

INTERNATIONAL MONETARY FUND

THE GLOBAL ECONOMIC AND FINANCIAL IMPACT OF AN AVIAN FLU PANDEMIC
AND THE ROLE OF THE IMF

Prepared by the Avian Flu Working Group¹
(in consultation with Departments and
the Joint Bank-Fund Health Services Department)

Approved by Mark Allen

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¹ The working group includes the following staff: Charles Blitzer (ICM), Kevin Craig (HRD), James Daniel (FAD), Liam Ebrill (HRD), Matthew Fisher (PDR), Lorenzo Giorgianni (EUR), Jeanne Gobat (PDR), David Hawley (EXR), Peter Heller (FAD), David Hoelscher (MFD), Alan MacArthur (PDR), G. A. Mackenzie (RES), Alvaro Piris (MFD), Hung Tran (ICM), Andrew Tweedie (FIN), Claudio Visconti (FIN), and Johannes Wiegand (RES).

I. INTRODUCTION

1. **There is growing concern about the possibility of an avian flu pandemic (AFP) and its implications for humans and the global economic and financial system.** While such pandemics are not new—the last one occurred in 1968—health experts are particularly concerned about the current strain of the virus (H5N1). This strain has spread quickly in bird populations, caused high mortality among poultry, and occasionally infected humans, with about half of the cases proving fatal. But human infections remain rare as the strain has not been spreading easily from birds to humans, nor has it been spreading from person to person.²

2. **According to the WHO, evolutions in influenza viruses cannot be predicted.** This makes it difficult to know if or when a virus such as H5N1 might become easily transmittable among humans. Hence, it is also impossible to say when another pandemic will arise, whether it will involve H5N1, or another strain, or whether it will be mild or severe. However, the WHO considers that, once a virus mutates into a form that allows for efficient human-to-human transmission, a pandemic could occur. Because of high global mobility and interconnection, illness could spread quickly, and, if the virus has a high fatality rate, threaten millions of lives around the world. The pandemic might emerge in repetitive waves with varying intensity, including durations beyond 6 weeks, as was the case with past pandemics.

3. **The WHO indicates that accurate predictions of mortality cannot be made before a pandemic virus emerges and begins to spread.**³ All estimates of the number of deaths are purely speculative. The WHO has used what they characterize as a relatively conservative estimate—from 2 million to 7.4 million deaths—because it provides a useful and plausible planning target. This estimate is based on the comparatively mild 1957 pandemic. Estimates based on a more virulent virus, closer to the one seen in 1918, have been made and are much higher. However, the 1918 pandemic was considered exceptional.

4. **Against this backdrop of considerable uncertainty about the nature of the pandemic, this note aims at providing a preliminary assessment of the risks and potential impact to the global economy and financial system from a possible avian flu pandemic.** It must be underscored that there is also substantial uncertainty about the economic impact of a pandemic of any given severity. It is difficult to extrapolate predictions about behavior from previous pandemics into today's world. Global integration with rapid

² The World Health Organization (WHO) identifies six stages of alert. The world is currently at Stage 3, where a new influenza virus subtype is causing disease in humans, but is not yet spreading efficiently and sustainably among humans. Stage 4 is evidence of increased human-to-human transmission. Stage 5 is evidence of significant human-to-human transmission, while Stage 6 is efficient and sustained human-to-human transmission.

³ The WHO's website (www.who.int) contains extensive discussion of avian influenza, including as "Ten Things You Need to Know About Pandemic Influenza" and "Avian Influenza: Assessing the Pandemic Threat" both available at: <http://www.who.int/csr/disease/influenza/pandemic10things/en/index.html>.

transport and mass communication may increase some risks, while better public health systems and drugs may act in the other direction. This note further discusses the Fund's role in helping members prepare their economic and financial systems for the possibility of an avian flu pandemic. The policy recommendations in this area focus on the need to mitigate risks that might arise in a severe pandemic with high absenteeism, even though some commentators consider that the most probable scenario would feature significantly less economic dislocation. In a less severe pandemic, many of the same issues seem likely to arise, albeit at a lower intensity. Attached to the note is a distillation of what is emerging as the common elements of business continuity planning in the financial sector for pandemic risks. This document will be updated on a periodic basis. Nevertheless, Executive Directors are encouraged to share this draft with their capitals as soon as possible. The appendix provides a collection of information that can be found on the global web on avian flu.

II. POTENTIAL GLOBAL ECONOMIC AND FINANCIAL IMPACT

5. **If the pandemic is severe, the economic impact is likely to be significant, though predictions are subject to a high degree of uncertainty.** The severity of a pandemic will, inter alia, depend on its attack and fatality rates,⁴ its duration, the behavior and preparedness of households and firms, as well as the capacity and preparedness of health care systems. A pandemic similar to the 1918 Spanish flu could result in high level of illness and death, and a sharp but only temporary decline in global economic activity (Box 1). Economic disruptions on the supply side would come directly from high absenteeism, as people may be asked to stay at home, or may choose to do so to care for sick relatives or because of fear of being exposed themselves. There may also be disruptions to transportation, trade, payment systems, and major utilities, exposing some financially vulnerable enterprises to the risk of bankruptcy. Moreover, demand could contract sharply, with consumer spending falling and investment being put on hold. Financial repercussions could further exacerbate the economic impact.

6. **Once the pandemic has run its course, economic activity should recover relatively quickly.** Both consumption and average hours worked might even overshoot the pre-pandemic level temporarily. The pace of the recovery would depend, inter alia, upon business and consumer confidence, the speed of resumption of international trade, and the recovery of asset values. Countries with weak fiscal and health systems are likely to be more exposed and be more severely affected, as they lack the financial resources and the capacity to purchase and distribute drugs and vaccines, treat victims in a timely manner and provide for health security measures.

7. **While it is most likely that a pandemic will be followed by a rapid recovery, resulting in limited overall economic effects, it is possible that a severe pandemic will have a more disruptive impact.** In such a scenario, worldwide current account effects would necessarily balance, but open economies could be more vulnerable to a deterioration

⁴ The attack rate is the percent of the population that fall ill with the virus; the fatality rate is the percentage of those falling ill that die from the virus.

in their current account balances. Tourism could drop sharply due to fear of infection and possible travel restrictions, and may be slow to recover. Other exports could suffer from trade and transportation restrictions—imposed to control the spread of the virus—as well as from lower global demand and domestic supply disruptions. If two-way trade flows are not restricted, imports in some countries may rise on account of higher need for medical goods and services, although this may be offset by sharply lower domestic demand and production. Low-income countries could see a deterioration in their trade balance owing to high health-related imports, but if financed through external grants this would not increase their debt burden.

Box 1. The 1918 Spanish Flu

The Spanish flu of 1918-19 was by far the most lethal influenza pandemic of the 20th century. According to WHO estimates, it infected about one-quarter of the global population and took the lives of more than 40 million people—about 2 percent of the global population at the time, and more people than died in WWI. This renders the Spanish flu the third most deadly pandemic on record, surpassed only by the plague pandemics of the 6th and 14th centuries. One unusual feature of the Spanish flu was that it killed not only the very young and the very old, but also adults in the prime years with above-average frequency.

Despite its name, the first outbreak of Spanish flu was recorded in early 1918 in army camps in the United States. The Spanish flu came in three waves, with the second wave—beginning in August 1918 simultaneously in France; Sierra Leone; and United States—being the most deadly. Fatality rates varied greatly between countries, ranging from an estimated 0.5 percent of the population in the United States (equivalent to about 600,000 deaths) to about 5 percent in India and 20 percent in some pacific islands, such as Fiji or Western Samoa.

Information on the economic impact of the Spanish flu is limited. This is, in part, because the epidemic broke out during WWI when most governments restricted the flow of information, but also because national income accounting was in its infancy at the time. According to data available for the United States, both industrial production and the business activity index dipped at the height of the epidemic in October 1918. However, according to a recent study by the Canadian Department of Finance these declines point to an annual output loss of only 0.4 percent. Other indicators point to temporary and modest reductions in passenger rail transport and retail sales.

While these estimates suggest a surprisingly modest economic impact, it appears unlikely that a similar outbreak today would have comparably limited effects. The Spanish flu struck when the U.S. economy was on a war footing. There may have been considerable social pressure on workers to stay at work, and the lack of a formal safety net may have threatened workers with high financial costs in case of absenteeism from the workplace.

One study dating from the 1960s for another country, India, finds that agricultural output declined by over 3 percent.¹ However, this comparatively large impact may reflect the heavy toll of the pandemic on the agricultural workforce, of which some 8 percent are estimated to have succumbed to illness. Both estimates are subject to large margins of error.

¹Theodore Schultz, 1964, “Transforming Traditional Agriculture” (New Haven, Yale University Press).

8. **A severe pandemic could pose risks to the global financial system.** Some temporary increase in risk aversion is highly likely, which would lead to a corresponding surge in demand for liquidity, specifically for cash, and for low-risk assets. This “flight to quality” would lead to at least temporary declines in asset prices and widening of credit spreads, both for corporations and emerging markets. Commodity prices could be expected

to decline reflecting weaker aggregate demand, but this may be offset by potential supply disruptions for key commodities such as oil. Although these effects are likely to be temporary, asset price declines could put the balance sheets of some financial institutions under stress and they may face challenges in meeting regulatory norms. Market operations could become more disorderly in the case of a breakdown in the trading infrastructure, leading to limited or intermittent trading.

9. **A severe pandemic may also lead to a significant but temporary reduction in net capital flows to emerging markets.** Some capital flight from residents seeking safe havens could be expected. Based on the SARS experience, foreign direct investment plans may change little, although major investments may be postponed. At the same time, a shift in risk preferences could lead to modest portfolio outflows, particularly from those members where equities are relatively highly priced, or with weaker public finances, or with current accounts highly dependent on commodity prices and export of services. To varying degrees, members would be able to address temporary balance of payments pressures in some countries by drawing on reserves—which for many countries are at a historical high. However, net flows to emerging markets countries might decline as a result of some combination of possible operational disruptions in the financial systems, a loss of confidence in more vulnerable countries, and abrupt shifts in risk preferences. The possibility of severe balance of payments pressures under an adverse scenario cannot be precluded. It is important to note, however, that even severe disruptions to the financial system caused by uncontrollable events would not necessarily lead to loss in confidence if governments were seen to be dealing effectively with the emergency.

10. **Aside from sharp changes in asset prices, operational risks constitute the greatest challenge to the global financial system in the event of a severe pandemic.** Although it is uncertain how much absenteeism a pandemic would cause, high absentee rates without adequate contingency plans in place could result in disruptions of critical functions and services of the financial system, including payments, clearing and settlement, and trading. Financial systems' information technology and communication infrastructures might also be affected. Operational disruptions could prevent transactions from being completed and obligations from being met. Moreover, disruptions in one jurisdiction could spill over into other jurisdictions.

11. **As noted above, in the event of a less severe pandemic, similar issues would arise, but with less intensity.** Precision is difficult in this area, on account of the uncertainties concerning the links between the severity of pandemics and the magnitude of their economic effects.

III. PUBLIC POLICY ISSUES AND THE ROLE OF THE FUND

12. **The need to help prepare for a pandemic is becoming an important focus for many governments and international organizations, including the Fund.** At the Beijing International Conference, US\$1.9 billion was pledged to support efforts at all levels to help fight avian flu and prepare for a possible human flu pandemic. The World Bank, the World Health Organization, the Food and Agriculture Organization, and the World Organization for

Animal Health are taking the lead in preparing a global coordinated response strategy on the possibility of an avian flu crisis, and helping members improve surveillance and control capacity and to develop national action plans that focus primarily on human and animal health.

13. **The Fund's role will complement these efforts.** While there is uncertainty as to the timing and severity of a pandemic, appropriate preparations can help mitigate output and income losses and minimize disruptions to financial systems. The Fund can play an important role in encouraging members to prepare for a possible pandemic, in facilitating cooperation across the membership, and, should one emerge, advising members on appropriate macroeconomic policies and helping to support them with balance of payments financing where this is needed.

A. Business Continuity Plans

14. **The Fund's near-term efforts will focus primarily on helping members prepare their economic and financial systems to limit the possible disruptions that may be caused by a pandemic.** Business continuity planning in the financial sector is essential to minimizing possible disruptions. The Fund is well-positioned to collect information from members that are most advanced in this area, and to share their experience with officials from members that are at an earlier stage of preparedness.

15. **Business continuity planning has become a critical component of operational risk management in the financial sector.** In recent years, financial institutions, central banks, and regulators have devoted significant resources to strengthening business continuity plans (BCPs) to enhance the resilience of their national financial system and to minimize the impact of a sudden failure of critical infrastructure from terrorism and natural disasters. Financial institutions, central banks, and regulators have adopted and tested contingency plans with the aim of ensuring that critical operations and services can be maintained or recovered in a timely fashion to ensure rapid resumption of business operations after a disruption. Such plans may involve identification of recovery teams and back-up facilities at alternate sites.

16. **However, in many countries, business continuity planning has not yet addressed the specific risks arising from a pandemic, particularly from possible high absenteeism.** Based on the limited discussions Fund staff has had to date, the level of preparedness among national authorities and financial institutions varies greatly (Box 2). In a few countries, particularly those affected by the 2003 SARS outbreak, preparations are well advanced and comprehensive. This level of economic and financial preparedness, however, does not appear to be uniform or yet widespread. Perhaps because an avian flu pandemic may appear to be a low-probability event, albeit one with high potential costs, many countries are only starting to develop a comprehensive approach to this threat. While enhancing preparedness will entail upfront costs, the benefits of mitigating the risks associated with a pandemic appear to outweigh these costs. Cross-country coordination is also at an early stage, although both the

Financial Stability Forum and the Joint Forum are discussing avian flu pandemic preparedness.⁵

Box 2. Country Preparedness and Business Continuity Planning

Fund staff has collected information on avian flu pandemic preparedness in the financial sector from a broad range of countries (predominantly from mature and emerging market countries), through brief surveys of central bank practices and more detailed discussions with some private and public sector institutions in Asia, Europe, and North America. Follow-up contacts with these and other country authorities are being pursued to gather further information on good practices in preparedness.

Based on the information collected so far, most countries have some basic tools in place—notably BCPs for financial institutions and central banks. BCPs aim to ensure the resilience of individual institutions in the face of disruptive shocks such as terrorist attacks and natural disasters. However, they generally focus on restoring infrastructure and critical functions in the face of a short-lived event. In many cases, adaptation of these plans to the specific issues likely to arise in an AFP such as high staff absenteeism is just beginning. Major disruptions to critical financial services could occur if a large number of staff could not report work.

The level of preparedness varies significantly:

- Preparedness is highest among countries that experienced the SARS outbreak, some countries that have recently dealt with avian flu outbreaks, and several countries with large, complex financial systems. Several large global financial institutions also have advanced preparations, as do providers of payment services, mainly by establishing alternative sites, and recovery task forces.
- Other authorities have progressed in identifying the critical issues in handling an avian flu pandemic, but have not yet finalized their response plans, or undertaken all the necessary steps to increase resilience. In most of these cases, decisions over significant investments (e.g. in IT or telecommunications infrastructure) or cross-training of staff in different functions have yet to be made, and coordination with other private and public institutions is just beginning.
- Finally, some members have yet to prepare specific plans. Some of these countries have, however, expressed an interest in developing their preparedness plans.

Among the most advanced cases, BCPs have been adjusted to account for the characteristics of a pandemic. Country plans are detailed and widely distributed, and often integrated into a government-wide initiative headed by a senior crisis management body. For both private and public entities, BCPs consider issues such as suspension of noncore activities, geographical dispersal of functions, working from home, response to heavy demand for cash by the public, health and safety issues for staff, and transportation for key personnel. Implementation of these plans is now beginning. Stockpiles of cash and supplies have been built up in several locations. Some private and public institutions are testing their BCPs—e.g., “desk top” exercises and scenarios, assuming absentee rates between 20-40 percent or higher, and checking whether their infrastructure can handle a surge in remote access activities. Finally, some regulatory authorities are working with private financial institutions to ensure adoption of adequate BCPs.

17. The Fund staff has initiated discussions with central banks, supervisors, regulators, and financial institutions to understand their preparedness and to collect information on business continuity plans. In this context, Fund staff has prepared a distillation of common elements of well prepared business continuity planning for pandemic

⁵ The Joint Forum consists of the Basel Committee on Banking Supervision, the International Organization of Securities Commissions and the International Association of Insurance Supervisors. The Joint Forum organized a meeting in Hong Kong, SAR on February 22 to discuss business continuity planning. The Financial Stability Forum plans to meet March 16-17 in Australia and will discuss, among others, avian flu preparedness.

risks in the financial sector (see Attachment). As this general area of business continuity planning is developing rapidly, this distillation is work in progress, rather than a final product.

18. **In the coming months, the Fund will be active in collecting and disseminating elements of good business planning for a pandemic across the membership.** Regional seminars are planned to bring together business continuity managers from central banks and supervisory authorities to facilitate a sharing of knowledge and experience. Before the Spring Meeting of the IMFC, five such seminars are under preparation, including three hosted at the Fund's training facilities in Singapore, Tunis, and Vienna. If requested, the Fund would be willing to organize targeted technical assistance programs, mainly in the financial sector. A short report on the Fund's work in this area will be prepared for the Spring Meeting. The global economic and financial risks as well as policy response will be covered in more detail in the WEO and GFSR, respectively. Finally, Fund staff will discuss preparations in members' financial sectors in the course of their interactions with country authorities and private sector representatives.

B. Macroeconomic Policy Response

19. **A pandemic will likely put substantial pressure on the fiscal balance, due to increased spending on health, public safety, social welfare, and subsidies to businesses and lost revenues (Box 3).** In response, allowing a temporary easing in the fiscal stance would be appropriate in most cases. The expected temporary character of a pandemic-related shock would argue for greater emphasis on financing rather than adjustment, and in poor countries, the extra expenditures may need to be financed by external grants to minimize crowding out and the difficulties governments may face in mobilizing domestic resources and new debt creation.

20. **The monetary stance may be eased temporarily to accommodate the expected surge in liquidity demand and shock-related price increases.** In particular, central banks will need to ensure an adequate supply of cash notes and capacity to deliver them to financial institutions in a timely fashion and that banks can meet a sudden increase in the demand for liquidity. To calm markets, financial regulators may need to consider a degree of prudential forbearance. For instance, liquidity requirements, capital adequacy rules, and provisioning requirements could be temporarily eased, and regulatory requirements could be adjusted for a "work at home" environment. To contain asset price deflation, regulators, including those supervising the insurance and pension industries, may have to consider temporary forbearance where prudential limits are breached by an initial decline in asset prices.

Box 3. Fiscal Implications of an Avian Flu Pandemic

The WHO has urged governments to put in place measures to prevent the emergence and contain the spread of avian flu. While some of the measures required may be relatively costly for some lower income countries (LICs), and may strain their absorptive capacity in the medical and veterinary sectors, most countries should be able to bear the fiscal consequences of such measures. More challenging may be the likely fiscal impact of an avian flu pandemic and the actions required for governments to prevent and respond to it.

Direct effects. If the pandemic hits, government finances, at least in nominal terms, will likely deteriorate sharply. Expenditure on health and public safety will surge, as governments implement WHO instructions, deploy security and police forces, distribute essentials, and meet heavy demands for health goods and services. Simultaneously, revenues will be hit as business and consumers put off purchases in the face of uncertainty, firms scale back production as employee attendance drops, and borders close. Disruptions to the payment system may also result in less revenue flowing into national treasuries and absenteeism in government ministries may also disrupt government activity.

Indirect effects. Governments will likely face many calls for compensation by affected sectors. Most immediately, in the pre-pandemic phase, compensation for losses from culling will be demanded by those involved in the poultry business. But if there is a full-blown pandemic, many other sectors will likely suffer, especially tourism, transport, retail, and insurance, and a range of sectors may experience bankruptcies. More generally, even many otherwise viable firms might fail to survive the weeks, or months, of much lower demand and unemployment may rise.

Permanent and temporary effects. If the pandemic proves temporary, so too will be much of the effects. Consumers and investors will start purchasing again, firms will build up to full capacity, international trade will rebound etc. But some effects will last. Most clearly, some in the labor force will not return and some firms may fail. Other firms may have built up debts that the government may be under pressure to assume. And the government too would have built up more debt to finance its weaker fiscal position.

LICs. These effects are likely to be pronounced in LICs as well as emerging markets given the weaker medical infrastructures and, in some cases, lower preparedness levels. Countries with weaker fiscal positions, unless offset by higher external grants, will also tend to be more constrained in the support they can offer. Those relying heavily on external financial markets may also face increased borrowing costs due to higher international risk aversion.

Preparing and responding. The main financial aspect of preparing for a pandemic will most likely involve up-front outlays on items such as medical and food stockpiles. But equally critical will be preparedness planning. And because many, especially the vulnerable, will likely suffer, a social safety net should be in place that will quickly be able to cushion the financial impact of those most affected. Once the pandemic hits, attention could then turn to executing the plan and modifying to the particular circumstances. Financing too will have to be obtained, and with financial markets likely to be thin at best, recourse to central bank borrowing may be inevitable.

21. **As soon as the acute phase of the pandemic is over, the magnitude of more lasting supply and demand shocks will need to be assessed.** In many countries, the shock may be self-correcting; in others, further steps may be needed to restore macroeconomic stability and fiscal sustainability. This may entail adjusting monetary policy to prevent a sustained increase in inflation, withdrawing fiscal stimulus, particularly in countries facing debt sustainability issues, as well as ensuring external viability, including through a rebuilding of international reserves and greater exchange rate flexibility.

C. Fund Financing

22. **The Fund’s existing facilities should be sufficient to help members address balance of payments needs on a limited scale.** However, greater obstacles would be faced under normal procedures if a response to large balance of payments needs, for example, related to multiple capital account crises, is required.
23. **For financing needs on a limited scale, the Fund’s Emergency Natural Disaster Assistance (ENDA) would allow a quick response to meet limited needs (normally 25 percent of quota), with larger amounts exceptionally available.** Existing on-track arrangements could be augmented—if needed between scheduled reviews. Support for low-income countries can also be provided through the Exogenous Shocks Facility (ESF), and ENDA can be subsidized subject to resource availability. These options could be available even if Fund staff could not travel or conduct more than limited policy discussions with the affected countries.
24. **Larger-scale financing could be more challenging in the event that a pandemic creates larger balance of payments needs.** In cases of exceptionally large financing needs, SBA and ESF-supported programs could be agreed to supplement immediate disbursements under ENDA. This would be most readily the case for countries that have been following good policies. However, in the event of a pandemic, the Fund’s ability to diagnose problems and negotiate appropriate policies, including because of restrictions on staff travel, may be challenged.
25. **The Fund’s current liquidity situation leaves it well-placed to respond, though this could change quickly in the event of a major crisis.** The one-year forward commitment capacity (SDR120 billion (US\$171 billion) at end-February) is at an all-time high, and could be supplemented by existing borrowing arrangements. The Fund also has a concessional loan capacity under the interim PRGF/ESF of SDR 2.7 billion (US\$3.9 billion), which could also be used to finance short-term balance of payments needs. However, subsidy resources available for emergency natural disaster assistance are only sufficient to support new lending of about SDR 60 million, and commitments for ESF subsidies so far total SDR 170 million compared with the SDR 500 million target. Thus, additional subsidy resources would likely be needed to support concessional emergency assistance on any significant scale.

**PREPARATIONS FOR AN AVIAN FLU PANDEMIC:
DISTILLATION OF COMMON ELEMENTS IN BUSINESS CONTINUITY PLANNING
FOR FINANCIAL SYSTEMS**

I. INTRODUCTION

26. This document presents a distillation of common elements of business continuity planning for financial systems. It is based on information provided by a number of monetary and supervisory authorities, and private financial institutions. As the IMF's work in this area is still in an early phase, this distillation must be seen as work in progress rather than a final product. For that reason, this document will be updated on a periodic basis. Nevertheless, it is being made available now to help monetary and supervisory authorities benefit from the work of those that are more advanced in this area.

27. The emergence of an avian flu pandemic (AFP), with high attack and fatality rates, could have a substantial impact on individuals, on the global economy, and on financial systems throughout the world.⁶ While the current strain of avian flu outbreak among birds has occasionally affected humans with high fatality rates, it does not spread easily from birds to humans, or yet from person to person. However, health experts are concerned that the virus could mutate into a form that allows for efficient human-to-human transmission while retaining its high mortality rate. A summary of issues concerning the possibility that avian flu could become a human influenza pandemic, based on information provided by the World Health Organization (WHO), is shown in Box 1.

28. Many financial institutions are at an early stage of preparing for an AFP. Most institutions have developed business continuity plans (BCPs) for wide-scale disruptions of infrastructure, that might occur, for example, as a result of natural disasters, or terrorist attacks. However, such preparations may not adequately address challenges arising from an AFP. Countries confronting pandemics could face major disruption to the operations and services of their financial system. BCPs are intended to mitigate this risk, by ensuring the continuity of critical financial infrastructure and functions of individual institutions.

29. The rest of this note is organized as follows: Section II provides an overview of challenges that seem likely to confront financial institutions in the midst of a pandemic, Section III of the critical elements of planning and preparations for an AFP by financial institutions, national authorities and payment system providers and Section IV of facility management as well as health, safety and administrative issues that need to be considered.

⁶ The attack rate is the percent of the population that fall ill with the virus; the fatality rate is the percentage of those falling ill that die from the virus.

Box 1. Avian Flu Pandemic¹

Avian influenza refers to a large group of different influenza viruses that primarily affect birds. On rare occasions, these bird viruses can infect other species, including pigs and humans. The vast majority of avian influenza viruses do not infect humans. An influenza pandemic happens when a new subtype emerges that has not previously circulated in humans.

A pandemic occurs when a new influenza virus emerges and starts spreading as easily as normal influenza—by coughing and sneezing. Because the virus is new, the human immune system will have no pre-existing immunity. This makes it likely that people who contract pandemic influenza will experience more serious disease than that caused by normal influenza.

Once a fully contagious virus emerges, its global spread is considered inevitable. Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but cannot stop it. The pandemics of the previous century encircled the globe in 6 to 9 months, even when most international travel was by ship. Given the speed and volume of international air travel today, the virus could spread more rapidly, possibly reaching all continents in less than 3 months.

Because most people will have no immunity to the pandemic virus, infection and illness rates are expected to be higher than during seasonal epidemics of normal influenza. Current projections for the next pandemic estimate that a substantial percentage of the world's population will require some form of medical care. Few countries have the staff, facilities, equipment, and hospital beds needed to cope with large numbers of people who suddenly fall ill.

Supplies of vaccines and antiviral drugs—the two most important medical interventions for reducing illness and deaths during a pandemic—will be inadequate in all countries at the start of a pandemic and for many months thereafter. Inadequate supplies of vaccines are of particular concern, as vaccines are considered the first line of defense for protecting populations. On present trends, many developing countries will have no access to vaccines throughout the duration of a pandemic.

Historically, the number of deaths during a pandemic has varied greatly. Death rates are largely determined by four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations, and the effectiveness of preventive measures. Accurate predictions of mortality cannot be made before the pandemic virus emerges and begins to spread. All estimates of the number of deaths are purely speculative.

WHO has used a relatively conservative estimate—from 2 million to 7.4 million deaths—because it provides a useful and plausible planning target. This estimate is based on the comparatively mild 1957 pandemic. Estimates based on a more virulent virus, closer to the one seen in 1918, have been made and are much higher. However, the 1918 pandemic was considered exceptional.

High rates of illness and worker absenteeism are expected, and these will contribute to social and economic disruption. Past pandemics have spread globally in two and sometimes three waves. Not all parts of the world or of a single country are expected to be severely affected at the same time. Social and economic disruptions could be temporary, but may be amplified in today's closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.

¹ Adapted from the WHO “Ten things you need to know about pandemic influenza.” Available at: <http://www.who.int/csr/disease/influenza/pandemic10things/en/index.html>

II. CHALLENGES IN PLANNING FOR AN AFP

30. It is difficult to predict with any certainty the economic and social conditions that would prevail during a pandemic. They will be heavily influenced by the way in which behaviors of people and institutions change, and the extent to which people panic. It seems likely, however, that organizations, including financial institutions, will face unique challenges planning for a pandemic, which may include:

- An AFP could result in significant absenteeism over a period lasting several weeks, which may arise from the illness itself, from official or autonomous attempts to limit its spread, from the need to care for the ill, because of forced closing of schools, and even from widespread panic. Projections are inevitably difficult, and absenteeism may vary widely across the cycle of the pandemic.
- Absenteeism could become so widespread that staffing for the most critical operations may become inadequate, and succession plans may no longer provide for continuity.
- An AFP will affect the whole economy. A financial institution's risk assessment and management plans may have to be expanded to cover the possibility of widespread economic disruptions and their impact on loan and other assets performance.
- Financial systems may confront an abrupt increase in risk aversion, with a corresponding surge in demand for liquidity. At the same time, large changes in asset prices and widening of credit spreads—both for corporations and emerging markets—could put banks' balance sheets under stress and challenge institutions' ability to maintain prudential ratios within regulatory norms.
- Pandemics may come in waves, spreading over weeks or months. Some waves may appear mild only to be followed by another, more severe outbreak. Financial institutions, therefore, must have BCPs that do not focus only on a single, short-lived event.
- An AFP may rapidly affect multiple regions and countries. Moreover, the WHO warns that, in the case of a severe pandemic, relatively large geographical areas may have to be quarantined. BCPs based on remote location of critical operations may not be adequate to allow critical operations to be maintained while keeping essential staff relatively well protected. Balancing the costs of establishing remote facilities at a significant distance from headquarters against the low likelihood of a severe AFP will be challenging.
- An AFP may also result in major disruptions to transportation, electricity production, telecommunications, and may severely stretch even basic services including, police, fire, and emergency medical care. A financial institution's risk assessment and management plans, therefore, may have to be expanded to cover the possibility

ofwide spread economic and infrastructure disruptions, rather than focusing exclusively on the impact of absenteeism in the institution.

III. COMMON ELEMENTS IN BUSINESS PLANNING AND PREPARATION

31. The Joint Forum—established under the aegis of the Basel Committee on Banking Supervision, the International Organization of Securities Commissions and the International Association of Insurance Supervisors and comprising of representatives of each of the banking, securities and insurance sectors—has issued a draft report for comment outlining high-level principles for the planning and preparation of business continuity.⁷ The draft report states that effective business continuity management plans cover policies, standards and procedures for ensuring that specified operations can be maintained or recovered in a timely fashion in the event of a disruption. The high-level principles outlined by the Forum are intended to support international standard setting organizations and national authorities in their efforts to improve the resilience of financial systems to major operational disruptions.

32. The high-level principles are generally applicable to all types of business disruptions, are non prescriptive, and do not identify the type of disruption. Nevertheless, they provide a useful framework for organizing and reviewing preparations for an AFP. This paper uses the Forum's seven high level principles to frame the discussion of common elements of BCPs that have been adopted by financial institutions and national authorities in preparation for an AFP.

Principle 1: Board and Senior Management Responsibility: Financial industry participants and financial authorities should have effective and comprehensive approaches to business continuity management. An organization's board of directors and senior management are collectively responsible for the organization's business continuity.

33. A pandemic will present unique challenges and require targeted responses by management of financial institutions. Provision of adequate resources in monitoring, planning and managing the proper response to the emergence of an AFP will be required. Institutions have taken a variety of steps to document strategic plans, clarify responsibilities, and establish means for implementing plans. Examples of actions taken so far include:

- Establishing a senior crisis management team. Implementation of overall contingency plans is generally supervised by senior management. Given the high degree of uncertainty, senior management will have to stand ready to respond with speed and flexibility. This senior group could consider the following:

⁷ The Forum's high-level principles for business continuity can be found at at <http://www.bis.org/publ/joint14.htm>

- Developing a strategic view of the main issues included in BCPs and alternative scenarios should be discussed well in advance, and possibly played out through “table-top” exercises or live tests.
- Determining the desired level of preparedness for each firm and the required investment. One option is to measure the profitability of each segment of the business and the investment needed to maintain that activity in a pandemic. Cost benefit analysis—bearing in mind that the demand for and profitability of any activity may change in a pandemic—could then provide guidance for the appropriate investment plan for an AFP and where to prioritize.
- Establishing separate task forces to develop detailed contingency plans by topics such as continuity of business, legal, human resource, communications (internal and external), health/hygiene and security. Each task force should report on a regular basis (once a month or more frequently) to the high-level management group for coordination, prioritization and for testing. Some institutions have hired outside expert consultants in crisis management and health care issues to guide the task forces through the process.
- Designing succession planning, establishing how and when authority will be delegated if key management staff is absent. Procedures for temporary or permanent transfer of authority should be clear, and this information can be disseminated through the firm and to key counterparties, so that staff knows who will have the authority to act if management is incapacitated.
 - Given the characteristics of the pandemic, geographical dispersal of designated successors may be advisable for some firms (perhaps triggered by reaching one of the phases of the pandemic declared by the WTO).
 - The crisis management team should also have successors. Deputies to crisis managers should be fully informed throughout the preparatory phase.
- Identifying reliable sources of information. A unit may be assigned the responsibility of monitoring key sources of information and identify any escalation in the potential for an outbreak. In a pandemic, rumors may spread faster than the virus. Having accurate information will be critical for timely decision-making. Obtaining reliable sources before an AFP may be effective.
- The senior group should integrate market risk analysis into strategic planning and preparation. BCPs have tended to focus on the rates of recovery from disruptions in a firms’ infrastructure, giving less consideration to market risk analysis (the risk of losses from changes in the value of financial instruments as a result of changes in risk perception, volatility, or market disruptions). An AFP will affect both the firm’s businesses and its ability to conduct business. Few institutions are advanced in integrating these two risks.

Principle 2: Major Operational Disruptions: Financial industry participants and financial authorities should incorporate the risk of a major operational disruption into their approaches to business continuity management. Financial authorities' business continuity management also should address how they will respond to a major operational disruption that affects the operation of the financial industry participants or financial system for which they are responsible.

34. BCPs plans aim at ensuring critical levels of production. BCPs designed to deal with a sudden temporary failure of infrastructure, are being expanded to incorporate threats to staffing levels. Such plans identify critical functions and focus on day-to-day workload management during a pandemic. For financial institutions, these may include providing liquidity, keeping ATMs functioning, maintaining the payments system, and managing financial market and counterparty exposures. BCPs typically include some or all of the following items:

- Identifying escalating levels of responses designed for different phases of the outbreak. Determination of triggers for and steps taken in each phase should be identified in the BCP. As an example,
 - Phase 1: No human-to-human outbreak reported. The costs of preparations included in the regular budget but may include some stockpiling of critical supplies and establishing task forces in key areas for detailed planning, coordination and testing.
 - Phase 2: Human-to-human transmission is identified. More costly measures implemented. Activities in that region isolated, activities shifted to other locations where possible, and staff removed from the area.
 - Phase 3: Isolated outbreaks in the parent company's country. Preparations accelerated, most costly measures implemented, staff dispersal initiated.
 - Phase 4: Outbreak affects key production areas or crucial facilities. The full range of the institution's plans is implemented.
 - Phase 5: Recovery period, including reintegration of staff and resumption of production, continued monitoring for further outbreaks, assessment of "lessons learned" from the outbreak.
- Identifying core activities or basic minimum services. Institutions may identify the activities they will cease providing or scale down at each phase of the response plan, recognizing that demand for certain services will change in a pandemic.
- Identifying key employees and supplies needed to provide those critical services. Scenario analysis can be useful to obtain a range of possible effects and actions. Institutions should recognize that identification of critical staff will depend on the

length of the disruption and on the timing of the absenteeism. For example, some staff may only be critical at the end of the month or reporting period but may be considered non-essential at other times. Others may only become critical if the disruption lasts for an extended period.

- Creating redundant or double teams for all critical staff functions. Some institutions are planning to split their critical staff into two sections to operate from different locations and are training ancillary workforce, including contractors, employees in other job titles, and retirees.
- Developing staffing plans identifying work that must be done in the office and work that can be done from home. Scenarios have been adopted, identifying procedures if absenteeism lasts a week or several weeks.
- Establishing remote and redundant facilities for activities that must be done from centralized locations (including, for example, dealing rooms and treasury functions). For this option to be effective, a number of further considerations are needed:
 - During the SARS epidemic, some institutions made special arrangements so that their critical staff could report to a facility without taking mass transportation.
 - If the facilities are in a populated area (e.g., another city), steps should be taken to protect the site from a spreading flu pandemic.
 - If staff is moved to remote facilities, determine if they commute from home. Identify when staff would be dispersed and if families move with them.
 - Institutions should undertake regular tests of the equipment and procedures for remote facilities that are not staffed or operational in normal times.
- Expand use of telecommunications to ensure social distancing. Such efforts raise a number of specific issues:
 - Budget requirements means that planning must be made far in advance of an outbreak.
 - Using a wide range of devices from diverse locations raises security issues that must be addressed.

- The carrying capacity of the bandwidth must be examined. For planning, some institutions have tried to estimate the impact of a large number of institutions shifting to remote computing.
- How to ensure access to key data. Staff may require access to data that is only available in paper form.
- Shift as many activities as possible to be conducted from home. For remote computing, BCPs need to consider:
 - Whether sufficient staff has remote computing capability, including access to key programs (if the firm has sufficient licenses), access to needed data, ports and other technical factors.
 - What work must be done “on line” and what work can be completed at home and submitted on some time schedule to a central location.
 - If pressures on the internet or company servers can be reduced by adopting two or three shifts.
 - Techniques for supervision of remote computing. Internal controls must be designed to ensure effective quality and risk control. Some institutions have also begun discussions with their regulators on possible limitations or modifications to prudential rules to ensure that any work from home meets requirements (reporting, documenting transactions, etc.)
- Identification and maintenance of stockpiles of key supplies in the case of potential transportation disruptions. Given the uncertainty of timing and the cost of stockpiling, some institutions have begun slow accumulation in order to smooth the budgetary impact of such accumulation.
- Consideration of how to proceed if key service providers (e.g., security personnel and accountants) are not available. Some institutions have begun discussions with critical suppliers of outsourced services to ensure that these providers have an effective contingency plan.
- Make arrangements to ensure that the financial institution can receive payments from and provide access to cash and payment facilities for retail customers. Demand for cash could increase sharply and a few financial institutions have stockpiled cash and have identified means of distribution to branches and ATMs.
- If business is shifted in location or scaled back, issues that must be considered include how to notify customers and how to provide services to customers from remote locations.

- Development of backup options in case of a failure of the payments system, or if the central bank is unable to provide critical services.

Principle 3: Recovery Objectives: Financial industry participants should develop recovery objectives that reflect the risk they represent to the operation of the financial system. As appropriate, such recovery objectives may be established in consultation with, or by, the relevant financial authorities.

35. Payment and securities settlement systems have the greatest need to ensure rapid and effective recovery capabilities. To that end, they typically have well developed standards concerning business continuity and operational risk. However, plans in many countries focus on back-up facilities and redundancy of physical infrastructure and have only recently begun to plan for high absenteeism. Areas for additional development may include the following:

- Identifying minimum, critical activities and the staffing needed to ensure continued provision of payment and settlement services in the face of increasing degrees of absenteeism. For payment systems, critical staff is often a very small group charged with opening and closing procedures, and monitoring of the system and participants behavior. “Value-added” services—e.g., credit provision—where individual decisions are required may be more difficult to maintain.
- Identifying activities that could be provided on a remote basis (e.g., work from home). This option may require investment in laptops and communication technology to ensure secure communication. Provision of access to data and remote use of proprietary software will have to be considered in the context of security protocols.
- Determining adequate distance between primary and secondary sites. Major systems have sometimes installed a third site typically “dark” or not staffed that is located in another part of the country and can be activated with some delay.
- Coordinating between the authorities, infrastructure providers and users. All relevant parties—including those outside the home country—should be aware of what services will be available under different scenarios, and be able to assess whether their assumptions regarding the availability of basic infrastructure and services are valid, and what their clients’ plans might imply for demand for their services.

36. Preparations by large complex financial institutions, key retail banks and the authorities themselves will need to be robust. Failure in any of these institutions will have an impact on the global financial system in addition to the direct impact on their own operations.

Principle 4: Communications: Financial industry participants and financial authorities should include in their business continuity plans procedures for communicating within their organizations and with relevant external parties in the event of a major operational disruption.

37. Communication with the staff, main suppliers and with government officials is likely to be key to addressing an AFP. Staff communication is critical for preventing panic, strengthening morale and providing essential information to ensure that staff health is protected and critical functions continue. Communication of information concerning the pandemic should begin immediately so a track record is established of the provision of accurate information. Some institutions are reviewing their communication programs to determine if special policies are needed in an AFP to address the high degree of fear and family concerns. Examples of communication issues to consider include:

- Determining how to ensure adequate communication with staff—including cell phone, satellite phone and landline telephone numbers, and personal e-mail addresses. Identify platforms and back up system for communicating with staff, vendors, suppliers and customers for timely updates and emergency contact systems (i.e., hotlines and dedicated websites).
- Informing staff about the institution's BCP, how the plan would be triggered and where to monitor the institution's on-going preparation.
- Establishing policies to communicate with counterparties—customers or, in the case of regulators, supervised institutions. Contact lists should be established and maintained. To ensure minimum disruption, counterparties should be able to get information on what services will be offered, under what conditions and if there are changes to these arrangements.
- Clarifying how critical providers and suppliers plan to respond to an AFP. Discussion should include how each will communicate and work around disruptions that might occur.
- Establishing education programs for staff:
 - Reminders on the importance of hand washing and health habits—cough hygiene diet and exercise.
 - Reminders to staff at high risk of the need for special care.
 - Advice on the difference between flu and a cold, and between avian flu and other flues (if appropriate).
 - Strong insistence that staff who feel ill should not report to work (together with liberal leave policies and non-punitive sick leave.)

Principle 5: Cross-Border Communications: Financial industry participants' and financial authorities' communication procedures should address communications with financial authorities in other jurisdictions in the event of major operational disruptions with cross-border implications.

38. Communication of conditions in the country and in financial institutions with international regulators is a critical aspect of managing the impact of an AFP. Accordingly, regulators should ensure they will be able to communicate with appropriate counterparts.

- Developing triggers and platforms for communicating with international counterparties, with timely updates and emergency contact systems (i.e., hotlines and dedicated websites).
- Establishing and maintaining contact lists. To ensure minimum disruption, contact lists should be updated on a regular basis.
- Communicating plans and possibly coordinating approaches to regulations for preparedness, testing and, in the event of a pandemic, regulatory forbearance. Because an AFP will have an extremely broad impact on many levels of the economy and society, information should be widely disseminated among the widest group possible.

Principle 6: Testing: Financial industry participants and financial authorities should test their business continuity plans, evaluate their effectiveness, and update their business continuity management, as appropriate.

39. Testing BCPs and staffing arrangements are important but pose challenges. Testing remote sites and staff dispersal plans may be difficult because of the disruption and costs to the institution. Identification of scenarios to test may be problematic. Testing for low incidence virus may be relatively easy, but the lessons learned may not be adequate for a virus with high attack and fatality rates. In response, institutions are considering a variety of alternatives:

- In the early stages of preparation, institutions may focus on testing of particular tools, rather than development of a complete scenario. This approach is less comprehensive and generally focuses on technology and infrastructure.
- The next level of preparedness could include the conduct of “desk top” exercises, wherein senior management or business managers are given a scenario (that may change over the course of the exercise) and they discuss how to respond. Comprehensive table top exercises can be relatively cost efficient but test a wide range of responses including infrastructure, internal coordination, and communication channels.
- Remote computing facilities could be tested. Institutions have identified departments or key individuals and evaluated efficiency when working from home for several days or a week.
- Scenario testing could help identify weaknesses in preparation and help guide investment planning for heightened preparedness.

Principle 7: Business Continuity Management Reviews by Financial Authorities: Financial authorities should incorporate business continuity management reviews into their frameworks for the ongoing assessment of the financial industry participants for which they are responsible.

40. Central bank and regulatory bodies play an important role in crisis management and planning, and should review their BCPs and those of the financial sector participants with the aim of minimizing payment, settlement and other financial market disruptions in the event of a pandemic .

Crisis Planning

41. Response to an AFP will involve a wide range of national authorities. A high-level group might be established to coordinate the different responses. Members may include the government (ministry of finance), the central bank, and the regulators. In addition, broader contingency planning might include key health and infrastructural authorities.

42. National authorities may have a critical role to play in coordinating the responses of private sector agents, as well as with the authorities in other countries. Individual institution's decision on whether to invest in preparedness or not will be influenced by the decisions of their counterparts in the market: the authorities may have to take the lead in setting expectations or providing a forum for industry-wide discussions among competitors. Likewise, the authorities may have to take the lead in establishing procedures if there are problems with cross-border transactions, or with subsidiaries or parent companies. This will require dialogue with regulators in partner countries or multilateral bodies.

Payments and Settlement System

43. In addition to having adequate BCPs to deal with critical staff shortages, providers of payment and settlement services should also:

- establish alternative payment mechanisms in case the key payment systems were to fail (e.g., shift to end-of-day net settlement, or netting across the books of the central bank.)

Economic policies

44. Consider policies concerning the provision of liquidity to banks. How can banks remain liquid and what will be done if they become illiquid? Ensure that the central bank has an adequate supply of cash and determine when note destruction will be slowed or halted.

45. Develop plans to absorb excess liquidity (either during the crisis if possible, or in the immediate post-crisis period). Consider the functioning of open market operations and money markets in the event of a significant deterioration in the financial system (e.g., interbank markets could become segmented).

46. Central bank should ensure adequate supply of cash, determine when note destruction will be slowed or halted, and assure that there is adequate capacity to deliver cash to financial institutions, considering that transportation networks may be affected.
47. Establish means for monitoring developments in external credit lines. In conditions of an AFP, international credit lines may be called or not rolled over. Consider alternatives for limiting the extent to which such lines are called.
48. Consider the consequences of sharply increased volatility or impaired liquidity in financial markets, and the effects of using “circuit breakers” or temporary suspensions of major markets.
49. Establish means of addressing instability in money and FX markets, including knowing minimum conditions to ensure such systems continue to function efficiently, and, in the event of disruptive market movements, establishing emergency “circuit breakers.”
50. Determine if and under what conditions capital controls could be used.

Prudential Regulation

51. Consider the extent to which some prudential rules may be eased. For example, how should banks treat loans coming due but not paid, and should prudential rules on minimum liquidity and loan classification be modified? How would these decisions be made?
52. Determine what information on prudential forbearance can be provided to financial institutions for the preparation of their own BCPs. To what extent can banks assume that auditing rules or reporting requirements or rules governing conduct of business will be temporarily eased as they develop their own plans?
53. In countries with a diverse regulatory structure, coordination among different regulatory bodies is essential. A coordinated approach to regulations for preparedness, testing and, in the event of a pandemic, regulatory forbearance is critical. Because an AFP will have an extremely broad impact on many levels of the economy and society, information should be widely disseminated among the widest group possible.

IV. ADMINISTRATIVE AND HEALTH ASPECTS OF A BCP

54. In addition to high-level principles covering business continuity, national authorities and global financial institutions have included in their BCPs measures to ensure adequate management of facilities, health and safety measures and administrative steps, all aimed at securing business practices in the event of a possible AFP.

Facilities management

55. Adequate facilities management can assist in the reduction in the spread of infection. Such measures would be particularly important in the early stages of a pandemic or if the virus is not easily communicable. Planning for facilities management should also consider supply shortages, lack of maintenance of key facilities, and the need for some quarantining practices. Possible practices include:

- Purchasing a minimum quantity of critical cleaning and health supplies, sufficient for a pandemic (two months-worth), including face masks, antiseptic wipes, gels, and towels.
- Management practices, including “just in time” inventory management, will have to be assessed for their reliability in the event of an AFP (but may also be expensive to reverse before an AFP).
- Plans for reducing staff interaction, e.g., by extending working hours and adopting shifts to reduce crowding in the building, closing the business to visitors, and staggering lunch hours.
- More frequent cleaning, focusing especially on desks, phones, keyboards, faxes, sinks, railings, door handles, and counters. Cleaning plans for offices of staff that become ill during working hours can also be outlined.
- Introducing a more intensive cycle of building maintenance, including for air conditioning systems.
- Developing plans for the worst phase of an outbreak that include supplying face masks, mechanisms to collect and dispose of masks and towels, and distribution of antiseptic wipes/gels in washrooms and work areas.
- Considering practices for staff that become ill during the workday (e.g., mandatory quarantine or isolation).

Health and safety issues

56. Protection of the health of an institution’s staff will be a key concern. Up-to-date information on the health of the staff will be critical for managers. Clearly established policies can reduce the spread of the virus, ease staff concerns, and allow time for the institution to address disruptions. Issues include both the treatment of sick staff and limiting the spread of the infection. Examples of actions that can be taken include:

- Early planning of health responses to an AFP, identifying steps to take at each phase of the pandemic (stockpiling of critical supplies in the early stage, intensive cleaning

as the pandemic becomes established, to closing key facilities and changing business practices such as working hours as the pandemic becomes established in the country.)

- Establishing mechanisms to centralize information and track sickness among staff.
- Instituting guidelines for the phased intensification of measures to reduce face-to-face contact (avoiding meetings, seating in meetings, use of videoconferencing, and modification of office layouts).
- During the SARS outbreak, some institutions established programs to test routinely employees for signs of infection during an outbreak.
- Distributing hygienic supplies throughout the offices, including hand sanitizers, tissues, and special trash receptacles with hands-free lids.
- Establishing designated places to quarantine the sick and arrangements for their transportation to health centers, policies for rapid cleaning of workspace, and the monitoring of those who were in contact with the sick.
- Extending working hours, aimed at reducing crowding in the building, closing the business to visitors, and staggering lunch hours.
- Identifying specially trained and equipped staff to assist with medical emergencies. Employees who have already been ill with the virus and have recovered are likely to have a degree of immunity and may be available to act in a volunteer capacity or in critical staff functions.
- Almost every response plan for an AFP incorporates some travel restrictions. Issues to consider include:
 - Triggers and procedures for activating travel limitations, including who can authorize restrictions, and if and who can grant exceptions.
 - Personnel policies concerning staff returning from infected areas (e.g., when they would return to work, medical check ups before returning to the office).
 - Plans for any staff held in quarantine abroad (e.g., means of transferring emergency cash or providing credit, revision of medical insurance policies to ensure coverage will extend to those in quarantined areas).
- Some institutions will review staff insurance policies, to ensure that coverage extends to those in quarantined areas.
- Plans are being developed by some global institutions for the wholesale evacuation of staff from infected areas. Issues to be considered in evacuation plans include

collecting required documentation in advance, finance considerations, contingency plans for business and staff that remain in the infected area, and security for offices and houses in evacuated areas are being developed.

Administrative preparation

57. The issues outlined above have a significant administrative impact. Stockpiling of supplies or infrastructural investment may be essential and must be budgeted. Managing staff issues may require changes in administrative procedures. Such procedures are best considered in anticipation of the outbreak of an AFP. Examples of issues considered by some institutions include:

- Development and communication of human resource policies concerning staff absences, including liberal leave policies if accumulated sick leave is insufficient (especially as incentives should exist for people to stay home if ill).
- Easing reporting and administrative procedures.
- Establishing policies for personnel who have been exposed to the virus or are suspected of being ill.
- For regions where there are concerns about police and security services, consideration may be given to enhancing in-house or contractor security services.

SELECTED WEBSITE INFORMATION ON PREPAREDNESS FOR A PANDEMIC INFLUENZA

Financial Sector

- The Joint Forum produced a paper on high-level principles on business continuity that can be found at <http://www.bis.org/publ/joint14.htm>
- The Monetary Authorities of Singapore has published business continuity management guidelines at http://www.mas.gov.sg/regulations/download/BCP_Guidelines10Jan03.pdf
- The UK Financial Supervisory Authorities have a dedicated website on business continuity planning. The website at <http://www.fsc.gov.uk> was established by the UK's tripartite financial authorities (HM Treasury, the Bank of England and the Financial Services Authority) to provide a central point of information about work on continuity planning that is relevant to the UK's financial sector.
- A preparedness guideline for influenza pandemic issued by the Hong Kong Monetary Authorities can be found at <http://www.info.gov.hk/hkma/eng/guide/index.htm> with links to the Government's national preparedness plan.
- The U.S. Financial Services Sector Coordinating Council for Critical Infrastructure Protection and Homeland Security (www.fsscc.org) and the U.S. Financial and Banking Information Infrastructure Committee's website (www.fbiic.gov) provide information on preparedness issues in the event of an avian flu pandemic.

Economic Analysis

- The Australian Treasury has produced a macroeconomic analysis of a pandemic shock (<http://www.treasury.gov.au/contentitem.asp?NavId=049&ContentID=1069>).
- The New Zealand's Treasury Report T2005/2024: Avian Influenza Pandemic – Issues (2 November 2005) (at <http://www.treasury.govt.nz>) provides an overview of the Treasury's involvement in the government's pandemic planning and assesses the economic implications of a pandemic.

Country Reports

- The Australian Government Department of Health and Aged Services has developed the *Australian Management Plan For Pandemic Influenza, June 2005*. It can be found at <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/phd-pandemic-plan.htm>.
- The Australian Department of Health has launched a dedicated [official website](http://www.avianinfluenza.com.au) at <http://www.avianinfluenza.com.au>, providing information on avian flu to the public.
- The Public Health Agency of Canada produced a *Canadian Pandemic Influenza Plan* (<http://www.phac-aspc.gc.ca/cpip-pclcpi/index.html>), mapping out how Canada will prepare for and respond to an influenza pandemic.
- The Public Health Agency of Canada launched a dedicated official website (http://www.phac-aspc.gc.ca/influenza/avian_e.html), providing information on avian flu to the public
- Hong Kong SAR government's national preparedness plan for an influenza pandemic can be found at http://www.chp.gov.hk/files/pdf/flu_plan_framework_en_20050222.pdf
- The New Zealand Government's *National Health Emergency Plan: Infectious Diseases*, which provides a detailed response to a pandemic influenza threat, can be found at www.moh.govt.nz/nhep. Further information on what the government is doing can be found at <http://www.moh.govt.nz/birdflu>
- The UK's National Pandemic Flu Plan can be found at <http://www.dh.gov.uk/PolicyAndGuidance/EmergencyPlanning/PandemicFlu/fs/en>.
- The UK's Department for Environment Food and Rural Affairs has a dedicated website on avian flu related issues at <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/index.htm>
- Information on avian flu can also be found at UK's Health Protection Agency at http://www.hpa.org.uk/infections/topics_az/influenza/avian/default.htm
- The US government has developed the *National Strategy for Pandemic Influenza*. The report can be found at www.whitehouse.gov/homeland/pandemic-influenza.html
- The US government launched a dedicated official website at <http://pandemicflu.gov>. This website describes the national strategy, the role of Department of Health and Human Services and other departments, state and local governments.

- HHS has further developed its *HHS Pandemic Influenza Plan* which can be found at <http://www.hhs.gov/pandemicflu/plan/>. The document serves as a blueprint for all HHS pandemic influenza preparedness.
- A [Pandemic Influenza Toolkit](http://www.cdc.gov/flu/pandemic/healthprofessional.htm), prepared by the Centers for Disease Control and Prevention (CDC), can be found at <http://www.cdc.gov/flu/pandemic/healthprofessional.htm>, provides information to physicians and clinics.

INTERNATIONAL ORGANIZATIONS SURVEILLANCE AND COORDINATION EFFORTS

Asian Development Bank (ADB)

- Information on the ADB's project for prevention and control of avian flu in Asia and the Pacific can be found at <http://www.adb.org/Documents/ADBBO/GRNT/39662012.ASP>. More general information can be found at <http://www.adb.org/BirdFlu/adb.asp>

Food and Agricultural Organization (FAO)

- FAO of the United Nations provides overall information on animal and food safety issues regarding avian flu at http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html
- [FAO's Proposal for a Global Program](http://www.fao.org/ag/againfo/subjects/documents/ai/Global_Programme_Jan06.pdf) can be found at http://www.fao.org/ag/againfo/subjects/documents/ai/Global_Programme_Jan06.pdf

European Commission

- European Influenza Surveillance Scheme at www.eiss.org/index provides information on the EU's surveillance network on influenza activity

World Health Organization (WHO)

- *Avian influenza: assessing the pandemic threat* at <http://www.who.int/csr/disease/influenza/H5N1-9reduit.pdf> provides a detailed discussion of a pandemic threat, the characteristics and lessons from previous pandemics
- WHO has a dedicated website at <http://www.who.int/csr/en/> where confirmed human cases of Avian Influenza A (H5N1), country updates, information on influenza in general and how they affect the public

- Draft Protocol for rapid response and containment can be found at http://www.who.int/csr/disease/avian_influenza/guidelines/RapidResponse_27%2001.pdf
- Responding to the Avian Influenza Pandemic Threat: Recommended Strategic Actions at http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_05_8-EN.pdf provides information on activities that individual countries can take for the next pandemic.
- WHO Global Influenza Preparedness Plan can be found at http://www.who.int/csr/disease/avian_influenza/guidelines/RapidResponse_27%2001.pdf
- WHO's Regional Office of Europe website provides information on prevention and treatment, including antiviral drugs. http://www.euro.who.int/HEN/Syntheses/pandemicflu_antivirals/20060106_10?language=German
- WHO has prepared a handbook on pandemic issues for journalists. See http://www.who.int/csr/don/Handbook_influenza_pandemic_dec05.pdf

World Organization for Animal Health (OIE)

- [Global Surveillance on Animal Health](http://www.oie.int/eng/en_index.htm) at http://www.oie.int/eng/en_index.htm provides information on OIE's role and developments on animal health surveillance, disease containment and control.

World Bank (WB)

- <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTTOPAVIFLU/0,,menuPK:1793605~pagePK:64168427~piPK:64168435~theSitePK:1793593,00.html>) Provides information on the WB's role in providing financing, coordinating international donor efforts, the Beijing Declaration for International Donor support, and the Avian Flu Trust Fund.