# Cost of Disease Burden: Different Perspectives

4th International Workshop for
Regulation of Animal Biotechnology

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The Food Supply Chain

Farm · Packaging · Transportation · Market · Your Home · Manufacturing · Distribution

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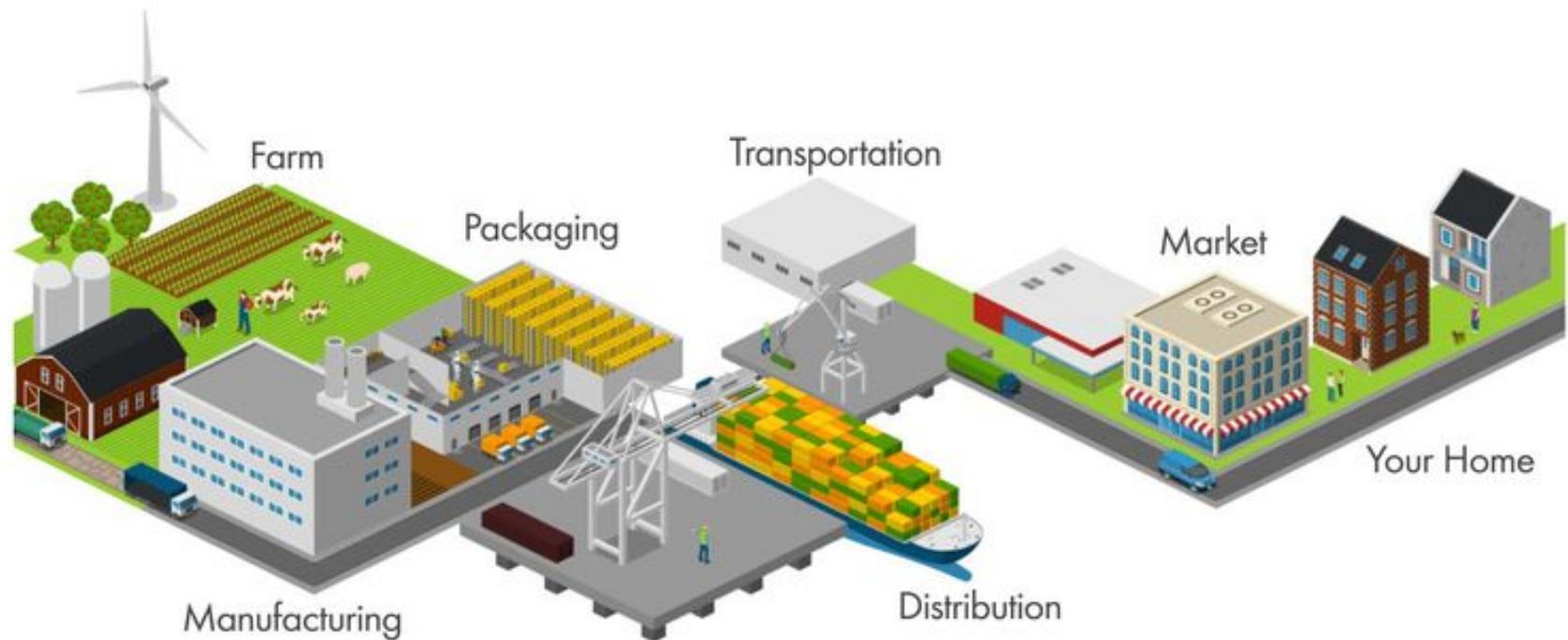
Table 1: Economic Losses and Costs to a Local Economy

Term	Definition	HPAI Examples
Direct Losses	Direct losses in physical output and assets	Loss of livestock, reduction in egg and poultry output
Indirect Losses	Indirect losses are those that follow from the physical damages	Transportation and commuter disruptions, loss of local tax revenues, reduced tourism
Ex Post Costs	Mitigation expenditures undertaken during recovery period	Response, clean up, and recovery: personal protective equipment, organic material, equipment rental, labor, food, lodging, other services
Market Impacts	Changes in commodity prices for inputs, outputs, and assets	Changes in revenue of poultry and poultry products to firms and prices paid by consumers
Ex-Ante Costs	Mitigation expenditures undertaken before the disaster occurs	Preventative investment, stockpiling, biosecurity, and surveillance

SOURCE: JOHNSON, SEEGER, AND MARSH (2016)

Results of Selected Release Scenario

Direct Losses & Market Impacts

Event	Output/ Location	Producer Returns to Capital and Management	Consumer Surplus	Government Costs		Regional Non-Agriculture Impacts	Total
				Indemnity	Non-Indemnification		
	p5/p5	$0	$0	$0	$0	$0	$0
	p5/p50	$0	$0	$0	$0	$0	$0
	p5/p95	-$19,920	$3,489	$18	$3	-$39	-$16,491
	p50/p5	-$18,752	$4,061	$1,414	$288	-$1,143	-$17,536
Liquid Waste	p50/p50	-$56,869	-$51,990	$1,903	$1,730	-$3,726	-$116,218
	p50/p95	-$64,027	-$60,322	$4,614	$3,216	-$4,152	-$136,331
	p95/p5	-$47,578	-$43,436	$2,322	$771	-$831	-$94,938
	p95/p50	-$61,231	-$58,915	$8,377	$5,387	-$2,433	-$136,343
	p95/p95	-$60,679	-$58,701	$9,844	$5,604	-$4,061	-$138,889

Results of Selected Release Scenario

Ex-Post & Ex-Ante Costs

Event	Output/Location	Changes in Producer Returns to Capital and Management	Consumer Surplus	Government Costs Indemnity	Non-Indemnification	Regional Non-Agriculture Impacts	Total
	p5/p5	$0	$0	$0	$0	$0	$0
	p5/p50	$0	$0	$0	$0	$0	$0
	p5/p95	-$19,920	$3,489	$18	$3	-$39	-$16,491
	p50/p5	-$18,752	$4,061	$1,414	$288	-$1,143	-$17,536
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	p95/p50	-$61,231	-$58,915	$8,377	$5,387	-$2,433	-$136,343
	p95/p95	-$60,679	-$58,701	$9,844	$5,604	-$4,061	-$138,889

Source: Pendell et al. (2015)

Results of Selected Release Scenario

Indirect Losses

Event	Output/ Location	Producer Returns to Capital and Management	Consumer Surplus	Indemnity	Non-Indemnification	Regional Non-Agriculture Impacts	Total
		Changes in		*Government Costs*			
	p5/p5	$0	$0	$0	$0	$0	$0
	p5/p50	$0	$0	$0	$0	$0	$0
	p5/p95	-$19,920	$3,489	$18	$3	-$39	-$16,491
	p50/p5	-$18,752	$4,061	$1,414	$288	-$1,143	-$17,536
Liquid Waste	p50/p50	-$56,869	-$51,990	$1,903	$1,730	-$3,726	-$116,218
	p50/p95	-$64,027	-$60,322	$4,614	$3,216	-$4,152	-$136,331
	p95/p5	-$47,578	-$43,436	$2,322	$771	-$831	-$94,938
	p95/p50	-$61,231	-$58,915	$8,377	$5,387	-$2,433	-$136,343
	p95/p95	-$60,679	-$58,701	$9,844	$5,604	-$4,061	-$138,889

Results of Selected Release Scenario

Total Losses

	Output/Location	Producer Returns to Capital and Management	Consumer Surplus	Government Costs		Regional Non-Agriculture Impacts	Total
Event				Indemnity	Non-Indemnification		
	p5/p5	$0	$0	$0	$0	$0	$0
	p5/p50	$0	$0	$0	$0	$0	$0
	p5/p95	-$19,920	$3,489	$18	$3	-$39	-$16,491
	p50/p5	-$18,752	$4,061	$1,414	$288	-$1,143	-$17,536
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# Changes in Producers' Returns to Capital and Management
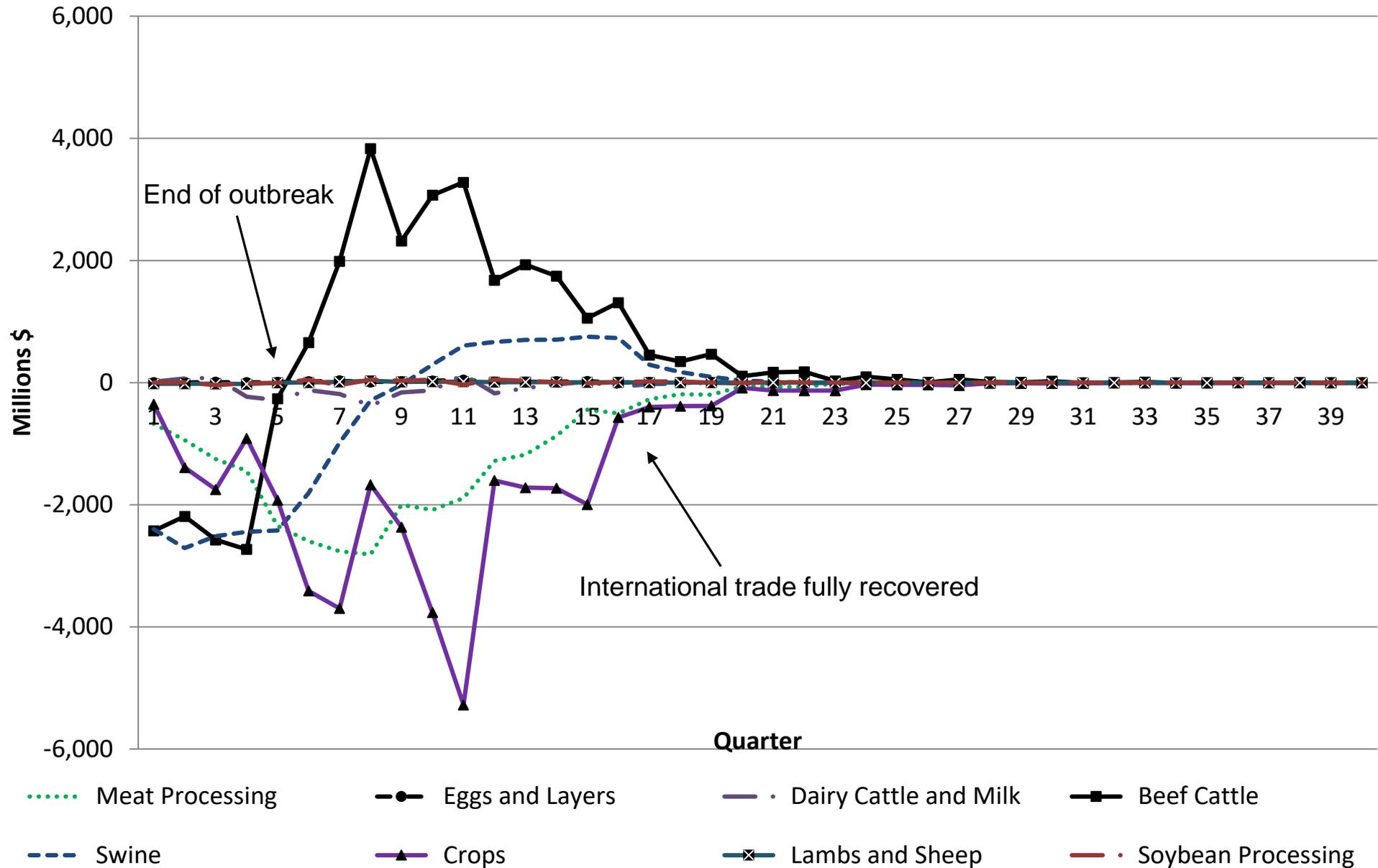
Modelling the global economic consequences of a major African swine fever outbreak in China

Daniel Mason-D'Croz ✉, Jessica R. Bogard, Mario Herrero, Sherman Robinson, Timothy B. Sulser, Keith Wiebe, Dirk Willenbockel & H. Charles J. Godfray

Changes in World Prices for Selected Commodities
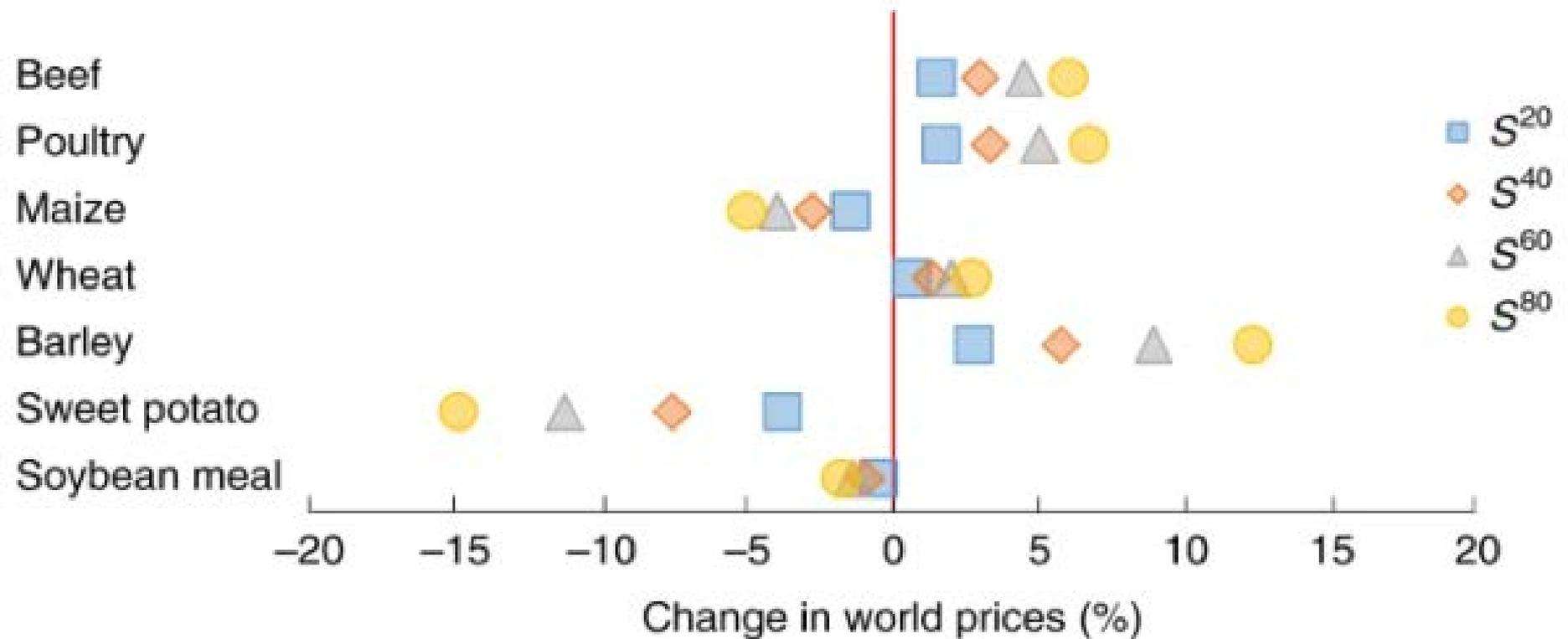
Source: Mason-D'Croz et al. (2020)

Effect of the ASF epidemic on calorie availability & risk of hunger

Source: Mason-D'Croz et al. (2020)
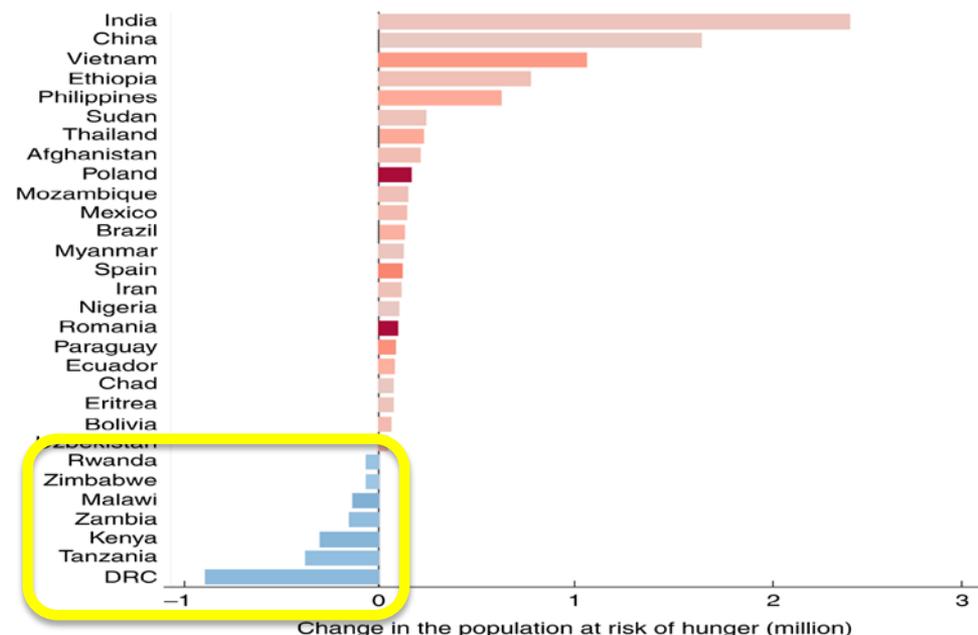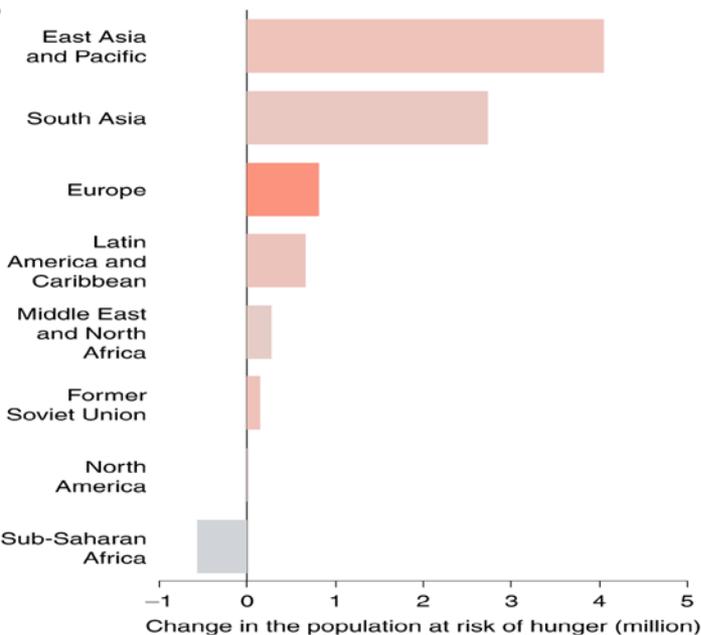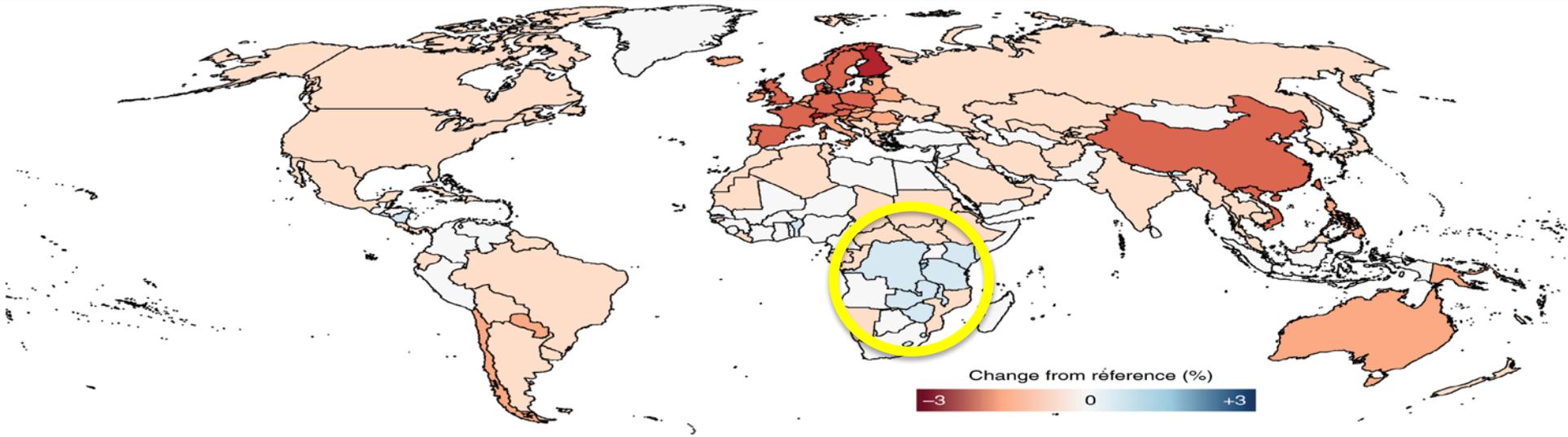
Estimated Costs of Emerging Zoonotic Diseases

Source: World Bank (2012)
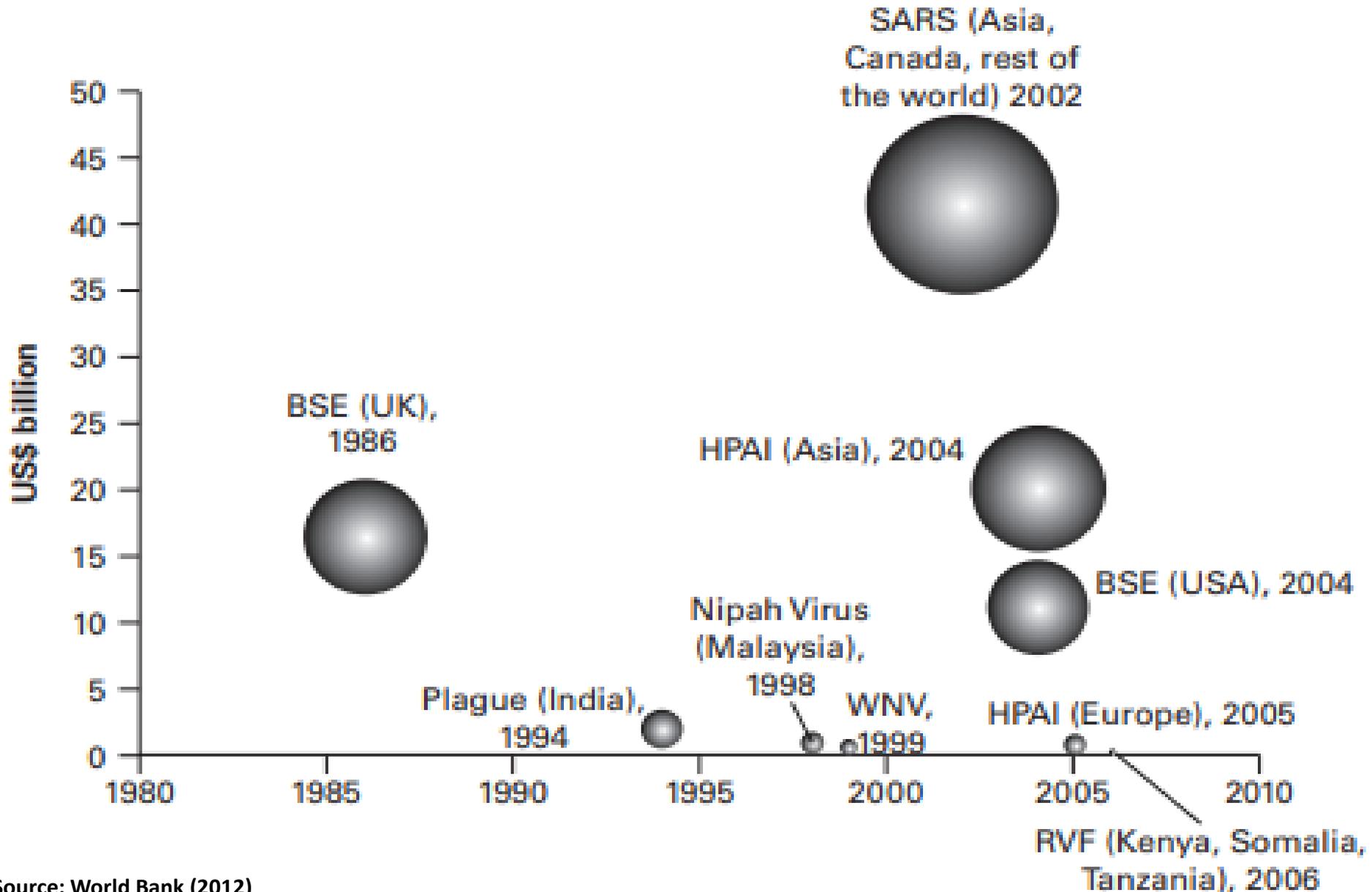
Consumer acceptance of gene-edited food products in China

David L. Ortega [a, b], Wen Lin [a], Patrick S. Ward [c, d]

Gene-Edited Meat: Disentangling Consumers' Attitudes and Potential Purchase Behavior

Daniel Martin-Collado[1,2*+], Tim J. Byrne[3+], Jonh J. Crowley[3,4], Tom Kirk[3], Guillermo Ripoll[1,2+] and C. B. A. Whitelaw[5+]

Consumers' Willingness to Buy CRISPR Gene-Edited Tomatoes: Evidence from a Choice Experiment Case Study in Germany

by Linde Götz [1,2,*], Miranda Svanidze [1], Alain Tissier [3] and Alejandro Brand Duran [3]

Consumers' willingness to pay for beef products derived from RNA interference technology

Logan L. Britton [a], Glynn T. Tonsor [b]