.4% and food 3.87% in March 2026; secondary reports show food inflation jumping in mid-2026, led by vegetables [verify with MoSPI]	PRS India, Outlook Business
Egypt	Subsidised bread reached about 65% of the population in 2023; its price was raised in 2024 for the first time since 1989; Russia and Ukraine supplied about 75% of wheat imports in 2022; imports expected at 12 to 13 million tonnes in 2026/27	Pound at EGP 52.39 per dollar in March 2026; cost of producing subsidised bread projected at EGP 125 billion in FY2025/26, up from EGP 90 billion	IFPRI, Milling MEA, EnterpriseAM
Nigeria	Large farming potential but constrained access [add conflict, logistics and household-access evidence]	Headline inflation 15.93% in May 2026 on the rebased CPI, imported food 14.60%; food inflation read 39.84% in December 2024 on the old series and 24.08% in January 2025 on the new	VON, TechCabal

3.3 Reading each case

Uzbekistan. Food matters for headline inflation here: food accounted for 62.7 percent of the monthly CPI increase in April 2026 (Daryo). Food and energy imports total roughly 6 percent of GDP (ING), so the external channel is real but moderate. The 2017 exchange-rate liberalisation is a natural shock episode to trace; one data portal puts food inflation at a record 26.8 percent in January 2018.

Singapore. The case supports the idea that import dependence is a risk to be managed and not a verdict. Diversified sources, stockpiles and fiscal strength do the stabilising work. The open question for the paper is the price paid for that resilience.

India. Availability is not the problem; price volatility is. Public stocks and a large distribution system protect access, but vegetable and pulse prices still move the CPI, and export restrictions on staples show food policy spilling into trade.

Egypt. The sequence is the clearest of the five: a weak pound raises the local cost of wheat, the subsidy bill grows, and fiscal and external pressure follow. The bread price rise of 2024 shows the political cost of letting that bill pass through.

Nigeria. The data themselves are part of the finding. A CPI rebasing cut published food inflation by roughly fifteen points between December 2024 and January 2025, so any cross-time comparison needs a stated method. Access evidence (conflict, roads, market links) must come from outside the CPI.

3.4 Propositions against the evidence so far

Proposition	Evidence so far	Status
P1 Import dependence only destabilises where buffers are thin	Singapore imports over 90% with strong buffers; Egypt's imports meet a weak currency	Supported on current evidence
P2 Food price swings pass into headline inflation where food weights are high	Food drove most of Uzbekistan's April 2026 CPI rise; Indian vegetable swings move the CPI	Partly supported; needs CPI food weights for all five
P3 Weak access neutralises domestic production	Nigeria's case rests on conflict and logistics evidence not yet collected	Open
P4 Subsidies and stocks shift risk to the budget and external accounts	Egypt's bread cost rose with the pound; India's food subsidy runs at about 0.6% of GDP	Supported for Egypt; needs a fiscal series for India
P5 Strength on all three dimensions stabilises most	Singapore strongest; no other case is strong on all three	Open

IV. Discussion

4.1 Principal findings

Two patterns stand out. First, the binding dimension differs by country: sourcing and buffers in Singapore, price volatility in India, the currency-financed import bill in Egypt, physical and economic access in Nigeria, and a mix of import cost and price pass-through in Uzbekistan. Second, the tools that protect households (subsidies, public stocks, price controls) move risk onto the budget, the trade account or the exchange rate. Food security therefore does not remove macro risk; it decides where the risk sits.

4.2 Five kinds of country

Pattern	Case	Binding dimension	Where the stress shows up
Buffered importer	Singapore	None binding; sourcing risk is managed	Little macro stress; the cost is spending on resilience
Producer with price volatility	India	Affordability	Headline inflation and trade policy

Pattern	Case	Binding dimension	Where the stress shows up
Subsidised importer	Egypt	Availability, paid for in foreign currency	Fiscal and external accounts
Producer without access	Nigeria	Accessibility	Inflation and household welfare
Intermediate importer in transition	Uzbekistan	Affordability and import cost through the currency	Inflation, with a moderate external bill

The typology is the paper's main analytical product. It lets a reader place a sixth country, Kazakhstan for example, by asking which row it resembles.

4.3 What it means for Uzbekistan

Uzbekistan sits between the rows. Its wheat import needs are rising with demand, and food is a large part of monthly price increases, but inflation has fallen from 7.3 percent at the end of 2025 to 6.4 percent in mid-2026, the exchange rate is market-determined and the external bill for food and energy is moderate. That is a more comfortable position than Egypt's, but it is exposed to the same two things: the price of imported wheat and flour, and the currency in which it is paid for. The comparison suggests that the thing to watch is not the volume of imports but how concentrated the sources are and how thick the buffers are.

4.4 Policy implications (answering RQ4)

1. **Diversify sources and routes.** Singapore's resilience comes from buying from many places and stockpiling; Uzbekistan's reliance on one main grain supplier is the equivalent weakness.
2. **Keep strategic reserves sized to import risk,** as India does with public stocks, but review their running cost and their effect on trade policy.
3. **Target support instead of fixing prices.** Egypt's bread programme shows how a universal subsidy turns a currency move into a fiscal event; targeted transfers cost less when the exchange rate moves.
4. **Invest in access, not only output.** Nigeria shows that production gains do not reach households without roads, storage and security; this matters for rural Uzbekistan too.
5. **Watch food prices in monetary policy.** Where food drives much of the CPI increase, central banks need early food-price signals, not only headline data.

4.5 Limitations

Five cases limit how far any pattern can be generalised, and the choice of cases shapes the answer. Data quality and CPI methods differ across countries (Nigeria's rebasing is the clearest example). Scoring involves judgment, and the preliminary evidence leans on secondary sources. The design shows consistency with a cause, not proof of one.

4.6 Directions for further research

Three steps follow naturally: add Kazakhstan as a regional counterpoint; run the panel extension in Section 2.6 for statistical generalisation; and use household budget surveys to see how food price shocks change what Uzbek, Egyptian and Nigerian households actually buy.

V. Conclusion

This paper compared five countries to ask how availability, accessibility and affordability shape national economic stability. The cases suggest that import dependence is a manageable risk when sourcing is diverse and buffers are thick, that strong production does not shield an economy from food-price inflation, that subsidies shift risk onto public finances and the currency, and that growing food is not the same as people being able to get it. For Uzbekistan the practical lesson is to watch source concentration, reserves and the exchange rate before the import volume itself.

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