

# **THE NEW ECONOMY AND APEC**



**Asia-Pacific Economic Cooperation**

**APEC Economic Committee**

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## FOREWORD

The 2000 APEC Leaders' Declaration laid out a vision to capture the full economic and social benefits of the emerging New Economy. With a view to achieving this goal our Leaders instructed Ministers to expand and develop the agenda to create an environment for strengthening market structures; institutions and infrastructure investment; technology development; and building both human capacity and entrepreneurship development. In response to this instruction, the APEC Economic Committee agreed to put into the work program for 2001 the New Economy project at its February 2001 meeting.

The EC's work in New Economy project is focused on bringing the benefits of the New Economy to all members in a balanced way. Five member economies—Australia, Canada, Japan, Chinese Taipei and the U.S. are leading this project. As a first step to moving forward the project, the U.S. submitted the report titled *New Economy and APEC*. The initial outline of the report was discussed with members of the New Economy Task Force in April in Beijing. Building on the Beijing meeting and collaboration with APEC economies through numerous preliminary drafts, the Committee adopted and published this study for presentation to APEC Ministers meeting in Shanghai in October 2001. The key messages for the study are conveyed to APEC Leaders as well.

The report provides a framework for identifying a set of economic policies essential to maximizing economic productivity in the evolving environment. However, it does not prescribe the specific steps or pathways for achieving these policy outcomes. Furthermore, it does not suggest any obligations for or require commitments from members. Rather it presents, qualitatively and quantitatively, evidence to support attention to a set of policy priorities, relates those priorities to productivity and hence prosperity, and leaves it to policymakers whether and how to pursue such priorities as weighed against other concerns and approaches.

The Committee membership is in agreement on the value of sending forth this analytical effort as a framework for considering the New Economy challenges before us—and the goal of enhanced productivity as the key to our prosperity. We retain a diversity of views on the weight given to the policy variables assessed in the Report. By identifying a framework for discussion today, this effort provides opportunity for each APEC economy to study and employ, or rather study and rule out, the factors considered herein.

I appreciate very much the contributions of APEC economies to this report, especially to the case studies and their comments on the report itself. I believe the result is an outstanding study and provides a valuable toolbox for clarifying our understanding of this complex topic as we move ahead. My special thanks go to the U.S. and its research team, led by Dr Catherine Mann and Dr Daniel Rosen from the Institute for International Economics (IIE) who wrote this invaluable report. Thanks are also due to Mr Charles Jose, Director (Program) at the APEC Secretariat, who has taken responsibility for publishing the study.



Kyungtae Lee

Chair, APEC Economic Committee

Seoul, October 2001



# THE NEW ECONOMY AND APEC

## Table of Contents

|   |    |
|---|----|
| I. Executive Summary .....  | 1  |
| Overview of the Project .....   | 1  |
| From Brunei .....   | 1  |
| ...to Shanghai .....  | 1  |
| Summary Objectives of the Report and Basic Outline of Method .....                  | 2  |
| A New Emphasis on Transformation .....  | 3  |
| Summary of Analytical Conclusions: .....  | 4  |
| Spanning the four domains: .....  | 5  |
| Within the domain of trade and cross-border investment:.....                        | 6  |
| Within the domain of banking and financial policies:.....                           | 7  |
| Within the domain of pro-competitive market policy and legal regime:.....           | 7  |
| Within the domain of fiscal policy and fiscal activities of government:.....        | 8  |
| II. The Fundamentals: Definition and Policy Underpinnings of the New Economy.....   | 10 |
| What is the “New Economy”? .....  | 10 |
| The Knowledge-Based Economy and the New Economy .....                               | 12 |
| What Are the Policy Fundamentals?.....  | 15 |
| Fiscal Policy and Fiscal Activities:.....   | 15 |
| Banking and Financial Structure: .....  | 17 |
| Trade and cross-border investment policies: .....                                   | 18 |
| Competition policy and legal regimes: .....   | 20 |
| Synergies among policy domains: .....   | 21 |
| Conclusion .....  | 22 |
| III. The Evidence: Benefits and Challenges of the New Economy .....                 | 23 |
| Introduction .....  | 23 |
| Information and Transformation; Dot-Com Bust, But Not the New Economy .....         | 23 |
| Evidence on Productivity Growth and the Use and Diffusion of ICTs .....             | 25 |
| Review of the Literature: The US experience precipitates research .....             | 26 |
| ...and raises similar questions for other economies .....                           | 27 |
| ICTs are the fad now, but research on productivity growth goes back a long way..... | 29 |
| Aggregate and global benefits of the New Economy.....                               | 30 |
| Time-series analysis of efficiency gains:.....                                      | 31 |
| Broad analysis of policy reforms:.....  | 31 |
| Economic gains through trade liberalization, particularly in services:.....         | 33 |

|  |           |
|--|-----------|
| Sub-Regional Trading Arrangements .....  | 36        |
| <b>IV. Case Studies of the New Economy in APEC .....</b>   | <b>38</b> |
| Restructuring and Transformation .....   | 38        |
| Conclusions About Transformation.....  | 49        |
| Transformation and Policy.....   | 49        |
| Fiscal Policy.....   | 50        |
| Financial Deepening .....  | 52        |
| Trade and Investment Policy .....  | 53        |
| Competition and Legal .....  | 54        |
| The Place of Human Resource Policy.....  | 56        |
| National E-Commerce Promotion Strategies .....   | 57        |
| <b>V. Implications of New Economy Divergence: Digital Divide.....</b>                            | <b>59</b> |
| Introduction.....  | 59        |
| Initial conditions and Predisposition to Policy Reform .....                                     | 60        |
| Productivity and Growth.....   | 60        |
| Digital Measures .....   | 62        |
| KBE Status Indicators.....   | 64        |
| Challenges to and Predisposition to Reform .....   | 65        |
| Policy Conditions, Sectoral Transformation and Trade Competitiveness in the New<br>Economy ..... | 66        |
| Measuring Overall Policy Conditions in APEC Economies .....                                      | 67        |
| Measuring Sectoral Transformation In the New Economy .....                                       | 71        |
| Putting These Together with Trade Patterns: Competitive Pressures and Opportunities..            | 73        |
| Other Aspects of Differential Progress .....   | 79        |
| Brain drain: .....   | 80        |
| Reactions from civil society: .....  | 81        |
| International relations and new alliances?.....  | 81        |
| <b>VI. Analytical Conclusions .....</b>  | <b>83</b> |
| Challenge to Reforms: Spanning the Four Policy Domains .....                                     | 83        |
| “Stove-pipe” government bureaucracy and public-private alliances:.....                           | 83        |
| Poor domestic and global economic and political environments: .....                              | 84        |
| Resource transfers and liberalization:.....  | 84        |
| Challenges for Trade and Cross-Border Investment Liberalization .....                            | 84        |
| Absence of on-going multilateral trade round:.....   | 85        |
| Incomplete fulfillment of existing commitments: .....  | 85        |
| Challenges for Banking and Financial Market Policies.....  | 85        |
| Poor Supervisory Oversight:.....   | 86        |
| Lack of Financial Skills:.....   | 86        |
| Thin non-bank financial markets:.....  | 87        |
| Challenges for Fiscal Policy and Reform of Fiscal Activities .....                               | 87        |
| Redirecting internal operations and external activities:.....                                    | 88        |
| Transforming inner workings of government:.....  | 88        |

|  |     |
|--|-----|
| Challenges for Pro-competitive Market Policies and Legal Regime .....      | 89  |
| Sophistication and rapid evolution of competitive environment: .....       | 89  |
| Difficulty of scope and nature of legal reforms: .....                     | 89  |
| Lack of a trusted environment: .....                                       | 89  |
| Command and control will speed adjustments right now: .....                | 90  |
| A Final Word .....   | 90  |
| <br>   |     |
| Appendix 1 Research on Transformation of Industries by ICTs Technologies . | 91  |
| <br>   |     |
| Appendix 2 Trade Exposure Charts for Each Economy .....                    | 93  |
| <br>   |     |
| Appendix 3 Trade Exposure Charts for Each Sector .....                     | 103 |
| <br>   |     |
| Appendix 4 Case Studies .....  | 108 |

# I. Executive Summary

## Overview of the Project

*From Brunei ...*

This Report from the APEC Economic Committee responds to the “Action Agenda for the New Economy” announced by APEC leaders at their meeting in Brunei in November 2000 and starts the task of underpinning the theme of “Meeting New Challenges in the New Century” for the 2001 year with China at the helm.

Leaders in Brunei noted

There is no doubt that the revolution in information and communication technology is dramatically boosting the development of a global economy. It carries with it unprecedented opportunities in a *new style of economy with new forms of markets, higher levels of productivity and new demands for knowledge, entrepreneurship and innovation.*

In their Declaration, Leaders noted that

The Action Agenda includes ways to promote *the right policy environment ... and build capacity ....*

The Leaders Action Agenda of 2000 built on earlier work within APEC and in particular on a report by the Economic Committee “Towards Knowledge-Based Economies in APEC”. That report analyzed the characteristics of a knowledge-based economy (KBE) in terms of four key dimensions: innovation system, human resource development, information and communications technology infrastructure, and business environment.

*...to Shanghai*

The themes for China (Meeting New Challenges in the New Century: Achieving Common Prosperity Through Participation and Cooperation, with sub-themes: Sharing the Benefits of the New Economy and Globalization; Advancing Trade and Investment; and Promoting Sustained Economic Growth.)

*“transcend the traditional boundary between trade and investment liberalization and facilitation, and economic and technical cooperation ....to revive the momentum of progress in APEC’s core mission of trade and investment liberalization ...to foster a favorable macro-economic environment for the sustainable growth of the regional economy.”<sup>1</sup>*

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<sup>1</sup> See Leaders’ Brunei Declaration; italics added.

Following the urging of the Leader's statements, the goal of this Report is to focus more explicitly on what, in the Leader's own words, constitutes the "right policy environment" to yield the "higher productivity" of the "new style of economy" where policies "transcend the traditional boundaries".

Accordingly, this Report 'The New Economy and APEC' goes forward from the KBE report of 2000 to examine what structural policies underpin a "knowledge-based economy". But, importantly, it goes one step beyond the individual members of APEC by considering what might be the implications for the forum as a whole of the potential divergence of productivity and economic growth that comes with differential paces of structural reform among the APEC membership. In making this analysis, it uses the lens of economists as advisors to policymakers, recognizing that policymakers face many, and sometimes competing, views and factors for their consideration.

### **Summary Objectives of the Report and Basic Outline of Method**

At the February 2001 meeting, the Economic Committee agreed to put into the work program for 2001 the preparation of a Report led by the US government on the New Economy and APEC. The initial outline of the Report was discussed with members of the sub-committee in April in Beijing, and initial findings were presented to Senior Officials in Shenzhen. The Report reviews existing research, develops new empirical analysis, and distills case studies written explicitly for this project by official and private sector representatives of the members of APEC.

The Report addresses four questions:

- What are the fundamental underpinnings of the "New Economy"?
- What evidence is there, at the macro level on benefits to growth and at the micro level of the challenges of transformation, which can assist in the domestic political discussion about policy reform and structural adjustment?
- What are the implications, particularly in terms of trade competitiveness and digital divides, of the different paces of policy reform in pursuit of the New Economy?
- What conclusions, both for economies and for the institution of APEC, can be drawn from the foregoing discussion?

With respect to empirical research, the Report both reviews existing empirical research as well as develops new analysis. It reviews existing empirical analyses of the macroeconomic benefits of putting in place the prerequisites for achieving the productivity enhancing outcomes of the New Economy; these analyses focus on the gains to GDP of trade and investment liberalization. In addition, the Report undertakes new microeconomic and sector-level analysis of the implications of the New Economy for international trade competitiveness. Specifically the Report considers the relationships between the pace of

transformation of an industry sector, the sector-level trade patterns of an economy, and its policy environment.

Finally, the Report distills common themes from 16 case studies from 12 members of APEC prepared for this Report. Nominally following a “template,” these mini case studies come from both official APEC sources as well as independent researchers and address how businesses, civil society, and governments are being transformed by the technologies of the New Economy—or are being held back from that transformation by the state of the domestic and international policy environments.

### *A New Emphasis on Transformation*

What underpins the New Economy? In recent years, the rise in globalization and usage of information and communications technologies (ICTs) precipitated what was likened to a new economic paradigm dubbed “The New Economy.” The initial euphoria over the Internet and ICTs subsided to a more reasonable level of expectation more recently and some demurred that the New Economy was simply a fad. The quantitative and qualitative assessment contained in this Report shows that the potential for *transformation* that is the hallmark of the New Economy remains substantial, and that policy underpinnings are needed to support and universalize the value of the technologies.

So, the New Economy is all about *transformation*. The definition of the New Economy stipulates that structural policy reforms make networked technologies immensely valuable for generating productivity. The *outcome* of this mix of policy and technology is transformation in the way markets, firms and individuals operate and make decisions. The transformation is *toward* more productive use of scarce resources, be they money, inputs like steel, lumber or water, or hours of labor. This is important and challenging for policymakers, in part because adjusting to a new way of doing things often entails displacement of old ways of doing things – displacement of people and vested corporate interests that is.

This transformation is continuous. The only thing constant in a New Economy is more constant improvement. Productivity rises because unproductive activities are more easily identified and harder to justify and perpetuate in the presence of greater awareness. But often human nature and certainly bureaucratic nature longs for permanence, for present and future conditions that will not change. This has never been possible, though some think that the past offered such security.

The reader will notice that several factors are not the focus of the analysis. Perhaps most notable is human resource development (HRD), which is not among the cardinal policy domains the Report identifies for securing the transformations of the New Economy. There is much work underway in APEC and other forums on HRD, both general and targeted to technologies as well as to the New Economy. While it is clear that the four domains of policy are *necessary, albeit not sufficient* for the New Economy to emerge, there is little or no analysis to ensure that policymakers understand the role for structural economic policies in determining relative productivity growth (manifested, for example, in the digital divide) and

to support APEC as an institution to help its members pursue policy reforms, to the extent that they so desire. Consequently, this Report focuses on structural reforms, where the consequences of inattention are increasingly costly.

### **Summary of Analytical Conclusions:**

The body of this Report provides analysis – analysis of research, of case studies and of data – for a sole purpose: to help policymakers in APEC economies better deal with the complicated challenges of the New Economy productivity paradigm which is causing shifts in relative comparative advantage in the region. This Summary provides a quick look at specific implications of the research for each of four policy domains. The overarching conclusion is much more than the sum of those findings however.

Overall, the Report finds that structural policy reform leads to transformation of firms and individuals, and markets too. This transformation, meaning significant changes in the activities of firms, governments, and individuals leads to greater economic productivity. Productivity is the source of prosperity, which implies that a shortfall of structural policy reforms can stunt the process of transformation, stymie productivity growth, and limit prosperity.

The research concludes that the differential in propensity to undertake such reforms can easily exacerbate the developmental divides already observed among APEC members today. In light of this chain of relationships, the Report concludes that while understandable given the hype over high technology manufacturing in recent years, the strategy of focusing on technology indicators, instead of policy indicators, as guideposts to the New Economy is misleading and possibly dangerous. Numerous examples, especially in the case studies, serve to demonstrate the consequences of over-reliance on technology goals to the exclusion of understanding the causal role of structural policy reform.

Yet, despite the larger and overarching conclusion about the role of transformation, no analysis can offer an exact conclusion for each economy on how much reform might be necessary to achieve some notion of “sufficient” because sovereign factors are relevant. Because the APEC members differ along many dimensions—development, culture, economic orientation-- there can be no “one-size-fits all” strategy for progress towards the desired goal.

That said, the analysis in this Report points to a framework of four policy domains crucial to underpinning the New Economy environment of transformation, higher productivity growth, and economic well-being. These are:

- Fiscal policy and the fiscal activities of government;
- Banking and financial market policy;
- Trade and cross-border investment policies; and

- Pro-competitive market policy and legal environment.

The research focuses on these four policy domains because:

- Specific structural policies are needed to achieve the KBE characteristics and subsequent New Economy outcome;
- Increased complexity, dynamism, and synergies among structural policies in the New Economy argue that these policies are better addressed together than in a piece-meal fashion;
- The forces of the New Economy affect how structural policies work to transform an economy, thus warranting a fresh review of those policies.

The specific conclusions for each policy domain flow from impediments and challenges gleaned from research both for this Report and elsewhere, as well as analysis of the case studies prepared for this Report. Several conclusions are crosscutting, which reminds us that in the New Economy the inter-relationships among policies are tighter and policy authorities and implementing bureaucracies often overlap.

This research suggests that certain policy reforms will be required in order to achieve the broadest economic benefits of the New Economy. However, policymakers face many challenges and must weigh many factors when making decisions. As written from the perspective of economists, the analysis suggests that these reforms are *required* in order to maximize the economic development potential of the New Economy. The analysis cannot say, nor does the Report try to say, that a policymaker must or should be required to undertake any specific reform. But, it is clear that choosing to undertake reform (or not) is a causal step with implications for development and the so-called digital divide. Therefore, the conclusions in this Report should not be viewed as binding on decision-makers, beyond the rational interpretation of the results of the research and analysis contained herein.

*Spanning the four domains:*

The New Economy presents many cross-cutting challenges and affects the conduct and performance of many policy-making agencies.

In many economies a political decision to create super-ministerial responsibility for crosscutting New Economy developments is needed. Research suggests that synergies among policies are enhanced by the forces of the New Economy, yet policies tend to be “stove-piped” within the bureaucracy of policymaking (meaning that each narrowly focused team tries to keep policy making to its self). Moreover, research suggests that access, use, and diffusion of New Economy benefits can be enhanced through public-private partnerships, particularly when domestic funds for such activities are limited. Giving the New Economy an elevated position at the bureaucratic table will promote crosscutting reforms and enable effective public-private alliances.

- New Economy does not obtain in economies where an open, frank and transparent stocktaking of policies is impossible. Policy reform and wise dispersal of limited funds for policy transformation would be aided by a more open cataloging and assessment of progress toward reforms in the four policy domains. Capacity building should reflect the imperative of making coherent progress on all policy domains concurrently. Aid agencies and organizations within and outside the APEC region might consider whether their outlays support reform in the policy domains that this Report illuminates.
- The New Economy is all about transformation. Policies that ensure that the domestic environment is conducive to transformation and that individuals and businesses can take advantage of new opportunities are crucial. It is a big task to review these policies of adjustment—indeed worthy of another report. But this Report recognizes that policies to promote domestic adjustment are complementary and mutually supportive to policies that support the New Economy.

*Within the domain of trade and cross-border investment:*

The productivity gains promised by the New Economy depend in part on effective participation with the global economy. The technologies that underpin the New Economy have global origins and global reach. Therefore, policies of trade and cross-border investment have immediate importance.

- Research suggests that reform and liberalization, particularly of services (telecommunications, financial sector, and distribution and logistics), are key to gaining the benefits of the New Economy. The absence of a multilateral trade round has undermined the climate for further collective liberalization in recent years. The findings in this study suggest that *if* APEC were looking to help prevent the widening of the productivity-related digital divide in the region, *then* promoting broader services liberalization and reform would be the best way. Were APEC to endorse wrapping WTO’s “built-in agenda” for agriculture and services into a broader agenda for a New Round that includes complete liberalization of manufactures and extensive liberalization of cross-border investment, it would equal or surpass the value APEC provided in catalyzing the Information Technology Agreement.<sup>2</sup>
- Within APEC, because the incomplete fulfillment of existing commitments challenges further liberalization, the APEC forum should extend the institutionalization of transparency, monitoring, and assessment of commitments (e.g. e-IAPs and more extensive review as broached by members at SOM II/2001), which would support further liberalization. This is a specific example of the policy catalog and stock-taking noted in general above.

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<sup>2</sup> The Report repeatedly argues for the reform and liberalization of services in this Report. This is not to imply that services are more important than goods in the New Economy. Rather, this emphasis reflects the fact that the benefits of open goods trade are already being realized in the world economy to a great, though incomplete, extent, whereas services opening is more incomplete.

*Within the domain of banking and financial policies:*

The New Economy is all about transforming the activities of governments, consumers, and firms. Financing new activities and new firms, and withdrawing funds from inefficient activities, are key to the process of transformation, as demonstrated in this Report using both empirical and anecdotal methods.

- Research suggests that poor supervisory oversight and lack of financial skills undermine the conduct and performance of the financial system and hold back New Economy transformation. To ameliorate these conditions, economies should develop on-going relationships with established supervisory training and exchange mechanisms (IMF, WB and central bank-to-central bank).<sup>3</sup>
- Research suggests that best practice in finance rebounds to benefit all users of financial transactions (that is, the whole economy benefits when the financial system works well). Thin non-bank financial markets (bond, stock, and venture) stymie the New Economy, particularly holding-back new firms. Transparent public listing requirements, along with strong accounting standards will help deepen financial markets. Economies should give priority attention to, in an orderly way, liberalizing barriers to cross-border financial transactions and institutions to bring in best practice.<sup>4</sup>

*Within the domain of pro-competitive market policy and legal regime:*

The New Economy depends on transparency, transformation, and greater dispersion of information. Legal regimes and competition policy are essential to ensure that corrupt, unfair, or anti-competitive practices do not imperil the benefits. Rules are important to guide behavior, but they must preserve the private sector's incentives to innovate.

- Research suggests that competition-policy regimes must work internationally for the network benefits of the New Economy to avail. APEC members should discuss how the APEC Principles to Enhance Competition Policy and Regulatory Reform operate in marketplace of the New Economy where more and more transactions cross international borders.
- Research suggests that legal reforms comprise both letter and spirit. Economies pursuing reforms should look to international forums (such as UNCITRAL, OECD, Hague) for legal precedent and legislative language, but policy must also support an overall climate

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<sup>3</sup> A proposed *APEC Financial Institute* could be a focal point to ensure that all APEC members have training in these critical aspects of the New Economy. Some members do not see the importance of limited APEC resources being directed toward such an endeavor. Others have worried that it could crowd out efforts to develop other training capacity, perhaps through the Bank for International Settlements or Asian Development Bank. It is clear that the matter of financial regulatory capacity is sufficiently critical to justify resource allocation and sufficiently huge to permit multiple capacity building efforts.

<sup>4</sup> This is consistent with the recommendation reached in the Finance Ministers Process of APEC following the 1997-1998 Asia-Pacific financial crises.

of the “rule of law” where transparency of law is crucial, the belief that the law applies equally to all and will be enforced.

- The New Economy uses information intensively and more transactions are made at arms length and in real time. A culture of fraud and uncertainty is inconsistent with the New Economy—both stymieing its development to the extent that people feel insecure as well as being exposed by the greater transparency of information. Policymakers should consider how best to support the development of an environment of trust and certainty.

*Within the domain of fiscal policy and fiscal activities of government:*

Governments are big economic players in many economies, and they have big budgets. Governments can lead the way and pave the way for using the technologies of the New Economy, or they can hinder the transformation by both public and private sectors.

- Research suggests that government agencies can enjoy the same type of productivity gains from the New Economy that businesses do. Getting this expertise into the government agencies is the issue. Building on the elements of e-APEC, E-government teams that are composed of foreign, domestic, and government entities can bring productivity enhancing ICTs as well as transformation into members’ government operations.
- Research suggests that governments should be more careful in their economic activities in the New Economy. High-return government spending in areas where the market fails are even more critical, given the need to *support* transformation in the New Economy, because the productivity gains to be achieved are greater. Conversely, low-return government spending on economic intervention where no market failure exists *stymies* transformation, and must be very critically assessed given the increased opportunity costs of that spending. Reform to eliminate unproductive spending or spending that forestalls transformation has added benefits, in that it enhances the fiscal balances, allows the lowering taxes, or allows increased spending on social needs. It frees up human talent previously absorbed into uncompetitive enterprises as well.
- Research reveals that the New Economy transactions will affect how tax regimes work—both in terms of types of taxes used (direct and indirect) as well as in terms of tax administration. While the future direction for tax regimes is quite complex, economies pursuing the New Economy today should quantify the extent and nature of tax evasion, which is often an impediment to bringing economic activities on-line in the New Economy and which, at the present time, reduces the resources available for the valuable activities of government.

The New Economy productivity premium is quite real, and it is the product of domestic economic policies that are more than access to technology per se and that are critically complementary to HRD. Therefore, a re-emphasis and re-analysis of policy reform is called for. If the upside allure of higher growth is not sufficient to motivate policymakers to reform, then acknowledging the downside risk of lost comparative advantage relative to more actively adjusting neighbors certainly should be. The political and human challenges that accompany economic development are daunting. The hope is that this Report will provide the analytical

foundation to build consensus on the scope and nature of the policy underpinnings of the New Economy so that all in the region can benefit from the New Economy.

## **II. The Fundamentals: Definition and Policy Underpinnings of the New Economy**

Since their Vancouver meeting in 1997 when Leaders stated, “We agree that electronic commerce is one of the most important technological breakthroughs of this decade,” APEC economies have steadily integrated electronic commerce, the Internet, knowledge-based economy, and now, the New Economy into their lexicon.

The APEC Task Force on Electronic Commerce produced the “Blueprint for Action on Electronic Commerce,” and a comprehensive background report in 1998. The Steering Group on E-commerce was constituted under the Senior Officials Meeting Task Force and charged with reporting annually to Senior Officials on e-commerce activities within APEC. Using the E-Commerce Readiness Guide, economy governments and businesses can assess the preparedness of their economy to participate in e-commerce activities, thereby setting the stage for a discussion of policy direction. In 2000, the Economic Committee forwarded recommendations to Ministers to support development of knowledge-based economies in APEC. The Collective Action Programs can now be up-loaded for review at the APEC Secretariat’s web-site, and the e-IAP Initiative will include individual action plans and annual summaries, thereby encouraging transparency and peer review.

At Brunei in 2000, Leaders recognized both the potential benefits of the New Economy as well as the requirements: “[A]n appropriate policy framework that encourages: strengthening the functioning of markets; openness to trade and investment; innovation and new enterprises; sound macroeconomic policy; education and lifelong learning; and the enabling role of information and telecommunications infrastructure.”

Even before assuming the Chairmanship of APEC in 2001, China indicated its commitment to extend and further substantiate the focus on the New Economy under its tenure. The United States was a key proponent of this work in recent years, and has sought to contribute as much as possible to China’s efforts to address this theme. To this end the present Report was requested, a request which was amplified by Chinese APEC officials, leading to the invitation by the Economic Committee to submit this Report.

### **What is the “New Economy”?**

In the APEC region, as elsewhere, policymakers are searching for a definition of the “New Economy”. Why the need for consensus and why the sense of urgency? Policymakers want consensus because the term New Economy is used in so many ways that they cannot assess its value or whether they should embrace it. Many policymakers believe that a clearer and agreed-upon definition would help prioritize domestic and multilateral reforms. The urgency comes because the New Economy could bring higher economic growth; and indeed in the United States, where the paradigm is most well developed, trend output and productivity have grown faster, employment has been higher, and inflation lower than resource fundamentals and income levels were thought to permit. Economies are afraid of missing out on benefits—

or worse, falling *behind* in relative terms if their neighbors start to pull ahead with faster trend growth.

A definition offers no shortcut strategy for reform, but it is the correct starting point for deeper analysis of what the New Economy is and upon what it depends. We will argue that there is a danger that the term will become synonymous with only the technology part of the story, or the notion that technology can solve all development challenges, or that riskless growth can be achieved. That would be unfortunate, because the paradigm is real and does indeed present new opportunities for prosperity, though in many respects the New Economy rests on traditional policy foundations.

In the spirit of Brunei, we offer the following definition as a point of departure for further analysis:

The New Economy is an economic paradigm. It is distinguished by the combination of structural policies and networked information and communication technologies. This mix increases the value of information available to individuals, firms, markets and governments, allowing each to act more efficiently, raising the return to knowledge skills, and demanding flexibility. The resulting transformation of activities yields higher overall productivity and economic well-being.

Whereas the technology part of the New Economy is new and is a key driver of productivity growth, it is the transformation of economic activity in response to the forces of the New Economy that generates the greatest gain. Therefore, this definition subordinates technology to the economic policy environment. What ICTs do –computers, the Internet, e-mail, electronic commerce – is substantially increase information. But it is the economic environment created by policies that provides opportunity and motive to actually *use* the information. The response by firms, individuals, and governments to opportunity and motive is *transformation*, as we shall describe empirically and anecdotally.<sup>5</sup> The ability and tendency to transform is intimately related to structural policy reform, hence the definition and focus.

ICTs matched with the policy reforms that make them usable yields a dynamic, competitive, innovative marketplace, wherein skilled people are needed to take advantage of new opportunities and transform what firms do in the economy. To some extent, ICTs embed skills, and in this sense can make people and firms more productive even when they are not highly skilled. But, a related but separate quality demanded by the New Economy is flexibility particularly associated with the use and diffusion of technologies throughout an economy. In an environment of transformation inability and unwillingness to change increasingly is untenable. Since skills are increasingly correlated with flexibility, human resource development is key.

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<sup>5</sup> We could go so far as to say that an economy 100% made up of technology exporters but with little use of that technology at home to transform the marketplace is *not* a New Economy, whereas an economy with no high-tech manufacturing, let alone exports, but robust import of and use of ICTs for transforming the domestic economy *is* the forces of the New Economy at work.

While acknowledging the importance of human resource development, this study focuses on the non-human resource *structural policies* to increase an economy's productive capacity. Many reports have been written on human resource development policies. In APEC alone, the Knowledge Based Economy (KBE) study produced last year, some of the forthcoming two-year projects associated with this one-year project (all under the umbrella of the "New Economy and APEC"), and other task forces within APEC are explicitly focused on it. Consequently, we will not compete with that work here.

Moreover, it is the responsibility of policymakers to focus on getting the structural policy dimension right *so that* the conditions for robust human resource development will be in place. Without good structural policies, skilled and flexible people will migrate to environments where their abilities are allowed to shine. Without good structural policies that create a robust domestic environment, domestic firms will see little value in investing in human resource development. Without good structural policies that underpin solid economic growth, the government will be starved for financial resources to support human resource development. Thus human resource development and human resource deployment depend on the structural policy fundamentals that create a dynamic environment.

In this regard, from the OECD:

Policies that engage ICT, human capital, innovation and entrepreneurship ... are likely to bear the most fruit over the longer terms. But to have any chance of succeeding in these areas, government must ensure that the fundamentals –macroeconomic stability, openness and competition, as well as economic and social institutions—are working.<sup>6</sup>

As important as they are as the foundation of strong economic performance, the policy fundamentals that will be discussed are not ends in themselves, but rather give rise to intermediate characteristics such as the four that were the focus of the *Knowledge Based Economy* (KBE) study presented in 2000 for APEC Ministers. We turn first to review these intermediate characteristics, before digging deeper to the fundamental structural policies that underpin them.

### **The Knowledge-Based Economy and the New Economy**

In 2000 the APEC Economic Committee, in partnership with organizations in member economies, analyzed the underpinnings of the knowledge-based economy (KBE). This work concluded that four dimensions characterize KBEs and are largely responsible for the strong economic performance of some economies over the last few decades. The absence of one or more of these factors, the report concluded, explained cases of lower levels of economic development over the period. The four dimensions deduced are that (from the KBE report summary):

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<sup>6</sup> OECD (2001), The New Economy; Beyond the Hype Executive Summary, pp. 8. Emphasis added.

- Pervasive innovation and technological change, supported by an effective national innovation system (i.e. a network of institutions in the public and private sector whose activities and interactions initiate, import, modify, and diffuse new technologies and practices).
- Pervasive human resource development , in which education and training are of high standard, widespread and continue “throughout a person’s working life (and even beyond)”.
- Efficient infrastructure, operating particularly in information and communications technology (ICT), which allows citizens and businesses to readily and affordably access pertinent information from around the world.
- A business environment (i.e. the economic and legal policies of government, and the mix of enterprises operating in the economy) supportive of enterprise and innovation.

The KBE report distinguished KBEs, on the one hand, from other economies that:

[S]imply [have] a thriving “New Economy ” or “information economy” somehow separate from a stagnant ‘old economy’. In a truly knowledge-based economy, all sectors have become knowledge-intensive, not just those usually called “high technology”.

Our definition of the New Economy is compatible with the KBE concept. The four dimensions of KBE success are necessary conditions for the New Economy as well. Indeed they could be used as proxies for whether an economy is successfully creating an environment in which the transformation of activities by individuals, business, governments, and markets will yield maximum sustainable growth. If the business environment is not supportive of innovation, it is fair to say the New Economy will not eventuate.

The KBE study permitted APEC economies to analyze themselves in terms of the characteristics that are associated with high sustainable growth. It did not explicitly broach the subject of *what* fundamental policies precipitate the desired characteristics. By taking this approach the KBE report facilitated debate on the nature and desirability of “mega-phenomena” such as an environment of innovation, human resource development, infrastructure performance, and facilitating business environment.

This Report pushes the analysis deeper than the four *characteristics of the KBE*, to focus on achieving the *New Economy outcome* of higher productivity growth and on minimizing the exacerbation of a digital divide which could result from too shy a discussion of policy. At the core of the push of the Report:

- First, it is not enough to recognize the importance innovation systems (dimension 1) or infrastructure performance (dimension 3) or business environment (dimension 4). Rather,

specific structural policies are needed to achieve the KBE characteristics and subsequent New Economy outcome. For example, if a KBE is characterized by innovation, one must ask, “What factors give rise to innovation?” If the answer is, “Efficient financial intermediation,” then one must ask what policies promote this outcome. Or, if a facilitating business environment is key, one must ask, “Do domestic regulations stand in the way of creating this environment?”

- Second, the increasing complexity and dynamism of the New Economy (in which economic transactions are bundles of goods and services) implies that the set of structural policies is better addressed together than in a piece-meal fashion. For example, if competitive markets are key to improving the performance of ICT infrastructures, then pro-competitive domestic policies and trade and cross-border investment liberalization both need to be working toward that goal. Pursuing policy reforms simultaneously yields positive synergies among them.
- Third, the forces of the New Economy affect how fundamental policies work to transform an economy. For example, technological advances may alter the strategy for achieving competitive outcomes in communications; for example, cable modems can erode the power of the domestic telecommunications monopoly faster than privatization could, making pro-competitive regulation a more prominent ingredient for a healthy outcome than it may have been the case previously. Or, faster information flow and electronic trading have altered the formula for exchange rate and international capital flow regimes. Or the New Economy affects the ability of a government to raise revenues by making more transactions services or digital products.

While policymaking uncertainties and debates remain, many (if not most) of the fundamental policies underpinning prosperity are clearer with the New Economy, not murkier. Therefore, this Report presents to APEC members the opportunity to address and discuss in a direct manner the basic policies themselves, now that the members have agreed on the intermediate conditions and have a common resolve to drive the determinants of regional economic development when possible, rather than be driven by them. A discussion of policy allows members to go beyond stating what everyone wants (e.g., an environment of innovation), to addressing how to achieve the goals. As Zhu Rongji said at the commencement of the Chinese National People’s Congress in March 2001: “We have already reached the point where we cannot further develop the economy without making structural adjustments.” He went on to specify policy postures needed for structural adjustment. Each economy in the APEC forum can benefit from a similarly frank discussion of the underlying policies conducive to maximizing growth, as indeed, some of them have in the context of the APEC E-Commerce Readiness Guide.

This Report does not *demand* policy reforms. Policymakers may abstain from growth-enhancing policies – no matter the reason, which is a sovereign affair, and which may under some circumstances make sense. But, that should not keep us from clarifying what set of policies leads to the most economically productive outcome – not least because that will help us forecast the severity of widening economic disparity due to a divergence of policy choices made today, allowing us to better plan the policy response to the consequences.

## **What Are the Policy Fundamentals?**

Key to the New Economy paradigm of economic growth, where it has been observed, is a fundamental set of policies that maximize sustainable growth through dynamic and full use of resources. The policy set presented here generated growth well before the recent high-technology boom and bust; although ICTs magnify the synergies among these prerequisites and the benefits that accrue from them. As to how any policymaker should respond to this set of fundamental policies, an economy's policy history influences what reforms are most pressing—the New Economy does not burst upon a neutral scene in any economy. But, there is much to learn from the experiences of the member economies about what reforms work and in what sequence.

Four policy domains offer a useful framework for classifying policies that are crucial to creating an environment in which networked information and communications technologies can transform the activities of governments, consumers, and firms, yielding overall higher productivity growth and economic well-being. Efficient and effective *fiscal policy and fiscal activities* direct public expenditures toward high-return activities and implements efficient, progressive, and broad-based tax regimes that support private sector incentives for growth. High performance *banks and financial markets* operating with sound prudential supervision yield market-determined interest rates and allocate resources toward investments with higher rates of returns (including through venture methods). Liberalized *trade and cross-border investment* augment competition, bring in best-practices, and promote efficient production based on comparative advantage. *Pro-competitive regulation, and clear legal environment*, within a fabric of rule of law encourages flexible entry and exit of firms and workers which support business innovation, employment, and growth.

This is not a new framework and these are not new policy domains—why revisit this terrain? What specifics underlie these general policy statements, why are these domains so important for the development of the New Economy, and how can the synergies between and among them help to create the environment conducive to the New Economy?

### *Fiscal Policy and Fiscal Activities:*

Government is like a big business. Even where streamlined, it has a large labor force, is a big spender, and interacts in many ways with its citizens, business, and economy. Therefore ensuring that administrative costs are low, procurement is efficient, taxes are collected efficiently, and communication is transparent are increasingly important, particularly in the New Economy environment where information and networked relationships have greater value. It goes without saying that poorly allocated or politically driven fiscal spending and inefficient tax policies bloat the government as well as have a deleterious impact on both macroeconomic environment and microeconomic incentives.

The technologies of the New Economy both increase the premium on efficient government as well as help enable it. Just as private firms are changing the way they do business, networked ICTs will change how government performs its core functions, including raising tax revenues, procuring goods and services, informing the public and providing for their needs.

Some policymakers are concerned that their tax bases will be undermined by non-transparent digital transactions (such as down-loaded software), increased intra-company transactions (such as through build-to-order inventory control mechanisms) and cross-border service-based flows via ICTs (such as business and professional services). Research so far indicates that lost revenue on domestic transactions is fractional and that the potential loss from increased digitization of cross-border transactions also is small.<sup>7</sup> Good old-fashioned tax evasion should be the bigger concern of policymakers right now.

However, as the New Economy becomes more pervasive, tax regimes that depend on indirect taxes such as value-added taxes and direct tax regimes that depend on determining so-called permanent establishment for the international apportionment of tax revenues will come under greater stress. This is because the New Economy has more numerous transactions; of greater information, service, or digital content; that take place more seamlessly across international borders. The response by policymakers is to recognize that the problem is not so much now, but in the future, which gives them time to evaluate how their tax systems should evolve in light of the new economic environment.<sup>8</sup>

Policymakers can take action right now, though, to proactively embrace the New Economy within the activities of government and gain efficiencies in procurement, administration, and service delivery. An “e-government team” can help. An e-government team is a “systems integrator” which rotates through the agencies of government and is comprised of global consultants (who have experience with different economies and technologies), local private sector firms (who know the local situation and marketplace) and people from within the specific agency of government (who rotate on to the team and then back to the agency after the agency goes on-line).<sup>9</sup>

Finally, successful e-government is a litmus test for the domestic services infrastructures and their international linkages. If the government cannot present information to its citizens, or process tax payments through the financial system, or get procurement through the distribution system, then most probably neither can the private sector.

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<sup>7</sup> Efforts to measure the potential loss of tax revenue are difficult because of dynamic response. For the US, Austan Goolsbee and John Zittrain, “Evaluating the Costs and Benefits of Taxing Internet Commerce,” *National Tax Journal*, vol 52 no. 3, September 1999, pp 413-428 calculate a loss over the next few years of less than 2 percent of sales tax revenues. For the full range of economies around the world, Susan Teltscher, “Revenue Implications of Electronic Commerce: Issues of Interest to Developing Countries,” mimeo, UNCTAD, April 2000, also finds loss of tax revenues of less than 1 percent overall, although the figure is higher for some economies.

<sup>8</sup> For an extended discussion of how networked information technologies will affect the activities of government as well a further references of international study groups, see Chapter 6 “Government Operations: Tax Regimes and Administration, and Services in Global Electronic Commerce: A Policy Primer (2000) Catherine L. Mann, Sue E. Eckert, and Sarah Cleeland Knight, Washington, DC.

<sup>9</sup> For further discussion of e-government teams and systems integration, see Catherine L. Mann, (2001) “E-Government in Developing Countries: Galvanizing the Sense of Urgency About Global Electronic Commerce,” manuscript prepared for the Commonwealth Secretariat Volume on E-Government, forthcoming.

### *Banking and Financial Structure:*

An efficient and sound financial structure is critical for growth and development. An economy's financial system intermediates between savers and investors and helps allocate and discipline capital. The financial system also is the conduit for monetary policy, which affects the overall level of macroeconomic activity in the economy. Research makes clear that finance and development go hand in hand, particularly when the legal environment is clear. A deeper financial system populated with a variety of bank and non-bank financial institutions is both associated with and leads to higher levels of income. This type of financial environment is also more resilient to downturns and economic volatility.<sup>10</sup>

Competition, both from home and from abroad, increases the range of financial activities and improves the disciplining role of the financial market in allocating capital. Evidence suggests that domestic financial institutions do remain active in the home marketplace even when that market is opened to foreign competition because of their unique knowledge of the domestic marketplace.<sup>11</sup> Thus, liberalization to allow foreign competition does not eliminate the domestic financial sector but instead often enhances the range of financial services and price and performance of service providers. Because of the pivotal role in the whole economy played by a robust financial sector, policymakers should want to avoid policies that protect poorly run domestic financial sectors which will operate at the expense of the whole economy.

With the New Economy, performance of banks and other financial institutions and the financial skills of the people in these institutions are key. Allocating capital to new ventures, cutting-off capital to activities that are no longer viable, and working with businesses to transform their operations to make them viable requires both technology and people. Moreover, financial institutions have to be well supervised, resilient in the face of change, and able to see new opportunities as they arise. The networked ICTs of the New Economy can create databases of information and best practice, but knowledgeable people are needed to analyze and interpret this information. But don't stop the chain of reasoning there—the overall policy environment must support these bankers and financiers as they act on the information to make loans and take risks on new ventures. Thus, the synergies among the four policy domains.<sup>12</sup>

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<sup>10</sup>Beck, Thorsten, Ross Levine, and Norman Loayza (1999) "Finance and the Sources of Growth," Policy Research Working Paper 2057, Washington: World Bank . Levine, Ross, Norman Loayza and Thorsten Beck (1999) "Financial Intermediation and Growth: Causality and Causes," Policy Research Working Paper 2059, Washington: World Bank and World Bank, Finance for Growth: Policy Choices in a Volatile World, A Policy Research Report.

<sup>11</sup>Demirguc-Kunt, Asli and Ross Levine (1999) "Bank based and Market based Financial Systems: Cross Country Comparisons. Policy Research Working Paper 2143. Washington: World Bank.

<sup>12</sup> Notably for some of the APEC members, it is not enough to simply fix the existing "bad-loan problem" at domestic institutions. People must be trained to spot new ventures that will turn into profitable business for the financial institutions. These risk takers must be allowed to make those bets. For more discussion of the difference between writing off bad loans and making good new loans, and the skills and institutional structure that is needed, see Catherine L. Mann (2000) "Korea and the Brave New World of Finance," Joint US-Korea Academic Studies, vol 10, pp. 55-68.

How do people learn how to be bankers and supervisors? Meaningful participation in the local market by foreign financial institutions that already have these capabilities will affect technology and knowledge transfers so necessary to improve domestic institutions. The partnership between international institutions with technology and best practice and local institutions with local expertise and market sense ensures that domestic firms and the domestic economy reap the fruits of the New Economy. More formal training mechanisms sponsored by development institutions can play a key role in bringing knowledge of the international private sector and official supervisory sector to the region's members, but on the job experience is critical.

Sometimes domestic reforms by themselves are insufficient to achieve a more effective financial environment. For example, domestic financial cartels can penetrate deep into the fabric of non-bank economic activities and consumer relationships and be very resistant to change. In order to boost the reform process, policymakers can turn to the technologies underpinning the New Economy for help. For example, networked ICTs enables the delivery across the border of some financial services, for example, insurance and mutual fund investments, without requiring commercial presence. Allowing these transactions (even if they have not been specifically scheduled by GATS commitments) can assist policymakers in creating a deep financial sector when domestic reform alone does not go far enough to increase competition and improve performance of the financial sector. Of course, this cross-border provision must adhere to prudential regulations and needs to be mindful of macroeconomic considerations, but the point is that trade and cross-border investment policies affect banking and financial market policies and can work in a complementary way to improve financial market and overall macroeconomic performance —once again emphasizing synergies among the four policy domains.

*Trade and cross-border investment policies:*

The benefits of openness to trade and to cross-border investment need no introduction. There is no question but that innovation is faster and firms stronger in a competitive business environment. Research discussed in Section III suggests that the nature of cross-border competition is different from domestic competition, so that large domestic markets are not sufficient to hone the competitive edge. Therefore, international engagement is a key underpinning of productivity growth. In the New Economy environment, cross-border investment plays an enhanced role by facilitating technology transfer that improves access to key technologies which can allow “leap-frogging” of stages of industrial development.

The New Economy paradigm puts greater emphasis on cross-border linkages. The nature of the production process (comprising both manufacturing and services) is becoming increasingly fragmented and globalized. Multinational firms and strategic business alliances communicate, get price quotes, submit bids, transfer data, offer customer service, produce product designs, code software, and basically *do business* using networked ICTs in the international arena. Past policies that focused on gaining a foothold on the global production ladder (through export processing zones for example) will no longer suffice.<sup>13</sup> Economies

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<sup>13</sup> See evidence in Section III on the relationship between hi-tech exports and productivity growth on this point.

that do not have a complementary domestic environment conducive to using ICTs will be marginalized from the globalized production process and global economy, at increasingly great cost to their citizens.

However, for the full range of productivity benefits associated with the New Economy to accrue, domestic use and diffusion of networked ICTs is key. How does global engagement through trade and cross-border investment facilitate domestic use and diffusion? Costly technology products (such as PCs), high and metered telecommunication rates, inefficient financial systems, and cumbersome delivery systems are primary obstacles to a New Economy based on information and transformation. These areas are ones where domestic policy reforms can be complemented by a strategy of international openness.<sup>14</sup>

APEC members were the first to recognize that liberalization of trade and cross-border investment in technology products could jump-start productivity growth at home. The Information Technology Agreement is the exemplar of the role that APEC can play in pushing to the multilateral forum of the World Trade Organization an agreement that has both domestic and international consequences.

*Communications systems* simply are critical and evidence shows that foreign direct investment can play a very important role in improving the competitive climate in even the smallest economies.<sup>15</sup> Going beyond the Basic Telecoms Agreement in the context of an overall new Round of multilateral trade negotiations will enable broader access in the domestic marketplace.<sup>16</sup>

A supportive *financial payments infrastructure* is crucial to achieve the cost reductions promised by technology-based commerce. As discussed more completely in the section on banking and financial markets, cross-border liberalization along with appropriate regulation and supervision will help bring international best-practice as well as global technologies to bear to improve the functioning of the domestic financial sector.

Finally, *delivery logistics* (including customs) round out the set of service infrastructures that are key support structures for the New Economy. Government policies have a direct impact in

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<sup>14</sup> For a more complete discussion of trade and investment liberalization in the context of the WTO, see Catherine L. Mann and Sarah Cleeland Knight (2000) "Electronic Commerce in the WTO," in Jeffrey Schott, ed. The WTO After Seattle, Washington DC: Institute for International Economics, and Catherine L. Mann (2000), "Electronic Commerce and the WTO: What's In IT for the Developing Countries?" World Bank WTO Handbook.

<sup>15</sup> See references in section "Privatization, Competition, and Regulation" in Chapter 3, "Infrastructure: Communication Systems" in Global Electronic Commerce, op cit. pp. 50-52. See OECD (2001), LOCAL ACCESS PRICING AND E-COMMERCE Working Party on Telecommunication and Information Services Policies, DSTI/ICCP/TISP(2000)1/FINAL,23 May 2001,. And George R. G. Clarke, "Bridging the Digital Divide: How Enterprise Ownership and Foreign Competition Affect Internet Access in Eastern Europe and Central Asia," Working Paper 2629, Washington: World Bank, July 2001.

<sup>16</sup> For a discussion of what this might entail, see OECD (1999) A REVIEW OF MARKET OPENNESS AND TRADE IN TELECOMMUNICATIONS , Working Party on Telecommunication and Information Services Policies, DSTI/ICCP/TISP(99)5/FINAL, 20 September 1999

these areas; and government has the principal task of raising the efficiency and transparency of customs operations. But policymakers will be assisted by the capital, competition, and technologies that come with liberalization of cross-border investment.<sup>17</sup>

In addition to being key to the New Economy, these three service sectors—telecommunications, financial transactions and institutions, and distribution logistics—are at the heart of on-going international services negotiations, as well as being covered by bilateral agreements. There is much to do to move away from the il-liberal status-quo situation that is contained in the GATS schedules and APEC members should use their collected voice to push for a new Round that will negotiate both goods and services.<sup>18</sup>

#### *Competition policy and legal regimes:*

The rule of law and pro-competitive policies including appropriate and independent regulatory authorities, transparent and non-onerous business rules, flexible labor markets, and ease of entry and exit of firms, including through mergers and takeovers, are fundamental to creating the New Economy environment characterized by innovation, quality infrastructure, and hospitable business environment.<sup>19</sup>

For key infrastructures, such as telecommunications and distribution and delivery, the research is quite clear on the importance of the private sector, independent regulation, and foreign participation in yielding a high-quality, fairly-priced, and technologically up-to-date infrastructure backbone. The New Economy puts a premium on this backbone, since the benefits of business efforts can be undercut by inefficient and costly infrastructures.

The global nature of New Economy transactions means that domestic pro-competitive regulatory authorities can butt up against the jurisdiction of policymakers in another economy. Realistically and rightly, different economies balance the interests of consumers and businesses differently when considering whether and how policymakers should intervene to affect market structure and conduct. APEC is a forum where policymakers can discuss these issues, bringing differences in views and approaches into the open. Doing so would move the international dialogue forward.

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<sup>17</sup> See Antonio Estache, “Privatization and Regulation of Transport Industries in the 1990s: Successes...and Bugs to Fix for the Next Mile,” Working Paper 2248, Washington: World Bank, November 1, 1999. In addition, much of the work of APEC’s trade facilitation projects, paperless trading initiative, and customs standardization, as well as business travel card are directed as improving the logistics aspect of trade.

<sup>18</sup> See Catherine L. Mann (2000), “Electronic Commerce in Developing Countries: Issues for Domestic Policy and WTO Negotiations,” IIE Working Paper 00-3 March.

<sup>19</sup> For a full discussion, with a precursor to the New Economy, in Edward M. Graham and J. David Richardson eds. (1997), Global Competition Policy, Institute for International Economics: Washington DC. For analysis more specific to developing economies, see Ian Alexander and Antonio Estache, “Infrastructure Restructuring and Regulation: Building a Base for Sustainable Growth,” Working Paper 2415, Washington: World Bank, August 1, 2000; and Mark Dutz and Aydin Hayri, “Does More Intense Competition Lead to Higher Growth?,” Working Paper 2320, Washington: World Bank, 2000. With regard to the role for mergers and takeovers, see in particular Bassanini, et al, OECD Economic Department, “Knowledge, Technology and Economic Growth: Recent Evidence from OECD Countries”, Brussels, May 2000.

With respect to the legal environment, it goes without saying that private sector innovation and business dynamism depends on assurance that property rights are respected and adjudication of disputes prompt. However, it is also clear that simply writing new laws is insufficient. The “rule of law” is even more crucial, implying a commitment on the part of business, government, and citizens to the legal process.

International bodies are working to write model laws that economies can use as a starting point for their own efforts: for example, the OECD, UNCITAL, and the Hague. However, in the New Economy, certainty of rules must be balanced against dynamism of technology. Laws must define objectives and be technology neutral. Laws should focus on guiding behavior while preserving the private sector’s incentives to meet the objectives of the law.<sup>20</sup>

The increasingly globalized environment of New Economy transactions and actors means that the legal environment of a specific economy must consider whether it is internationally interoperable. Homogeneity of law is not required, but if laws are not internationally workable, domestic firms will not have global reach and domestic consumers will be cut off from the benefits of international markets. Both will undermine the potential benefits of the New Economy that derive from global engagement.

#### **Synergies among policy domains:**

This set of growth-fostering economic policies is not new, and precedes the New Economy paradigm. However, the New Economy tightens the inter-relationships among these policies.

- For example, capital deepening, particularly in the form of ICTs and networks, is an essential ingredient of the New Economy. So, macroeconomic mismanagement (for example, through the inflation tax from inefficient or mis-directed fiscal policies or through high interest rates caused by poor banking systems or directed credit policies) is much more costly to economic growth.
- Or, another example, the New Economy depends on a private sector responding quickly and flexibly to changes in technology, information, and the marketplace. So, excessive government intervention (for example, through “picking winners” in business, supporting large companies or monopolies, and restricting trade and investment) slows the development of the New Economy.
- Or, another example, network externalities are a key source of the New Economy benefits; so, limiting global connectedness (e.g. with domestic standards different from global ones, or limitation on domestic or cross-border information exchange) will reduce the benefits to be had from all other domestic reforms.

To reiterate the earlier point, capable human resources is distinct from the policy set we focus on here, but also important. The diffusion of benefits is influenced by flexibility and skills.

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<sup>20</sup> See Catherine L. Mann (2001), “International Internet Governance: Oh What A Tangled Web We Could Weave,” Georgetown Journal of International Affairs, forthcoming.

People who can use ICTs to create and promote growth may benefit even more than those who enjoy the new products and jobs that are the fruits of the ICT innovations. Well-distributed prosperity depends on some willing to take risks and others able to respond to change.

## **Conclusion**

In sum, not only does the New Economy paradigm not provide an alternative to the difficult undertaking of policy reforms for structural adjustment and development, it favors comprehensive progress on the full range of policies—picking and choosing in piecemeal fashion is less and less rewarding. Once the set of policies is understood implementation is the next step. The benefits of the New Economy depend on *managing the political economy of policy reform in the domestic arena above all else*.

Managing the reform process is deeply challenging. The risks from embracing new policies quickly, with the potential for disruption to the economy and citizenry, must be weighed against the costs of not engaging fully in reform. The New Economy does not diminish the right of choice for policy makers but it does make more transparent the outcome when the choice is made (for political, cultural, or security reasons—it does not really matter) to diverge from growth-oriented policy. Meanwhile, adopting a “culture of transformation”—which is essentially what joining the New Economy means—may pose a challenge to the national identity of a society, which requires leadership and wisdom.<sup>21</sup> This we know: it can be done, and will be done by at least some in APEC, as elsewhere.

The next two sections of this Report present tools for policymakers forging policy reform at home in view of the New Economy. Section III presents evidence on changes to trend productivity (and hence economic growth) made possible with new technology operating within a facilitating environment and with diffusion throughout the economy. Evidence from the US, Australia, and Europe is compared and contrasted to interpret the different ways that economies can gain from the forces of the New Economy. Second, using modeling techniques, it highlights the aggregate macroeconomic gains reformers can achieve as the outcome of policy reforms. Section IV uses examples from APEC economies to sketch pictures of how business, civil groups and government have been able to more fully engage in the New Economy as a function of policy reform, or been held back by failure to reform.

Looking ahead, the remainder of the Report will draw out the implications of this evidence for the APEC region, considering in particular trade competitiveness and other aspects of the so-called “digital divide” (Section V). Section VI summarizes the challenges and impediments to reform and offers recommendations and conclusions. Annexes contain the mini-case studies from APEC members, detailed analysis of trade competitiveness and references.

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<sup>21</sup> Economists may well ignore this, but politicians cannot. We are guilty as charged, but it is nevertheless important to provide the politicians with the ammunition of mere economic costs and benefits.

### **III. The Evidence: Benefits and Challenges of the New Economy**

#### **Introduction**

The dramatic growth of the Internet and electronic commerce since the mid-1990s has been matched by and fueled by the hype. Some see the fall of stock markets in advanced economies – especially the United States and particularly in the stocks of technology companies – as a sign that the New Economy was an illusion. As a result the urgency to emulate the experience that changed underlying economic performance in the US and some other economies such as Finland and Australia has subsided in some places.

But, in the New Economy (and throughout the established “old economy” activities as well) entrepreneurs are creating new markets. Established companies are restructuring with new strategies of production, marketing, and sales. Consumers are interacting with businesses in new ways and across more borders. Delaying reforms that will enable these transformations in an economy comes at a price. Delay should not be an accident of inertia or ignorance, but rather a conscious policy choice for which policymakers take responsibility.

This section provides three analytical perspectives on the benefits and challenges of policy reform to achieve the growth-oriented New Economy paradigm, in an effort to help policymakers sort the confusing mix of opportunity and exaggeration. These are:

- The key role of information in transforming activities.
- Analysis of evidence from advanced economies on the relative importance of use and diffusion of information technology into society to enhance productivity and growth, including an overview of the dot-com bust.
- Econometric modeling of the aggregate benefits to be anticipated from diffusion of information technology and the policies that underpin that for both individual economies and the global economy.

Supplementing this more macro view is Section IV, which analyzes and distills “mini” case studies of companies, governments, and civil society within APEC of the benefits and challenges of New Economy opportunities.

#### **Information and Transformation; Dot-Com Bust, But Not the New Economy**

Declines in technology stocks around the world are a vindication for those who see little or nothing new in the New Economy. However, this reversal of fortune is driven, appropriately, by the fundamentals of any market, old or new: Data revealed weakness in demand, falling growth, and absence of profits (in the case of dot-coms) or unrealized (and unreasonable) expectations in the case of everyone else. That is, the business cycle (and its reflection in macroeconomic aspects such as inflation, output, and employment ups and downs) has not

been eliminated just because of the New Economy, but some investors thought so and bid stocks (technology and the rest) up based on that belief.

Beyond the cyclical culling of the early crop of New Economy applications and firms, and the unrealistic expectations of a continuous increase in the rate of profitability for many other firms, sustainable and profound technological changes are taking place that will continue to lift productivity among “old economy” firms, create whole new sectors and markets for consumer and business users, and reduce misallocation of resources and man-hours in the world economy.

There is a common thread to what changes behavior across so many levels (individual, firm, government, and market) in the New Economy—networked information. Modern economic theory relies on some “stylized assumptions” to teach how economic transactions are supposed to work. The very first is the assumption of perfect information. Assuming perfect information makes it easier to see how an individual’s action is in his or her economic interest, why firms buy one or another input when the price changes, or how changes in interest rates affect the macroeconomy. While this assumption does not reflect reality, it is more helpful in understanding economic and policy behavior and relationships. In the New Economy, the use of ICTs at multiple levels of society brings the economy closer to that assumption of perfect information, especially when that technology is networked to connect everyone together in real time. The network and ICTs allow more information to flow, which dramatically changes the bounds of what individuals and firms can do, and vastly increases how efficiently they can do it.

Enhancing the efficiency of business-to-business transactions and restructuring firms to take advantage of the increased information available contributes most powerfully to the benefits of the New Economy. Starting with simple analysis of their operations inside the boundaries of the firm and then radically re-engineering the relationships between and among firms, information is changing the production and use of resources within an economy and between economies.

On a real-time basis, national and multinational firms monitor information flow to decide whether to shift production, change product focus, and identify merger or acquisition targets. Suppliers must now accommodate the technology-intensive, more transparent, and faster pace or lose their position on the global value-chain of production. Job functions change as well: A purchasing manager can now solicit and compare bids from suppliers worldwide without leaving his desk and without spending weeks on the phone, freeing up his time for different and more productive activities.

Greater information and quicker response can increase individual volatility, although the volatility of whole markets is less obvious. But, both demand greater resiliency by all participants—individuals, financial intermediaries, firms, and governments. More information must be used wisely in order to reap its full range of benefits, which makes clear why there is a premium on policy reforms that contribute to the effective use of information.

For macro policymakers, the benefits of the New Economy paradigm are the better choices and behavior that come with more information and transparency. Public revenue authorities should be able to curtail tax evasion, reduce administrative costs and thereby either use budgetary resources for specific needs or reduce rates of taxation. A clearer view of which poverty reduction programs are effective may be achieved through the diffusion of ICT, allowing policymakers to better target their programs to achieve results at lower cost. Finally, greater transparency in the New Economy means citizens can demand and receive superior government services for their tax dollars. Thus government must be more responsive in the New Economy paradigm, because the cost of providing services will be better known, the results more visible, and analysis of the performance of governments compared to others more pervasive.

These fundamental and pervasive changes in the way individuals, firms, governments, and markets work are why the ICTs themselves are the obvious and simple part of the New Economy, but they are not the only, nor even the key, ingredient to its fundamental benefits.

### **Evidence on Productivity Growth and the Use and Diffusion of ICTs**

Policy makers and economists have always cared about productivity. Rising productivity is critical to long-term economic growth without inflation. Rising labor productivity is an important source of rising real wages and family income. But what are the sources of productivity growth, and can we observe a change in trend right now in some economies? Two members of APEC—the US and Australia—offer examples that highlight the roles for information and communication technologies, structural policies, and competitive and flexible markets for products as well as workers.

In the last half of the 1990s, both the United States and Australia have enjoyed a surge in employment and non-inflationary income growth. The US continues its longest period of economic expansion ever recorded: GDP growth averaged more than 4 percent per year from 1995 to 2000.<sup>22</sup> Australia enjoyed 13 consecutive quarters of GDP growth in excess of 4 percent during the 1990s—the longest period of such rapid growth on record.<sup>23</sup> Do common characteristics underpin the economic performance?

In the most recent *Economic Report of the President*, the US Council of Economic Advisors (CEA) noted that between 1995 and 1999 fully one-third of American output growth came from increased *spending* on information technology. About one half of the increase in labor productivity came from capital *spending* on information and communications technologies (hardware and software). For Australia, about one-third of the increase in Australian labor

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<sup>22</sup> US Council of Economic Advisors (2001). The Economic Report of the President, Government Printing Office: Washington.

<sup>23</sup> Australian Treasury. [www.budget.gov.au/papers/](http://www.budget.gov.au/papers/).

productivity came from spending on information and communications technologies.<sup>24</sup> These impressive figures are what other policymakers want to emulate.

There are some important similarities between the United States and Australia, but some important differences as well. The key similarity is that, for both economies, about one-half of the increase in labor productivity came not from spending on ICTs, but on using them. In the future, it is this multi-factor or total-factor productivity (MFP or TFP) that will most enrich these economies, far more than simply buying more hardware and software. What is TFP? TFP reflects doing things differently in a business, in order to get more output out of the same or fewer inputs (capital, equipment, labor)—in other words, it is a proxy for transforming, restructuring, and reorienting the activities of the individual and/or business.

A key difference between the US and Australia also is insightful. The US is a major producer of ICTs and Australia is not. That is, Australia raised its TFP not through domestic production of ICTs, but by importing and then using them. Taken together, the similarity and the difference imply that the more important driver of the benefits to be gained in the New Economy—and the driver that is available to all economies—is not ICT sales or ICT production, but how individuals, firms, markets and governments use those technologies, especially in a networked environment.

*Review of the Literature: The US experience precipitates research ...*

During the second half of the 1990s, US economic activity was sustained and relatively faster than that of other industrial economies, but without any apparent increase in inflation. The US experience generated some urgency in the research community to answer the question about sources of productivity growth so that policymakers in other economies could follow a similar path to growth, if in fact such a path exists and could be gleaned from an investigation of the US.

Accordingly, researchers have undertaken an extensive examination of US data and conclude, in one way or another, that investment in high-technology equipment is a key source (but not the only source) of the increase in labor productivity growth and in multi-factor productivity growth. Despite the similar focus and approach of researchers, there is not full agreement on the manner or extent to which this investment might percolate through the economy to affect overall measures of productivity growth. And, there is incomplete agreement as to the permanence of the observed increase in productivity growth over the last five years. However, more and more researchers are coming to the conclusion that the increases in productivity growth are real and will be sustained.

Some authors suggest that a change in the pace of innovation in semi-conductor chips is key, so that a slowing in the pace of innovation could jeopardize the trend increase in productivity

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<sup>24</sup> Gruen, David, “Australia’s Strong Productivity Growth: Will It Be Sustained?” RBA Bulletin, February 2001. (Table 1)

growth.<sup>25</sup> Others find that capital investment is the key instigator, which suggests that the productivity gains could be mostly a cyclical event and subside as interest-rates and the business cycle position change.<sup>26</sup> Others suggest that the capital deepening via computer equipment (that is, raising the share of ICT in the production of goods and services ) represents a step-up and permanent change in capital structure for firms inside and outside the sectors that actually produce this type of capital equipment; thus the step-up in trend productivity will not be reversed.<sup>27</sup>

Finally—and perhaps most importantly—a new round of research has focused on the complementary changes in organizational behavior within the firm that is needed to fully benefit from the capital investment in the ICTs. Workers’ activities have to change, and how their activities within the firm have to change when ICTs enter the firm. When these organization changes are undertaken (which is not always the case in any firm), the combination of ICT investment and behavioral changes yields a more durable increase in trend labor and multi-factor productivity growth. These changes in organizational behavior are often more difficult to achieve and can take longer to take root compared with simply buying computers (a point that we will see in the mini-case studies from APEC).<sup>28</sup>

*...and raises similar questions for other economies*

Researchers have been applying similar methods to data for other economies to see if ICTs have been as important for growth there. The general outcome of this research is that the US experience generally has not been replicated—Australia being an exception among APEC members. Examining research on other economies instructs on the ingredients necessary to mirror the US performance.

Simply describing the situation in other economies is challenging because of data needs.<sup>29</sup> But, once data are assembled, most research finds that the US behavior of productivity growth (labor or multi-factor) has not (yet) been replicated in other economies, although there is evidence of the process underway in Canada and Australia (among APEC members) and in

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<sup>25</sup> Jorgenson, Dale W. (2001). Information Technology and the U.S. Economy,” *The American Economic Review*.

<sup>26</sup> See Gordon, Robert. (2000). “Does the “New Economy” Measure Up to the Great Inventions of the Past?,” *Journal of Economic Perspectives*, vol 14 no.4, Fall 49-74. Even Gordon admits in his latest analysis that much of the “cyclical” component captured by his time-varying parameter is sustainable.

<sup>27</sup> Oliner, Stephen D., and Sichel, Daniel E. (2000). “Computers and Productivity,” *The Journal of Economic Perspectives*. Stiroh, Kevin J. (2001). New and Old Economics in the “New Economy”. Federal Reserve Bank, New York (9 April). Nordhaus, William D. 2001. *Productivity Growth and the new Economy*. NBER Working Paper Series 8096. Cambridge, MA: National Bureau of Economic Research.

<sup>28</sup> Council of Economic Advisors, (2001) US Economic Report of the President. Government Printing Office: Washington. Dunne, Timothy, Lucia, Foster, Haltiwanger, John, and Troske, Kenneth. (2000) *Wage and Productivity Dispersion in the U.S. Manufacturing: The Role of Computer Investment*. NBER Working Paper Series 7465. Cambridge, MA: National Bureau Economic Research.

Brynjolfsson, Erik, and Hitt, Lorin M. (2000). Beyond Computation: Information Technology, Organizational Transformation and Business Performance, *The Journal of Economic Perspectives*

<sup>29</sup> Scarpetta, Stefano, Bassanini, Andrea, Pilat, Dirk, and Schreyer, Paul. (2000). *Economic Growth in the OECD Area: Recent Trends at the Aggregate and Sectoral Level*. Economics Department Working Papers No. 248. Paris, France: OECD. (/ DSTI/IND/STP/ICCP (2000)1)

the Nordic economies and Ireland.<sup>30</sup> The reasons why the behavior of productivity in most of the rest of the world differs from the US remains elusive, but possibilities focus on measurement differences, nature of capital deepening (e.g. investment in different types of capital), flexibility of labor markets, and trade patterns.

On measurement issues, some pundits initially surmised that the US use of hedonic price indexes to deflate some of the categories of information and communications technologies must account for some of the difference in performance. More careful examination revealed that this methodological difference is not a key source of the difference in productivity growth.<sup>31</sup>

Capital investment *in total* is not the source either. Looking at capital investment alone, or capital-labor ratios, there is little evidence that there is insufficient capital in the production process in other industrial economies.<sup>32</sup> But, focusing in on the *ICT sector* reveals more differentiation. Domestic production (e.g. size) of the ICT sector is relatively small in the EU economies and in Australia compared to the US.<sup>33</sup> Investing in ICT capital and adding it into the production process (e.g. capital deepening via ICT) has been lower in the EU, but about the same for Australia.<sup>34</sup> What is key, looking at the US and Australian data, is that *diffused use* of ICTs are key for productivity growth. On balance, the lower share of ICTs in the capital investment of firms in most other economies (which precipitates the transformation of the production process overall) is likely the main reason for their relatively lack-luster performance to date.

Whether firms in other industrial economies will follow the US and Australian pattern and significantly increase capital investment via ICTs is another question. First, capital-labor ratios are, if anything, higher in most non-US industrial economies. Raising capital intensity further via more investment in ICTs might not make sense. Moreover, one must ask whether an economy's financial market structure (in conjunction with accounting rules and corporate governance) can facilitate a change in the composition of capital. Thus banking and financial structure and the policies that underpin banking and financial structure appear to be important factors underlying the ability of an economy to transform its physical capital structure.

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<sup>30</sup> OECD (2001), *The New Economy: Beyond the Hype*, Executive Summary.

<sup>31</sup> Gust, Christopher, and Marquez, Jaime. 2000. *Productivity Developments Abroad*. Federal Reserve Bulletin (October). Schreyer, Paul (2001). *Computer Price Indices and International Growth and Productivity Comparisons*. Paris, France: OECD.

<sup>32</sup> Scarpetta, Stefano, Bassanini, Andrea, Pilat, Dirk, and Schreyer, Paul. 2000.op. cit.

<sup>33</sup> For EU see Roeger, Werner. 2001. *The Contribution of Information and Communication Technologies to Growth in Europe and the US: A Macroeconomic Analysis*. Economic Papers No. 147. Brussels: European Commission. See Gruen, David, "Australia's Strong Productivity Growth: Will It Be Sustained?" RBA Bulletin, February 2001. (Table 1) for Australia.

<sup>34</sup> Gust, Christopher, and Marquez, Jaime. Op. cit. Schreyer, Paul. 2000. *The Contribution of Information and Communication Technology to Output Growth: A Study of the G7 Countries*. STI Working Paper Series 2000/2. Paris, France: OECD. Elmeskov, Jørgen, and Scarpetta, Stefano. 2000. *New Sources for Economic Growth in Europe?* Paper presented at "The New Millennium-Time for an Economic Paradigm, Oesterreichische NationalBank, Vienna (15-16 June). Gruen, David, "Australia's Strong Productivity Growth: Will It Be Sustained?" op. cit.

At least as important, evidence from the US and Australia points to changes in work organization and methods, which impact the labor market. Most authors, in comparing the US and Australia with other industrial economies, conclude that the industrial economies that employ less ICT capital must have a less complementary environment for the needed changes in organizational behavior within firms and resource reallocations across plants that appear to be a key component of the US and Australian experience.<sup>35</sup> The OECD as well has found a positive correlation between ICT investments and adoption of new workplace practices.<sup>36</sup> While these analyses do not prove the point, it appears that policies that allow flexible entry and exit of firms and movement of labor around the economy are key for the New Economy successes that have not been emulated or replicated elsewhere.<sup>37</sup>

*ICTs are the fad now, but research on productivity growth goes back a long way.*

The current spate of research, much of which has focused on the US and on the role for ICT capital per se, should be placed within the rich and extensive literature that investigates more broadly the trends and cyclical dynamics of labor productivity and multi-factor productivity. Researchers have investigated how the level of productivity is affected by resource reallocation across industries, R&D spending, capital deepening, and trade patterns.<sup>38</sup> This previous research has implications for the recommendations on innovation systems in the KBE report.

Initially, much of this work used long time series, focusing on aggregate data on productivity for an economy.<sup>39</sup> More recently, however, researchers have focused on increasing the range of included variables, and using shorter time series but more disaggregated industry or even firm-level data.<sup>40</sup>

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<sup>35</sup> Gust, Christopher, and Marquez, Jaime. 2000. op. cit. Bassanini, Andrea, Scarpetta, Stefano, and Visco, Ignazio. 2000. *Knowledge, Technology and Economic Growth: Recent Evidence from OECD Countries*. Economics Department Working Paper Series No. 259. Paris, France: OECD. See Gruen op. cit. for Australia Treasury, op. cit. For a different view on the EU see Roeger, Werner. 2001. op. cit.

<sup>36</sup> OECD (2001) The New Economy: Beyond the Hype (Executive Summary), esp. pp 15-17 and Figure 6.

<sup>37</sup> See generally OECD (2001), The New Economy: Beyond the Hype.

<sup>38</sup> Navaretti, Giorgio Barba, and Tarr, David G. 2000. International Knowledge Flows and Economic Performance: A Review of the Evidence. *The World Bank Economic Review* 14, No. 1: 1-15.

<sup>39</sup> Basu, Susanto (1996), "Procyclical Productivity: Increasing Returns or Cyclical Utilization," Quarterly Journal of Economics, August, p.719-751. Basu, Susanto and John Fernald (1997), "Aggregate Productivity and Aggregate Technology," manuscript, Federal Reserve Board, February. Bils, Mark (1992), "Measuring Returns to Scale from Shift Practices in Manufacturing," manuscript, University of Rochester. Burnside, Craig, Martin Eichenbaum, and Sergio Rebelo (1995), "Capital Utilization and Returns to Scale," in B. Bernanke and J. Rothenberg, eds., NBER Macroeconomics Annual. Burnside, Craig, Martin Eichenbaum, and Sergio Rebelo (1996), "Sectoral Solow Residuals," European Economic Review, p 861-869. Caballero, Ricardo J. and Richard K. Lyons (1992), "External Effects in U.S. Procyclical Productivity," Journal of Monetary Economics, vol 29, pp 209-226. Shapiro, Mathew (1996), "Macroeconomic Implications of Variations in the Workweek of Capital," BPEA vol2, p.79-119. Solow, Robert M. (1957), "Technological Change and the Aggregate Production Function," Review of Economics and Statistics, vol 39, p 312-320.

<sup>40</sup> Dunne, Timothy, Lucia, Foster, Haltiwanger, John, and Troske, Kenneth. 2000. , op. cit. Bresnahan, Timothy F., Brynjolfsson, Erik, and Hitt, Lorin M. 1999, op. cit. Bartelsman, Eric (1990), "R&D Spending and Manufacturing Productivity: An Empirical Analysis," FEDS Working Paper no. 122, Division of Research and Statistics, Federal Reserve Board of Governors, April.

Among the determinants of trend productivity growth, R&D has a long history and the role for trade to affect productivity growth a somewhat more recent one.<sup>41</sup> Finding a positive correlation between R&D and productivity growth has been challenging—which has been disappointing for policymakers who want to support R&D as a way to enhance growth. The conclusion of the most recent work that links together trade and R&D is relevant for both the conclusions about policy synergies as well as the recommendations of the KBE report: Innovation policies are not enough to spur productivity growth; innovation must take place in an environment of open trade and investment to reap the reward of productivity growth.<sup>42</sup>

### **Aggregate and global benefits of the New Economy**

There are several ways to approach modeling the potential economic benefits of engaging in policy reforms that yield New Economy performance. This section reviews three different approaches:

Econometric analysis of time-series data that quantifies the macroeconomic benefits achieved from increased economic efficiency associated with the diffusion of network technologies into business;

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<sup>41</sup> Work by Bartelsman, Eric (1990), op. cit. Griliches, Zvi (1986), "Productivity, R&D, and Basic Research at the Firm Level in the 1970s," American Economic Review, vol.76no.1, March. Griliches, Zvi and Frank Lichtenberg (1984), "R&D and Productivity at the Industrial Level: Is there Still a Relationship?" in Zvi Griliches, ed. R&D, Patents, and Productivity, Chicago: University of Chicago Press, and Perelman, Sergio (1995), "R&D, Technological Progress and Efficiency Change in Industrial Activities," Review of Income and Wealth, series 41, no. 3, September, focus on R&D and productivity.

On the trade side, the tendency has been to consider only the role for imports or the role for exports, depending on the level of detail of the examination. On a sectoral basis, data on imports and exports are generally available—see Mann, Catherine L. (1998), "Globalization and Productivity Growth in the United States and Germany," in Stanley Black, ed. Globalization, Technological Change, and Labor Markets, Boston: Kluwer Academic Publishers, pp 17 – 41 and (1997), "Trade, Technology, and the American Worker," manuscript, Institute for International Economics, December 19, 1997, on how exports and imports affect the growth rate of industry-sector labor productivity using disaggregated data.

At the plant-level, which is becoming de rigor for such analysis, import data are not available. See Jensen, J. Bradford and Nathan Musick (1996), "Trade, Technology, and Plant Performance," ESA/OPD 96-4, U.S. Dept of Commerce, Economics and Statistics Administration, February, Bernard, Andrew B. and J. Bradford Jensen (1997), "Exporters, Skill Upgrading, and the Wage Gap," Journal of International Economics, February, p 3-31, and Baily, Martin Neil and Jans Gersbach (1995), "Efficiency in Manufacturing and the Need for Global Competition," BPEA--Microeconomics.

Other analysis on the trade side include: Bayoumi, Tamim, Coe, David T., and Helpman, Elhanan (1996), R&D Spillovers and Global Growth. NBER Working Paper Series 5628. Cambridge, MA: National Bureau of Economic Research, (who use simulations with Multimod), and Helpman, Elhanan. 1997. R&D and Productivity: The International Connection. NBER Working Paper Series 6101. Cambridge, MA: National Bureau Economic Research. Nadiri, M. Ishaq, and Kim, Seongjun. International R&D Spillovers, Trade and Productivity in Major OECD Countries. NBER Working Paper Series 5801. Cambridge, MA: National Bureau of Economic Research. See also OECD ECO/CPE/WP1(93)6.)

Finally, for the key complementary role of institutions, see George R.G. Clarke, "How the Quality of Institutions Affects Technological Deepening in Developing Countries," Working Paper 2603, Washington: World Bank, April 25, 2001.

<sup>42</sup> The work by the RBA and Australian Treasury, and for the OECD countries overall by Baygan, Günseli and Catherine L. Mann (2000), "Technological Sophistication and Labor Productivity in the OECD" presented ASSA, manuscript IIE, November suggest that higher labor productivity is associated with greater openness.

Analysis with econometric models that quantifies macroeconomic benefits associated with broad-based trade and investment liberalization, diffusion of networked technologies into business, and domestic policy reforms that ensure that resource reallocations can take place;

Analysis that compares the relative macroeconomic benefits from liberalization of different types of trade—agriculture, manufacturing, and services. The service sector is an area of particular interest because of its key role in access, use, and diffusion of networked information technologies throughout the economy.

*Time-series analysis of efficiency gains:*

The cost savings associated with the networked information technologies and financial exchange of business-to-business electronic commerce is substantial and pervasive across manufacturing, industrial supplies, and services. Martin Brookes and Zaki Wahhaj of Goldman Sachs estimate cost savings ranging from 10 percent in sectors such as aerospace, paper and steel, and communications bandwidth and media advertising, to more than 20 percent in electronic components and machining, forest products, and freight transport.<sup>43</sup> Cost savings of this magnitude have been confirmed by individual case studies.<sup>44</sup> Because the use of these technologies for business-to-business sales and purchases is so pervasive, cost savings of this magnitude could impact about one-third of US GDP and increase the efficiency of resource utilization. Together these translate into faster productivity growth, which supports a higher sustained rate of GDP growth.

Brookes and Wahhaj apply their evidence on cost reductions in an econometric model (“Multimod” used at the International Monetary Fund). This econometric model of the global economy uses time-series data on many economies in a set of complex models of the individual macro economies as well as their global inter-relationships. The BW simulations suggest that GDP in the specific industrial economies examined (US, France, Germany, UK, Japan) would be almost 5 percent higher after ten years, and the annual growth rate of GDP would be about 0.25 percentage points higher during this period. (A figure that is similar to the increase in productivity growth estimated by Litan and Rivlin.) For example, for the United States, GDP would be higher by about \$400 billion at the end of the 10 years on account of the use and diffusion of networked information technologies.

*Broad analysis of policy reforms:*

The OECD and UNCTAD<sup>45</sup> have investigated the potential benefits for the global economy and for regions of the world from broad-based reforms that incorporated not just trade liberalization but also domestic policy reform and structural adjustment. The approaches are different, but the conclusions are the same: The potential gain to economic well-being is huge

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<sup>43</sup> Martin Brookes and Zaki Wahhaj, “The Shocking Economic Effect of B2B,” Goldman Sachs Economics Paper No. 37, 3 February 2000.

<sup>44</sup> Robert Litan and Alice Rivlin, (July draft 2001) Beyond the Dot-Coms: The Economic Promise of the Internet. Washington: The Brookings Institution.

<sup>45</sup> OECD, World in 2020; UNCTAD, Building Confidence.

from policy reforms that create the facilitating environment in which networked information technologies can take hold.

UNCTAD investigates the same question as BW, but they use a very different methodology. Using the general-equilibrium econometric model (the GTAP model) UNCTAD considers the long-run effect of Internet usage and facilitating policies on GDP in various regions of the world.<sup>46</sup> Adjusting the UNCTAD simulations to be of comparable magnitude to the survey estimates from BW<sup>47</sup>, yields the result that GDP in the developed world would be about 4.9 percent greater (about \$1 trillion) in the long run—strikingly similar to the figure in the BW study, which uses a very different methodology.

UNCTAD assumes that developing economies do not have the facilitating environment in place. Internet commerce yields only one-third the gains accruing to the industrial world: GDP would be 1.2 percent (\$30 billion) higher in Asia and 1.0 percent higher in Latin America (\$15 billion). If developing economies did deepen service sector reforms, creating a facilitating environment for information technologies to take hold, and put in place the legal framework to help create an environment of certainty and trust, they could enjoy benefits of more efficient resource utilization much greater than those shown above. Therefore, the UNCTAD study implicitly shows the consequences of incomplete policy reforms: Incomplete reforms cut by more than half the potential gains to be had from the resource efficiencies of networked information technologies.

OECD takes a very broad overview of the potential for gains from external liberalization (e.g. trade and investment liberalization and removal of subsidies) and domestic policy reform (e.g. fiscal prudence and domestic labor market reforms). Together these yield domestic resource reallocations, immigration and capital flows, and a changed structure of production and trade around the world. Or, not—since what the OECD does is compare a “high-performance” (HG) scenario where these reforms and changes take place, and a “business-as-usual” (LG) scenario where policies around the world proceed pretty much on the path that they are now—some policy improvements, but not very much. (Notice that the scenarios do not consider a back-sliding of policies toward protectionism and large fiscal deficits.)

What are the differences between substantive reforms and continuing on the current policy paths? For the industrial economies of the OECD, GDP growth would be 3.0 percent per year in the HG compared with 2.3 under the LG scenario (compared with 2.5 annual percent growth 1971-1995). For the non-OECD, GDP growth would be 6.9 percent under HG and 4.1 under LG. For China, the difference would be 8.2 GDP growth under the HG scenario and 5.3

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<sup>46</sup> GTAP was developed at Perdue University in conjunction with a number of international organizations including UNCTAD. See UNCTAD, pages 28-30 for more discussion of the model results.

<sup>47</sup> In one of the simulations performed, UNCTAD examined a 1 percent improvement in resource utilization by industrial economies and a 0.3 percent improvement by developing economies in conjunction with increased service sector efficiency. They note, “These percentages do not intend to reflect the actual differences in access to the Network...but simply represent a working assumption.” Adjusting this parameterization to the same magnitude as the evidence found by Brookes and Wahhaj (op. cit), the UNCTAD “shocks” should be 3.5 times as large.

under LG. For other East Asia (Chinese Taipei, Malaysia, Philippines, Singapore, Thailand) the difference is 7.0 under HG and 4.8 under LG.<sup>48</sup>

All told, these scenarios make clear that the developing world has the most to gain from broad-based liberalization of trade and investment—including the services sectors of finance and banking, telecommunications, and distribution and delivery—operating within a macroeconomic environment of fiscal prudence and where competition policies and appropriate regulation ensures that domestic labor and capital adjustments and reallocations can take place.

*Economic gains through trade liberalization, particularly in services:*

Trade and investment openness is one of the key policy reforms to create an environment in which Internet usage and the forces of the New Economy can increase efficiency and improve resource utilization. Economic theory and business experience both detail why trade and investment openness increase GDP and economic well-being; this very long history will not be repeated here. As noted, however, effective performance of the services sector is necessary to unleash the power of networked information and communications technologies to restructure and transform the activities of all parts of the economy—including manufacturing, agriculture, the conduct of government, as well as services themselves. Thus, it is reasonable to look at recent analyses of the potential gain to GDP of trade and investment liberalization that focus in particular on the gains to liberalizing the services sector.<sup>49</sup>

Several studies have estimated how much global and individual GDP might increase under different scenarios for a new round of trade negotiations. Table III.1 shows the results for global GDP from CGE analysis by three research groups of liberalization of all sectors, manufacturing sectors, and services sectors.<sup>50</sup> Despite their significant differences (in baseline, in coverage of service sectors and in measurement and scenario for liberalization of service sector protection), two of these studies find dramatic increases to global GDP from service-sector liberalization.

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<sup>48</sup> OECD, *The World in 2020*, pp. 92.

<sup>49</sup> For an overview of the approach taken by APEC members with regard to services liberalization, see Sherry Stephenson, “A Comparison of Existing Services Trade Arrangement Within APEC,” in Christopher Findlay and Tony Warren, eds. *Impediments to Trade In Services*, Routledge: London, 2000, pp 287-340. See also Findlay and Warren, “Services Issues in APEC,” in the same volume.

<sup>50</sup> Phillipa Dee and Kevin Hanslow (2001), “Multilateral Liberalization of Services Trade,” in Robert M. Stern, ed. *Services in the International Economy*, University of Michigan Press: Ann Arbor, pp118-139 . Thomas Hertel (2000), “Potential Gains from Reducing Trade Barriers in Manufacturing, Services, and Agriculture,” *Federal Reserve Bank of St. Louis Review* , May-June 2000, vol 82, pp. 77-99. Drusilla K. Brown, Alan V. Deardorff, and Robert M. Stern (2001), “Impacts on NAFTA Members of Multilateral and Regional Trading Arrangements and Initiatives and Harmonization of NAFTA’s External Tariffs,” presented at Industry Canada conference “North American Linkages”, June 2001.

**Table III.1**

|                | Sectors Liberalized (\$ billion gain) |                       |
|----------------|---------------------------------------|-----------------------|
|                | All sectors                           | Services sectors only |
| World (BDS)    | 613                                   | 390                   |
| World (D&H)    | 267                                   | 133                   |
| World (Hertel) | 350                                   | 50                    |

Notes:

BDS: Services coverage includes construction, trade and transport, other private services, government services. Service protection measured by excess operating profits of firms listed on stock markets. Scenario shows liberalization of implied protection of 33 percent. Taken from Table 2, pp. 25.

D&H: Services protection measured by telecom and banking estimates, extended to trade and transport, business and recreational services, and half of public administration, defense, education and health (but not utilities, construction which are assumed to be non-traded). Scenario shows liberalization of protection, including extensive induced of FDI flows and implied change in protection-induced rents. Tertiary = services. Taken from Table 6, p 132.

Hertel: Services coverage includes construction and business and financial services. Service protection measured by deviation from that expected from a gravity model of trade. Scenario shows liberalization of protection.

At first blush, the source of the gains focuses on benefits to industrial economies. Barriers to trade in services (including through barriers to investment) are generally much higher than are barriers to manufactures, so industrial economies generally would export more services if barriers were lower. Global welfare rises through this increased trade in services.

However, a second (and potentially more important) reason for the improvement in global GDP is that developing economies gain resource efficiency through imports and investment in the services sector, which raises their GDP. This is made clear by considering the relative importance of gains to GDP from liberalization of both manufacture and service trade. (Table III.2) It would seem that developing economies would stand to gain much more from liberalization of manufactures both because they export manufactured goods and because their manufactured exports generally face higher barriers than do those of industrial economies.<sup>51</sup> In contrast, it would seem that liberalization of trade in services would not have much of an impact on the developing world because these economies generally do not export services and their domestic service sector is generally quite small.

However, Table III.2 shows that the gains to GDP for developing economies of liberalizing and improving the performance of the services sector are nearly as large as the gains through exports of manufactured goods. Given the generally small size of the domestic service sector in most developing economies, this means that the multiplier effects to raise GDP must be much larger for services liberalization than from increased exports of manufactured goods. In other words, the productivity gains throughout the economy from improved service sector performance are dramatic.

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<sup>51</sup> See Hertel, Table 2, page 80..

**Table III.2**

|                | Sectors Liberalized |       |          |       |               |       |
|----------------|---------------------|-------|----------|-------|---------------|-------|
|                | All sectors         |       | Mfg only |       | Services only |       |
| Group          | %GDP                | \$Bil | %GDP     | \$Bil | %GDP          | \$Bil |
| World          |                     | 613   |          | 211   |               | 390   |
| Canada         | 1.85                | 13.5  | 0.38     | 2.8   | 1.46          | 10.6  |
| Mexico         | 1.84                | 6.5   | 0.32     | 1.1   | 1.49          | 5.2   |
| USA            | 1.95                | 177.3 | 0.34     | 31.3  | 1.65          | 150   |
| Japan          | 1.9                 | 123.7 | 0.89     | 57.8  | 0.95          | 61.6  |
| Australia      | 1.16                | 5.1   | 0.56     | 2.5   | 0.65          | 2.8   |
| New Zealand    | 3.04                | 2.2   | 1.88     | 1.4   | 1.2           | 0.8   |
| HK,China       | 3.36                | 4.3   | 1.56     | 2     | 1.78          | 2.3   |
| China          | 1.50                | 13.6  | 0.54     | 4.9   | 0.79          | 7.1   |
| Korea          | 2.48                | 14.1  | 1.4      | 8     | 0.91          | 5.2   |
| Singapore      | 5.60                | 4.2   | 2.85     | 2.1   | 2.62          | 1.9   |
| Chinese Taipei | 2.78                | 9.8   | 1.58     | 5.6   | 0.49          | 1.7   |
| Indonesia      | 1.65                | 4.2   | 0.06     | 0.1   | 0.79          | 2     |
| Malaysia       | 2.81                | 3.4   | 1.99     | 2.4   | 0.54          | 0.6   |
| Philippines    | 5.4                 | 4.8   | 3.52     | 3.1   | 1.68          | 1.5   |
| Thailand       | 2.62                | 5.4   | 1.47     | 3     | 1.12          | 2.3   |
| Chile          | 2.40                | 1.9   | 1.29     | 1     | 1.17          | 0.9   |

Source: BDS, Table 2;

One of the principal channels to get the benefits from services liberalization is through the increase in direct investment that often is the manner in which services trade takes place.<sup>52</sup> Even allowing for some imperfection in capital flows (which is reasonable, because investors do show some degree of risk aversion), Brown and Stern<sup>53</sup> show the benefit to global GDP rises nearly 10 fold (from just \$76 billion to \$704 billion) as liberalization takes the form of not just allowing trade in cross-border services but also allowing capital to be reallocated to new markets that need more services. What goes unstated in these scenarios, but which is obviously true, is the domestic financial system as well as the competition and regulatory environment play key roles in determining whether capital will be appropriately allocated in this liberalized environment. Thus, these scenarios further bolster the argument concerning synergies among the policy reforms outlined to create an environment conducive to the New Economy.

<sup>52</sup> The liberalization of movement of persons is a source of economic gain and fits under the umbrella of services liberalization, but there is no econometric analysis that attempts to quantify the gains of such liberalization for the broad APEC membership. .

<sup>53</sup> Drusilla Brown and Robert M. Stern, Measuring and Modeling of the Economic Effects of Trade and Investment Barriers in Services, *Review of International Economics*, Vol 9, no. 2 May 2001. pp 262-286 is both an excellent summary of other's work in this area as well as offering an important contribution by comparing the relative impact of liberalization of trade in services with liberalization of trade and investment in services.

### *Sub-Regional Trading Arrangements*

APEC is a regional grouping. Its hallmark is “open regionalism” embraced in the Bogor Declaration. Open regionalism was designed to allow differential progress toward trade liberalization yet to ensure that trade diversion caused by liberalization among a few would not overwhelm benefits of trade creation among those liberalizing. In the environment of the New Economy where productivity gains are enhanced through liberalization and openness, such open regionalism is paramount, not only for the original reason, but more importantly because those “left-out” of exclusive arrangements are more likely to fall behind. In the contest of the digital, productivity, and income divides in APEC such an outcome would be terrible. Some suggest that the plethora of sub-regional trading arrangements (SRTAs) is an effort to preserve the voluntary non-binding approach, still make progress toward the Bogor goals, and achieve the liberalization contained in the Osaka Action Agenda.

The relationship between regional trade arrangements and multilateral trade agreements (are RTAs stumbling blocks or building blocks) has a long history that need not be reviewed here.<sup>54</sup> Recent analyses of the scope and inclusiveness of the current crop of SRTA in the APEC context add new dimensions to the previous research that are worth mentioning here because of their relationship to the New Economy. On the “building block” side, some of the SRTAs have considered more extensive liberalization of services sectors and have focused on trade facilitation devices including mutual recognition or harmonization of standards, customs procedures, business law, and so on. All of these are of increasing importance in the New Economy. To the extent that SRTAs formulate consensus approaches that are then expanded throughout the APEC region, they act as building blocks. On the “stumbling block” side, however, is the potential for each SRTA to promote “its own” standards, which can raise costs and be just as detrimental to inclusiveness as a differential tariff barrier.

The rise of the SRTA adds a third block-type problem—of the so-called “spaghetti bowl” type.<sup>55</sup> That is, the activities of a single firm are increasingly likely to take place in more than one SRTA member, with trade crossing more than one SRTA boundary. The requirements for being aware of and following more and more rules raises the cost of engaging in trade, even if the rules do not preclude trade. This could impede the productivity gains of the New Economy as well as favor large multinational corporations (who have whole departments to interpret trade rules) and hinder small and medium-size enterprises.

This recent research on the range of proposed sub-regional trading arrangements make it clear that the gains are relatively small (compared with multilateral liberalization). Yet there is the

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<sup>54</sup> See Jeff Frankel, Regional Trading Bloc in the World Trading System, Institute for International Economics: Washington, October 1997.

<sup>55</sup> The “spaghetti bowl” metaphor was first used by Jagdish Bhagwati, David Greenaway and Arvind Panagariya to describe fragmentation associated with different rules of origin. See reference to the broader issues in Robert Scollay and John P. Gilbert (2001), New Regional Trade Arrangements in the Asia-Pacific?, Institute for International Economics: Washington DC, page 13.

potential for large sectoral shifts in employment, which could be disruptive to those economies<sup>56</sup>

Some of the proposed SRTA among the smaller APEC members might be seen as exemplars of “best practice”.<sup>57</sup> Since they would be between small economies the trade gains and any trade diversions would be small. If such “best practice” agreements were exported around the region, particularly under “open regionalism” perhaps there is an argument for further pursuit of this approach.

The detour from open regionalism and pursuit of free trade in the context of multilateral negotiations could be a costly one, for APEC the institution as well as some of its poorest members. Such an outcome is not predetermined, so long as the SRTA works within the framework of WTO rules.

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<sup>56</sup> Robert Scollay and John P. Gilbert (2001), New Regional Trade Arrangements in the Asia-Pacific?, Institute for International Economics: Washington DC. For analysis of both GDP effects and sectoral employment shifts see: Drusilla K. Brown, Alan V. Deardorff, Robert M. Stern (2001), “CGE Modelling and Analysis of Multilateral and Regional Negotiation Options,” manuscript January 23, forthcoming in Robert M. Stern ed. Issues and Options for US-Japan Trade Policies, University of Michigan Press: Ann Arbor.

<sup>57</sup> See comment in Scollay and Gilbert, pp 111.

## **IV. Case Studies of the New Economy in APEC**

The previous section offered reformers in APEC economies a summary of macro-economic evidence that can be used in domestic debates over reforms conducive to New Economy economic performance. This section offers a supplementary toolbox for persuasive reform advocacy: an analysis of case studies of the New Economy collected from government and non-government entities throughout the Asia Pacific region. The raw case studies for this exercise are presented in Appendix 4 to this Report.

By their nature, case studies are anecdotal and offer a partial picture. In total 14 case studies were examined for this Report, including 3 from China. Although we provided a template for these case studies to the drafters, we provided flexibility as well and this resulted in a range of styles and focus. Some concern a single firm, others offer macroeconomic pictures or government strategies. This section is not a comprehensive assessment or roadmap to the New Economy. Rather it is a snap shot of incentives and hurdles, common challenges and concerns, and a demonstration of relationship between policy foundations and productivity outcomes.

Our analysis below focuses on 2 principal themes running through the case studies: that the New Economy is essentially about transformation toward greater productivity, and that reforming structural policy fundamentals is the key to that transformation. Perhaps the most interesting message to be taken from these case studies as a whole is that adopting ICT hardware and software is not the hard part. Nor is training employees to use it. What is most challenging is creating a culture where rational action in response to clear information about maximizing economic opportunities is the principal impulse. This “culture” has both a social basis in tradition and a structural basis in the incentives and disincentives that formal and informal policy conditions provide. This is to say that both government on the one hand and firms and individuals on the other play a role in creating an environment of productivity. This cultural dimension is exceedingly difficult to derive from empirical approaches to the New Economy based on econometrics, such as provided in the previous section. It is in this regard that case studies such as these, which chronicle the stories behind economic transformation, can be most valuable.

### **Restructuring and Transformation**

Case study respondents were not asked to enter the competition for an end-all definition of the “New Economy” as a prelude to their contributions. Explicitly or implicitly all of them have a view on this subject however. All referenced information technology, and most commented directly on at least some aspects of policy that shape the use of ICTs. But what is most germane in the narratives they present is the process of restructuring and transformation taking place at the governmental, corporate and individual levels across the Asia Pacific.

The adoption of ICT by the Hong Kong Trade Development Council (HKTDC) over the past 2 years is described in the Hong Kong case study<sup>58</sup> as transformative. The TDC exists to promote international trade for HK, China companies—especially small and medium export-oriented firms. The use of ICTs has permitted the organization to increase the volume of information it swaps with its members. The volume of inquiries from parties interested in Hong Kong, China suppliers processed has also been increased dramatically. The mix of services has also evolved: now real time information can be exchanged through the Council’s website, and hence the organization is being pulled toward opportunities to help provide attendant business services such as one-click insurance, financing and the like. A conversion is taking place from an old, low-tech attitude about bringing Hong Kong, China businesses and customers face-to-face mainly through trade shows, to a new attitude that is very tech-centric. HKTDC has become an active proponent of ICT uptake with its members because it now knows the benefits first hand, needs to have them become tech savvy to maximize its own new offerings, and in order to fulfill its statutory mission of helping HK, China firms maintain competitiveness in the international economy.

This is not an easy task. Table IV.1 reproduces results from Hong Kong cited in the case study showing that small and medium sized firms, as compared with larger firms, may be slower in taking up e-business, in particular at the initial stage. Over 80% of the survey sample was small firms with less than 10 employees. A substantial number of them belonged to the retail sector and personal service sector. These firms were relatively slower in their IT uptake for reasons ranging from reluctance to spend the money required to limited numbers of IT professionals (though that doesn’t seem to be stopping neighboring Shenzhen from undergoing a high-tech boom<sup>59</sup>) to wariness about on-line banking and services (which could relate to concerns about either tax data or information leakage).<sup>60</sup> (These figures are further elaborated in supplemental case studies HK2 and HK3, which were not analyzed for this section but are included because they contain valuable data.) By contrast for larger firms having 50 or more employees, over 90% of them had reached the “basic adoption” level or above, i.e. they had e-mails and webpages and some may also have their business fully integrated with IT. Hong Kong, China’s greatest challenge appears to lie with adoption of IT by smaller firms. Were those smaller firms to be value chain partners to Hong Kong’s larger firms, the challenge would be somewhat compounded.

On the other hand, the supply side has been very active in Hong Kong, China, and once firms are ready to fully plug into the network, they will find one largely built. How the builders will

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<sup>58</sup> Prepared by Christine Loh of the Hong Kong non-profit Civic Exchange.

<sup>59</sup> On June 26, 2001 the *South China Morning Post* online edition reported that “The Hong Kong Retail Management Association (HKRMA) estimates shoppers from Hong Kong spend HK\$100 million a day in Shenzhen.”

<sup>60</sup> Information leakage involves the unintended disclosure of confidential or proprietary information, which in turn can affect markets or market expectations in a manner counter to the economic interests of the owner of the information. The need to use human brokers to divide and transact very large securities market trades, often over several days, commonly leads to information leakage which moves the price against the transactor before he has finished executing his position. But the Internet can help fix the problem – it is not inherently the source of the issue: losses for transactors from information leakage have motivated the formation of internet-based private securities- trading systems like *Liquidnet*.

recover their costs without subsidy should demand sit idle for a prolonged period (say, half the length of a business cycle) is a separate question. The trend is toward broader uptake in Hong Kong, China and certainly compared to many economies this one is in pretty good shape on the supply side.

**Table IV.1 e-business Adoption Index (Hong Kong, China)**

| Levels 0-5                 | Identifiable features  | % in Sept. 1999 | % in Sept. 2000 | % in May 2001 |
|----------------------------|--|-----------------|-----------------|---------------|
| 0: No intention            | No e-mail address and no intention in next 6 months  | 60%             | 54.4%           | 51.4%         |
| 1: Show intention          | Plan to set up an e-mail account and/or a website within next 6 months   | 40%             | 45.5%           | 48.6%         |
| 2: Basic adoption          | E-mail usage only  | 34.5%           | 42.4%           | 45.8%         |
| 3: Prospecting             | Well-established web page and e-mail communication   | 10.2%           | 15.3%           | 12.4%         |
| 4: Business integration    | Web application for online transaction or basic integration with internal operational systems or with external business partners | 3.7%            | 3.8%            | 3.8%          |
| 5: Business transformation | On-line transaction, on-line payment, internal and external integration, web page, email   | 0.2%            | 0.3%            | 0.3%          |

Nonetheless, HKTDC's transformation will only be meaningful if the firms it exists to serve can transform too: smaller traders need to be encouraged to have email and web browsers so as to see the Trade Council's spiffy new site or email addresses to get business opportunity flashes electronically. And as the Council has learned by taking the plunge, adoption of transformative business practices in the New Economy is not something that can be achieved by official decree or even promotion (though such programs help). A culture shift is required here. This may depend on 'big' players taking the lead in developing applications and driving the market in the Hong Kong case (though it may be argued that in the United States the initiative of smaller, start-up firms using technology to obviate the barriers to entry traditionally held by established players were the primary source of productivity impetus). With the increasing number of applications in various sectors, e.g. Internet stock trading, e-supply chain, e-logistics, EDI services for the trading sector, there has been increased adoption by small and medium sized firms. This is reflected by the significant increase in their adoption over the 18-month period from September 1999 to May 2001.

While Hong Kong, China ranks as one of the most open economies in the world, it is important for it to continue to introduce competition into "non-tradables" —which are *increasingly tradable*, thanks to ICTs and the global business impulse of the New Economy—to ensure it can keep pace with rapidly adjusting neighbors less vested in the prosperous

guilds of key professionals.<sup>61</sup> This is highly consistent with the empirical findings about the importance of transformation entering an economy through the import trade channel as noted below.

The case study of New Economy developments in Japan also captures the flavor of transformation and deep restructuring. The case study, drafted by analysts in the Japanese Cabinet Office<sup>62</sup>, provides an overview of the New Economy changes taking place in Japan as a result of ICTs and evolving underlying policy conditions, rather than a specific firm. But the signs of corporate transformation are abundant. For example the study presents data showing a shift in corporate IT spending from areas related to marginal cost savings and efficiency, such as personnel/human resources and accounting<sup>63</sup>, to core components of how firms compete, including management planning and procurement. As the study states:

There have also been changes in the objectives of IT investment. While “speed up of operations” is becoming less important, other objectives are getting more important, such as “Strengthening business and sales force,” “Organizational reformation,” and “Reduction in procurement cost.” From this it can be seen that IT investment is being undertaken as an active corporate management strategy.

The Japan case study is also very explicit in observing that only in cases where “corporate flattening” – a Japanese way of saying restructuring – took place along with the move to ICT did total factor productivity tend to increase. (Human capital was also identified as a necessary co-factor.) Attempting to install the ICTs without permitting the change in corporate culture and behavior that comes along with greater information and fewer constraints (policy and market structure) to use that information (i.e., a more contestable marketplace) does not lead to the gains of the New Economy. In fact *it is actually value-subtracting*, because it requires capital expenditure but does not produce a return on the investment. The case study offers us an example of what a shift in attitude would mean in Japan:

Employment relations from now on are expected to develop more along the lines of “Treatment based on merit and ability,” “Securing human resources with priority on competitiveness and expertise.” These responses seem to foresee that enterprises will try to link IT to their competitiveness more strategically by advancing restructuring of the human resources within their organizations.

That such a shift is still required in the world’s second largest economy toward using *expertise* as the decisive factor in making hiring decisions says much about the “structural” aspect of Japan’s economic reform challenge.

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<sup>61</sup> See Michael Enright et al’s study of HK noting that until recently “the non-competitive delivery of non-traded services was not a matter likely to jeopardize the territory’s competitiveness;”<sup>61</sup> but that today it matters tremendously.

<sup>62</sup> Prepared by International Economic Affairs Division, Cabinet Office—Japanese Government.

<sup>63</sup> This is not to say that incremental changes in the conduct of business functions such as HR and accounting are not important New Economy events, or do not add up—when they take place across the whole economy—to potent economic gains and transformation.

As suggested above, the incentives present in a more competition-driven economic environment are the key to altering the culture to better emphasize efficiency, talent, merit and ability in human resource, and in the board rooms and corporate strategy sessions too. In Japan's case, the dampers to domestic competition are fairly well known. But they are not the subject of this case study, nor is it the objective of this Report to catalogue them or tell Japanese officials what they need to do. Rather, the goal here is only to clarify the connection between structural policy factors and the benefits of the New Economy phenomenon too often associated merely with having a lot of information technology around the office. For the purpose of this Report, it is enough to note that work remains in this case in each of the 4 domains of policy that Chapter 1 identified: fiscal, financial, trade and investment, and competition and legal policy.

Korea is coming to grips with the centrality of firm and market transformation in the New Economy story as well, as the case study on the merger of Samsung Corporation and Tesco of the UK attests.<sup>64</sup> Unlike the Japanese case, the Korean case describes a specific firm, and the imperative for transformation in the narrative is unambiguous: the alternative was bankruptcy. The case study shows that adjusting to the notion of a foreign firm as part of the solution for Samsung was just the beginning. The real work of transformation entailed changing the culture at the human level within the firm. Thanks to considerable openness in Samsung-Tesco's sector (retailing) the domestic competition needed to motivate transformation was clear, what was more difficult was training the firm to act differently, unlike in Japan where key sectors still have limited contestability. But like Japan, a shift toward "rationality" in personnel and strategic management was identified as key. As the case study puts it:

It is relatively easy to adopt just the new hardware and train employees the new skills that are required by new technology. The harder part is the balancing of different culture (in this case, British and Korean)... As New Economy thrives on the network and the network connects different regions and cultures, the balanced (globalized but also localized) mindset of the workers plays critical role in utilizing the benefits of a global network.

And,

The morale of the employees was quite low due to cultural difference caused by merger, language barriers, and communication difficulties. The major conflict was that employees perceived the new management process of Samsung-Tesco to be too rational and lacking humanity.

Once again having ICTs in the office, or even exporting a lot of high tech manufactures, is not what generates the New Economy benefit: using the information generated by using the ICTs to make more rational choices—which is what information is for after all—is the source of the gain. And often, using information rationally requires transformation of a company, its culture, and the structural policy context in which it operates.

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<sup>64</sup> Prepared by Youngmin Jang of the Korea Institute for International Economic Policy (KIEP).

The other wealthy economies of APEC for which case studies were submitted also focused on the transformation entailed in the New Economy. The Singapore case study, focusing on electronic government, is conspicuously about transformation.<sup>65</sup> It stipulates a necessity that “Government...fundamentally re-think all aspects of governance to see how we can leverage on technology and new business models to improve efficiency of internal processes as well as change the nature and quality of government interactions with both individuals and businesses.” It pointedly notes that, “Strategies that have worked well in the past may no longer be as relevant for this New Economy paradigm,” and that “Public officers must therefore be prepared to change their tried and tested ways in transforming government.”

For Australia, in regard to the banking sector, the case study analyzes the wholesale transformation of the market structure and incentive of firms within it to use ICT to change what they do and how they do it.<sup>66</sup> The decisive factor in commencing these changes within Australian banking is identified as the opening of the sector to competition. As the case study puts it:

The main driver of [IT uptake] all of which involved substantial up-front costs, was competitive pressure from other banks and financial institutions. These forced ANZ [Australia-New Zealand Bank] and the other major banks to seek efficiencies and productivity gains wherever they could. ANZ sought “to optimise use of our electronic as well as our traditional branch delivery channels, to serve customers better and to provide ANZ with a permanently lower cost base”. Plus it could not afford to look old-fashioned compared to its competitors, as information technology rapidly evolved.

The study cites the CEO of ANZ bank as arguing “[T]he advantages of incumbency are being rapidly eroded by the technological and business developments of the ‘New Economy’”. But while opening to competition sounded the starting gun for bank sector transformation, it did not proceed in a vacuum: a much broader context of change made such profound restructuring necessary and viable. The Australian study indicated that a government willing to encourage “competition in telecommunications (and thus innovation and lower costs) and a strong education and training system to give the necessary technical and commercial skills base” was key. Telecom competition has a major role in fostering an environment of transformation, but a policy of engendering dynamism and productivity enhancing restructuring in a given enabling sector—telecom or finance/banking, e.g.—would be meaningless without a broader context of reform.

The Canadian case study of general merchandising retail, prepared by staff at Industry Canada<sup>67</sup>, echoes the study of the same sector in Korea. Information technology and a policy

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<sup>65</sup> Prepared by the e-Government Planning and Management Division, Government Chief Information Office, Infocomm Development Authority of Singapore.

<sup>66</sup> Submitted by Tony Weir of the New Economy Branch of Australia’s Department of Industry, Science and Resources, but the paper is a personal view only not necessarily representing an official view.

<sup>67</sup> Prepared jointly by Philippe Richer, Service Industries Branch (Industry Sector) and Raymond Lepage, Electronic Commerce Branch (SITT Sector), although again the paper does not necessarily reflect the views of Industry Canada.

environment conducive to its use (i.e., one that *doesn't* preempt rapid, transformative shifts in market structure and *does* support the profit incentive to undertake the risks entailed in such shifts) are transforming Canadian retailing: the nature of the business is changing. The core competency in the industry has become one of value chain management as much as stocking shelves. As the study says, "The objective essentially consists in accelerating processes through better planning and execution among partners." Adding to the transformed nature of achieving that objective in the New Economy is the disintegration of traditional positions in the market:

Not only is competition fierce, but firms are also becoming more uncertain of their competitors' identity. In the retail sector, the traditional value chain of supplier, distributor, retail and customer is changing rapidly. The Internet adds to this insecurity, as prominent manufacturers now sell their products directly over the web - bypassing whole sellers, distributors and retailers. As a result, retail organizations are often faced with the difficult situation of competing among both other retailers and their own suppliers in certain cases.

If the leading firms in an industry are having to relearn who their competitors and who their partners are, constantly re-calibrating the two groups, then how much less able government is in trying to shape market structure in an industry. But that does not mean the virtuous process of transformation happens without a seminal government role. The Canadian study was one of the most explicit in drawing a connection between industry restructuring and the role of government in assuring a desired outcome, noting: "[I]t is important that the government provide a sound fiscal framework, low inflation regarding stable price as well as stable interest rates. It is especially true for retail sector as the large merchandising firms must be convinced that the economic environment is conducive to sustaining economic growth before they make large capital investments."

The case studies from middle and lower income APEC economies—Chinese Taipei, Malaysia, Peru, Vietnam, and China—have just as much to say on the subject of transformation and restructuring. These case studies remind us that aggressive transformation is not taking place everywhere equally, and, too, that it is relatively more jarring the fewer resources are available to absorb losses in the process. But the message comes through just as clearly that in talking about the New Economy we are talking about wholesale transformation of organizational behavior on the micro and macro level, but the bumps in the road are more apparent in the less wealthy cohort.

In the case of Chinese Taipei, we must read what the case study tells us about the evolution of Taiwan Semiconductor Manufacturing Corporation (TSMC), but then must read outside the text (or between the lines) in order to understand this evolution in context<sup>68</sup>.

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<sup>68</sup> Dr. Chen Shin-Horng, Research Fellow and Deputy Director of the International Economics Department of Chung-Hua Institution for Economic Research.

The case study describes with admirable clarity how institutionalized the habit of flexibility and transformation has become at TSMC. The firm constantly reassesses its place in the value chain of semiconductor design, manufacture and use. For TSMC the product is the process:

In TSMC's B2B e-commerce model, goods and cash flows are secondary to information flows. As a pure-play foundry, its inventory costs for finished products are not an important issue, whereas in contrast, customer relationship management is regarded as central to TSMC's operations as a means of securing its rates of capacity utilization and profitability. In addition, from their own view, B2B e-commerce is necessary for foundries to come to terms with the trend towards SOC. Therefore, TSMC's e-commerce initiatives aim to meet the across-the-board needs of its customers, in order to enhance customer loyalty.

As a leading firm in a global ICT sector, TSMC has its finger on the pulse of the New Economy. But what makes it a New Economy company is not so much the fact that it manufactures computer chips, but that it uses ICT comprehensively to run its process and interaction with customers and suppliers in a flexible, adaptive manner. It would be a mistake to think that TSMC's greatest accomplishment is its prowess as an exporter. Its system to manage information flows among the many parties in the IC value chain is its crown jewel. Moreover, it is not just mobilizing information, but a culture of liberty to *act* on this information in pursuit of profit that is key.

The cyclical downturn in technology, and the mix of value chain modification and special circumstances that exist with neighboring economies, will put TSMC's flexibility to the test in the years to come. It will be a test of the ability of Chinese Taipei policymakers to ensure the fundamental policy conditions for New Economy transformative behavior as well.

The lack of constraint on trade and investment flows in Chinese Taipei has contributed to TSMC's adaptive ability to move quickly up and down the value chains of its customers in order to build partnerships that preclude "commodity" status for the firm in an increasingly crowded market. A transformation-ready firm needs a transformation-willing policy environment as well. To a considerable degree TSMC is as valuable to Chinese Taipei offshore as it is for other economies from a Chinese Taipei base today: its value lies in the power of its semiconductors to harness information that can make Chinese Taipei more productive across the boards, not just in tech sectors.

The Malaysian case study also examines a single firm and its experience of the New Economy, but differs from Chinese Taipei in that it is a small family firm instead of a global powerhouse (\$12.5 million annual turnover, versus a market capitalization for TSMC of over \$50 billion as of May 2001)<sup>69</sup>. The firm is described as "privately owned trading and distribution company involved in the import and export of industrial products." Though smaller, the firm's business is inherently international, they maintain offices in Hong Kong, China and Singapore in addition to Malaysia, and they are in a sector where comparative

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<sup>69</sup> Contributed by Karim Raslan, a Kuala Lumpur-based lawyer and regionally syndicated columnist.

advantage has the potential to shift significantly given the investment in ICT by firms elsewhere.

For this particular small family firm, the use of ICT may not be transformative, mainly because of the firm's reliance on face-to-face and personal interaction, and a reluctance to do business or negotiate on-line. Factors including volatile technology prices and concern over on-line security contributed to this Malaysian firm's concerns. But the overarching view was that low tech approaches were just better suited for their business.

A few quotes sum up their perspective:

There is no doubt that the reduced costs have been a direct benefit to the bottom line. Furthermore the accelerated operation times has reduced inventory costs. However the Internet has not resulted in an expansion of either the customer or supplier base. The clients stressed that in the industrial supply business the element of personal relationship remains crucial.... Clients were adamant that a good track record of service, reliability and a strong market reputation helped them maintain their competitive edge. [T]here were, at least in late 1999 and early 2000, very high expectations about the Internet and its ability to cut business costs. However, they have not yet found that many apparent advantages have been applicable in their particular business.

As discussed earlier, this preference for the personal is prevalent in wealthy Hong Kong, China as well, where over 50% of SMEs appear uninterested in transforming even so much as to use e-mail. The commonality here may be smallness. It is unclear why a firm cannot maintain personal contacts and employ information technology at the same.

The Peruvian and Vietnamese cases implicitly demonstrate the need for transformation. The Vietnamese case describes an on-line medical clinic service claiming to have 6000 unique visitors a month in an Economy with only 130,000 dial-up internet users<sup>70</sup>. In Peru meanwhile, 83% of an estimated 1 million internet users are said to want pre-paid internet debit cards to do transactions on-line<sup>71</sup>. Numbers like this reflect an extraordinary latent demand for alternative consumption channels. Though neither case study addressed the question of the New Economy making marginal changes to economic behavior or, rather, transformative changes, it is clear that this level of on-line demand in relatively poor economies reveals a big up-side potential from transformation. It is little surprise then that Viet Nam has signed a comprehensive bilateral trade and investment treaty with the United States that will serve as a template for wholesale restructuring of both externally and internally oriented commercial regulations and barriers. Or that Peru is the second most improved economy in 2001 over 1994 in FTAA negotiation readiness indicators soon to be published by the Institute for International Economics.

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<sup>70</sup> Contributed by Dr. Mai Anh of Vietnam's Ministry of Science, Technology and Economy (MOSTE).

<sup>71</sup> Christian Rodríguez Ramos of the non-governmental Peruvian Institute for Electronic Commerce (IPCE) prepared this case study.

Finally, this Report includes fully 3 case studies concerning China. We decided to solicit multiple cases concerning China for three reasons. First, China is APEC Chair this year, and we believe the opportunity for many ministers and leaders to visit various parts of China for APEC meetings can be heightened with additional case study materials to provide context on the setting. Second, China is exceptionally diverse in terms of levels and conditions of development and large in terms of market size, arguing for a broad set of views. Finally, and most importantly, the combination of rapid ICT uptake and rapid structural policy adjustment already taking place in China is in and of itself a principle driver of the New Economy imperative for all other economies in the APEC region. Does this mean China has achieved New Economy status? In some ways yes, in some ways no: the story is a complicated one, hence the multitude of China case studies. Our goal here is not to decide that question, but to learn what we can about the New Economy from experiences in China.<sup>72</sup>

The three China cases include an assessment of the environment for e-commerce in international trade with China, done by a MOFTEC subsidiary unit charged with its promotion (CIECC)<sup>73</sup>; an assessment of the quasi-statal conglomerate TCL Holdings and its transformation to take advantage of new demand for ICT<sup>74</sup>; and a study of difficulties promoting retail business automation software systems due to market distortions, contributed by an expatriate business professional with long experience in China.

Each China case reflects the profound changes that have taken place in China, but also illustrates the benefits still unrealized due to residual restraints on transformation, and the challenges of overcoming them. Take the CIECC study. It describes an elaborate electronic trade network that has been built to facilitate and streamline international trade, especially exports. The trade network, called CIETNet, is said by the MOFTEC unit to have 97 nodes covering China with an integrated network for data exchange and trade processing, with links to international networks. The case says that last year (2000), "...about 40 billion U.S. dollars export transactions used CIETNet to transmit export documents." This achievement testifies to the transformation that has taken place using ICTs.

But we also know from copious research and from senior Chinese officials themselves that serious local distortions, including intra-provincial trade barriers, prevent full rationalization of commerce. The ICTs cannot transform the market structure alone, rather central policy reform must occur in order for the network to realize its full potential. Otherwise, regions utilizing the efficiency benefits of the network (e.g., permitting online financial services) will pull ahead while regions resisting network-borne competition in order to promote local infant firms will fall behind. The resisters will hobble the non-high tech, old economy by denying it the benefit of competitive value chain partnerships. The CIECC study correctly reveals the likely transformation of government, too, that will occur as the network is allowed to function fully: "It [the network] also makes the governmental administration on trade more efficient and more transparent, eradicates low efficiency, arbitrary, and bureaucracy and helps to build

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<sup>72</sup> The purpose of this Report is not to arbitrate who is and who is not a New Economy. Rather, it is to provide evidence on the nature and benefits of the New Economy phenomenon that policy professionals in APEC can use in advocating reform.

<sup>73</sup> China International Electronic Commerce Center of the Ministry of Foreign Trade and Economic Cooperation.

<sup>74</sup> Prepared, like the Hong Kong study, by Christine Loh of the non-profit Civic Exchange.

an administration-service system of standard, efficiency, justice and transparency.” What that means is that the *status quo* in governance and regulatory behavior in most of China as it pertains to commercial activity is about to change—radically.

This forecast is substantiated by the other two China case studies focused on the fortunes of particular businesses in China. From the retail automation systems study we see first hand what the countervailing local forces are that must be transformed if CIECC’s network is to realize its value, and in the TCL case we can extrapolate what sorts of top level structural policy reforms will be needed to permit a Chinese success story in the journey from state owned-follower of policy to dynamic mid-sized-competitor for national market share to make the next step: to world class, world scale competitor.

The case study by a small private retail automation systems company is valuable, as it is from the perspective of a firm that offers the nuts and bolts of information processing technology for the New Economy. From the case study:

[The] product is a Consumer Relationship Management software suite, which gather information about consumers and analyze demographic and purchasing characteristics in order to enable companies to improve operating margins. Profitability is increased through better targeting of marketing campaigns, early identification of attrition risks, improved management of customer service, and other technology-aided marketing and sales activities.

This is precisely the kind of product that permits managers of a business to quantify the advantages and disadvantages of how they are currently using scarce capital and labor for commercial ends. Once again, the rational reaction to that data is—so long as the market incentive exists—to transform a business using new information, because it is no longer ambiguous what is fruitful and what is wasteful in the present activities of the firm. The case study describes, however, how the normal market incentives that would bring about that transformation, and with it—quite possibly—increased profits, jobs and efficiency in resource use, are stymied by policy inadequacies. The next section explores the policy specifics; our point here is that transformation is the mother of productivity, and transformation is impeded by distortions in the policy environment.

TCL electronics is another proof of the transformation that is taking place in China. Its ownership structure is partly state, partly market (with HK and BVI listing vehicles), and the firm was one of the first to list in the Shenzhen stock exchange in 1993. Concurrently, the firm made a conscious shift up-market toward higher value added, more technology-intensive products, starting with simple consumer electronics and moving toward computer related goods. It has shifted from a local orientation to an international mindset, forming joint ventures and alliances with Chinese Taipei and American high-tech firms. Starting in 1996 TCL established a research and development function in the United States to acquire expertise in high definition television technology. Firms like TCL are transforming expectations about China: this is no longer an economy foreign firms come to on a one way street to find cheap

labor alone; Chinese firms are reaching out just as aggressively, positioning themselves for a future that is thoroughly global.

Two dynamics are most worth noting here. First, the principle transformation at TCL was the mindset that senior managers had toward the firm and its purpose. Second, the vision of those managers required more than tech-sector opportunities or internal installation of ICTs to be achieved: it required critical shifts in the policy environment. Without steps toward financial liberalization it could not have financed its up-market transition, without trade and investment liberalization it could not have maximized earlier opportunities in contract manufacturing. As a firm growing based on domestic demand, especially in telecommunications and media, TCL has been most aided by the introduction of competition into these niches domestically, which is spurring consumption and network build-out. Its further success will be predicated even more directly on a pro-competitive stance by central authorities, as its increasing market share may well come at the expense of less competitive domestic and foreign firms which will argue against competition unless the interest of consumers and macroeconomic growth are defended by the center.

### *Conclusions About Transformation*

This section has drawn from APEC case studies to demonstrate that the New Economy paradigm, characterized by new firms and new use of technology by existing firms to lift productivity—with positive consequences for the macroeconomy—is found in the transformation and restructuring of how economic agents behave in the market, not just in the manufacture or adoption of computers and phones. The next section will draw on these case studies again to clarify the connection between that transformation and the specific policy domains that are identified as critical to the New Economy at the beginning of this Report.

### **Transformation and Policy**

Policymakers have over-emphasized the power of manufacturing and selling ICTs alone in generating productivity gains and attendant macroeconomic benefits associated with the New Economy. By contrast, we have stressed that those gains result from more profound transformations in economic behavior that occur when key policy reforms empower firms and individuals to maximize the use of ICTs and information resources they make available. The previous section drew on case studies to illustrate the character of the process of transformation; this section illustrates the connection between that transformation and policy. Both sections are meant for the use of policymakers in the Asia Pacific to draw upon in demonstrating to fellow decision-makers domestically the imperative of policy reform in maintaining pace with other New Economy economies.

Six factors will be examined in this section: the 4 structural policy domains that are the foundation of clear market incentives (fiscal, financial, trade and investment, and competition and legal), and 2 policy concerns that deal in culture as much as the realm of economics, namely human resource policy and national e-commerce promotion strategies.

## *Fiscal Policy*

The case studies show the relationship between fiscal policy reform and New Economy style transformation, both affirmatively and negatively.

Recall from Chapter 1 the constitution of the fiscal policy domain. An illustrative list of fiscal policy tasks any government needs to address would include the factors in this restatement of the fiscal domain:

Fiscal policy: Government has a large labor force, is a big spender, and interacts in many ways with citizens, business, and economy. Ensuring low administrative costs, efficient procurement, and transparent communication are important, particularly as information and networked relationships have greater value. Poorly allocated or politically driven fiscal spending and inefficient tax policies bloat the government and damage both the macroeconomic environment and microeconomic incentives. ICTs both increase the premium on efficient government and help enable it. Private sector participation and public-private partnerships in the delivery of government services can increase efficiency. Moreover, information technologies can enhance the transparency of procurement and regulations that allow the private sector to focus on productive economic activity as well as enhances the role for civil society.

A key point here is that governments evince sufficient fiscal discipline on the spending side—for several reasons. Traditionally, this concern was so not to tempt recourse to “inflation taxing” in order to reduce the burden of debt. Several more dynamic points come into play in the discussion of APEC economies. First, fiscal spending plays a role in supporting consumption, thereby moderating business cycle fluctuation; but it can have the unintended consequence of *deferring transformation and restructuring* if it simply makes up for poor economic performance that is structural in nature, not cyclical.

Second, public expenditure priorities can prevent adjustment quite apart from aggregate demand management efforts (though the latter is often used as a cover) when a large share of public spending goes to support *specific* firms for the sake of industrial policy. Not only can such efforts crowd out competitive new firms—both foreign and domestic—from acquiring the market share that is the life blood incentive for investment, but these goals crowd out more productive avenues for expenditure such as primary health and education, or environmental reclamation that national resources might otherwise be directed toward. Finally, the tax side is fiscal spending’s twin, and it is imperative that fiscal outlays be tamed so that tax rates can be held lower enough to attract investment and innovation while still providing for basic high-return government tasks.

This quote from the Korea Samsung-Tesco case study is both instructive and fascinating:

Had the macroeconomic conditions been favorable, Samsung Corporation would never have considered a merger with Tesco PLC and the result would not have been as

good as now. Strategy and Planning department of Samsung-Tesco pointed out that while favorable macroeconomic condition is important and much more preferred, it is also the case that the unfavorable macroeconomic condition sometimes boosts restructuring and creates an environment for what Samsung-Tesco calls a 'step change'.... When the organization does not have capability of conducting 'creative destruction', unfavorable macroeconomic conditions could stimulate the innovation process, but it should not be (and cannot be) deliberately created for its risk is too big.

The message here is extremely clear: the until recently-prevailing strategy in Korea of using fiscal subsidies directly or indirectly to offset the commercial shortcomings of firms in a changing, increasingly global economy stymied transformation which—though unpleasant to go through—is the source of subsequent corporate strength. In the end, as difficult as transition was for Samsung, it probably can be thanked for the continuing viability of countless jobs.

Very little is said *directly* in the case studies about fiscal policy issues, aside from a pointed comment in the Canadian retail sector case study:

[I]t is important that the government provide a sound fiscal framework, low inflation regarding stable price as well as stable interest rates. It is especially true for [the] retail sector as the large merchandising firms must be convinced that the economic environment is conducive to sustaining economic growth before they make large capital investments.

As this quote notes fiscal policy has an important role to play in minimizing the disruptive effects of business cycles and thus in girding investment, and that is something that many of the case studies emphasize. Malaysia; Hong Kong, China; Peru; Japan and Korea, for example, in addition to Canada, suggested that ICT investments had been reduced by lean economic conditions (though often these were considered exogenous and hence less amenable to proper domestic fiscal action).

A thesis consistent with many of the case studies but not directly stated is that the tax regimes in some APEC economies are an impediment to the adoption of ICTs and thus to productivity transformation.

The reason behind this may be as simple as a highly atomistic market structures marked by a predominance of SMEs. Or, it may mean a tendency to tax avoidance among many firms that would work against the uptake of online modes of commerce which leave a tax trail of information for authorities to follow. That tax avoidance is an impediment to moving on line in most of the APEC economies is clear; for research purposes here, names need not be named, but the problem needs to be recognized. One could posit that movement to online modes of business is in fact inevitable, and therefore that Asian governments most afflicted by tax evasion today *are on the cusp of a major windfall in revenues*, which will permit them to better invest in social safety nets and services while simultaneously reducing marginal rates for the few firms that are regular payers. However, *they must ensure that the reasons for*

*evasion are not so structural that firms would rather move operations offshore or fold up shop rather than face the statutory tax burden.*

### *Financial Deepening*

The case studies offer many examples of the importance of financial deepening to fully propagate a New Economy outcome. Recall that by financial deepening we are concerned with an outcome: the most efficient allocation of financial resources toward investments with the highest returns on a long-term basis. The ingredients for such an outcome include enough bank and non-bank financial institutions to engender competition and competitive offerings that are a central input for every other sector in the economy. Deep financial markets operating within an environment of appropriate prudential management yield market-determined interest rates. Part of the New Economy mindset is institutional flexibility to adjust to the most promising opportunities available; access to efficient financial services is like the grease in a motor that permits that flexibility. Adequate prudential regulation is an essential part of making that possible.

Financial institutions were early adopters of information technology, using it to cut operating costs by processing transactions more efficiently as seen in the Australian banking case study. They did old tasks, but more efficiently. But ICTs meant offering whole new services as well, like remote banking and 24 hour services. Spreadsheet software, an early but revolutionary ICT offering, has directly influenced the trend in mergers and acquisitions, and financial decisionmaking by everyone from the largest conglomerates to individuals, thus changing the demand for financial services dramatically. The case study reflects the globalization of finance: an individual can now manage a Citibank account in New York from literally any place on earth, and indeed, many do.

In Canada “Company A continues to leverage traditional EDI technology to process transactions with suppliers. Company B receives more than one thousand orders on its web site per day. In 1999, Internet sales exceeded \$ 22 million. Company C uses its network to place orders, submit invoice, track shipments of goods and pay its suppliers.” All these uses of the Internet increase efficiency and competitiveness, and all require both policy willingness to permit financial service innovation and provision in a new way, and a competitive finance industry where firms foreign or domestic strive to expand the utility of their services for consumers and businesses.

The Canadian retail case study shows how retailers are integrating all financial tasks into their B2B networking practices. By contrast, the China case study documents that similar types “of simple financial service [are] off limits to the private sector in China, not obtainable from any of the state-owned banks, and therefore not, currently, an option.” The biggest problem identified by Samsung-Tesco in Korea was also a government prohibition against private businesses offering new financial services to customers who wanted them. In Peru, “Many projects to build Internet focused SMEs have been halted because of the high interest rates in the Peruvian financial system.”

The global provision of financial services we see in the Australian study makes it increasingly fruitless to maintain restrictions on innovation in finance domestically. At the very least, domestic citizens will be highly aware of the superior value and quality of financial services offshore, and therefore be discontent with their local providers. Moreover informal arbitraging to take advantage of the value elsewhere will emerge and entrepreneurs will go abroad to access efficient finance.

It is also clear how important the prudential function is for financial deepening to lead to long-term benefits. In Malaysia, the studied firm worried that online finance: "...depended on the quality of management and supervision. 'We are concerned about the calibre of the people inputting data and supervising the process.'" In Vietnam, the lack of regulations covering financial transactions on the internet leads the entrepreneur in the case to be cautious about on-line payments. Even the case study from advanced Japan fretted that "we cannot deny that IT has served to destabilize financial and capital markets." These concerns are totally justified, they range from the microeconomic needs such as consumer protection to macro concerns like interest rates, and they require a trusted and competent organization of financial regulators and policy reformers to remedy.

Economic transformation yields benefits, in terms of profitability, jobs created, quality of life and environment and prevented adjustment shocks in the future. But it requires inputs and finance is perhaps the most important one. The financial sector must send some of the most sensitive, critical and powerful signals through the whole economy in the form of the prices it sets for finance, therefore it is critically important that it performs efficiently. The financial sector itself must be permitted to transform to be viable in the New Economy, but then it must be empowered by its independence to help all other sectors transform as well. Ultimately, given the size of the rest of the economy compared to the finance sector, it is most important that this input to transformation is provided efficiently, and of very little importance whether it is provided by a domestic firm.

### *Trade and Investment Policy*

The case studies offer plenty of examples of and support for the broadly understood notion that liberalization of trade and investment policies is key to stoking domestic productivity growth. The inflow of foreign know-how, technology, competition, culture, products, and finance, as well as the "inflow" of foreign demand, can each bring about transformation and restructuring in domestic firms. Failure of policy to encourage openness to trade and investment conversely defers that restructuring, and during that deferral—especially during moments of profound technological change in the external economy such as is taking place today—domestic commercial prowess will generally erode.

The case studies mostly reflect the upside of the New Economy for trade and investment openness. In Hong Kong, China, the Trade Development Council may now process over 1 million inquiries about local businesses a year. The CIETNet e-commerce network in China is expected to help precipitate a fully paperless trading environment there by 2010, which is expected to also help eliminate false trading license problems between China and the US and

other economies. (Indeed, the CIETNet case study notes the importance of APEC in helping coordinate progress toward that paperless environment.) Peruvians send large amounts of goods home through internet commerce, along with \$800 million a year, and the customs authorities hope to be paperless in the medium term. Competition successfully impelled the Australian banking industry to dramatically improve competitiveness.

But for each of these successes and hopes, there is a dark side: the prospect that for whatever reasons, the domestic policy changes needed to implement these improvements to the trade environment will not happen everywhere at once, resulting in at least temporary new comparative advantages for early movers and corresponding disadvantages for laggards. The implications of this are dealt with at length below, in the section on *Digital Divide*.

### *Competition and Legal*

At the macro level, competition policy must support an efficient market structure outcome. Consider the following quote from the Canadian case on the subject of market structure. “Not only is competition fierce, but firms are also becoming more uncertain of their competitors’ identity. In the retail sector, the traditional value chain of supplier, distributor, retail and customer is changing rapidly. The Internet adds to this insecurity, as prominent manufacturers now sell their products directly over the web—bypassing whole sellers, distributors and retailers. As a result, retail organizations are often faced with the difficult situation of competing among both other retailers and their own suppliers in certain cases.” This concern from the business perspective has an analogue for policymakers: it is increasingly challenging, yet increasingly important, to estimate the market contestability results (and hence consumer welfare implications) of new horizontal and vertical arrangements among firms. Policymakers must take heed of the confusion even among firms about market power to redouble domestic efforts to provide fair trade governance, taking care not to stifle innovation in the process, so that the New Economy is characterized for easier entry and exit from market.

At the micro level, the competition regime must permit productive firms to use ICTs to create efficient business models and take commercial risks without arbitrary restrictions on scope and scale of business. One case study of China described the effects of market licensing and structure authorities that are still more concerned with the welfare of a handful of threatened producers than the welfare of the myriad of consumers.

“[R]egulatory restrictions on operating retail establishments across provincial lines make it difficult for the company to grow enough to increase efficiency by lowering overhead costs. [L]icense-scope restrictions make it hard to come up with internal financing arrangements to facilitate coordinated, group activity. [G]eneral retailing licenses, permitting sales of different product lines, cannot be obtained by small or private companies. Instead, to conduct its business, the company must use surrogates to act as the seller-of-record for the various product lines.”

Not only does such a situation harm consumers, but it hobbles what ought to be a new generation of competitive firms from taking off because they cannot access such services,

while new foreign competitors post-WTO most certainly will be able to even if they consume them offshore for onshore use.

In instances, the pro-competition function of government must be to actively look for potential sources of competition to incumbent domestic firms. This is why in Australia the “roles of government that have facilitated e-commerce include encouraging competition in telecommunications (and thus innovation and lower costs)”.

There are also indications in the case studies of how important reforms to the basic legal environment are, including of course sound regulatory stances in areas discussed above (fiscal policy, financial, trade, etc.), and just as importantly deregulatory moves where needed. There wariness of businesspeople to use online modalities for commerce expressed in many case studies (e.g., Malaysia) reflects the fact the in many Asian economies informal means to approximate a predictable legal environment have been fashioned over time through personal relationships and individual, local political leadership—such as a mayor in a port town ensuring foreign investors are not cheated even though national legal mechanisms are not fully in place to guarantee that. The promise of the networked economy must inherently go beyond such a bundle of local “islands” of legality to take advantage of broad economies of scope and scale unbounded by geography. If the power of information cannot be used because only a fraction of jurisdictions have a sufficient legal environment to support its use, then the losses to an economy are exponential. This is why the low legal risk opportunities such as transmitting export documents have already gone on line in a case study such as the China CIETNet, while the higher risk but higher value added opportunities such as managing intra-firm payments online have not.

Although it does not arise in the case studies, nor does it come up in conversation too much in Asia, a taxonomy of legal and regulatory reforms conducive to a maximum growth outcome in the New Economy would not be complete without mention of property rights—including the disposition ownership of state owned enterprise assets. The Report does not propose a blanket prescription of privatization and titling. However it does propose that the burden of proof lay with government as to why assets should be held by the state and not the people. The case studies show many instances where New Economy firms are blocked from transforming toward productivity by the crowding out effect of state subsidized firms. Entrepreneurs are hungry for financial leverage that could be afforded by a proper assignment of rights to property or national wealth tied up in state enterprises. State enterprises are eager to reform, but partly constrained by the ambiguity of the ownership of the fruits of their labors. But neither does the Report pretend that the resolution of these ownership issues will be simple. Some Eastern European nations did indeed have unfortunate experiences with the process. Nonetheless, for those APEC economies facing this dilemma the alternative to pressing forward is even less desirable, as it means eroding performance vis-à-vis economies better able to mobilize assets through assignment of property rights. What’s more, the experiences of others are now available to help.

## **The Place of Human Resource Policy**

In this Report we have steered away from a direct treatment of appropriate human resource policies, because the subject can be addressed in the detail it deserves only in lengthier reports elsewhere, and because the primary concern in the Report is with those structural economic policies which have been more neglected in New Economy analyses. However the number of comments concerning human resources in the case studies necessitates that several principal topics are noted.

Three broad topics that arose were overall national human resources policy, human resource availability, and human resource training in the firm. First off, in terms of overall policy, many case studies emphasized the importance of incorporating technology awareness into basic education nationwide. Firms appreciated the value of new employees possessing a level of ICT awareness that prepared them for new skill requirements in the marketplace. This is related to another overarching role for government in human resources: to promote broader awareness of ICT and the new competitive environment created by policy reform so that those still in the basic education system and those already in the marketplace alike will have the contextual awareness to understand the profound importance of using technology to participate in society more productively. As the case studies show, in some APEC economies ranging from the less developed to the most developed a surprising number of businesses still think ICTs are just an incremental, not a revolutionary, addition to the marketplace. Such an attitude is not conducive to transformation.

Second, a number of cases reflected a concern about human resource availability. The need for skills-oriented special visa programs was mentioned. The under-use of software tools due to scarcity of relevant skills was noted. Some cases recognized that the urgency for human resources in technology was transforming the structure of labor markets, with high-skill scarce professionals working on a temporary basis without needing to form longer term bonds with big firms, while women with skills especially have new opportunities to telecommute via ICTs to fill the personnel gap. New firms and strategic alliances are being formed, often cross-border, to provide critical skills.

A related concern is that the best and most talented workers are snapped up by multinational firms. There are some structural reasons for this. MNCs are fully cognizant of the value of these workers and compensate them accordingly. They have heavily invested in ICTs and give tech workers a large and growing role in building the foundations of the business. And in some cases the more flexible culture of these foreign firms presents a more attractive environment to workers trained to think flexibly and creatively. This tendency, if in fact it is broad-based, can of course be reversed. Many talented Chinese workers, for instance, are increasingly leaving foreign invested enterprises to join Chinese firms or start their own now that they have acquired experience and training with them. But that reversal is contingent on local firms matching the zeal for transformation that make some foreign firms a dynamic and rewarding place to work, and upon adequate finance available for local start-ups to get going and invest adequately to be competitive.

Finally, the subject of training within the firm arose in case studies, again ranging from poorer to wealthier economies. The message here was that pre-employment, basis education was important for producing a pool of New Economy workers, but that the most important skills had to be taught, and maintained, once inside the firm. One of the characteristics of modern ICTs is that they don't have to be one size fits all—they are adaptable and are tailored for each business in which they reside. This is a source of proprietary, competitive advantage for many New Economy leaders, including the old economy firms that employ them. It follows therefore that the basis education platform cannot prepare workers for the specific technology that they may use in their jobs, that firms must be prepared to do that thoroughly themselves, and that policymakers should not delude themselves into assuming that basic education is a panacea. The return to firms from investment in HRD must be the engine for a skilled populous.

### **National E-Commerce Promotion Strategies**<sup>75</sup>

Almost every case study made mention of the need for a national or economy-wide policy function to promote the New Economy or e-commerce. The reasons are various and include concerns that the policy problems noted above will not be remedied quickly enough without a coordinated government perspective. Some see national policy as the key to providing new services and regulations needed to nurture the net, such as e-commerce laws, cyberspace consumer protection, or other “soft-infrastructure” needed to support transformation. Others focused on the negative side of the story: that existing government policies designed for an old paradigm in which competition and transformation were not unambiguously good were themselves the problem, and had to be scrapped in order to facilitate progress. Several studies honed in on the government's role in assuring domestic firms unfettered access to the emerging global online trading environment, whether that meant negotiating to make sure they weren't shut out by collusive competitors or that the necessary domestic ICT infrastructure (telecom, legal) was in place to ensure the global network had a local socket to “plug into”. Others, meanwhile, showed an awareness that such efforts to guarantee open competition internationally were no more important than efforts to secure open competition domestically.

We add a final point from the case studies that is as much a reminder to policymakers in developed economies as for the developing. More than half the studies underscored concerns about network security or robustness. Businesses in the United States worry about system failure as well, no question about it, and expend serious resources to protect themselves. But in many APEC economies the network is still far less secure. Telecom problems regularly interrupt email communication. Maintenance and support services can be hard to come by and insufficient. Some would say the answer to such problems is greater foreign competition to permit more competitive products to be offered, and indeed in markets with more open telecom sectors price does decline while quality goes up more rapidly than in closed economies. But these things take time, and in the meantime APEC firms that want to climb the learning curve along with their global competitors must work twice as hard, backing up

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<sup>75</sup> See also the discussion of e-commerce promotion (with assessment of specific cases) in Chapter 10, Government and Development: Closing the Digital Divides, in Global Electronic Commerce: A Policy Primer, op. cit.

business processes with fax and hardcopy and whatever else is needed to prevent over-dependence on the new networks. It behooves policymakers everywhere to respect the urgency of these challenges for (especially small and medium) businesses going forward, understanding the role of structural policy reform in making that network more dependable but also the natural speed limit toward that goal for many economies.

## V. Implications of New Economy Divergence: Digital Divide

### Introduction

As with the Gutenberg printing press information revolution in the 15<sup>th</sup> Century, the industrial revolution of the 19<sup>th</sup> Century and the micro-processing revolution of the mid-20<sup>th</sup> Century, the networked information technology revolution characterizing the New Economy today has the potential to invigorate economic productivity greatly where it unfolds. Thus have Chinese leaders, for example, noted that they “missed the industrial revolution, and must not miss the IT revolution”.<sup>76</sup>

The preceding section developed evidence and examples for policymakers seeking to secure these gains for their economies. But for a variety of reasons, policy reforms will not occur evenly around the world. Old inequalities could be exacerbated and new tensions introduced as relative economic competitiveness shifts among nations. (Although, we hope that this Report will help point the way toward ameliorating some of those inequalities.)

The rate of absorption differs, so a productivity and development divide within and between economies is inevitable, at least for a period. At issue for this Report is to consider the consequences of divergence in economic performance between “adjusters” that undergo the full panoply of economic and social transformations from embracing the New Economy paradigm, and “laggards,” which will not. No one *wants* to be in the lagging column, but some will end up there.

In the parlance of the New Economy, these differences in initial conditions and in subsequent growth and development have taken on their own new definition—the digital divide. Just as it is both wrong and (from a policymaking perspective) dangerous to conceive of the New Economy narrowly in terms of ICTs alone, it is both wrong and dangerous to think that the growth divide among economies has come from and will worsen simply on account of differences in measures of access to ICTs and the global network. As we have seen in the discussion of US and Australian productivity experience, the presence or absence of ICTs is a first step, but the diffusion and use of the ICTs, which depends on the policy environment, is the more important step towards higher sustained growth. Consequently, whereas we will often use the colloquialism “digital divide”, what we are concerned with is the broader concept of the productivity and growth gap among APEC members. The Report speaks to that divide.

This section will examine the productivity divide from three perspectives:

- Initial conditions, with respect to growth, development, and digital indicators.

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<sup>76</sup> Ironically of course it was in China that movable type was first developed, yet was never employed in a manner that contributed mightily to national productivity. This is not the case with the information revolution, wherein already IT and the internet are enhancing the productive activities of Chinese firms and entrepreneurs.

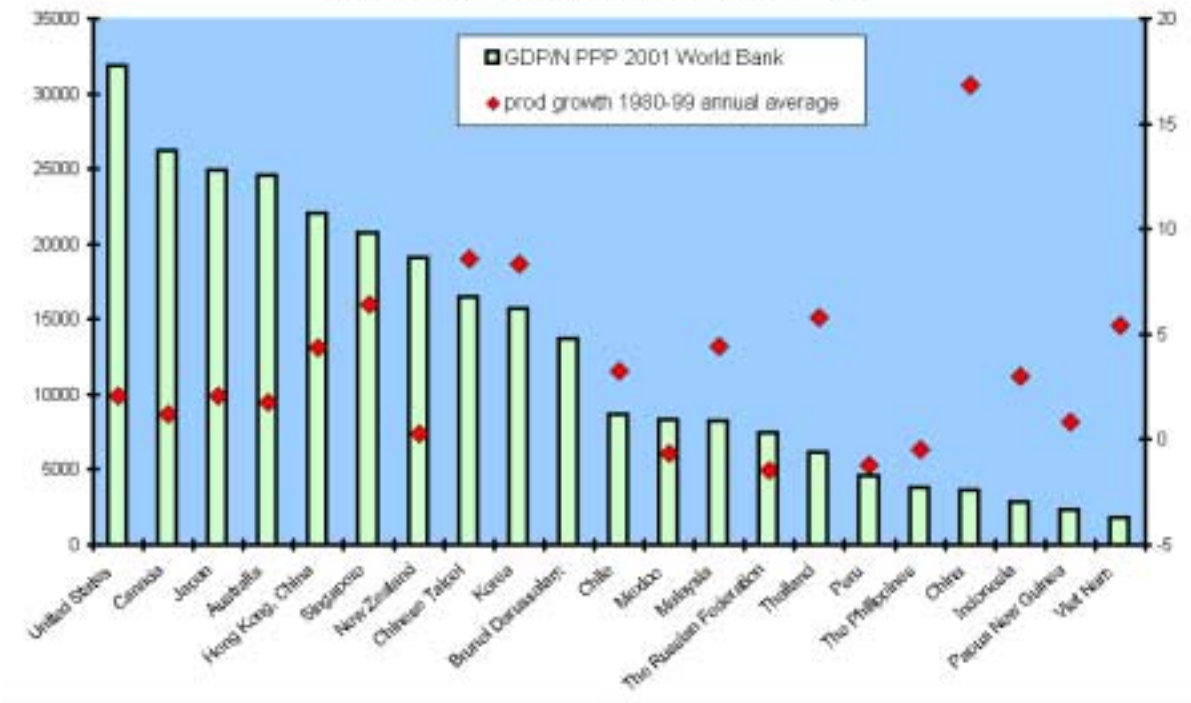
- Possible consequences for trade competitiveness of different policy conditions.
- Implications for international economic institutions.

**Initial conditions and Predisposition to Policy Reform**

Before addressing how the forces of the New Economy might transform economic activities to change productivity growth and the capability of an economy to grow rapidly without inflation, we should establish where the various APEC economies are starting. Initial conditions likely will affect the extent to which an economy can embrace the potential of the New Economy.

Clearly the relationship between development, technology, and policy is complex. It is impossible in this Report to give a substantive and complete analysis of the relationship—nor indeed are we, as advisors to policymakers, likely to ever have enough evidence to complete a road map to prosperity that highlights route, speed, and good places to stop and rest along the way. The purpose of this section is simply to show some indicators and some relationships that are particularly germane to this study.

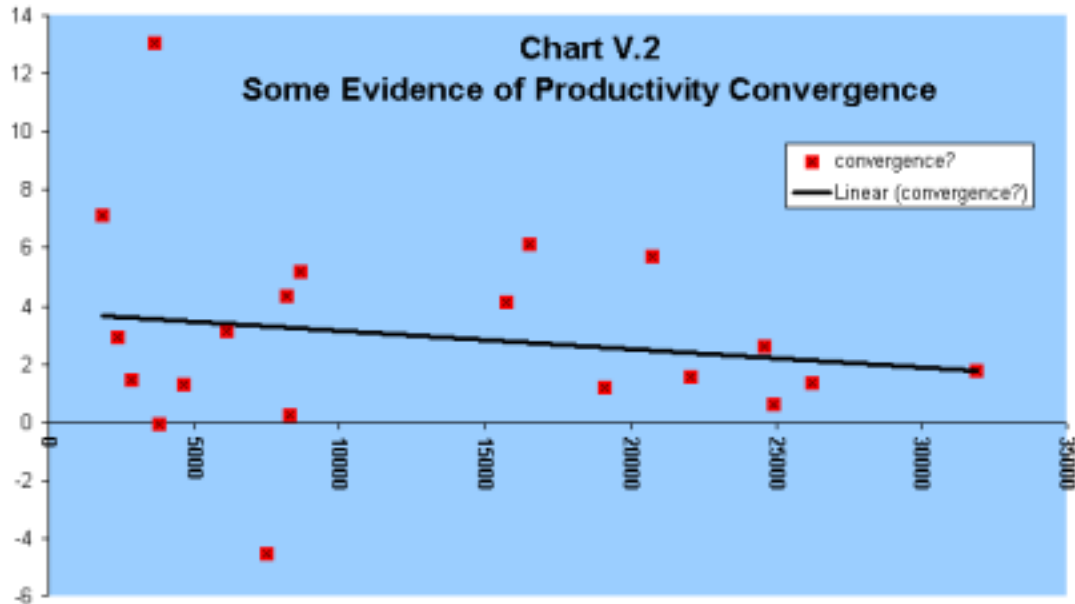
**Chart V.1. Initial Conditions in APEC:  
Real GDP per capita and Productivity Growth**



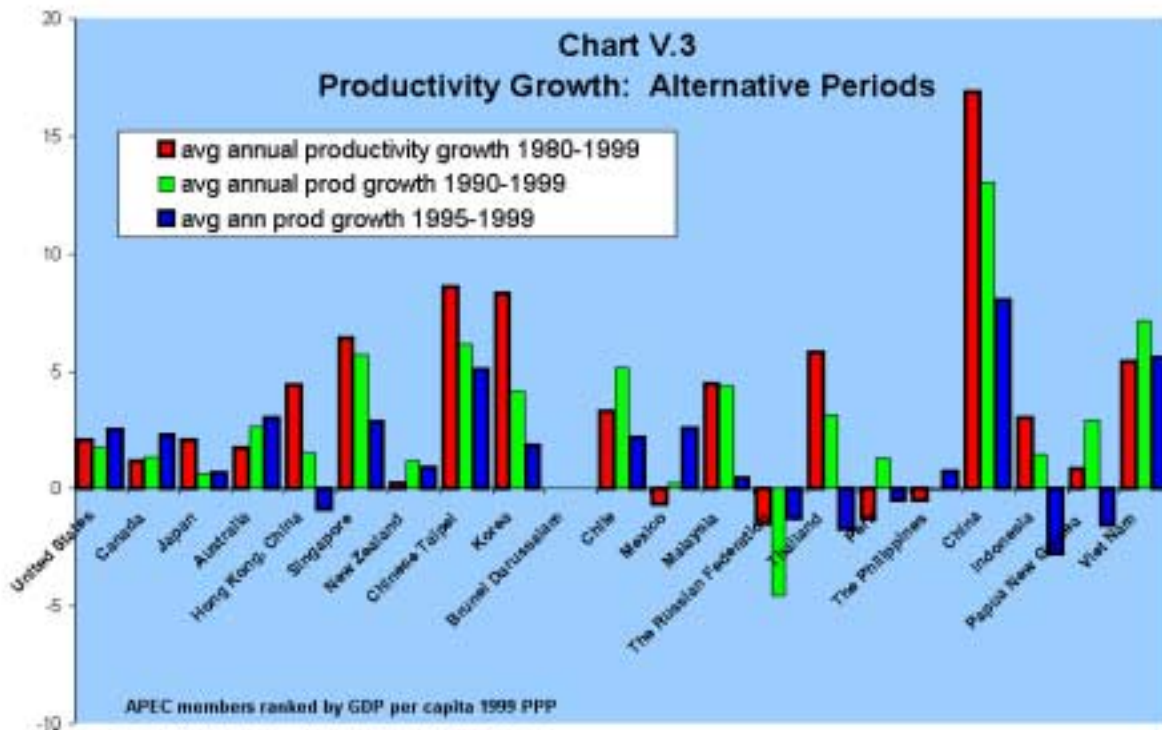
*Productivity and Growth*

Chart V.1 shows GDP per capita and the average annual rates for productivity growth for individual APEC members (1980-1999). From this presentation of the data, there is some suggestion of “convergence” within APEC—that is, the economies with the higher per capita

GDP have lower rates of productivity growth, and the economies with the lower per capita GDP have higher rates of productivity growth (see Char V.2). But the evidence for convergence is weak and more apparent is the wide range of experience.

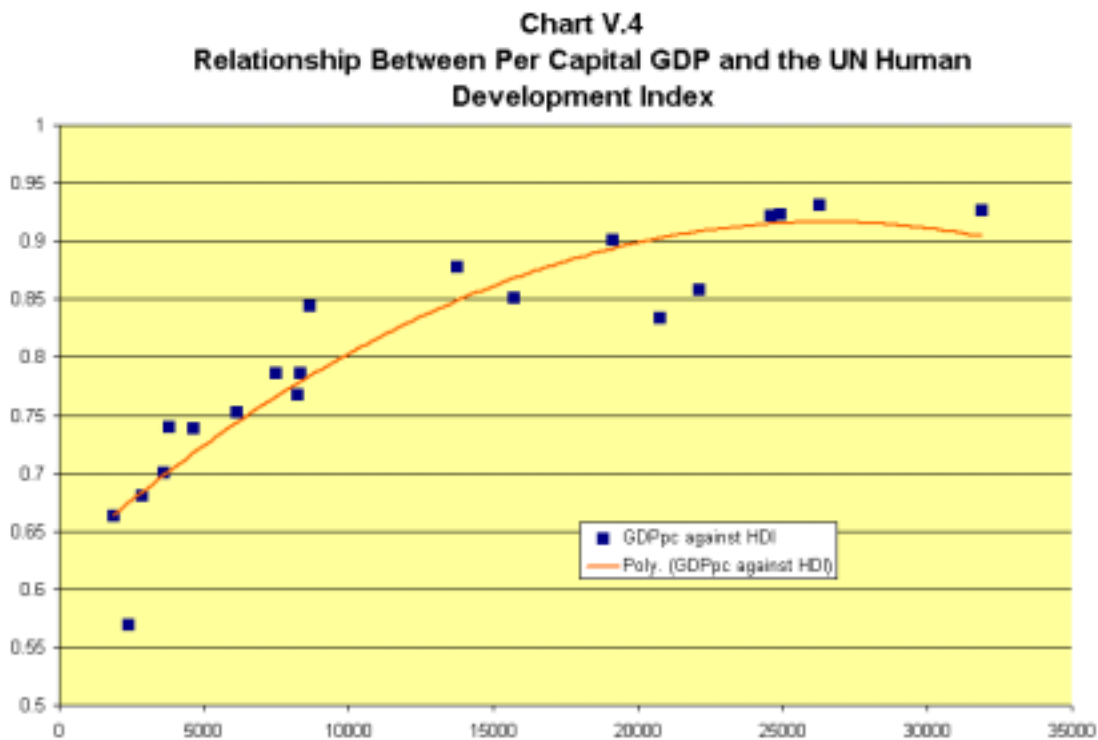


Moreover, Chart V.3 shows that for many members, productivity growth in the last half of the 1990s (right bars) fell short of the average productivity growth of the 1990s (middle bars). While some might argue this is on account of the financial crises, the 1990s



productivity performance is often lower than that of the averaged for the whole of the 1980s through 1990s (left bars). Only for some members—US, Canada, Australia, and Mexico—has recent productivity performance exceeded that of the 1980s-1990s. These charts imply that the productivity divide, and therefore the growth divide, are widening in APEC.

Some might argue that GDP per capita is too narrow a measure of well-being so that focusing on productivity growth to raise GDP per capita is too narrow. Chart V.4 shows a scatter plot and polynomial trend line relating GDP per capita and the UN’s Human Development Index, which includes education, health, and environmental measures. There is a close relationship between these two measures for the APEC members, particularly at lower levels of GDP per capita. This suggests that raising GDP growth via increased productivity will raise the broader measure of well-being of the Human Development Index as well. So, the Report’s focus on productivity growth and the New Economy is not misplaced.



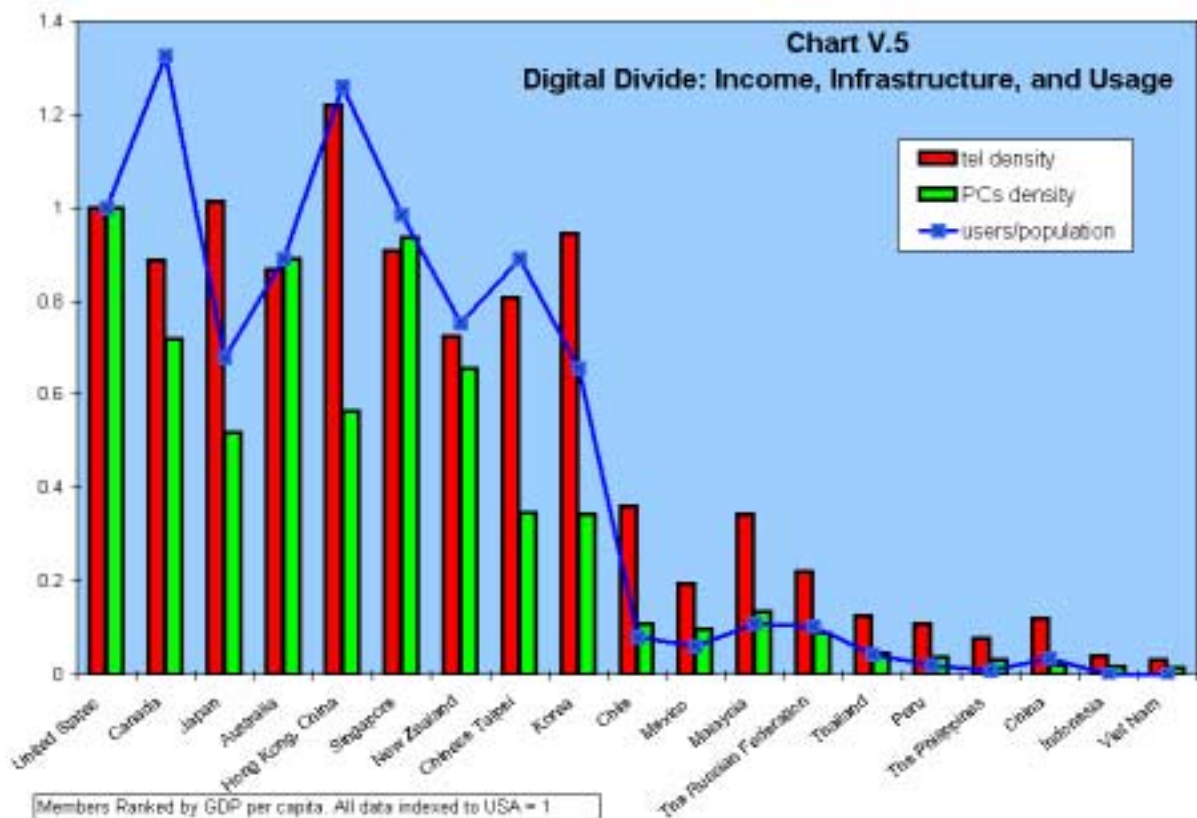
### Digital Measures

Even before going “digital” it is clear that there is a “divide” in APEC. And, indicators of productivity growth do not suggest any rapid closure of that divide soon.

But, what about the digital divide? First, it is important to establish that there are two divides—*between economies* which is associated with different levels of income as well as infrastructure—and *within economies*, which is associated with a number of factors, including income, education, culture, and geography, among others. The “between-economy” divide is well known, but the “within-economy” divide may be more difficult to remedy, and, is in

evidence in many economies even those with a high average level of income of the economy.<sup>77</sup>

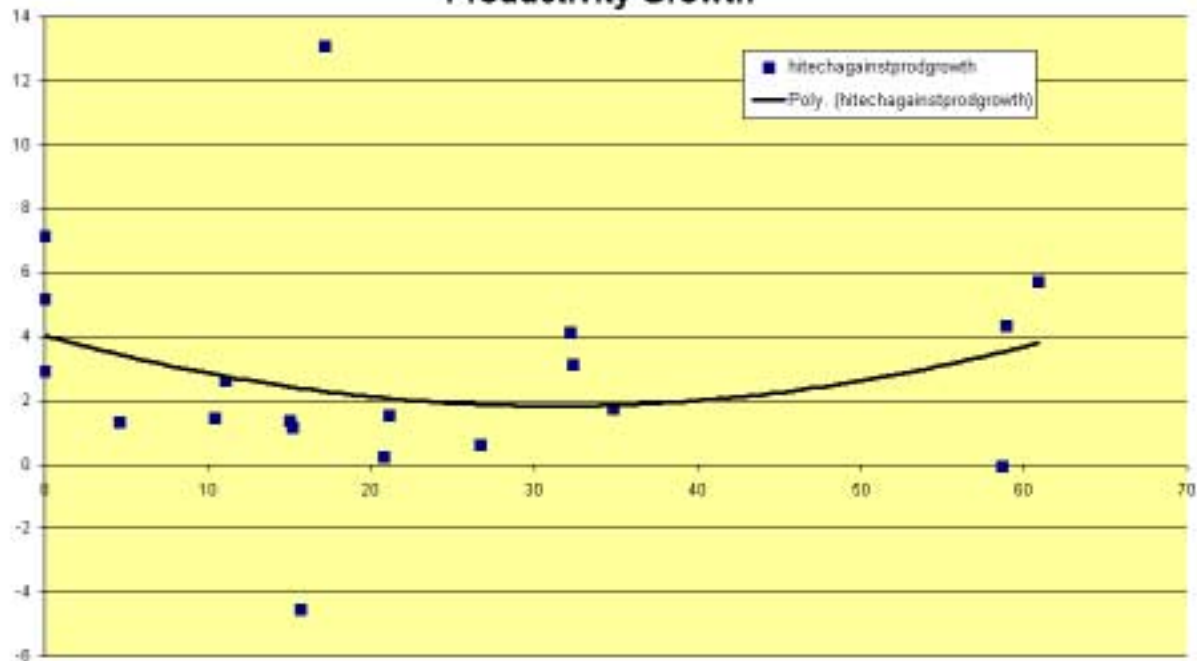
What evidence shows a digital divide within APEC? Chart V.5 shows the relationship between income, two key aspects of infrastructure—teledensity (which is necessary for networking ICTs) and PCs (which are key delivery devices)—and users as a share of the population. The relationship between income, infrastructure, and usage is clear, and the digital divide in APEC is striking.



Would closing one aspect of the digital divide—say, by producing and exporting high-tech products (which includes telephone gear, PC pieces, as well as a variety of other products) be a way to jump-start economies that are at risk of falling further behind? The discussion of the US and Australian experience of the 1990s concluded that an environment that facilitated the *diffusion* of ICTs throughout the economy was critical to raising productivity growth. But, perhaps economies with large high-tech export sectors could use this as a spring-board for domestic use and diffusion throughout the economy, to yield overall greater benefits. Unfortunately, there is no such simple path. Chart V.6 shows no strong relationship between the share of hi-tech exports in manufacturing exports (World Bank data) and the average productivity growth experience of APEC members over the 1990s.

<sup>77</sup> See the discussion in *Global Electronic Commerce: A Policy Primer*, (2000) Catherine L. Mann, Sue E. Eckert, and Sarah Cleland Knight, Institute for International Economics: Washington, pp 173-188, Chapter 9: Government and Development: Closing the Digital Divides.

**Chart V.6**  
**HiTech Exports Have No Strong Association With 1990s**  
**Productivity Growth**



Finally, returning to Chart V.4 we note that the relationship is not linear, indicating that even members at higher level of GDP can do more to improve the human development of their citizenry. Members with higher per capita income and high human development index should have a greater capacity for transformation. But wealth and health are no guarantee that reform will proceed, and indeed wealthy and healthy economies can be more satisfied with their situation, more risk averse, and thus less prone to accept reform.

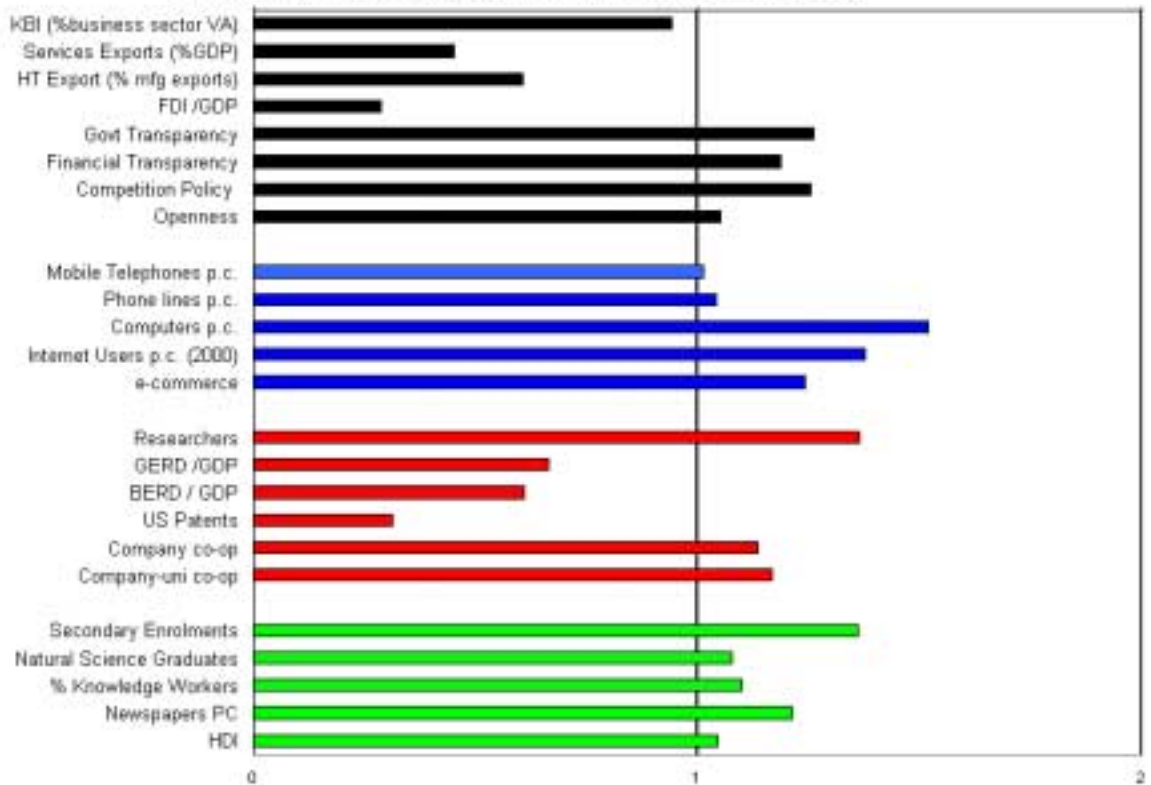
*KBE Status Indicators*

The KBE Report from 2000 recommended that “KBE Status Indicators (KSIs)” be included in the annual APEC Economic Outlook publication. The lead economies (Australia, Canada, Korea) have submitted a proposal and implementation plan to the Economic Committee of APEC to further this objective.

Chart V.7 presents recently updated data on the indicators for Australia, as an example. The complementarity between this Report and the follow-on from the KBE Report of 2000 is clear. In fact, many of the indicators that are shown here are used in the aggregate measures of policy environment presented later.

Indeed, the KSIs in conjunction with the digital measures (previous) and the overall measures of policy conditions (discussed extensively below) should help policymakers target their efforts to those areas where they might reap the greatest gain. That said, we must remember

**Chart V.7. Australia KBE Status Indicators**



that achieving an environment to promote uptake of networked ICTs and facilitate transformation of activities is more than simply “checking the boxes” one after another.

*Challenges to and Predisposition to Reform*

In sum, by a variety of indicators and regardless of income levels, APEC members must renew their commitment to broad-based reforms so as to raise potential growth and human development of their economies. This is why in this Report the focus is so exclusively on the policy environment.

What determines the predisposition to policy reform, how is this endogenous to the process itself, and how can the forces of the New Economy help the process? First at issue are adjustment pains—ranging from reduced corruption income, to loss of power and profit of vested interests, to sectoral and demographic dislocations, to individual job losses. Some of these adjustment pains are worthy of a response to ameliorate them, some of them may require a response so as to mute the resistance, and others will simply take care of themselves. However, the longer an economy defers structural adjustment, the more challenging in terms of bankruptcies, transitional unemployment, skills mismatch and fiscal expenditure the process will be. Both high income and lower income economies in the APEC region have had to face this truth over the past decade. The adjustment pains at home also are a function of reforms abroad. To the extent that New Economy policy reforms pervade neighboring economies, the greater the need for policy reforms at home, but the more wrenching the change needs to be. In this regard, being a first-mover may reduce the depth of economic

restructuring. But, by the same token, the forces of the New Economy once released may help policymakers undertake reforms. For example, introducing new technology can erode the power of vested interests, as for example in telecommunications, and release more resources to the private sector activities. A commitment and vision by policymakers to the overall reform process will speed up the process.

Past successes can blind policymakers to current needs. Some policymakers still believe that there is a short cut to high growth without structural adjustment. Some would argue that the focus of “export-oriented” growth with governments picking industry sectors based on a view to the international leaders still has currency in the New Economy. Today, most of these economies are at or near the technological frontier, and the adjustments needed to their “export-oriented” industries and to their domestic economies are greater for not having at home a vibrant marketplace designed to find through the trial and failure the new “winners”.

Institutional and social assets in an economy are essential supports to reform. The United States, for example, entered the information age with a well-developed legal system capable of instilling confidence among investors so that they would put at risk literally billions of dollars toward research and development in innovation and implementation of technology. For another example, China and Vietnam—by virtue of past investment—enjoy literacy rates of over 80 and 90% respectively as they go forward, a key asset for a knowledge based economy, whereas India, by contrast, has a rate of only somewhat over 50%. These institutional factors facilitate fundamental policy steps, such as a mature legal system does in advance of broad financial liberalization, or can determine the pace of movement toward the KBE-type mega-phenomena, such as literacy is for human resource development to be pervasive.

Just because an economy is not making the *comprehensive* policy reforms described above necessary to produce a New Economy outcome does not mean it is making no reforms, of course, or that its policy regime and economy are not becoming more efficient and productive. Thanks to piecemeal reforms a particular economy may not decline in *absolute* terms, but the differential pace of overall reforms will increasingly be observed in different outcomes in terms of growth performance.

### **Policy Conditions, Sectoral Transformation and Trade Competitiveness in the New Economy**

Trade has always been an important channel for changes in global demand and production technology to affect productivity and growth. The forces of the New Economy operating in the global marketplace are transforming production methods and production patterns. How does an economy’s *policy environment* combine with its *trade patterns* to create new opportunities for businesses in economies; and how might the failure to have a facilitating policy environment lead to a loss of competitiveness in the international trade arena?

Even small changes in the pattern of trade will be important. In 1999 industrial economies purchased \$1.2 trillion worth of merchandise from developing economies, compared to

development assistance to them totaling only \$52 billion net, after repayments. Even after taking into account exports to developing economies from industrial economies of \$985 billion, the net payment for traded goods to the developing world was \$224 billion, more than four times the value of aid (hence the slogan: “trade not aid”). For developing economies, this market share in the industrial world is critical. Relatively subtle changes in the competitive landscape among developing economies are certain to have major effects on trade flows and thereby on income and productivity growth. Since the latter are the macro-level manifestations of the APEC “divide”, examining the nexus of policy conditions, sectoral transformation, and trade patterns makes sense.

The methodology presented in this section should be thought of as a tool for analysis and consideration by individual APEC members. Rather than reach definitive conclusions, APEC members will have the opportunity to compare themselves against others in the group according to a common set of indicators and focusing on an arena in which they do compete—international trade. While these common sets of indicators necessarily cannot capture the nuances of individuality of each economy (for which the KSIs do better), they do yield powerful inferences. Moreover, it is important to remember that third parties (such as investors) make these comparisons using common measures, appropriately or not.

#### *Measuring Overall Policy Conditions in APEC Economies*

Evaluating and measuring an economy’s policy conditions and preparedness for engaging in and enjoying the benefits of the New Economy is somewhat of a cottage industry. Some measures focus on specific indicators that are important for specific aspects of the New Economy (e.g. telecom density or number of knowledge jobs). Other measures add in broad issues that are increasingly relevant given the transparency inherent in the information flow of the New Economy (e.g. corruption, arbitrariness of regulations, or opacity of corporate governance). Still others include indicators that are important for all kinds of commerce (e.g. macroeconomic stability, global openness, or performance of financial institutions). And, all indexes are a combination of the policy inputs and the environment that results. As discussed early, APEC is preparing data to measure progress along the dimensions of the four KBE phenomena.<sup>78</sup>

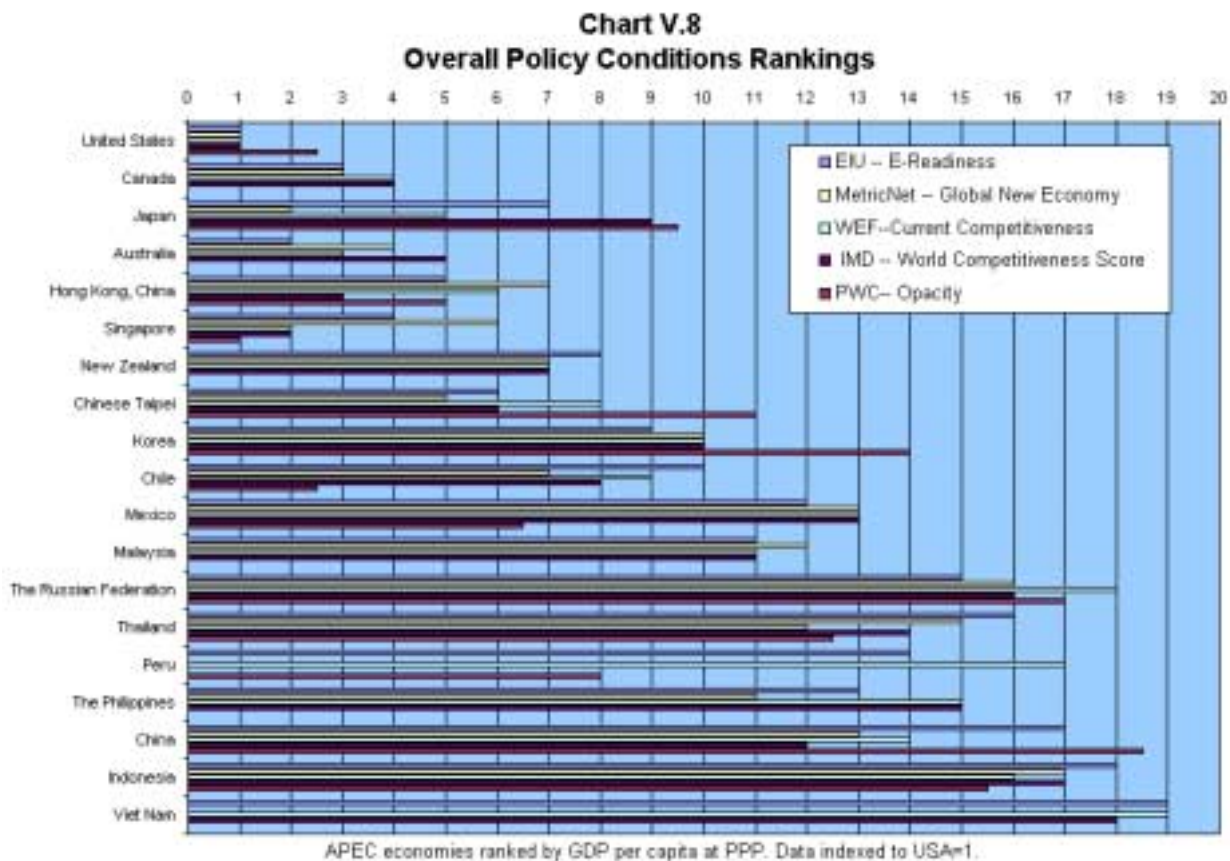
Clearly, there is no one right measure. Moreover, evaluations can be undertaken for a range of purposes, from promoting introspection and internal policy debate within an economy to an international firm deciding which economy to consider for a new investment. The purpose of this section is simply to show some indicators of overall policy conditions that include the dimensions deemed important for creating a facilitating environment.

Several Charts and Tables show both general and more specific measures of policy conditions and preparedness for the New Economy. Chart V.8 shows several widely available summary measures of policy conditions for most APEC members: Economic Intelligence Unit/Pyramid Research E-readiness ranking; World Economic Forum Current Competitiveness Index; the

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<sup>78</sup> APEC (2000), *Towards the Knowledge-Based Economy Report*, Appendices and submission by lead-economy Australia to the Economic Committee II in Dalian, China August 2001.

Global New Economy Index from MetricNet; the World Competitiveness Score from IMD in Lausanne Switzerland; and, with more limited coverage, PriceWaterhouseCoopers Opacity Index. APEC members are shown in descending order of per capita GDP. If all measures ranked the APEC members identically, all bars would be the same length.



The data and surveys underlying these broad-based indicators are, in many cases, exactly the same as the disaggregated indicators shown in the 2000 KBE Report. The advantage of examining broad-based indicators is that they summarize the overall policy environment. We believe that synergies among policies in the four domains are key to creating the New Economy environment in which transformation of economic activities can take place in response to technologies and information. Moreover, it is clear that firms experience the whole picture for an economy. Disaggregated indexes are useful too, because they provide insights for policymakers to discern which policy area needs the most reform. On balance, for the purposes of this analysis, purposes, aggregate measures are superior.

What underlies the different indexes presented here? The concept of *e-readiness* by the Economist Intelligence Unit/ Pyramid Research<sup>79</sup> is shorthand for the extent to which an economy's business environment is conducive to Internet-based commercial opportunities.

<sup>79</sup> The Economist Intelligence Unit (2001) *The Economist Intelligence Unit/ Pyramid Research e-readiness rankings*. [http://www.ebusinessforum.com/index.asp?layout=rich\\_story&doc\\_id=367](http://www.ebusinessforum.com/index.asp?layout=rich_story&doc_id=367)

The model tallies scores across six categories—including the EIU’s business environment rankings—and 19 additional indicators. The six categories comprising the ranking are, with decreasing weight: 1. Connectivity; 2. business environment; 3. e-commerce consumer and business adoption; 4. legal and regulatory environment; 5. supporting e-services; and 6. social and cultural infrastructure. Where possible, the variables—connectivity in particular—rest on quantitative, statistical data; others reflect qualitative assessments by EIU economy analysts.

The *Current Competitiveness Index* by the World Economic Forum purports to measure the conditions that determine an economy’s sustainable level of productivity.<sup>80</sup> Factors underpinning current competitiveness are divided into two major categories: The sophistication with which an economy’s firms compete and the quality of the economy’s business environment. A variety of measures (some 65 of them, all statistically related to GDP per capita), are combined into the indexes. The content of the overall index includes indicators on infrastructures (air, sea, land, communications, administration) capital availability, human resources, science and technology, and business and regulatory environment (transparency, entry and exit, and trade openness).

MetricNet’s *Global New E-Economy Index* represents a measure of the economic dynamism and strength, as well as the technological capabilities and potential of an economy. The categories of the indicators in the Global New E-Economy Index are: 1. knowledge jobs; 2. Globalization; 3. economic dynamism and competition; 4. transformation to a digital economy; and 5. technological innovation capacity. The GNEI uses data for the categories and factors specified above from the following sources: *The World Competitiveness Yearbook, 2000; The Computer Industry Almanac and The Internet Software Consortium.*<sup>81</sup>

The *World Competitiveness Score* from IMD, International measures and compares the extent to which an economy provides an environment that supports globally competitive companies. It is sold to businesses so that they can monitor markets and investigate new sites for investment and to governments to judge their own policies in practice. The components of the Score include: Economic performance (domestic, international, employment, prices, and forecasts), government efficiency (public finance, fiscal policy, institutional framework, business legislation, education), management efficiency (productivity, labor markets, finance), and infrastructure (basic, technological, scientific, quality of life and value systems). Some 139 criteria are involved in generating the Score.

The *Opacity Index* by Price Waterhouse Coopers is a more narrow measure, but one of particular importance for the information flows and investment climate of the New Economy. This index estimates the adverse effects of opacity on the cost and availability of capital in 35 economies. The composite score for each economy is based on opacity data in five different areas that affect capital markets: 1. Corruption; 2. legal system; 3. government macro-economic and fiscal policies; 4. accounting standards and practices (including corporate

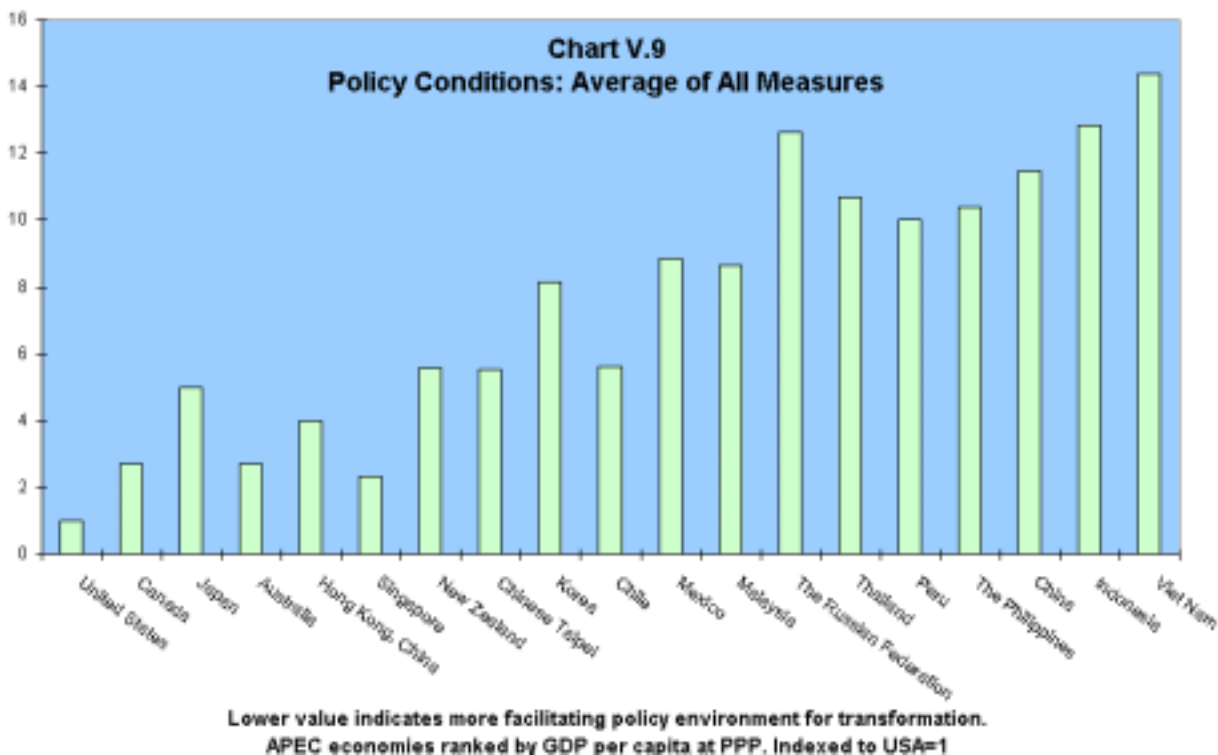
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<sup>80</sup> Porter, Michael E.; Sachs Jeffrey D.; Warner Andrew M; Cornelius Peter K.; Levinson, Macha and Schwab; Klaus (2000) *The Global Competitiveness Report 2000*. The World Economic Forum. New York: Oxford University Press. See in particular pp 16 and pp 44-47.

<sup>81</sup> Metricnet.com (2000) *The Global New E-Economy Index: A Cyber Atlas*.

governance and information release); and 5. regulatory regime. The data is based on average survey responses for the five types of opacity.<sup>82</sup> Since the coverage of the O-factor is more limited than for the other indexes, the scale of an economy and its position in rank has been adjusted to be comparable to the other measures.

Considering the range of indexes, the similarity in ranking of the member economies is striking. For a few of the economies, the different rankings vary by more than two or three places: Japan, Singapore, and China for example. A closer examination of the underpinnings of the indexes would reveal the specific differences among the overall, and policymakers in these individual economies no doubt should wish to make this examination.<sup>83</sup>



However, for the analysis focusing on trade competitiveness for the full APEC membership, the policy conditions rankings must be distilled and simplified. Chart V.9 averages the five indicators of policy conditions with the most complete coverage of economies and orders this average by GDP per capita of the APEC economies. Economies with shorter bars have policy conditions that are more facilitative to the environment and transformations of the New Economy.

<sup>82</sup> PriceWaterhouseCoopers (2001) The Opacity Index. Launching a new measure of the effects of opacity on the cost and availability of capital in economies world-wide. [www.opacityindex.com](http://www.opacityindex.com)

<sup>83</sup> The original sources present the inputs to these measures and methodology of aggregation to the composite measures shown in the Report.

## *Measuring Sectoral Transformation In the New Economy*

The nature of the production process (comprising both manufacturing and services) is becoming increasingly fragmented and globalized. Multinational firms and strategic business alliances communicate, get price quotes, submit bids, transfer data, offer customer service, produce product designs, code software, and basically *do business* using networked information and communications technologies in the international arena.<sup>84</sup> Economies that do not have a facilitating environment to allow the forces of the New Economy to transform business activities will be marginalized from the global production process and global economy, at increasingly great cost to their citizens.

But, the uptake of network and information technologies differs across sectors and can be measured several ways: By cost savings when used, by how these capabilities are being used (static Web-site, interactive Web-site, financial exchange over the Web, supplier information exchange, fully integrated operations). For this Report, several different analyses of how network and information technologies have affected the operations of US and European industries are considered to derive a summary indicator for each sector of the intensity of transformation due to use of networked ICTs: we call this the Technology Transformation Intensity (TTI).

For most APEC economies, we would not expect their industry sectors to use the network and information technologies as intensively as the US or European counterparts. But, the TTI measure should indicate which sectors are likely to feel pressure to use these technologies first. For example, if a firm in an APEC economy is currently part of a multinational value-chain, and its partner and parent firms use ICTs, it will be expected to use them as well.<sup>85</sup> Thus, using the US and European analyses as a benchmark makes sense.

Measures of 'Technology Transformation Intensity' by sector summarizes various approaches to estimating how intensively industrial sectors are using networked ICTs to transform their operations. This research is distilled into the Table below which ranks industry sectors by the extent to which they are being transformed by the use of networked information technologies. A lower value of TTI means less transformation is being undertaken by this sector in response to New Economy opportunities.

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<sup>84</sup> The measures of business to business (B2B) transactions overwhelmingly dominates Internet commerce and many B2B sales take place across the border and between multinational and local firms. Forrester estimates \$2.7 billion on B2B exchanges by 2004 [http://ebizchronicle.com/slp\\_reports/march/erp04\\_oracle.htm](http://ebizchronicle.com/slp_reports/march/erp04_oracle.htm)). Jupiter estimates increase from \$336 this year to \$6.3 T in 2005 accounting for 80% of B2B transactions ([http://ebizchronicle.com/editorials/editorial\\_09\\_ebizover.htm](http://ebizchronicle.com/editorials/editorial_09_ebizover.htm)). Boston Consulting Group estimates rise from \$1.2T (13 percent of inter-company gross purchases) to \$4.8 T in 2004 (40 percent of inter-company gross purchases; include EDI. (<http://ebizchronicle.com/backgrounders/dec00/b2snapshot.htm>).

<sup>85</sup> Indeed, several firms in several economies have made this point in the course of field research. The firms worry that if they do not have a facilitating environment at home that they will be dropped from the supply chain. They also worry about the cost of capital and human resource issues. These points were made as well in the case studies.

| <b>Table: Technology Transformation Intensity: Benchmark</b> |   |
|--|---|
| Foods  | 4 |
| Consumer goods and textiles                                  | 3 |
| Energy, chemicals, natural resources                         | 1 |
| Pharmaceuticals  | 4 |
| Forest/paper products  | 4 |
| Steel/metals and metal products                              | 1 |
| Industrial equipment & Supplies                              | 3 |
| Electronic Components  | 5 |
| Autos  | 3 |

It is worthwhile discussing the research underlying the Table (which is presented in detailed form in Appendix 1). Survey research of US industry in 2000 (Brookes and Wahhaj) suggests cost savings ranging from 10 percent in sectors such as aerospace, paper and steel, and communications bandwidth and media advertising, to more than 20 percent in electronic components and machining, forest products, and freight transport. New research, edited by Litan and Rivlin of Brookings, takes a more comprehensive look at the impact of information technologies on productivity growth in different sectors in the US and sums up the impact on US productivity growth at between 0.25 to 0.5 percentage points.<sup>86</sup>

Forrester Research<sup>87</sup> considers two inputs: “industry readiness” and “product fit” to yield a measure of “ultimate marketplace saturation” for how much different industry sectors might use networked ICTs. Computing and electronics for example has a measure of greater than 70 percent “ultimate marketplace saturation” because the industry is “ready” and the “product fit” is high. For industrial equipment and supplies, the industry is “ready” but the “product fit” is not as good (since a great degree of customization is common); thus a measure of only 60-70 percent “ultimate marketplace saturation”. And so on. These measures of both “industry readiness” and “product fit” help to characterize which sectors are or will be transformed the most by the use of ICTs, and therefore, which sectors may demand a heavier use of networked information technologies by their supply chain partners in the APEC economies.

EITO from Europe<sup>88</sup> presents another analysis of how e-commerce is affecting industry sectors there. This study rates European industries and partners by internal use of the networked ICTs (e.g. whether firms in the sector are reorienting their internal organization and operations toward using the Internet) and external use of networked ICTs (e.g. whether external relationships and marketing are being done via the Internet). The two scores weighted-up yield the overall score for the sector. By and large, the analysis suggests that US

<sup>86</sup> Robert E. Litan and Alice M. Rivlin (2001), Beyond the Dot.Coms: The Economic Promise of the Internet, Brookings Institution, July 2001 draft.

<sup>87</sup> ([http://ebizchronicle.com/backgrounders/march/forrest\\_b2opportunity\\_onlinetrade.htm](http://ebizchronicle.com/backgrounders/march/forrest_b2opportunity_onlinetrade.htm)) last visited June 26, 2001.

<sup>88</sup> EITO (2001), European Information Technology Observatory 2000 Millennium Edition Part Two, The Impact of E-Commerce on Five Vertical Sectors (prepared by GartnerConsulting in close collaboration with EITO Task Force and Enterprise DG of the European Commission).

and European firms and supply chains are responding similarly to the opportunities offered by networked information technologies.<sup>89</sup>

The National Association of Manufacturers and Ernst&Young<sup>90</sup> classify stages of Internet usage and adoption by different industry sectors. Stage 1, e-Information is where firms use the Internet for information. Stage 2, e-Interaction is where firms use e-mail actively. Stage 3, e-Commerce is where firms buy and sell using Web-sites. Stage 4, e-Company is where firms link together their supply-chain partners. Stage 5, e-Economy is where a whole economy is populated by firms that actively use information technologies throughout their operations. NAM/E&Y evaluate what share of US firms in a particular sector have reached a Stage. For this Report, the industry sectors that have moved furthest through the stages of application of e-commerce are given higher values for technology transformation intensity. So, for example, chemicals and natural resources have lower TTI values because this sector has moved less far along the stages of application. The consumer goods sector has moved farther, so is more Internet intensive.

This latter research maps well into the policy dimensions that are the focus of this Report: An economy needs to have adequate network access to achieve Stage one (e-information, which, for example, is having a “brochure-ware” style Web-site with company information). An economy needs to have reasonable network pricing, and use information technology at the desk to reach Stage 2 (E-Interaction, allow businesses to send and receive e-mail from a Web-site. Such capabilities are important for setting-up business appointments.) An economy needs to have a good banking and finance infrastructure to move into Stage 3 (E-commerce, which for example, allows the buying and selling of products from a Website). An economy needs to have adequate network security and safeguards as well as rapid distribution capabilities to move to Stage 4 (E-Company, which, for example might mean a company intra-net to keep track of inventory and do just-in-time supply). An economy needs to have all these infrastructures, a facilitative business climate, and a population of e-businesses to move to Stage 5 (E-Economy).

#### *Putting These Together with Trade Patterns: Competitive Pressures and Opportunities*

Suppose an economy currently has a high share of trade in electronics products, which has a high technology transformation intensity (TTI), but the economy has a poor ranking when it comes to policy conditions. This economy could lose competitiveness, production, and employment in the industry to an economy with similar trade characteristics but better policy conditions. This observation may induce policy reform in the target economy, it certainly will impact economic activity and, through the trade channel, productivity as well. (Recall the discussion of the evidence for the US and Australia, among others, on the role for trade to affect productivity growth.)

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<sup>89</sup> The textile sector is somewhat different, with the US sector using the Internet more intensively than its European counterparts. Since the textile and apparel sector has had extensive protection via the MultiFiber Arrangement, this could account for different uptake. Indeed, see the discussion in EITO.

<sup>90</sup> The National Association of Manufacturers and Ernst&Young (2001); [E-Commerce Trends Index](#)

On the other hand, suppose an economy has a high share of trade in a product that has a low TTI and the economy also has a rather poor showing on policy conditions. Such an economy is insulated from the forces of the New Economy coming through the trade channel. Whereas such an economy would be better off in a macro sense from improving its policy conditions, the trade channel is not likely to be the factor forcing domestic policy change.

There are several ways to show the relationships between policy conditions, trade patterns, and sectoral technology transformation intensity. The first approach is to examine each economy separately and consider how the New Economy forces are working through the trade channel of different *industry sectors within the individual economy*. The second approach is to examine each industry sector separately and consider how the New Economy is working through the trade channels to differentially affect the competitiveness of economies, *comparing economies within an industry sector of trade*.<sup>91</sup>

Consider this second perspective first. Appendix 2 presents a series of charts which incorporate data on the composition of trade (exports and imports) by major industry sector and also incorporate the benchmark TTI for each of the industry sectors.<sup>92</sup> Chart V.10 is a prototype of those charts. The vertical axis measures share of exports and of imports of different industry sectors in trade of the economy, which are arranged along the horizontal axis by SITC classification, starting with foods and ending with autos. (To avoid too much clutter, bubbles for trade shares of a sector less than 10 percent are not shown.) There are two bubbles for each sector—the centerpoint of one measures the share of that industry in imports and the centerpoint of the other bubble measures the share of that industry in exports. The diameter of each bubble is the benchmark TTI of the industry sector, so the size of the bubble is the same for both exports and imports.

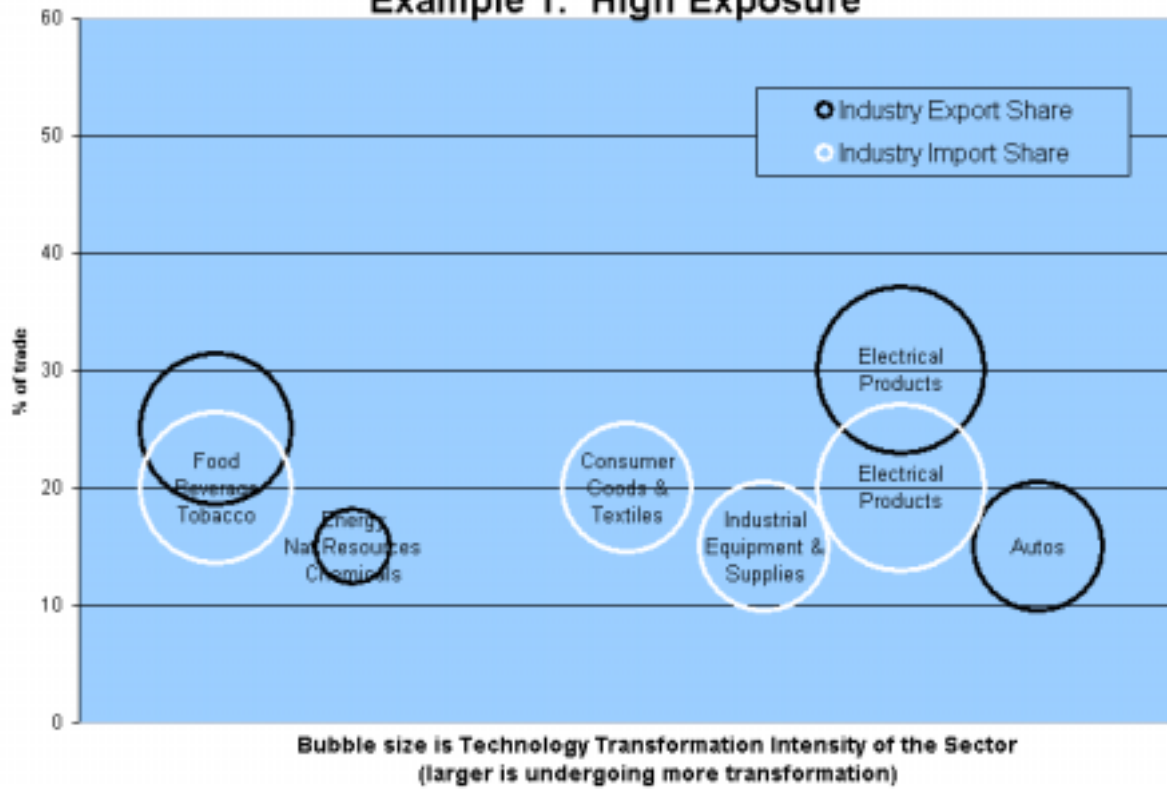
How should we interpret these charts? Consider first the export data in the example in Chart V.10, Example 1: High Exposure. The prototype economy has larger bubbles in the upper part of the chart, indicating that the industries that have the largest share of trade are those undergoing the greater transformation through technology (higher TTI). Therefore, this prototype economy has an export pattern biased toward industry sectors that are rapidly being transformed by networked ICTs. This is an economy exposed to the forces of the New Economy through the export trade channel. If its exporters cannot employ the networked

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<sup>91</sup> Data on trade for PNG and for Vietnam were not available in sufficient detail for this exercise. Measures of policy conditions for PNG and Brunei were not available either so no Charts are prepared for them.

<sup>92</sup> The industry sectors shown are major SITC categories compiled to match the categories for which research underpins the TTI indexes. “Foods” is the sum of SITC 0 and 1; Energy, natural resources, and chemicals is the sum of SITC 2, 3, 4, 5; Metals&metal mfg is the sum of SITC 67, 68, 69; Consumer goods and Textiles is the sum of SITC 65 and 8; Industrial equipment and supplies is the sum of SITC 71, 72,73, 74; Electrical products is the sum of SITC 75, 76, 77; and auto is SITC 78. All data on trade come from the United Nations and are for 1998 (except Thailand where the trade data are for 1997). For all the economies except Russia, the coverage of trade flows is at least 90 percent.

**Chart V.10**  
**Example 1: High Exposure**

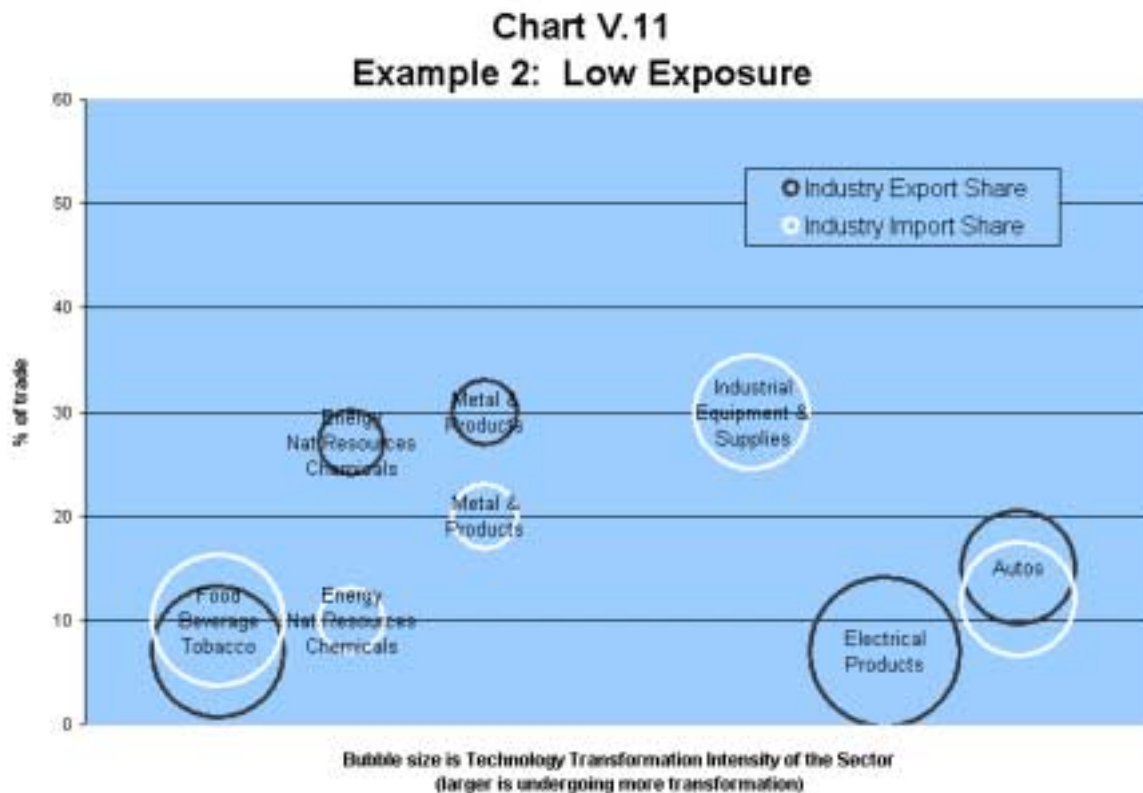


technology because the domestic policy environment is uncondusive, and its competitors can because their policy environment is better, this economy may lose trade competitiveness as information technologies become more pervasively used.

We can use this example to indicate the potential for benefits and challenges to come via the trade channel into the domestic economy, in this case, through imports. Consider again Chart V.10 and look at import bubbles. Sectors with high shares of trade and high TTI (e.g. large bubbles in the upper part of the chart) will be sectors where the forces of the New Economy are transforming firms and the sectors are important for the economy's trade.

The import channel offers two possible avenues for the New Economy to affect the domestic economy: imports as competition for domestic producers and imports as inputs to domestic production. Industries with high TTI (large bubbles) are those where information technologies are reducing costs. Therefore, economies with high exposure to these industry sectors can benefit greatly from using these imports in the domestic production process, if the economy has policy conditions that are conducive to the use of ICTs so that the domestic producers can use the transformative technologies of the imports. On the other hand, domestic producers of products similar to these imports will need to upgrade their own operations through the use of ICTs and through changes to organization behavior to remain cost-competitive with the imported substitutes. Through both of these channels, imports of sectors that are intensive in the use of transformative technologies will raise productivity growth in the domestic economy, although domestic transformation is necessary to gain the productivity benefit.

In contrast, consider Chart V.11, Example 2: Low Exposure. In this case, the economy has smaller bubbles in the upper parts of the chart and most large bubbles are in the lower part of the chart. This indicates that the industries that have the largest share of trade are those with low TTIs. Therefore, this prototype economy has a trade pattern biased toward sectors that are not intensively being transformed by the use of ICTs. This is an economy that is less exposed to the forces of the New Economy through the trade channel. Therefore, if this economy's firms cannot employ networked information technologies, say because of a poor policy environment, the trade channel is not going to force the issue.



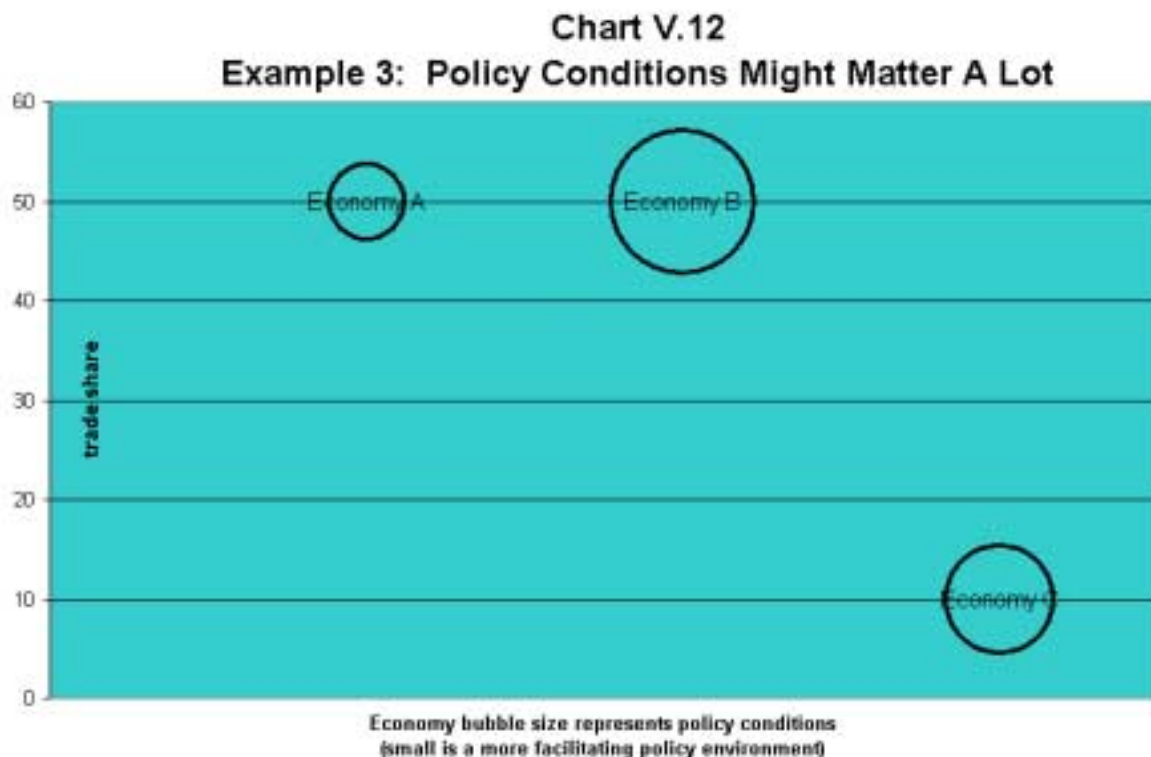
Now consider several of the APEC economies, which present much more complex situations. (See charts in Appendix 3.) Several economies are highlighted simply to show how to read the charts given a full set of data. As an example, Peru might be less affected by the forces of the New Economy coming through the trade channel because most of its trade is in metals/metal products and energy/chemicals which have a low TTIs. Note, however that the high share of export trade in foods, which is a high TTI sector, represents an opportunity for this industry if the policy environment is facilitating. A similar picture emerges for Chile. In contrast, Mexico, Thailand, and Korea, with large trade shares in high TTI, such as industrial equipment and supplies, electrical products, and autos will be more exposed to the forces of the New Economy through the trade channel.

Note that these forces come through different channels. In Thailand, the high share of imports of industrial supply and equipment suggests that the cost reductions associated with high TTI

could benefit the economy...if it has the right policy conditions to use these products. And Mexico, with substantial export exposure in electrical products exports could gain trade competitiveness and international market share vis-à-vis other electrical exporters in this high TTI sector—if it has the right policy conditions to support those exporters.

This line of reasoning, which focuses less on the economy and more on the sector, suggests a second presentation of the relationship between trade patterns, intensity of technology transformation, and policy conditions.

Charts in Appendix 4 shows all of the APEC members for each industry sector. Each chart shows economies whose share of exports (imports) in that sector is greater than 15 percent. Example 3 in Chart V.12 is a prototype.



The vertical axis measures share of the sector in exports (imports) of the economies, which are arranged along the horizontal axis ordered by per capita GDP. Each economy is represented by at most two bubbles (it depends on whether the trade shares are greater than 15 percent, here in this example, only one trade bubble is shown). The centerpoint of a bubble measures the importance of the sector for that economy's exports (imports). The diameter of the bubble is the classification of the economy's policy conditions (recall that the smaller bubble represents superior policy conditions). So the size of the bubble is the same for each economy's exports and imports, if both are shown. Since each chart shows a sector, which by definition has the same TTI for all economies, these charts gauge how export competitiveness of a sector might be affected by policy conditions, and how imports of a product might

enhance efficiency of domestic down-stream sectors and/or yield increased competition to competing domestic sectors.

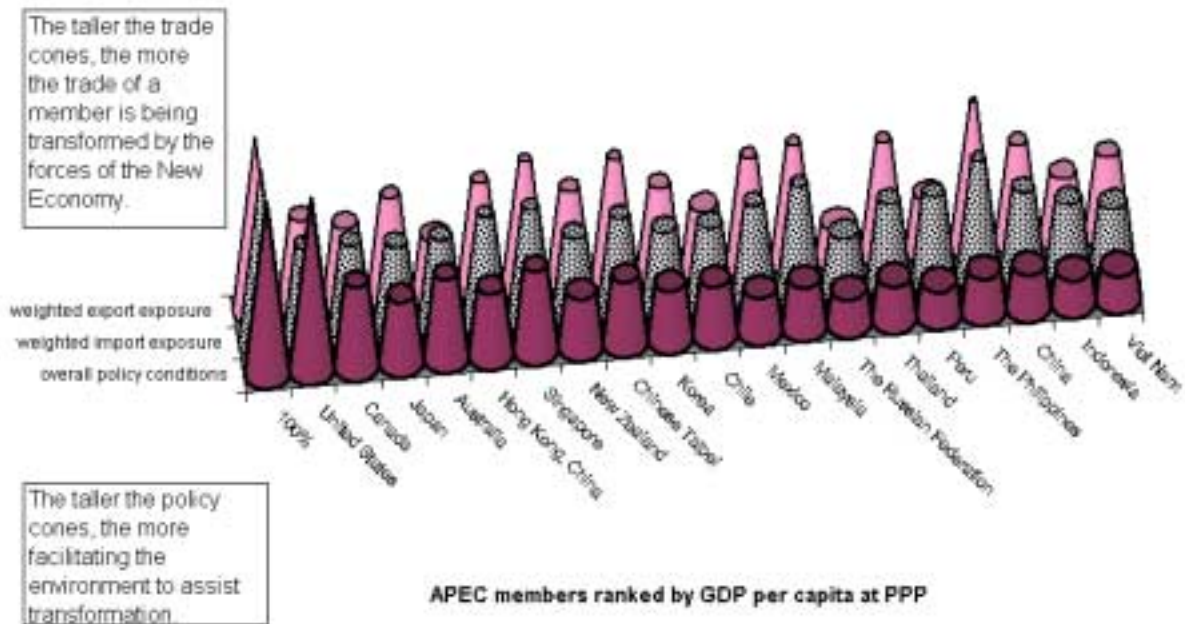
How should we interpret these charts? Consider Example 3: Policy Conditions Could Matter A Lot in Chart V.12. In this simplified presentation there is only one trade bubble for each economy to represent, alternatively, exports and imports shares. Suppose we know that the industry has a high TTI, such as electrical products. Two economies (A and B) have bubbles in the upper parts of the chart, indicating that these economies have large shares of trade that are exposed to a sector that is undergoing substantial transformation on account of technology (high TTI). Economy C has a smaller share of its trade in this industry. Economy A has a small bubble, indicating that its policy conditions are superior to those of Economy B with a large bubble.

Firms in Economy B have problem. They are exposed to a high TTI sector, but their policy environment at home is not conducive to the uptake of these technologies. The firms in Economy B may lose export competitiveness and market share as the uptake of transformative technologies becomes more pervasive. And, economy B is less able to benefit from the cost reductions coming through the import channel. Note, that although Economy C is not particularly exposed through the trade channel, its policy conditions are superior, indicating that its firms might possibly take advantage of the trade channel, and, in any case, the domestic benefits of a more conducive environment are clear.

Finally, Chart V.13 summarizes all these dimensions: the policy conditions, and export and import exposure weighted by trade shares and transformation intensity. The three fully pointed cones to the left show the archetypal case where 100 percent of export and imports are in the sectors experiencing the greatest transformation due to the forces of the New Economy (the greatest technology transformation intensity index) and where policy conditions are most conducive to supporting an environment where the technologies and information of the New Economy can be most transformative. These three summary measures are shown for members of APEC are shown ranked by GDP per capita.

The more “squat” are the trade-weighted cones the less an economy’s trade is in sectors that are being transformed on account of the New Economy. The more squat are the policy cones, the less positive is the policy environment to support the transformation. Thus, when the trade cones are tall and policy cones are squat, there could be a problem in terms of competitiveness and productivity growth in that in the international arena, transformation will be underway, but firms in the economy might be unable to undertake needed changes because the domestic policy environment is not facilitating. Some economies have trade flows that are highly exposed to sectors which are undergoing substantial transformation on account of New Economy technologies (the weighted export and import cones are quite tall), yet do not have overall policy conditions that are particularly supportive (the policy cones are rather short). Other economies have policy environments that are out ahead of their trade patterns, perhaps

**Chart V.13**  
**Overall policy conditions and weighted trade exposure**



creating new opportunities in the international marketplace (for example, Australia). Others are currently relatively more insulated from the New Economy (for example, Russia). Economies can judge for themselves whether their policy conditions are likely to support international competitiveness and the productivity growth that comes with it in the New Economy or not.

In sum, the future for international trade increasingly will depend on networked information and communications technologies. Potential changes in competitiveness, productivity, and growth depend on the relationship between the policy environment and the sectoral exposure of trade for an economy. Policymakers, when looking for allies in the reform process should consider the matrix of trade and TTI by sector since this is where the pressures and opportunities will be created.

### **Other Aspects of Differential Progress**

Our analysis points to a widening “productivity divide” within APEC coming from differences in improvement in productivity from ICTs due in large part to underlying structural policy conditions. The “digital” part of this divide is a narrower construct than broader productivity factors which underpin prosperity, but the digital and non-digital are increasingly intertwined.

Thus far, we have focused on specific economic consequences of this divide, such as trade competitiveness, in as quantitative an analysis as possible. There are many social and political facets of the potential divide however, that are deeply tangled with the economic factors.

This study cannot catalogue the whole spectrum of non-economic issues associated with divergent productivity growth. But below it briefly reviews three issues that are implicit in and related to the economic arguments because they deserve special consideration by policymakers and leaders.

*Brain drain:*

“Brain drain” concerns both highly skilled individuals and the promising enterprises they are often associated with or create. It is an international phenomenon involving two civic players: an unattractive economy and a more enabling one with alluring incentives for wealth creation and prosperity. And it is a phenomenon that is greatly augmented by the heightened transparency of opportunity, greater openness to high-skill migration, and greater economic return to knowledge that characterize globalization generally and the operating modes of the knowledge-intensive New Economy specifically.

Economic analyses of the New Economy trends all highlight the increased “frictionlessness” of markets for goods and services, which benefit consumers, and for foreign direct investment, which benefits reforming policy environments. But with these come brain drain, the dark side of low barriers to economic activity that is increasingly hard to prevent without simultaneously shutting out the benefits.

The social and political lens on this problem is worrisome. Already there are arguments against investing public funds in training professionals for government service for fear that trainees will forthwith migrate to the private sector or other economies. There is little antidote to this concern other than to work toward a creating a domestic economy with good incentives via sound structural policy foundations.

The political challenges abound. In some economies, the very right of entrepreneurs to be represented directly in political decision-making is still debatable. In others, business people are blamed for every social-ill with each new wave of political unrest. In many, their rights to manage their businesses are heavily constrained by political committees and considerations.

The New Economy is not creating this problem: it has existed forever. We believe, and we think it is increasingly evident both from casual and empirical appraisal, that the power of human talent to determine economic outcomes through the choice of their movement is now an order of magnitude greater. The political and social underpinnings of the solution are profound, and as yet not fully appreciated or understood. This much is clear however: the desire of highly-skilled individuals and firms to stay put is a key validation of the policy conditions leaders are responsible for, and likewise their departure is a sign of domestic negligence no less than foreign allure.

### *Reactions from civil society:*

In the domestic sphere, at the more macro level than the choices of the high-skill elite, the New Economy brings the potential for – more, the likelihood of – far more active expectations from broad civil society about the opportunities and potential of their economies and polities. This is a potential wellspring of growth. Higher expectations can mean a higher degree of self-motivation and preparation to capitalize on opportunity, as opposed to the sense of inevitability and conservatism that accompanies narrow horizons on the broader world. But the more information rich community of the New Economy also brings greater demands and assertiveness and the need for government to be demand driven.

Popular reactions to economic under-performance from civil society are likely. What are the consequences of greater citizen awareness of the price they pay for slow adjustment in terms of foregone opportunities for private initiative, lost current markets, lower rates of domestic growth, higher costs of capital, higher rates of unemployment, and so on? Technology makes it increasingly easier to calculate the costs and the comparisons in the neighborhood will be much easier to make. For example, in the United States economists were able in the early 1990s to determine that textile jobs cost consumers \$200,000 a year on average to sustain against competition from lower cost producers overseas and, in 2000, that pending steel protection would cost \$3.5 billion.<sup>93</sup> These facts do not always alter policy outcomes, but the US did agree to phase out the Multi-Fiber Agreement (MFA) under the WTO and has not yet responded to pleas from the steel lobby. In India today, activists are stirring up a furor simply by publicly posting lists of civic projects for which monies were allocated and disbursed, but which never appeared because of rampant corruption. IT is dramatically abetting such efforts to quantify inefficiencies and expose corruption.

This study provides no easy answers for Leaders or policymakers on how to handle the political and social implications of this trend. This much can be said: the trend is inevitable (without shutting down all the benefits of economic development); it is empowering and fosters prosperity as much as it is politically challenging; and it cannot likely be quarantined in the economic realm and out of the political.

### *International relations and new alliances?*

In the international sphere, in the macro context, divergent productivity performance engendered by differential policy reform achievements and associated uptake of ICTs will have implications that go beyond economic competitiveness. More to the point, changing economic competitiveness will have implications for international affairs beyond the economic realm to include political and security considerations.

Most international economic bodies, the WTO, the World Bank and IMF, the UNDP for examples, are rooted in dichotomies between developed and developing nations. Shifting productivity trajectories will likely alter the alliances and blocks within these groups that have

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<sup>93</sup> See “Steel: Big Problems, Better Solutions” by Gary Clyde Hufbauer and Ben Goodrich, International Economics Policy Brief 01-9, July 2001, Institute for International Economics, Washington.

become expected. Reform oriented developing economies may have more in common with developed economies than they do with erstwhile colleagues in the caucus of the poor. Shifting interests can be expected to generate institutional tension during a transition period.

The first reaction from laggard economies may be to insist on rich world financial contributions to help bridge the development gap, as though financial shortfalls and not policy problems lay at the root of the problems. This will intensify traditional debates over whether such resource transfers promote or preempt development, and in any case the appropriate role of conditionality for ODA. Since this debate will happen against a backdrop of heightened economic performance in advanced and adjusting economies, the argument that wealth transfer is the ethical position will be sharpened.

Debate about who should pick up the tab for financial, telecommunications, transport and other infrastructures that have not appeared in the laggard on account of the failure to reform is the recipe for continued work by the international financial institutions, but also will engage the WTO because of commitments made in the Uruguay Round.

The tendency to blame successful economies for the performance of low growth economies has undermined international cooperation before. In addition to strife between advanced and less advanced economies over the proper flow of ODA, however, there will likely be increasing strife among less advanced economies, as market shares in advanced markets shift from developing laggards to developing adjusters. This discord may translate into a temptation to pursue deeper international economic liberalization in alternative venues to all-inclusive clubs such as WTO.

## VI. Analytical Conclusions

A full understanding of the implications of the New Economy is a long way off. Even economists and Wall Street strategists have not put it all together yet. Irrational exuberists and irrational pessimists alike fail to take account of history and the cycles of innovation and utilization that characterize technological change. Only a few major opinion makers have offered an analysis that fully reflects the medium term productivity enhancements likely to derive from broad diffusion of new technology in an environment that encourages transformation set on a foundation of pro-growth policy.

It appears that a contentious and fundamental debate remains necessary to assert the role of policy in the New Economy model. The mantra of “private sector leads” is not misdirected—but it is only meaningful once government has done its policy job. In addition to “getting out of the way” in some respects, in others it means that policymakers face the very hefty job of deepening and managing the process of structural adjustment.

The goal of this study was to better quantify the upside so that reformers can depict the opportunity costs of inertia and clarify the consequences of a temporarily widening productivity gap. The goal of the recommendations is to help deepen consensus on the political economy of policy reform in each APEC economy, identify what can be done to make everyone a *transformer*, and determine what role APEC as an institution may play.

### **Challenge to Reforms: Spanning the Four Policy Domains**

The New Economy develops best in an environment of comprehensive policy reform, which goes against the structure of most government bureaucracies where separate agencies each has a Minister, Director, staff, and priorities. Second, technological dynamism means that the private sector—including in particular, the foreign private sector—must be given a major role to play in the domestic transformation process. Managing the relationship between the public and the private sector is not easy. Third, the current macroeconomic climate for reform (both at home and in global markets) is not especially auspicious. Finally, many economies are used to financing reform and adjustment through international resource transfers, which have been reduced scale and scope in recent years. How can economies move toward meeting these challenges?

*“Stove-pipe” government bureaucracy and public-private alliances:*

No government is going to change structure over-night and no Minister will give up power and prestige. But the New Economy with its cross-cutting policies and economic benefits needs a voice at the table. Although not needed by all, some economies that appoint a high-level and charismatic individual or team may do better. This party has vision, charisma, and stature and can broker deals among agencies finding allies and common ground to yield comprehensive policy reform. Such a person or team can fashion pro-active alliances among government agencies and businesses that wish to promote liberalization, deregulation, and competition to achieve the benefits of New Economy transformation. Such a position can help

ensure that private sector competitors—both domestic and foreign—actively engage in creating the new environment in which both they and new firms can flourish.

*Poor domestic and global economic and political environments:*

The US economy slowed dramatically, in large part due to a down-shift in investment in information technology and very quick adjustment by firms and workers to changes in demand. Most prognosticators believe that, on account of the rapid adjustment, the US economy is poised for a resumption of faster growth in Fall 2001. In some economies, adjustment by large industries—politically and economically important—to trade liberalization, domestic changes, and the forces of the New Economy has been difficult and prolonged. Some take these examples—the wrenching nature of the US down-shift and the difficult approach to big-industry change—as evidence that adjustment to the New Economy should be slowed. However, the essence of the New Economy *is* transformation, so its benefits come only when activities can adjust to new information. A measured pace will tend to magnify the costs, solidify the vested interests in the old activities, and delay the introduction and growth of new businesses and methods. Enabling, indeed speeding up these transformations should be the objective of policymakers.

*Resource transfers and liberalization:*

Economies wishing to enjoy a New Economy boost in productivity and resulting economic gains must make a habit of inducing transformation: the New Economy is not a “one-time” thing. Some resources truly support the process of opening by making skills and technical capacity available—but too often the effect is to blunt adjustment. Where the dependent variable for New Economy success truly is a matter of “bridge financing” to help defray the cost of adjustment, then resources need to be made available in whatever manner is appropriate. But without conducive policy conditions, the transfer of resources will be no more helpful than the transfer of high-technology into an environment where it cannot be utilized. Accordingly, to better understand where resource transfers might achieve additionality, economies would do well to catalog policy standing and progress toward reforms in each of the four policy domains so that policymakers take advantage of policy synergies, make better use of technology to reform, and can more effectively use neighborhood comparisons to support domestic reform. Programs for capacity building should reflect the imperative of making coherent progress on all policy domains.

**Challenges for Trade and Cross-Border Investment Liberalization**

APEC has made important contributions to trade and investment reform in the past decade. The Bogor Goals of free trade by 2010/2020 and the Declaration’s emphasis on inclusiveness and ‘open regionalism’ were a powerful signal to the world that the era of protectionism was giving way to an era of individual, collective, and concerted reductions in trade distortions. The Information Technology Agreement (ITA), catapulted from APEC to the WTO level, freed trillions of dollars of global trade in the essential ingredients of the networked information technology revolution. However extensive impediments to cross-border trade and investment remain.

Based on the analysis in Section V, differences in the pace of external (as well as internal) reforms among members are likely to be amplified by changes induced by the New Economy. The APEC community could be pushed apart by the differential productivity gains that result. The remedy to this threat, and the promise of shared prosperity, is redoubled effort on trade and information opening.

We recognize a number of impediments to that objective, both economic and political including absence of an on-going round of multilateral trade talks to help catalyze deeper regional opening and support domestic reforms; incomplete fulfillment of existing commitments; and the temptation of sub-regional arrangements.

*Absence of on-going multilateral trade round:*

In the past, APEC has been a motivator for global trade and investment liberalization. If APEC renewed its commitment to both the goals and principles of Bogor and the specifics of the Osaka Action Agenda, it would send a very strong signal to its own membership as well as to the global community. The empirical work is clear on the gains to the membership of broad-based multilateral liberalization of trade in goods and services and of complementary cross-border investment. Trade and cross-border investment liberalization, most prominently in the services sectors that support and augment networked information technologies, are key to gain the benefits of the New Economy. Were APEC to endorse wrapping WTO's "built-in agenda" for agriculture and services into a broader agenda for a New Round that includes complete liberalization of manufactures and extensive liberalization of cross-border investment, it would equal or surpass the value APEC provided in catalyzing the Information Technology Agreement.

*Incomplete fulfillment of existing commitments:*

Voluntary non-binding commitments have been the centerpiece of APEC's strategy of liberalization. Although valuable, particularly to bind together the membership toward common Bogor goals, this approach perhaps has run its course as the guiding method for liberalization with APEC. Within APEC, because the incomplete fulfillment of existing commitments challenges further liberalization, the APEC forum would do well to extend the institutionalization of transparency, monitoring, and assessment of commitments (e.g. e-IAPs and more extensive review as broached by members at SOM II/2001), which would support further liberalization. This is part of the "cataloging" effort broached in a broader sense in the previous conclusion. After all, it is difficult to deepen and broaden liberalization and face adjustment when existing statements and actions with regard to reform are non-transparent or can be called into question.

**Challenges for Banking and Financial Market Policies**

Reforms to the financial sector are critical for it to play its role in financing innovation and New Economy firms, and the transformation of the economy towards a superior allocation of resources. Economies will do better when they embrace the notion that transparency in financial relationships makes them stronger, that market discipline, (including through foreign

participation and competition) of corporations improves corporate governance and behavior, and that a culture of private finance and competition which depends on credit analysis, pricing, and the notion of risk, return and failure will yield a superior outcome for their economies because it creates one that can grow fast and yet be resilient in the face of economic shocks.

But many APEC members see true challenges to reforming this sector, particularly with the recent crises in mind. The challenges have deep institutional roots and the process of reform will have ramifications for macro policy choices and financial market structure. APEC members should continue to work on domestic reforms that enhance performance and institutionalized capacity building in the APEC forum could assist that process. At the same time, progress on trade and investment liberalization has very strong links to the success of the reforms of the financial system.

Challenges to reforming the domestic financial system fall into three categories: Poor supervisory oversight including the inability of regulators to keep up with financial technology; Lack of financial skills among local institutions such that performance poor and the competitive threat from foreign institutions hinders commitment to external openness; Thin non-bank financial (for example, limited bond, equity, or venture) markets such that innovative approaches to raising capital are hampered and foreign capital inflows are (often, particularly now) seen as more of a threat than a benefit.

#### *Poor Supervisory Oversight:*

The importance of a solid foundation for prudential supervision is now obvious. The Basle Core Principles<sup>94</sup> outline what should be the objectives of the supervisors and the BIS Capital Adequacy Guidelines put numerical measures on these objectives. However, domestic supervisors often are unfamiliar with or untrained in new financial techniques. And supervision will remain an ever-changing challenge as financial institutions and transactions change in response to the demands of the marketplace. To ameliorate these conditions, economies should develop on-going relationships with established supervisory training and exchange mechanisms (IMF, WB and central bank-to-central bank). The APEC Financial Institute could be a focal point to ensure that all APEC members have training in these critical aspects of the New Economy to ensure that all APEC members have access to this critical aspect of the New Economy.

#### *Lack of Financial Skills:*

It is not enough to have supervisors, however. Performance of the financial system depends on having a set of trained credit analysts who can spot good risks and lend to them appropriately. Here, technology transfer, global linkages, and international best practice in finance are key ingredients to enabling the New Economy. These can best be obtained by encouraging participation in the local market by foreign financial institutions. Research makes

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<sup>94</sup> Morris Goldstein, The Case for an International Banking Standard (1997) Policy Analyses in International Economics, Washington: Institute for International Economics.

clear that domestic institutions change, but are not eliminated completely.<sup>95</sup> Technology and knowledge transfers are important to improve domestic activities. Moreover, the partnership between international institutions with technology and local institutions with local expertise brings the domestic institutions into the global network of financial institutions. Early and priority attention to liberalizing barriers to cross-border investment for financial transactions and institutions will allow the learning and application of international best practice.

*Thin non-bank financial markets:*

The problem of thin non-bank financial markets has two dimensions. The first is that these non-bank financial markets (such as bond, venture, and equity) are particularly important avenues for financing innovative efforts and new firms.<sup>96</sup> Moreover a robust financial system, with multiple channels to allocate resources is also more able to productively allocate inflows of capital, and to withstand the sometimes volatile nature of those flows. Transparent public listing requirements, along with strong accounting standards will help deepen financial markets because they improve the ability of investors to judge credit and improve the ability of firms to present themselves to investors.

### **Challenges for Fiscal Policy and Reform of Fiscal Activities**

The forces of the New Economy, and its benefits, demand the same kinds of transformation within government as within business. We can think of the “business” of government as raising and redistributing revenues and providing public services. Just as private businesses are reaping efficiency gains from the New Economy, so too can government increase the efficiency of what it does. Just as private firms are examining how the New Economy affects the focus and method of their business activities, so too should government consider how the New Economy affects both what it does and how it does it. Moreover, in many economies, the government can play an important role in leading the way and paving the way for uptake of transformative technologies by the private sector.

APEC government have been embracing some of the aspects of the New Economy through the Electronic Commerce Steering Group, e-APEC, and the TelWorking Group. But members face real challenges to reforming both the internal workings of government as well as the external activities of government.

In many APEC economies the government is a large employer and a big spender in the economy. To significantly rationalize and redirect the domestic activities of government (for example, to reduce subsidies or close down state enterprises) can be seen thought to add to the cost of adjustment to the New Economy. Of course, in some cases, these activities are

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<sup>95</sup> See Mann, Eckert, Knight, Global Electronic Commerce: A Policy Primer, chapter 4; See also World Bank. Finance for Growth: Policy Choices in a Volatile World, A Policy Research Report

<sup>96</sup> See O’Shea, Margaret and Candice Stevens, “Governments as Venture Capitalists,” The OECD OBSERVER No. 213 August/September 1998 and Baygan, Günseli and Michael Freudenberg, “The Internationalisation of Venture Capital Activity in OECD Countries: Implications for Measurement and Policy,” OECD STI Working Papers - 2000/7, December 2000.

politically sensitive and are a source of patronage. With respect to the internal activities of government, reform at the federal level may be uncorrelated with reform at the local level, leaving governmental presence and activity fragmented and uneven throughout the economy.

There are significant challenges to the transparency of and flow of information which are crucial to gain the benefits of the New Economy. Tax evasion is a significant problem throughout APEC and stymies the transformations toward the New Economy technologies: on the one hand, incentives that promote evasion tend to undermine the use of electronic transactions methods; as well, digitization could facilitate further evasions. Taking stock now makes sense.

However, if government embraces the concept and transformative nature of the New Economy, as well as uses its ICT tools effectively, the net fiscal position of the government can be improved so that spending will help the adjustment process move forward, not just help ride out the storm.

*Redirecting internal operations and external activities:*

Research points out that the dynamism of the New Economy means that governments should be more careful of their choice of economic activities. Economies pursuing New Economy outcomes should focus activities on areas where the private market is least successful (education and basic research) and carefully evaluate the cost vs. benefit of keeping state-owned enterprises and activities functioning. And, consideration should include the cost vs. benefit of alternative strategies that promote transformation, including social safety nets which can either encourage workers to leave to join new businesses or be a constraint on them doing so.

*Transforming inner workings of government:*

Research suggests that government agencies can enjoy the same type of productivity gains from the New Economy that businesses do. Getting this expertise into government agencies is the issue and requires both hardware and software (that is, capacity building). Building on elements of e-APEC, E-government teams that are composed of foreign, domestic, and government entities can bring productivity enhancing ICTs as well as transformation into members' government operations. These e-government teams could partner international technology consultants, domestic private sector firms, and personnel within each government agency. These teams could undertake a needs-assessment, affect technology transfer and best practice, and help ensure inter-operability among ICT systems throughout government agencies.

The operations of government can play an important role as a "litmus test" for policy conditions in the economy as a whole. If the government cannot present information to its citizens, or process tax payments through the financial system, or receive procurement through the distribution system, then most probably neither can the private sector. And, the transformations of activities of the New Economy could be slowed.

## **Challenges for Pro-competitive Market Policies and Legal Regime**

Based on some of the case studies, some APEC policymakers may be concerned that competition policy is too sophisticated and the environment is changing too rapidly to enshrine a regime. They worry that legal reforms are time consuming and the relative roles of central and periphery authorities often unclear and evolving. Some see that the transparency associated with the information flow of the New Economy will undermine (or the New Economy will be held back by) corrupt practices. Others think that adjustment within the New Economy paradigm actually will be enhanced by command and control and that letting market forces work will take too long and be too costly and disruptive.

### *Sophistication and rapid evolution of competitive environment:*

The role of competition policy is to create an environment which preserves the private sector's incentives to innovate. Sometimes this implies government intervention to level-the-playing field for new entrants. Sometimes this implies government intervention to ensure that property rights are respected. Sometimes this implies government intervention to act as an advocate for the minority (say with regard to privacy of personal information) that otherwise might be disregarded. In other words, competition policy implies a balance between individuals, firms, and society. There is no particular set of rules that will do this; any particular set of rules to do this would be quite complex; and the rapidly changing environment means that any particular set of rules is likely to be overcome by change. These observations taken together imply that competition principles should be the objective of a competition regime. Therefore, APEC members should discuss how the APEC Principles to Enhance Competition Policy and Regulatory Reform operate in the marketplace of the New Economy where more and more transactions cross international borders.

### *Difficulty of scope and nature of legal reforms:*

Specific reforms to legal code and new model laws that create an environment of certainty in which the New Economy can develop are being undertaken by many economies and international bodies. The UN Committee on International Trade Law (UNCITRAL) has put forward model contracts, the OECD and WIPO are working on electronic signatures. APEC members should look to these international efforts for legal precedent and models. However, individual APEC members will have to embody these laws in the various jurisdictions of their governance structure. Moreover, it is important to recognize that laws alone do not create an environment in which the New Economy can flourish. The “rule of law”—the transparency of law, the belief that the law applies to all, and will be enforced, is necessary.

### *Lack of a trusted environment:*

Fraud, an environment of perceived unfairness, and uncertainty are costly—and are even more costly in the environment of the New Economy where arms-length transactions, digital delivery, and obtaining and using information are key. A trust environment raises productivity gains by expanding the activity of transformation that businesses undertake. APEC members

should recognize that the technologies of the New Economy (such as secure transactions) can be used to improve trust in the environment, when those technologies are underpinned by law.

*Command and control will speed adjustments right now:*

Regardless of the legitimacy of such a statement at a point in time, the New Economy depends on a complex, rich web of information and reaction by many entities. Domestic private enterprises and firms must learn to recognize opportunities themselves, otherwise the full benefits of the New Economy will not accrue. Failure is a part of learning and therefore a precursor to success. The pace of technological change and the dynamic nature of adjustment to the new demands of the marketplace mean that government policymakers have no hope to achieve the “right” outcome through command and control. APEC’s knowledge network will catalog private-sector ‘success stories’ which will help other governments pursue a better strategy to achieve the transformation to the New Economy.

### **A Final Word**

This Report has been prepared by economists for the Economic Committee of an economic forum. It has been narrowly focused on the policy requirements to achieve the benefits of the New Economy. But the fullest understanding of the New Economy paradigm, just as with previous technological shifts, must involve a far more universal analysis. The nature of society, government, security, culture and individual experience are all being impacted by the tendency toward globalization that is inseparable from the New Economy economic trends described herein. The parsimony of analysis here is not an oversight but a necessary sacrifice to stay within the mandate for this Report and the purview of the economic policymaker audience for whom it is prepared. Clearly however it must be examined in a larger context, and hopefully it will make a contribution to that context as well.