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APPLYING NEW GROWTH THEORY TO INTERNATIONAL TRADE

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Abstract

This paper argues that the baseline assumptions in conventional trade theory may mislead many governments into belittling the role of trade in human development. The theory of comparative advantage that still shapes the mindset of most trade economists implicitly assumes that the world consists of a fixed amount of ideas, goods and services that are produced wherever there is a comparative advantage with respect to the availability of the scarce factor inputs land, labor and capital. However, economic development is essentially an endogenous process driven by individuals who succeed or fail in trying new ways of doing things. Once they succeed, their ideas on how to do things better may be simultaneously adopted in the rest of the world and thus lead to catch-up growth. Since this kind of new knowledge represents a non-rival and non-scarce resource, the market lacks incentives to invest in it to a degree that would be optimal for society. Policy makers therefore need to create such incentives and assume an active role in facilitating economic and technological change primarily by investing in people and their ability to build up new businesses. Only then can a country and its people truly benefit from international trade and only then will globalization lead to convergence rather than divergence. In this paper we show that the scattered attempts to describe this endogenous process of development are based on the ideas of Schumpeter whose theory of economic development could not be integrated into the formal language of economics until Paul Romer proved able to do so in the 1990s. Romer's

interdisciplinary approach to economics has been gradually refined over the years and many governments, especially in developing countries, decided to embrace it in their economic policies. It has also become crucial for policy makers whose aim is to make international trade work for sustainable development.

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1. Introduction

In his book “Knowledge and the Wealth of Nations: A Story of Economic Discovery” (2007) Warsh discusses why the discipline of economics has failed to revise its textbooks in light of the successful formalization of the endogeneity of growth by Romer (1990) and overwhelming empirical evidence that the rise of Asia is strongly related to economic policies that are derived from New Growth Theory (Amsden 2003). Today’s textbooks continue to rely on Samuelson’s rather ahistorical ‘Economics’ (Samuelson and Nordhaus 2004), which was first published in 1948 and is now in its 18th edition. Mankiw, whose textbook (Mankiw 2006) is widely seen as the successor to Samuelson’s classic, continues to adhere to the same principles and convictions. Throughout the 20th century many eminent scholars in economics have directly or indirectly criticized the baseline assumptions of this textbook canon through their empirical research (Coase 1990, Winter and Williamson 1993, Warsh 2006) but with little effect. In an article in 1997, the economist Mark Skousen (1997) focused his criticism directly on Samuelson’s textbook, arguing that it consists of an uneasy mix of laissez faire on the micro-level and government interventionism on the macro-level. He rebutted Samuelson’s claim to provide a unified approach to economics and warned that it would create a false sense that there is only one way of thinking about how economies work (The Economist 1997). Moreover, its Keynesian basis of “economics” tended to ignore other aspects of economic development and led to dubious policy prescriptions. In 2011, even Mankiw’s students at Harvard started to rebel against the dogmas of Post-Cold War economics. In view of the changing circumstances in the global knowledge economy and the financial crisis, they accused Mankiw of teaching ideology rather than social science (Rodrik 2011). Yet, it is likely that they will continue to be ignored since maverick economists often tend to leave economics faculties. Often they lose patience with the firmly entrenched and habitual modes of thinking of their fellow economists (Warsh 2006). Moreover, for a long time, policy makers did not really bother about the consistency of the underlying economic theory of their public policies as long as the economy was humming. Economists proudly talked of the era of great moderation that would be mainly due to their sophisticated economic equilibrium models. Federal Reserve Chairman Ben Bernanke still argued confidently in 2004¹ that thanks to a better understanding of macroeconomics in theory and public policy, economic life had ushered in an era of not just reduced volatility of inflation but also reduced volatility of output. He was also confident that this trend would continue far into the future. The global financial and economic crisis that started in 2008 proved him wrong. Indeed, many principles of neoclassical economics have fallen into disgrace since then because comparative-static models that are based on these principles, not only failed to predict the crisis in Western countries (Wolf 2010), they also failed to explain the success of state capitalism in the rest of the world (Tan, 2005). The crisis of economic theory is also reflected in published number of critical books on economics (Schlefer 2012, Keen 2011, Hill & Myatt 2010). Moreover, even established economists (Acemoglu 2012, Rodrik 2012) are distancing themselves from orthodox theory and rediscover the insights to be learned not from modelling but from the history of economic development. Finally, new economics textbooks have just been published that focus on the basic insights of new growth theory and the formal falsification of the basic principles of neoclassical economics (Dasgupta 2011, Sengupta 2011, Galor 2011).

All these changes have implications for public policy in general and trade policies in particular. In this paper we discuss how trade policy would look today if governments were to embrace New Growth Theory rather than Neoclassical Economics as the guiding theory in the design of their trade policies. We deliberately use the term ‘New Growth Theory’ rather than endogenous growth theory or modern growth theory for not many bold insights have been added since Paul Romer published his two seminal articles in the early 1990s (Romer 1990, 1994). In fact, many of the economists who shaped the field of endogenous growth theory after Romer, such as Helpmann (2004), Aghion (2008) and Acemoglu (2008) tended to ignore many of the bold claims made by

¹ See <http://www.federalreserve.gov/BOARDDOCS/SPEECHES/2004/20040220/default.htm#fig1> (visited in April 2012)

Romer. They were formalizing them away for fear of otherwise striking at the foundations of neoclassical economic models (Warsh 2006). Romer himself recently refined his theory by putting more emphasis on the importance of institutions in facilitating the process of endogenous economic growth (Romer 2009, 2010). It is in this context that his recent initiative to promote Charter Cities in the developing world must be understood (Mallaby 2010). Charter cities would allow entrepreneurs to take advantage of an institutional environment that enables them to flourish and grow through innovation and entrepreneurship. It is essentially a lesson learned from economic history (e.g. Hanseatic League, Hong Kong). The urgency for action becomes obvious if we consider that 200 million people already live in countries that are not their country of origin and 600 million more people intend to migrate. But where are they to migrate to? In the 19th century, during the first wave of industrial globalization, people did not need a passport or visa to migrate to another continent or region. Australia, New Zealand, Eastern Europe, Canada and the United States welcomed migrants who often even received an initial cash advance from their countries of origin to help them seek their fortune elsewhere. Today, the barriers to migration have become a major humanitarian disaster and youth unemployment is one of the major challenges to political stability (e.g. Arab spring). Charter cities suggest that, based on historical experience, something could be done about the situation.

In this context, economic historians such as Maddison (2007) may also contribute to a better understanding of endogenous growth and the importance of trade and exchange in human development. Maddison (2008) traced back data related to technological innovation and growth to ancient times. He highlighted the “hockey stick” pattern that shows that both population and per capita gross domestic product (GDP) remained essentially flat for nearly two thousand years before, all of a sudden, rising steeply over the past two centuries. Nordhaus (1997) illustrates the trend with the ‘price of light’ calculation. The real price of light fell by a total of about 17% between 38,000 BC and 1750 BC due to the transition from using animal or vegetable fat to sesame oil as a fuel. In the early 19th century, the development of improved candles and whale oil reduced the price by a further 87%. Between 1800 and 1900, the introduction of the carbon filament lamp led the price of light to fall at an annual rate of 2.3% (38 times faster than before). And then in the 20th century, the price of light fell by 6.3% per year with the use of tungsten filaments and fluorescent lighting. In addition, the development of (low-emitting diode) LED technology has caused efficiency and light output to rise exponentially, with a doubling occurring about every 36 months since the 1960s, similar to Moore’s law which applies to the recent history of computing hardware. New ideas are very clearly at the heart of this accelerating productivity growth (Jones and Romer 2010).

Historical research therefore provides clear evidence that governments today should focus on investing in technological and economic change if they want to cope with the double challenge of reducing poverty and lessening the environmental impact of human activity. Policies would then move away from social and environmental planning towards more progressive policy strategies as they were already pursued in the 19th century, when governments had to cope with the first wave of globalization and its negative social and environmental impact (Schumpeter 1942). The nationalist policies in Europe and the United States back then might have been driven by mercantilist views but they were focused on catch-up growth rather than the protection of domestic markets. Among the industrialized countries today, only New Zealand (Aerni 2009), and to some extent the Scandinavian countries (Karlsson et al. 2009, Hårsman and Quigley 2009), embraced the basic insights of New Growth Theory in public policy. They skipped neoclassical economics and instead embraced the basic lessons learned from economic history. As a consequence, they have rediscovered the role of government as a facilitator of sustainable technological and economic change, in addition to its responsibility as a regulator. The rise of the Asian economies followed the same principles but from a different stage of economic development (Tan 2006). For these countries, open trade in itself is not necessarily a desirable end in itself, but instead considered to be a means to an end, namely to ensure access to non-rival as well as rival goods that help the domestic private sector to innovate, advance human development and cope with the environmental challenges. Yet, despite the global financial crisis, most economists continue to cling to what they have learned from conventional economics textbooks, relying mostly on

ahistorical equilibrium models. These highly abstract models, even though useful as an additional source of economic information, are hardly able to explain the complexity and often irrationality of the history of economic development (Warsh 2006, Keen 2011, Schlefer 2012).

2. Why we need to move beyond neoclassical economics in public policy

'Economics is the study of how society manages its scarce resources' (Mankiw 2006). However, is this textbook definition of economics still appropriate to describe economic change in the global knowledge economy? Can such a definition help us design public policies that enable catch-up growth and thus economic convergence within and between countries? Can it help to design environmental and agricultural policies that enable us to produce more with less?

Even though focusing on the optimal allocation of scarce resources has its merits in explaining the circular flow of goods and services in a stationary economy, there are three major reasons why it is unlikely to serve as a theoretical guide to sustainable policies in the 21st century:

1. Benefits from trade are explained in neoclassical economics through the concept of marginal utility: marginal gains and losses occur when one thing is traded-away and another is acquired. Since both parties agreed to the trade due to their different preferences, everyone must be better off. This Pareto efficient state would represent an economic equilibrium and any divergence from this equilibrium would eventually lead back to the Pareto optimal point. The problem of 'marginal utility economics' is that this Pareto efficiency is based on highly restrictive assumptions. It implicitly assumes perfectly competitive, negligible transaction costs (assuming transparency and thus nearly perfect access to information) and all markets to be in full equilibrium. Pigou (1929) already recognized that even if Pareto efficient outcomes would be achieved, they do not take into account the externalities generated by private sector activities. Yet Pigou himself tended to ignore the positive externalities that the private sector can generate for society and the environment (e.g. employment, innovation, producing more with less, etc) focusing instead on the social costs that result from private sector activities (negative externalities). Consequently, according to Pigou, the goal of government must be to avoid a divergence between the marginal private interest and the marginal social interest through the internalization of external costs via regulation and subsidies. A Pareto-efficient outcome for society as a whole is then possible again. Based on this view Kenneth Arrow (1951) and other welfare economists portrayed the state as a rational social planner that looks at aggregated social preferences and allocates the scarce public resources in a Pareto-optimal way (making at least someone better off without putting anyone worse off). Buchanan and Tullock (1962) criticized this view because it is detached from the reality of daily politics in democracies. The democratic decision-making process is not a rational process on an aggregated level as Arrow assumes. There are different intensities of preferences among the political actors, which allows them to give up a weak preference on one political topic for a strong preference in another political issue. This eventually enables political compromise and consequently political action. Moreover, the whole process of preference formation is endogenous in nature (Lichtenstein & Slovic 2006). The aggregation of presumed fixed social preferences as 'public values' would therefore be highly problematic. Rather than trying to be rational social planners, political actors primarily aim at shaping these presumed public values in a way that is in line with their self-interest. As a consequence they try to frame everything that goes against their interest as a negative externality and to convince the public that their motive is not driven by self-interest but the public interest (Tullock 2005, Aerni 2011a). Consequently, there is no such thing as a rational social planner unless it refers to an all-knowing and benevolent dictator. What matters instead is the role of institutions and the law. If the constitutional and operational rules of a democracy are able to channel the pursuit of self-interest in a way that

benefits society and the environment as a whole, then they are in the public interest (Buchanan & Tullock 1962). If they just serve a powerful and well-organized minority to shape the political agenda in a way that transfers wealth from public to private accounts, they are likely to cease the purpose of serving the public interest (Olson 1971). Therefore, Buchanan and Tullock conclude in their noble-prize winning book 'The Calculus of Consent' (1962) that neoclassical welfare economics is of little help in explaining political decision making processes in modern democracies (Buchanan and Tullock 1962). They recommend a shift in economics from social planning theory to institutional economics. Yet, based on the new empirical insights in cognitive psychology (Lichtenstein and Slovic 2006) modern institutional economics will also have to move away from the concept of a purely rational and utility-maximizing homo oeconomicus in favour of the more complex and ambiguous real nature of the human being that has its foundations in psychology, sociology and anthropology (Aerni 2011b).

2. The definition of economics as the study of the optimal allocation of scarce resources ignores that there is one resource that is not scarce: new knowledge. Knowledge is not subject to the laws of scarcity and diminishing returns and since it is a partially non-rival good its increased use does not undermine its value but actually enhances it (Varian 2005). It creates great welfare effects if employed to either continuously improve existing goods and services or to create discrete innovation that result in entirely new goods and services. Its value for society at large increases if the resulting innovative products spread through international trade. These welfare gains generated through the introduction of new goods and services were demonstrated by Paul Romer (1994) but are largely ignored in neoclassical economics. As a consequence the public good character of private goods and services remains largely ignored even though most public goods as well as public bads today are being produced in the private sector rather than the public sector (Heal 1999). Moreover, once non-rival goods, understood as new knowledge in the form of ideas, instructions, protocols, and designs, among others, are taken into account, complete property rights and perfect competition that work so well in a world consisting solely of rival goods may no longer be desirable. The optimal allocation of resources would not be achieved. With increasing returns resulting from the creation of new markets through product innovation, price must exceed marginal cost somewhere to provide for the reimbursement of the fixed costs invested in product development and for the incentive to make a profit that permits further investment (Boldrin and Levine 2008). A single price, set in a market of countless anonymous sellers and buyers, cannot, therefore, simultaneously allocate goods to their most efficient uses and provide the appropriate incentives for innovation.
3. The amount of ideas to address technological, social, economic and environmental problems is not fixed, but increases in proportion to population growth (Jones and Romer 2009). Governments and the private sector must therefore recognize that population growth can be an asset if it is translated into a greater share of qualified human capital that is able to make use of and generate new ideas. Esther Boserup was the first scholar to note, as a result of her comparative field research in Kenya, that population growth must not necessarily be bad for sustainability if institutions are conducive to technological change (Boserup 1981). Therefore, it is crucial to design institutions that provide the necessary incentives to invest in people and their respective talents and allow them to engage in trade and exchange (Aerni 2007a).

What could possibly replace neoclassical economics as the theoretical guide for national trade policies that aim to take advantage of the global knowledge economy to enable sustainable economic change on the domestic level and improved cooperation on the global level? One answer is to revisit the comprehensive and interdisciplinary theories of prominent economists that have been ignored by the academic guild of economics due to their unorthodox dynamic views of economic development, the most prominent of which is probably Schumpeter.

3. The early insights of Joseph Schumpeter

The opposition to comparative static formalism in economics itself has a long history. One of the most prominent opponents was the great economist Schumpeter who had already described the flaws in neoclassical economics as early as the first half of the 20th century (Schumpeter 1942). He suggested a more dynamic view of economics taking into account history and anthropology.

Schumpeter divided economic processes into three different classes (Schumpeter 1934):

1. *The circular flow of economic life as conditioned by given circumstances.* This part comprises basic textbook economics that illustrates the mutual interrelations of economic variables and phenomena under stationary conditions by means of a general equilibrium system. The stability and certainty of such a stationary economy would, however, eventually lead to standstill. Small and gradual increases in the labor force, savings and capital accumulation would merely lead to marginal economic expansion with no qualitatively new phenomena, only processes of adaptation. The businessman in this system is just the 'Economic Man' who manages and adjusts the system in response to external changes.
2. *The concept of economic development* portrays economics as an evolutionary science and as such discusses the irreversible processes of economic development while highlighting some of the recurring patterns. Some basic insights from this research are that (a) economic development comes from within the economic system, it is not an external factor, (b) it occurs discontinuously through qualitative changes (innovation, technical revolutions) which fundamentally displace old equilibria and create new ones, and, (c) economic development is accompanied by growth in national income, savings and population. The great innovations are supply-side driven and cannot be derived from a sovereign consumer demand. The process of innovation requires not an 'economic man' but an 'entrepreneur' who is willing to take risks and cope with uncertainty. In particular, he must deal with uncertainty about the potential market, lack of accurate data, subjective reluctance to strike out into the unknown, and possible public resistance to change (habits, vested interests).
3. *The importance of business cycles.* Economic growth emerges from and is a consequence of cyclical development. Discontinuous bursts of innovative investment are the basic cause of these business cycles. Economic development comprises not just technological but also organizational and resource changes. They raise productivity, improve quality and reduce costs and thus constitute the foundation of economic growth causing and driven by the interruptions of the business cycles.

Policy makers often fail to take all three dimensions of economic change into account because the economic models of their advisors (often trained in neoclassical welfare economics) implicitly assume an economy under stationary conditions. As a consequence, disruptive technological change, international trade and cyclical development in business are often seen as sources of unwanted change producing negative externalities that must be regulated. This is especially the case in affluent countries that are fearful of economic decline.

Trade liberalization tends to be associated with unpredictable social and environmental changes, more exposure to global business cycles, a displacement of less competitive domestic companies by more competitive foreign companies and a general loss of national autonomy. Yet, if opponents to trade were to consider its long-term benefits they would realize the foundation of their affluence as well as their achievements in poverty reduction, employment creation and effective environmental management is actually based on economic and technological change fuelled through open international trade. But as Schumpeter noted, the benefits of capitalism are taken for granted while the risks are increasingly considered to be socially unacceptable (Schumpeter 1942). This, however, is not yet the case in many developing countries that have undergone an economic transformation moving away from heavy-handed socialist policies and costly

subsidies towards innovation-based economies. These countries did not consider trade to be desirable in itself, instead they simply saw it as a vehicle to promote economic and technological change that would eventually also help them to cope with the sustainability challenges of the 21st century (Aerni 2009).

Schumpeter had the broad knowledge base and the curiosity to recognize that the foundations of economic development are based on informal (habits, behaviour, private enterprise, customary practices) and formal institutions (e.g., government regulation, property rights protection, contract law) which are again rooted in history, sociology, anthropology and psychology, rather than economics. Schumpeter admired Marx precisely because of his combination of economic analysis and economic sociology. Unlike Marx and Keynes, however, Schumpeter did not necessarily consider economic inequality as a flaw or failure of capitalism. Profits are the expected reward for commercially viable innovation. They are the result of a temporary monopoly position that gives the entrepreneur price-setting power up to the moment when competitors enter the market with cheaper versions of the product. The expected profits through innovation are an essential driver in the motivation of the entrepreneur. Yet, as Paul Romer, who largely built his New Growth Theory upon the ideas of Schumpeter, illustrated in his article in 1994 (Romer 1994) the welfare effects - produced by the entrepreneur through the introduction of new goods and services - are not captured in a partial equilibrium model that reflects the price-setting power of a monopoly. Since the entrepreneur is limited in his power to set the price by the willingness of consumers to buy the new product for a certain price, he or she cannot capture the whole benefit - part of it goes to the public at large. These public welfare gains which Romer calls the ignored 'Dupuit' triangle in the partial equilibrium model (Romer 1994) must also be taken into account in welfare economics. Otherwise one is left with the misleading impression that the private sector does not make any contribution to public welfare (and thus does not generate any positive externalities for society).

Based on his analysis, Romer suggests that economists should at least learn to distinguish between a monopoly position obtained through political lobbying for market protectionism and a monopoly achieved through an innovation that created a new market in which no one else has, as yet, the ability to compete (Romer 1994). The former does not produce any welfare gains while the latter does.

Schumpeter accepts that such innovation-based monopolies can generate short-run inefficiencies in resource allocation, inequalities in income distribution and social exposure to new risks. All these negative effects are the result of the disruption of the circular flow of goods and services in a stationary economy. But such temporary monopolies enable technological change that benefits the poor more than the rich in the long run (Schumpeter 1934). Yet, since people tend to take the benefits of technological change for granted while the risks are increasingly considered not to be worth taking, governments tend to respond by merely regulating change induced through entrepreneurship and innovation rather than facilitating it. Schumpeter predicted that this would lead to a world of large public and private bureaucracies that would essentially deprive the entrepreneur of his or her nutrient medium (Schumpeter 1942).

3.1 Schumpeter and global trade in the 21st century

Looking at the broader trends in economic life in the 21st century, Schumpeter proved to be prescient in many ways. Large corporations in cooperation with large non-governmental organizations (NGOs) increasingly assume government functions through self-regulation, comprising private standards, best practices, codes of conduct and certification, as well as accountability and transparency mechanisms (Freidberg 2007). It may be understandable that these large and globally active non-state organizations cannot wait until the various national governments pass adequate environmental and food safety regulations. Moreover, the different organizations of the United Nations in charge of the global management of public goods, such as health, food security and the environment are not designed to facilitate action but to slow things down and when necessary to prevent things. This makes sense when we consider that the original purpose of the creation of the United Nations after World War II was to prevent action,

particularly if such action could lead to war (Urquhart 2004). However, since the end of the Cold War and its bipolar world, the preventive character of the institutional design of the UN and the fear of assuming public leadership in national governments have led to a power vacuum that is increasingly filled by powerful non-state actors that recruit politicians to frame change as risky and thus ensure their power as incumbents in the field of business, politics and civil society. In order to win public trust, these actors tend to wrap their private interests in a morally objective language that allows them to appear as representatives of the public interest while ensuring the growth and prosperity of their private organization (Aerni and Bernauer 2006, Aerni 2011a). The particular brand created through such public-attention seeking activities by the respective international NGOs or corporations also gives them the symbolic power to set the agenda with regard to their particular field of activity. In both cases these non-state actors have an interest in imposing regulation on others that entrench their own power as de facto policy makers. At the same time the grip on regulation allows them to prevent the emergence of competitors that try to win over their constituency or customer base through innovation. The result of the process may be to decrease growth rates. As a consequence, the size of the cake up for redistribution in politics is not getting any bigger while the fight over the different shares is growing ever more grim (Olson 1984).

3.2 Growing regulatory constraints to bottom-up innovation and entrepreneurship

Mancur Olson argues in his book 'The rise and decline of nations' (Olson 1984) that Japan and Germany were able to produce economic miracles after World War II because all the established interest groups in domestic politics that previously focused on preventing change and taking part in the redistributive arrangements of public policy were destroyed. The ensuing lean regulatory environment gave entrepreneurs the freedom to respond rapidly to the countless unmet needs in the ravaged countries through innovation. There were of course risks involved in bringing largely untested products on to the market, but it was widely perceived that the benefits outweighed the risks in view of the general poverty of the masses. As a result, entrepreneurs generated increasing returns through economies of scale and scope and further invested their profits in the development or improvement of new products to create new markets. In the 1970s, many newly founded environmental organizations protested against the new form of capitalism that produced many undesirable side-effects for society and the environment, and the oil crisis further added to the list of public grievances. They found that the moment had come when the benefits of economic and technological change had stopped outweighing the risks. Both the forms of protest and the political agenda of these organizations were bottom-up, progressive and bold at that time and, as a result, policy makers responded by passing new laws and establishing new institutions for the protection of society and the environment. Today, these previously subversive groups have themselves grown into large organizations (Greenpeace has a budget that is greater than that of the World Trade Organization). As a result, they have become more concerned with self-marketing than the environmental and social issues they claim to fight for (Bernauer and Aerni 2009). In this sense, it has become increasingly hard to distinguish a global retail franchising chain from a globally active environmental organization. Both pursue top-down strategies where regional representatives are instructed to follow the political line defined by the headquarters in Europe and the United States. This political line is meant to reflect the preferences of affluent donors and consumers in developed countries but does not encourage local people in developing countries to become active themselves (Aerni 2006).

These increasingly powerful public and corporate stakeholders focused primarily on pleasing their respective constituencies would also show little interest in further trade liberalization, especially if the public associates it with undesirable change. Moreover, global trade is increasingly dominated by intra-firm trade anyway due to the trend towards global vertical integration (Konde 2008). The regulation of intra-firm trade is beyond the power of national governments and the World Trade Organization (WTO). Large corporations are not bound by the most-favoured nation (MFN) and national treatment principles of the WTO. Instead they have the power to unilaterally set private standards that aim at the strict control and enforcement of process-oriented

standardization but add little or nothing to existing science-based public safety regulations. Their acting as de-facto law-makers in many developing countries tends to discourage innovation among suppliers and further entrench their power as gate-keepers in the value chain (Freidberg 2007). As a result, entrepreneurship, experimentation and product innovation are being discouraged (apart from improvements in logistics). Large retailers are risk-averse and primarily concerned with their public image, especially if their brand is well known. Eventually, as Schumpeter rightly predicted, the entrepreneur will be replaced by the economic man and with this comes a transition from a dynamic economy towards a more stationary one. This trend may eventually have a larger negative impact on genuine trade between nations than the failure of the Doha Round.

4. Adjusting economic theory to the reality of the global knowledge economy

Neoclassical economics is in crisis but remains the basis of the mindset of most policy makers and economists. If there is any lesson to be learnt from past experience it is that Schumpeter and, later, Paul Romer and his new growth theory were much more accurate in predicting global economic development over the past two decades than textbook economics.

Some economists, like Aghion (2005), Greenwald & Stiglitz (2006), Rodriguez-Clare (2005), Hausman and Rodrik (2003), Acemoglu (1997), Murphy, Shleifer and Vishny (1989), increasingly agree with this finding. They are primarily concerned with the adjustment of economic theory to the new reality reflecting the economic rise of Asia. The move of Asia from the periphery to the centre of the global knowledge economy could not be deduced from the classical trade theory of comparative advantage. However, despite accurate and sophisticated formalizations, most economists continue to stick to the old comparative-static concept and its fuzzy terms such as externalities, spillovers, multiple equilibria and public goods. The problem of using such terms is that they mean different things to different institutions. Romer proposes therefore to omit them and instead focus on less ambiguous and continuous terms such as rivalry and excludability to define the private and the public good character of certain products and services (Romer 2012).

Indirectly, Hausmann and Rodrik (2003) have embraced many of the ideas of Paul Romer even though they do not quote him. In their paper (Hausmann and Rodrik 2003) they highlight the problems of economics when trying to understand the bottom-up process of economic and technological change. They admit that neither neoclassical economic theory nor management science is of much use in helping entrepreneurs (and the state) in choosing appropriate investments among the full range of innovative economic activities, that go beyond labor-intensive products or natural resource-based products. Yet, the move from a traditional and primarily domestic economic sector towards a modern one characterized by strong global economic integration requires the role of the state as a facilitator of endogenous economic change. Unlike in routine economic activities in the traditional sector, Hausmann and Rodrik argue that the launching of a new product or service that has the potential of creating a new market with increasing returns, mostly fails in the initial stage because the costs of production and thus of the production function are not yet known. They point out, as Paul Romer had done earlier (1994), that there is a role for industrial policy to create incentives for the private sector to invest in new knowledge and product development and thus go beyond routine business. However, the model used by Rodrik and Hausmann excludes the political economy dimension by implicitly assuming that the state is able to act as a rational social planner designing policies independent of established interest groups. Ideally, governments induce companies to invest in the creation of new markets (e.g. by allowing them to have an initial temporary monopoly that enables them to appropriate the profits from increasing returns and thus cover the costs of launching a new product) and then withdraw support once the companies prove able to stand on their own two feet. As a result, a country would become innovative as well as competitive and thus ensure long-term growth. In this context, the authors assume that the social planner is still aware of failed import substitution policies in the past and consequently would make

sure that subsidies end in a second phase. This would make the profits from the temporary monopoly vanish unless the company further invests in product improvement.

But as Buchanan and Tullock (1962) argued some time ago: there is no such thing as a rational social planner in democratic government unless there is a benevolent and all-knowing dictator, and that is not even the case in China. Institutions that govern economic life are primarily shaped by the perceptions, preferences and interests of the stakeholders in the formal economy that also participate in the political decision making process. Their rational strategies are primarily focused on pleasing the constituency that ensures their economic survival and political legitimacy (Aerni and Bernauer 2006, Olson 1971). Innovative entrepreneurs, in return, are mostly driven by irrational motives and their primary concern is not politics (Hamilton 2000). They become obsessed with proving to the business community that they can succeed by doing things differently. They do so against all odds and often at the price of tremendous social tension. Whether they succeed or not depends less on the existence of a rational social planner than on the institutional setting in which they operate (Thornton 1999). The institutional setting largely determines whether the pursuit of private interests leads to relative welfare gains or welfare losses for the public at large. If the institutional setting and the infrastructure for entrepreneurs are able to keep the costs of launching a new product or service relatively low, then there will be investment in innovation and economic integration (Romer 1994), otherwise the economy will remain in a routine and stationary circular flow as Schumpeter would explain it, or a low-productivity equilibrium, as a neoclassical economist would call it. Romer also illustrated how the establishment of charter cities that triggered economic development and cultural change throughout history (e.g. Lübeck, Philadelphia, Hong Kong) was never really linked to the implementation of a rational master plan of economic development but rather to bold experimentation and learning from history.

4.1 Paul Romer's contribution to a better understanding of economic globalization

Paul Romer was already challenging the orthodox views in economics in the 1980s and 1990s by using the formal language of neoclassical economics to disqualify some of its most essential baseline assumptions. In his new growth theory (Romer 1984, Romer 1990, Romer 1994), he explains long-run economic growth through endogenous factors such as human capital, knowledge and the process of technological change. He was certainly not the first one to do so, but he was the most radical one. His theory did not allow for a compromise with the incumbent doyens of economic growth theory (Warsh 2006). Romer's central point was that the use of marginal concepts in economics and the focus on efficiency gains are unable to convincingly explain why we are better off today than we were a hundred years ago. Economics should not be the science of the optimal allocation of scarce resources but the science of making best use of the only non-scarce resource, which is knowledge. Public and private investment in knowledge and human capital may lead to continuous product improvement and to the introduction of new goods and services with increasing rather than decreasing returns. It would build upon the traditional economic sector that dominates the production and trade of commodities. These traditional markets are characterized by price-taking (the market price of the commodity is shaped by the actual aggregated demand and supply), decreasing marginal returns, and low profit margins. In return, the dynamic new markets of the knowledge-based economy are characterized by a relentless process of innovation. It is shaped by monopolistic competition where profits are used to invest in new products where the innovating companies enjoy temporary price-setting power.

This process results in increasing returns to scale and scope on the microeconomic level. On the macroeconomic level it eventually leads to economic growth, a transition from low productivity to high productivity employment and welfare gains for the public at large thanks to the introduction of new goods and services that better meet the needs of the people (Jones and Romer 2009). Economic prosperity is therefore not primarily based on the efficiency gains and the optimal allocation of scarce resources (rival goods) but the increasing returns generated through the effective use of non-rival goods (new knowledge)

in the production process of rival goods. It requires institutions that encourage investment in knowledge-intensive industries. These growth-oriented and innovative industries can emerge in all three economic sectors (mining and agriculture, manufacturing, and services) if the regulation of the sector is conducive to economic and technological change (Aerni 2009).

Institutions that are conducive to growth are however not designed by a social planner but evolve through learning by doing. History therefore plays a crucial role in new growth theory, and this can be considered the most significant advance to the old comparative-static model of economic growth designed by Solow (1957). Yet, the Solow model, and its implicit assumption that technological change is an exogenous factor that produces constant returns to scale may have been a convenient theory to explain economic development in the rather static bi-polar world of the Cold-War period. It is however no longer applicable to the global knowledge economy of the 21st century. Empirical evidence over the past 20 years clearly shows that new growth theory is better able to explain the success of the state-led capitalist models in Asia (Amsden 2003, Tan 2006) as well as endogenous economic growth in the manufacturing sector of OECD countries since the end of the Cold War (Ochoa 1996, Ulku 2007).

Recent papers by Jones and Romer (2009) and Romer (2010) provide evidence that thanks to population growth, increasing levels of human capital, growing urbanization rates and the revolution in information technology, catch-up growth in lagging developing countries is happening much faster in the 21st century than at any time before; provided that historically well-tested national institutions are in place that permit countries to take advantage of global economic and technological change and thus enable the economic empowerment of its people. If, however, governments reject institutions that enable trade and exchange with other countries or cease to allow for economic experimentation with new technologies and institutions (non-rival goods), then they are likely to stay poor and thus contribute to the trend of global economic divergence. Economic divergence is a process that puzzled economists in the mid 20th century as much as it puzzles economists in the 21st century who continue to predict economic convergence based on their comparative static equilibrium models.

4.2 Why is there global economic divergence and not convergence?

In some of today's developing economies the majority of the population is almost as poor or even poorer than fifty years ago. Others, however, have experienced rapid catch-up growth and a massive reduction in poverty rates. The result is increasing economic divergence. This divergence in income and total factor productivity was observed as one of the stylized facts by Kaldor in 1961 and was already considered back then to contradict the predictions of neoclassical economics (Kaldor 1961). This divergence has been even more pronounced over the past two decades as the new stylized facts proposed by Jones and Romer suggest (2009). But unlike Kaldor, Jones and Romer are able to explain this divergence based on the insights of new growth theory.² Kaldor's original stylized facts focused primarily on physical capital (rival goods), whereas Jones and Romer emphasize the importance of human capital and ideas in accounting for economic growth and institutional change. They argue that it is the interaction between ideas, institutions, population, and human capital that determines whether a country seizes on or misses out on the economic opportunities of the global knowledge economy and international trade. If institutions are conducive to economic change they are likely to enable rapid catch-up growth by closing the distance to the global technological frontier. The virtuous circle between population and ideas does not just enable the rapid adoption and local adjustment of new technologies and the resulting acceleration of endogenous economic growth but helps countries to cope better with the growing social and environmental challenges of the 21st century (Aerni 2009).

Whether economic globalization turns vicious or virtuous depends on institutional change. Institutions may hinder the adoption and utilization of ideas – or facilitate it.

² Jones and Romer call it 'modern growth theory' in their paper, perhaps to seek convergence with the work of other economists such as Rodrik and Hausmann who do not use the term 'new growth theory'.

Even though institutions that have proved to facilitate sustainable change are well known thanks to the historical record, they are not necessarily widely adopted because they sound counterintuitive to the public (why should private profits also increase public welfare? Why should trade be different from theft?) and the education system often fails to explain the long-term benefits of institutions that encourage trade, exchange, entrepreneurship and innovation.

Institutions are themselves non-rival goods that can easily be adopted elsewhere (Romer 2010) but they often lack public support and therefore the political majority needed for them to be adopted. Instead the response to economic challenges in highly developed countries with less bottom-up pressure for economic change is often a sort of muddling through that is primarily designed to appease public anger with short-term gestures and the attribution of economic problems to external factors (e.g. technological change, the rise of China, global trade, intellectual property rights, or greed).

4.3 State failure or market failure?

The financial and sovereign debt crises in Europe largely reflect the lack of political will to embark on institutional reform (Howden 2011). The same trend can be observed with the trade negotiations in the World Trade Organization (WTO). The Doha Round, the latest round of trade negotiations, has been put on ice because governments tend to regard gains from multilateral trade as marginal and they are concerned about stiff domestic opposition to any multilateral trade deals (Kleimann and Guinan 2011). It is not that trade liberalization was ever very popular in any country (Schumpeter 1942). But since policy makers during the Cold War considered socialist and protectionist policies are threat to world peace and an obstacle to the economic integration of the Western hemisphere, governments agreed to strengthen the role of international trade by making the Uruguay Round succeed and thus to pave the way for the establishment of the WTO in 1995. Yet, while almost every national economy has an economic sector that is well-endowed with advanced human capital and highly integrated into the global economy, the majority of economic activities remain rather local (Ghemawat 2011). Whereas the local economic activities in developed countries are firmly embedded in the formal economy and therefore able to grow through investment, most local economic activities in developing countries are stuck in the informal sector. Business in the informal sector is able to meet some of the needs in the respective neighbourhood but once an entrepreneur decides to offer his or her products and services on a regional or national scale, compliance with all the requirements of the formal economy becomes an institutional obstacle they cannot cope with. Even though a transition from informal to formal is associated with increasing costs of compliance and taxation, it also enables the business concerned to attract investment to improve the quantity and quality of production, to enhance its customer base and eventually to grow and employ more people (Aerni and Rügger 2012).

Arthur Lewis argued as early as 1955 that poverty in developing countries would eventually be reduced by bringing all the poor people in the informal sector into the formal economy, which would allow for investment, growth and the creation of more formal employment (Lewis 1955). This did not happen and most people in the developing world remain locked in the informal economy. They are largely excluded from the benefits of trade and the exchange of ideas. This inability to benefit from modern economic institutions that facilitate economic integration is probably the most significant factor in explaining global economic divergence. Yet many experts in development assistance continue to see poverty, inequality and environmental degradation not as a failure but as a result of global economic integration. This also helps explain why most of the university programs that deal with development and the environment frame technological and economic change as part of the problem rather than part of the solution. It is linked to the failure of the education systems in developed and developing countries to explain to students the positive externalities generated by entrepreneurs who take advantage of non-rival goods to do things differently and produce things more cheaply or of a better quality. There is overwhelming evidence that entrepreneurship and innovation must

become one of the pillars of sustainable development and human empowerment (Quadir 2012). They are the drivers of economic change and economic integration. Even though this process may lead to short-term regional economic divergence, it eventually contributes to economic convergence because it is the only way that a lagging developing country is able to catch up and close the gap between itself and the developed economies. Development economists should therefore move away from merely relying on comparative-static general equilibrium models and focus more on concrete field research to better understand the importance of institutional change in facilitating endogenous economic growth.

5. Making trade theory more comprehensive and dynamic

International trade almost doubled in size from 1960 to 2006, but foreign direct investment increased by a factor of thirty in the same period. The same applies to the spread of innovation: in the 1960s, 83% of patents granted by the U.S. Patent and Trademark Office went to domestic entities. In the first decade of the 21st century it was only about 50%. Finally, the proportion of people living in cities has increased from 30% to 50% in the past 50 years and is likely to reach 70% in 2050 (Jones and Romer 2009). All these indicators hint that the extent of global economic integration is, despite all odds, much larger than any economic model is able to capture. Efficiency gains from trade in existing goods are marginal compared to the benefits that result from the continuous introduction of new goods, services, technologies and ideas into the global knowledge economy. Often it is in fact not trade in goods and services that contributed to local development, but the trade and exchange of new ideas (instructions, protocols, recipes, designs) that allow local entrepreneurs to produce things more cost-effectively on the local level instead of importing the finished good. Yet, in order to be able to take advantage of non-rival goods (ideas) such as ideas elsewhere, there is a need to have institutions in place which provide incentives to invest by rewarding innovation and reducing risk and uncertainty.

Paul Romer highlighted the link between institutions and technological change in order to explain the gap between a developed and a developing country in a recent paper in the *American Economic Review* (Romer 2010). There is a world stock of technologies (T^*) and a stock of technologies (T) in a particular country. A country-specific factor R (for 'rules') influences the rate at which ideas from the rest of the world enter a certain local economy. With good rules, T could catch-up with T^* very quickly. With bad rules, T might not grow at all and the country's economic stagnation becomes increasingly detached from global economic growth, thus accounting for increasing economic inequality.

Paul Romer's new production function consists of a function A that captures the factors of productivity (non-rival goods such as ideas related to rules (R) and technologies (T), and function F (conventional production function homogeneous of degree 1 in the standard of rival inputs such as physical capital, skilled labor, unskilled labor).

In this context the local stock of ideas depends on the stock of technologies in the rest of the world (T^*) and the local rules $T > T(T^*, R)$. Because foreign technologies T^* are non-rival it is theoretically possible for T to equal T^* . $Y = A(T(T^*, R), R) F(\cdot)$

Since components of T^* have however some degree of excludability (IPR protection), public policy needs to search for an institutional design that gives the private sector the necessary incentives to invest in new goods and services but also ensures access for the purpose of addressing urgent issues in the fields of environment, public health and development.

Yet, there are different types of technologies that have different interactions with rules. Rules may let in technologies that reduce mortality (R facilitating $T^*=T$) even as they keep out other technologies (R preventing $T^*=T$) that can lift income per capita. This explains why progress in increasing global average life expectancy and decreasing child mortality (especially in Africa) is much more impressive than growth in global income per capita over the past century, because it is based on the exchange of non-rival and non-excludable goods such as formulas and recipes rather than rival and excludable goods such as imported pills (Bourguignon and Morrison, 2002). A non-rival and non-

excludable good such as a formula to fight diarrhea (e.g. oral rehydration therapy) can be precisely defined, explained at the phone, presented in a lecture, described on paper, or send over the Internet. That makes the good non-rival. If no one has a legal right to exclude anyone from making use of the particular good or idea then it is non-excludable. Yet, in order to make use of such non-rival and non-excludable goods there needs to be human capital that is familiar with the codified knowledge and has the tacit knowledge to apply it. Human capital is however a rival good. It is a rival good (a physical organism) that produces non-rival goods (ideas). Institutions must be designed in a way that leads to more public-private sector investment in R&D and human capital. For that to happen, incentives must be created to innovate and disseminate innovation, and to bring the new knowledge into the education system to adjust the formation of human capital constantly to the knowledge frontier and the needs of the private sector. This process can only succeed if all stakeholders participate in the implementation of the political strategy. Rather than relying on a social planner, it is about relying on institutions that arrange the pursuit of private interests in a way that benefits the public as a whole.

Economic analysis should therefore focus on the institutions that make best use of the creation and dissemination of non-rival goods such as rules and ideas. The introduction of new rules and ideas may however face stiff resistance from incumbents in business, civil society and politics. But even these stakeholders may eventually agree to start with a small and time-limited pilot-project. Once this succeeds it becomes more likely to reach political momentum for political action. Sweden proved this when it introduced road-pricing in Stockholm (Hårsman & Quigley, 2009).

6. A reality check for textbooks economics: look at New Zealand

With the development of his new growth theory Paul Romer managed to create an endogenous growth model of technological change that takes into account the special role of knowledge and the increasing returns it generates for society at large (Romer 1990). Unfortunately, the subsequent specialization on modelling endogenous growth prevented a rediscovery of the importance of the history of economic and technological change in economics. Economists studying the process of endogenous growth largely refrain from boldly questioning the baseline assumptions in neoclassical economics for fear of causing a paradigm shift that would make it necessary to profoundly revise economics textbook and force many teachers in economics to forget what they learned in school. This explains why the New Growth Theory had also little impact on public policy in Europe and the United States. Western economic and trade policies continue to rely on the mercantilist view that trade liberalization means sacrificing local production in favour of cheaper local consumption (Warsh 2006). And most domestic actors in developed countries that lobby against economic change because they manage to benefit from the status quo are able to convince the public that trade is a zero-sum game where the poor and the environment will be the losers.

The benefits from trade and the exchange of new ideas for society and the environment at large have become obvious in the case of New Zealand. In the early 1980s, the country decided to unilaterally liberalize its agricultural economy and increase its investment in domestic institutions that foster investment in human capital, R&D and the development and commercialization of new goods and services. Not surprisingly, the negative externalities associated with trade liberalization were not as bad as expected while many new positive externalities were experienced for society and the environment that are not found in any economic model or economics textbook. In fact, New Zealand proved that it is able to ensure the multifunctional character of agriculture as a positive side effect of the stimulation of entrepreneurship and innovation in the farming sector (Aerni 2009).

It is becoming increasingly clear that the biggest threat to sustainable agriculture is often not competition in international trade but subsidies. EU subsidies in the fisheries industry have delayed sustainable structural change, encouraged over-mechanization and thus the depletion of natural marine resources. The same applies to its subsidies for tomato and olive production in Mediterranean countries. Subsidised farmers care less about the cost-effective use of resources and they tend to focus on politics rather than innovation. In this context, the role of the public sector as a facilitator of the production

of scientific and economically relevant knowledge and as a facilitator of new markets should be given more attention in the theory and practice of law and economics in general and international trade theory in particular (Jones & Romer 2010). Governing is not just about regulating change but also facilitating change.

Conclusions

J. Bradford DeLong, a Professor of Economics at the Berkeley University, recently expressed his frustration about the state of economics in the following words "...perhaps economics will remain a discipline that forgets most of what it once knew and allows itself to be continually distracted, confused, and in denial". His remark caused outrage but also received the approval of many of the leading economists who equally deplore the inability of the discipline of economics to move beyond the neoclassical approach, especially when considering that, more than two decades ago, new growth theory was able to formalize the missing endogenous dimension of economic development and highlight that it is not only the public sector but also the private sector that produces welfare effects through innovation. He also showed that the positive effects of international trade go far beyond the efficiency gains that conventional trade models in economics predict.

With the earlier formalization of the new trade theory and its focus on returns to scale and network effects (Krugman 1979, 1981; Helpman 1981), it has become clear that the gains from trade can arise from two fundamental sources: differences in comparative advantage and economy-wide increasing returns. With new growth theory it has become clear that trade in non-rival goods (ideas, instructions, protocols, designs, formulas, etc) might have a bigger impact on economic growth than trade in rival goods. Increasing returns may result from the economic use of knowledge spillovers from R&D activities. The integration of business in the research sector can have a significant impact on growth in the different economic sectors even if trade restrictions continue to be imposed.

This essentially explains the success of Asia. Many Asian countries were less interested in the efficiency gains from trade than its knowledge spillovers, which would help its own domestic sector to become more innovative and competitive. The focus was primarily on catch-up growth: Researchers at home were primarily engaged in reverse engineering of foreign durable goods. Others produce new designs and sell them to firms that will manufacture the new inputs. The kind of policy favored by a developing country may be very different from that favored by an advanced country. Followers may prefer some kind of protection for infant industries while leaders prefer free trade (Lucas 1988, Grossman & Helpman 1990, Rodrik 1996, Rodriguez-Clare 2005).

When it comes to calculating the benefits of trade, economics should go beyond equilibrium models that assess the optimal allocation of scarce resources and focus more on the best possible application of new knowledge to development.

This article reviewed some of the economic literature that goes beyond the neoclassical approach that still dominates teaching and research in economics. This less orthodox economic literature proves to be better able to explain the rise of the global knowledge economy and the successful economic integration of Asia into the global economy over the past two decades. The main insight is that public policies that facilitate the exchange of knowledge and new ideas and invest in economic and technological change experience less economic divergence and are better able to cope with the social and environmental challenges of globalization and international trade. Developed countries such as New Zealand, Finland, Sweden and Denmark, which embraced new growth theory in their economic, environmental and agricultural policies have tended to fare much better over the past two decades than other industrialized countries where established interest groups, which prefer to cling to old theory and practice, were able to prevent change. Of the developing countries, China is probably the most striking example to prove that catch-up growth today is possible at a much faster rate than ever before. The recipe for the success of China is related to the fact that international trade was not considered to be good by itself, but rather a means to achieve the end of national development. The

major focus in China's effort was on the acquisition and application of knowledge in the domestic economy. This strategy required exchange with Western countries and therefore a selective opening up of the Chinese economy. In view of China's impressive record in economic growth and poverty reduction, many other developing countries tend to focus on what is going on in the East and have stopped listening to western policy advisors and their prevailing gospel of neoclassical economics. The result is a massive increase in south-south collaboration which is about to transform global economic trade patterns.

Why have all these changes hardly been noticed in textbook economics? Probably because paradigm shifts in the social sciences, and in economics in particular, are almost impossible even in the face of overwhelming empirical evidence. Joseph Schumpeter had already pointed out the inconsistencies of neoclassical economics in the 1930s and 1940s, but to no avail. Followers of Schumpeter in the discipline of economics tended to end up at the faculties of business schools because they were no longer seen as pure economists who acknowledged the discipline's gradual approach toward universal economic truths through pure reasoning and the application of comparative static modelling (Warsh 2006).

The basic message of Joseph Schumpeter and later Paul Romer that trade and exchange in non-rival rather than rival goods has produced the biggest welfare effects in the process of global economic integration is, however, generating increasing interest even in Western countries due to the ongoing financial, economic and also 'economics' crisis. Governments that face an economic crisis realize that fiscal austerity and commodity trade by themselves will not be sufficient to lead to economic recovery and new employment. They need growth through innovation converting many of the formerly non-tradeable goods into tradeable goods. This kind of growth with its increasing returns must be recognized as the contribution of innovation and entrepreneurship to global welfare. This contribution is however only possible if policy makers realize that overregulating the economy in name of eliminating the negative externalities of business activities, may also stifle innovation and entrepreneurship and with it prevent its positive externalities for society (e.g. employment, more affordable goods and services) and the environment (e.g. environmentally friendly technologies).

Alas, welfare economics has never made an effort to measure these positive externalities. It ignores the fact that the private sector invests in R&D and often comes up with the most effective solutions when it comes to challenges related to poverty reduction and sustainable resource management. National policy makers should therefore focus more on new growth theory and its focus on the design of the best possible incentives for the private sector to invest in the development and commercialization of new products that would have a high public good character and to work closely with public sector institutions on sustainable solutions to global problems. Such public-private partnerships are likely to improve the acquisition and application of new knowledge to economic development and consequently improve a country's capacity to participate in global trade on favourable terms. It is this sort of catch-up growth that allows a country to reduce poverty and create employment through the active participation in economic globalization. Yet often national governments refrain from undertaking the necessary reforms because they are unpopular. The lack of popularity is again a result of an education system that still teaches the old economic ideology, which suggests that we live in a stationary economy that is largely concerned with the optimal allocation of scarce resources. If we want to explain why the process of economic globalization has not led to global economic convergence, we need to look at failed national policies rather than global institutions such as the World Trade Organization (WTO). Certain national governments have boldly focused on reducing the gap between the global technology frontier and the national level of technology through institutional reform. They designed and implemented rules that proved to be effective in mobilizing domestic entrepreneurship and innovation for economic growth. Others, however, have preferred to refrain from unpopular reforms. As a result, growth largely happened there primarily due exogenous factors (e.g. state of the global economy). Consequently, if the rest of the world is in crisis, they immediately become part of it and international trade is naturally seen as the cause of the problem.

Since the primary goal of politicians in mature democracies is to get re-elected rather than supporting unpopular but necessary institutional reform, reforms tend to be postponed and growth opportunities are missed. As a result, these countries eventually suffer from institutional sclerosis and become unable to take advantage of the opportunities of economic globalization. Economic divergence may therefore increase as a result of global economic integration because certain countries are moving backwards rather than forwards to please the powerful domestic stakeholders that benefit from the status quo. The consequences may be much more disastrous for a country today than in previous times because catch-up growth today occurs at a much faster rate provided that national institutions do not prevent access to new markets, ideas, knowledge, technologies, goods, or services.

There is no doubt that the risks of economic and technological globalization are also real, but humankind will be unable to address them by economic, environmental and social planning alone. Coping with new challenges will always be a process of trial and error, and often the most effective solutions to sustainability problems come not from social planners, but from innovation and entrepreneurship. Domestic and international institutions are therefore not just meant to regulate change but also to facilitate sustainable change by investing in the necessary infrastructure and by creating the right incentives to encourage the local private sector to further invest in new markets and eventually participate in international trade with new goods and services. This will be the best way, not just to decrease global economic divergence, but to effectively address global sustainability problems through managed economic and technological change.

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