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Leadership in Decline: Assessing U.S. International Competitiveness in Biomedical Research

Presenters:

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- U.S. Competitiveness in Biomedical Research

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■ Selected Biotech Cos. with Origins in Fed-Funded University Research

- | | | |
|----------------------|-------------------------|------------------------|
| 1. Adenosine Therap. | 15. GeoVax Labs | 29. PolyMedix |
| 2. Advaxis | 16. HealthMeda | 30. Paxis Biologics |
| 3. Agensys | 17. iCardiac Techs. | 31. Protea Bioscience |
| 4. ArmaGen Techs. | 18. ImmuneWorks | 32. Response Genetics |
| 5. Aursos | 19. Integrated Genomics | 33. Saneron-CCEL |
| 6. Avid Radiopharma | 20. Kinex Pharma | 34. TetraLogic Pharma |
| 7. AzERx | 21. Maroon Biotech | 35. Therametric Techs |
| 8. BioMarck Pharma | 22. MicroMRI | 36. TomoTherpay |
| 9. BioNanomatrix | 23. Momenta Pharma | 37. Transgenex Nanobio |
| 10. Cerluean Pharma | 24. Nanopharma Techs | 38. Triangle Pharma |
| 11. CS-Keys | 25. Natura Therapeutics | 39. Vaccinex |
| 12. Fast Diagnostics | 26. ONY | 40. VGX Pharma |
| 13. FluGen | 27. Pacific Biosciences | 41. Xenogen |
| 14. Genentech | 28. Pharmasset | 42. Ximerex |

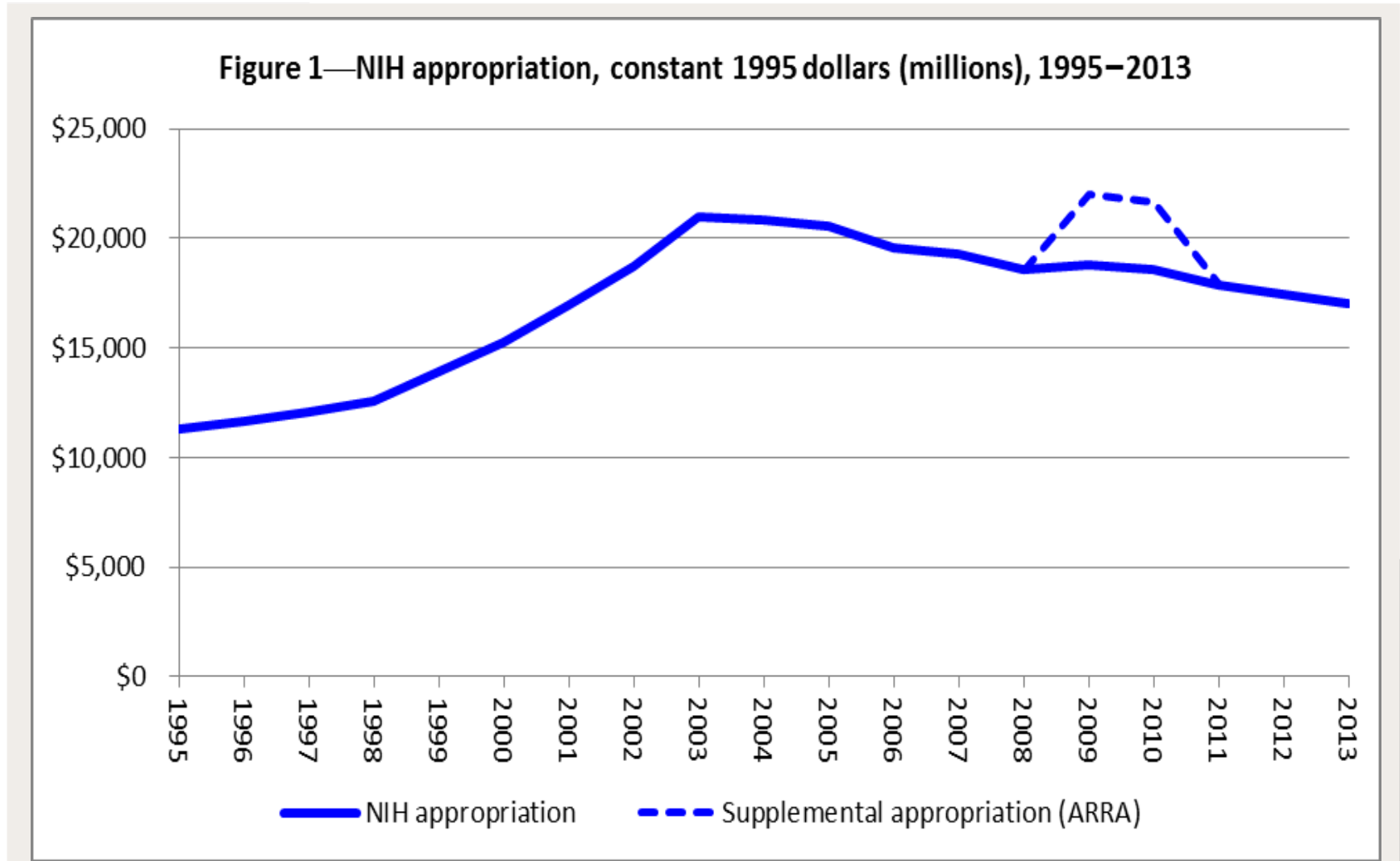
■ U.S. Competitiveness in Biomedical Research

- U.S. global leadership grew from the value of scientific research proven in World War II.
- Federally funded biomedical research has been a key input to both new drugs and biologics and entirely new companies.
- **Major economic benefits & consistently high returns on federal research investment (societal ROI greater than 30% per yr).**
- **U.S. life sciences industry today = 7 million jobs & \$69B in GDP.**

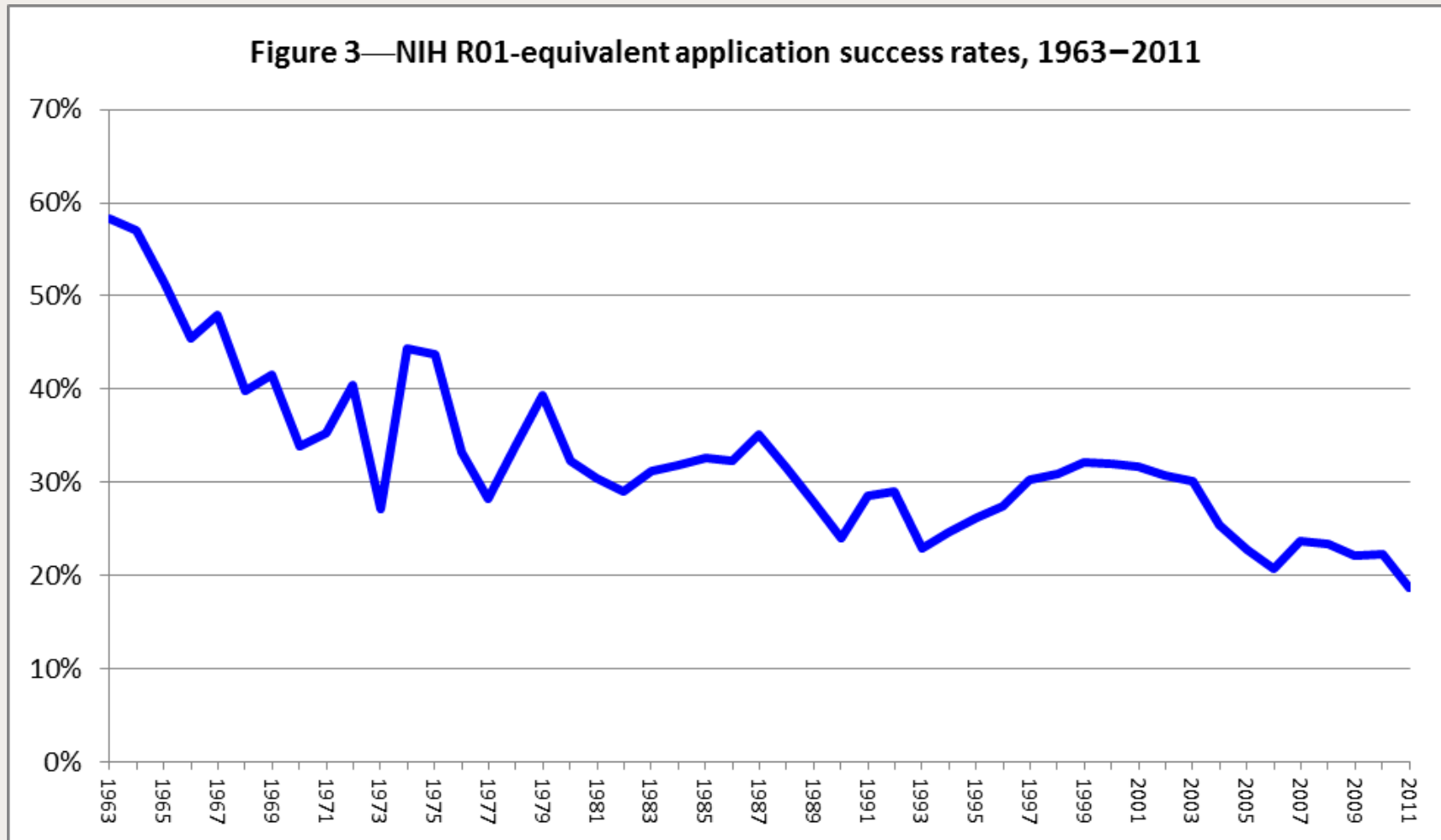
- U.S. Leadership Today is Under Threat

1. Life science research funding has not kept pace with inflation, much less Congress' pledge to double NIH funding.

■ NIH Funding in Real Dollars is Down



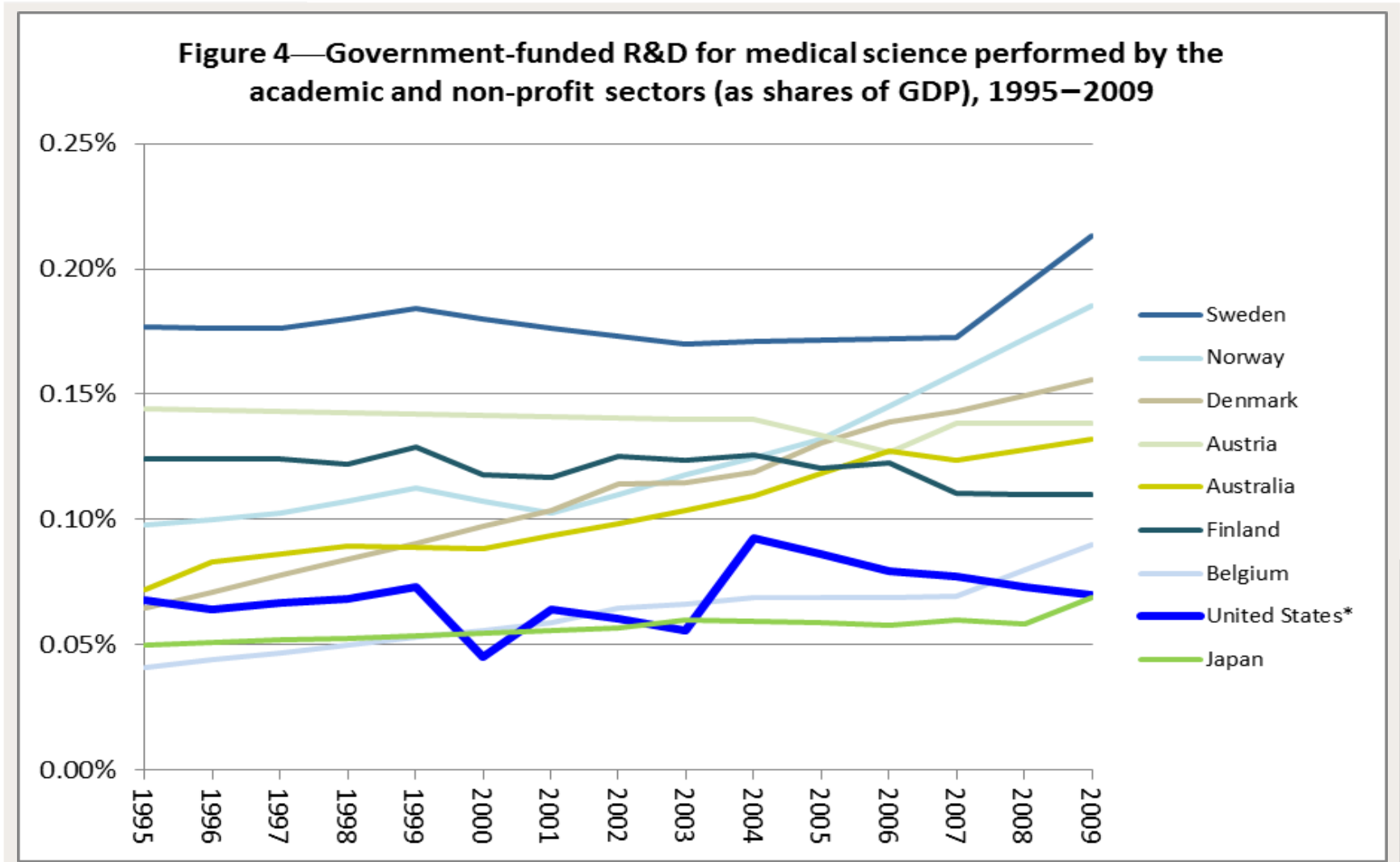
■ As a Result, It's Harder to Win an NIH Grant



■ U.S. Leadership Today is Under Threat

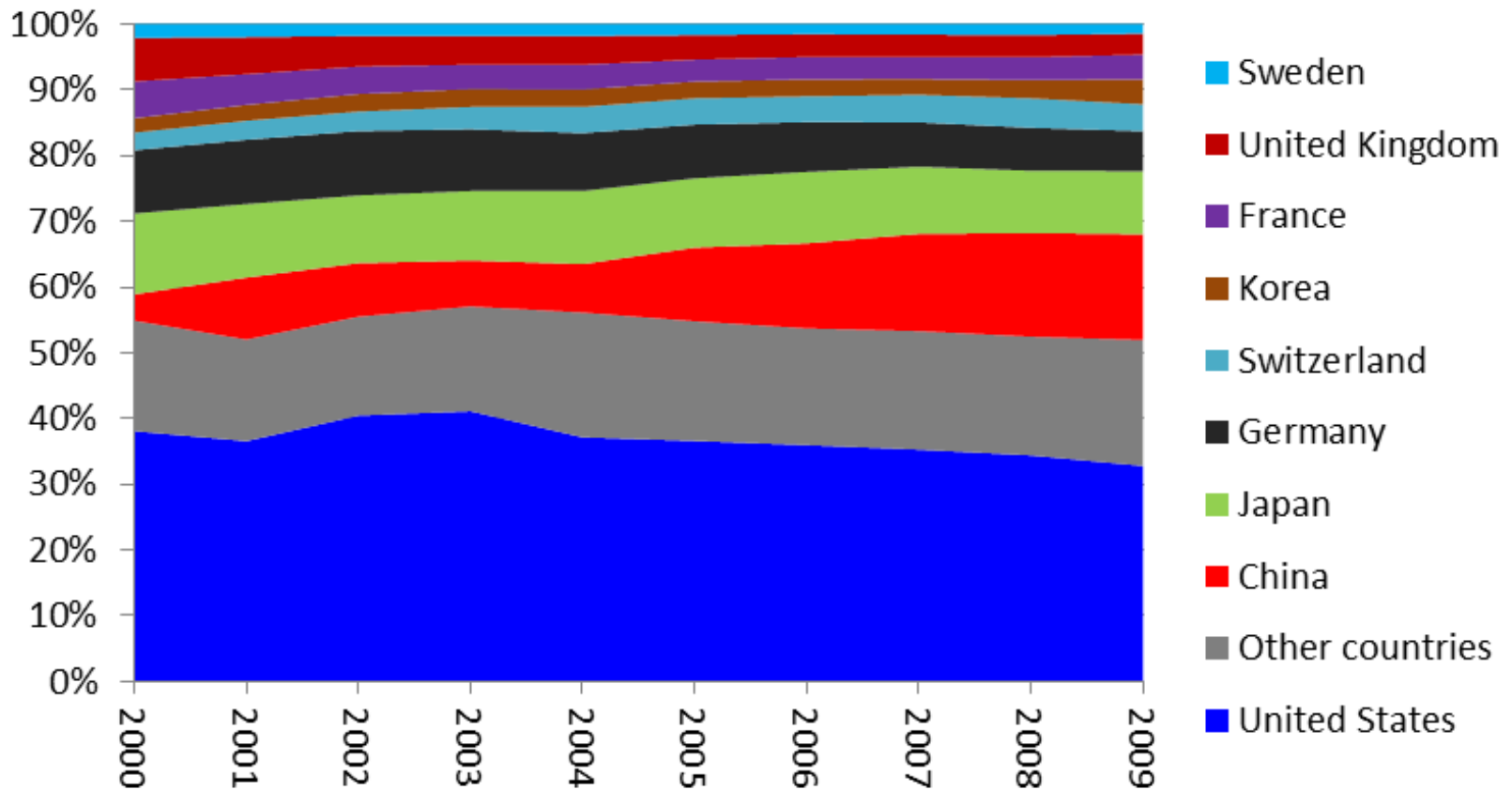
1. Funding has not kept pace with inflation, much less Congress' pledge to double.
2. **Competitors ramping up efforts with intent to stake their own claims on global leadership:**
 - **China spending \$308B over next 5y (4x U.S. as share GDP); leads world in DNA sequencing capacity.**
 - **Germany, India, Singapore, Sweden, UK, etc. all increasing funding and honing policies to gain global market share.**

■ Government Funded R&D for Medical Science

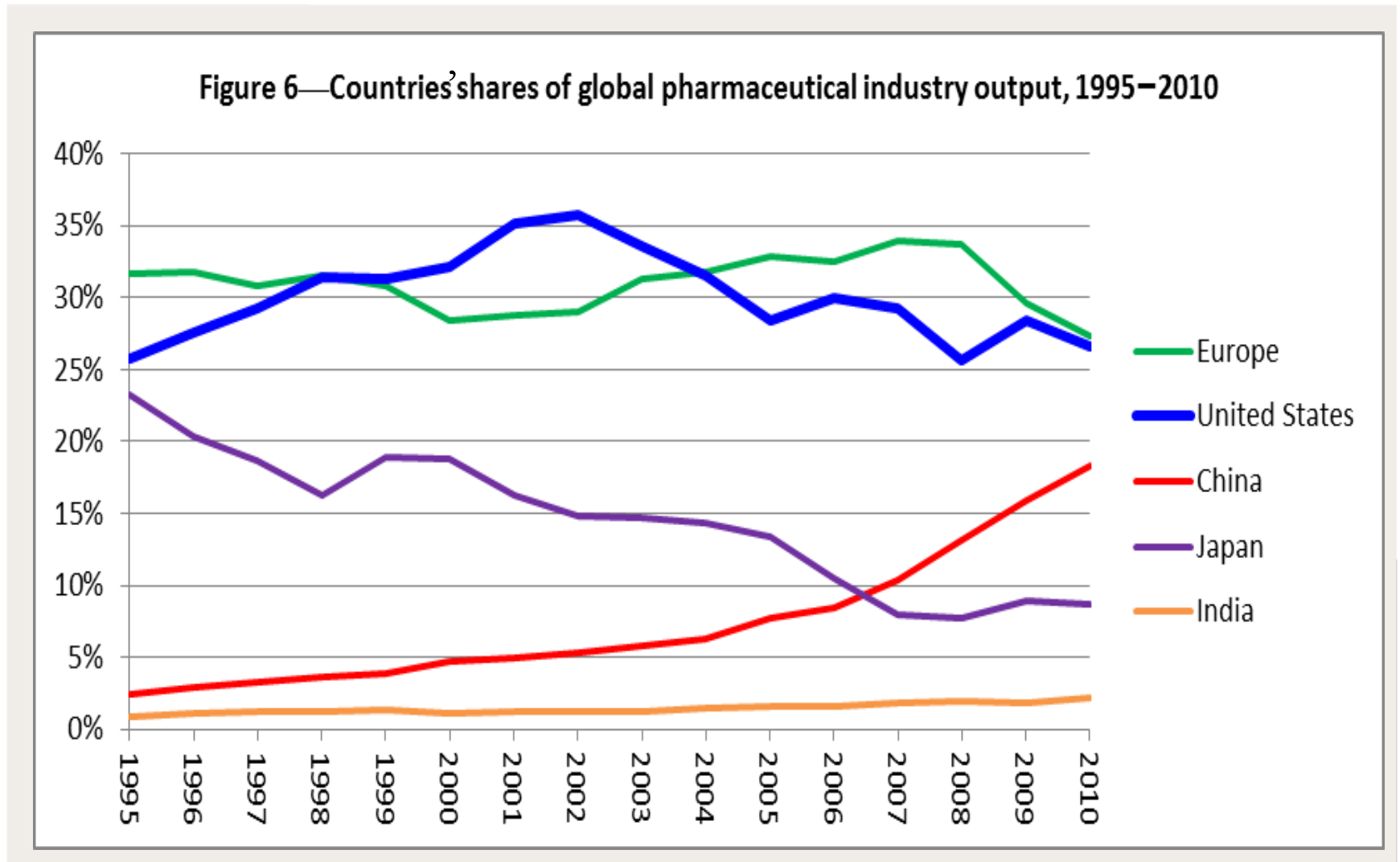


Country Shares of Global Biopharmaceutical Patents

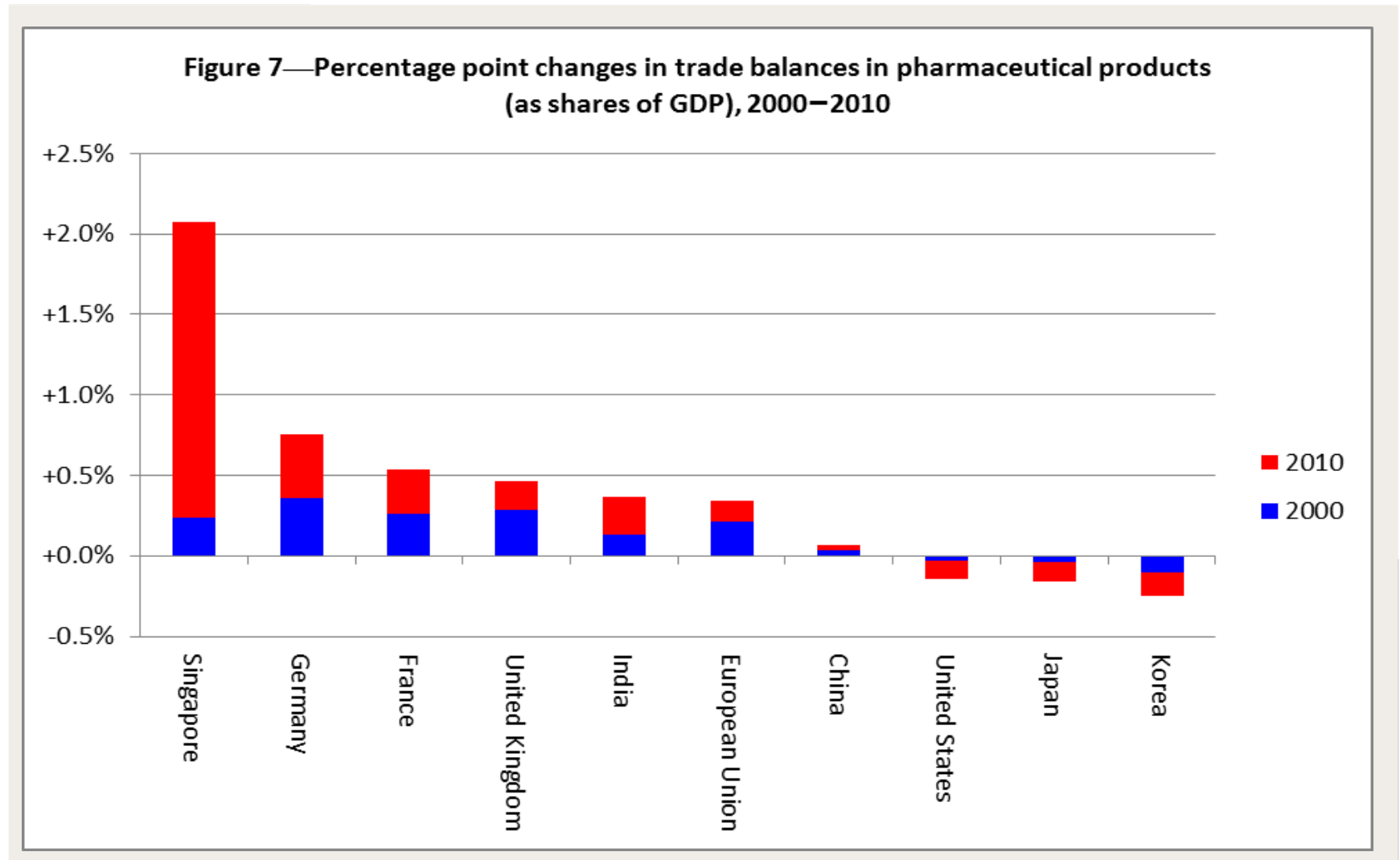
Figure 5—Global Shares of biopharmaceutical patents granted by all patent offices, 2000–2009



■ Country Shares of Global Pharmaceutical Output



■ Many Other Nations Expanding Trade Surplus



■ What Is To Be Done?

1. We cannot get out of our current budget dilemma by cutting investment.
2. Growth driven by investment is critical to good jobs, GDP growth and overall federal tax revenues. As such Congress should distinguish between investment and consumption expenditures.
3. Biomedical research is not a luxury; it is an essential keystone for economic growth (and human health improvement) in the 21st century.

■ Policy Recommendations

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3. **Funding increases should be steady year over year.**

■ Policy Recommendations

1. Congress should target sustained funding for NIH of at least 0.25% of GDP.
2. Life sciences funding in other agencies (e.g., DOE, USDA) should be increased commensurately.
3. Funding increases should be steady year over year.
4. **Supportive policies are also critical (e.g., tax incentives; FDA reform; high-skill immigration; and targeted trade enforcement against foreign life sciences' mercantilist practices).**

Thank You!

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